

Appendix 1: Detailed tables per site

Table of Contents

1.	Table Layout	6
2.	East Coast Catchments	6
2.1.	Akitio at Weber (25003), July 1980 to July 2000 (all data)	6
2.2.	Owahanga at Branscombe Br (1425101), July 1999 to July 2005 (all data)	9
3.	Manawatu and Southern West Coast Catchments	10
3.1.	Manakau at Gleasons Rd (32001), July 1979 to July 1989 (all data)	10
3.2.	Ohau (Water Race) atd/s Culvert (32107), July 1991 to July 1994 (all data)	12
3.3.	Ohau at Rongomatane (32106), July 1978 to July 2004 (all data)	14
3.4.	Ohau at Water Race (32105), July 1974 to July 1978 (all data)	17
3.5.	Kiwitea at Spur Rd All (200), July 1977 to July 2005 (all data)	18
3.6.	Kumeti at SH2(Napier) (32599), July 1975 to July 1980 (all data)	21
3.7.	Kumeti at Te Rehunga (1032501), July 1981 to July 2004 (all data)	23
3.8.	Makakahi at Hamua (1032518), July 1980 to July 2005 (all data)	25
3.9.	Makino at Boness Rd (1032564), July 1992 to July 2006 (all data)	28
3.10.	Makuri at Tuscan Hills (1032591), July 2001 to July 2006 (all data)	30
3.11.	Manawatu at Hopelands (32504), July 1948 to July 2005 (all data)	32
3.12.	Manawatu at Opiki (synthetic) (1932501), July 1980 to July 2006 (all data)	36
3.13.	Manawatu at Palmerston North All (300), July 1923 to July 2005 (all data)	39
3.14.	Manawatu at Upper Gorge (1232566), July 1979 to July 2003 (all data)	44
3.15.	Manawatu at Weber Rd (32503), July 1955 to July 2004 (all data)	46
3.16.	Manga-Atua at Hopelands Rd (1232564), July 1980 to July 1989 (all data)	50
3.17.	Mangahao at Ballance (32526), July 1962 to July 2004 (all data)	52
3.18.	Mangatainoka at Larsons Br (1032555), July 1983 to July 2006 (all data)	55
3.19.	Mangatainoka at Pahiatua All (400), July 1954 to July 2005 (all data)	58
3.20.	Mangatera at Dannevirke 1 (synthetic) (32541), July 1955 to July 2004 (all data)	62
3.21.	Mangatera at Dannevirke 2 (synthetic) (500), July 1955 to July 2004 (all data)	65
3.22.	Oroua at Almadale All (800), July 1948 to July 2004 (all data)	69
3.23.	Oroua at Awahuri Br (1932512), July 1992 to July 2004 (all data)	73
3.24.	Oroua at Kawa Wool (synthetic) (700), July 1967 to July 2004 (all data)	75
3.25.	Pohangina at Mais Reach (32576), July 1969 to July 2005 (all data)	78
3.26.	Tamaki at SH2(Napier) (1032503), July 1977 to July 1983 (all data)	81
3.27.	Tamaki at Stephensons (1332556), December 2003 to April 2005 (all data)	83
3.28.	Tamaki at Water Supply Weir (1032504), July 1983 to July 2004 (all data)	85
3.29.	Tiraumea at Ngaturi (32529), July 1980 to July 2004 (all data)	87
3.30.	Tokomaru All (900), July 1980 to July 2005 (all data)	90
3.31.	Turitea at Ngahere Park Rd (1132501), July 2001 to July 2006 (all data)	92

3.32.	Puke Puke at Lake Outlet (32602), July 1971 to July 1980 (all data)	94
4.	Rangitikei Catchments	96
4.1.	Forest Rd Drain at Drop Structure (32747), July 1974 to July 2006 (all data)	96
4.2.	Hautapu Taihape All (100), July 1963 to July 2004 (all data)	99
4.3.	Makohine at Viaduct (32754), July 1977 to July 2004 (all data)	102
4.4.	Maungaraupi at Maungaraupi (32723), July 1970 to July 1975 (all data)	105
4.5.	Moawhango at Moawhango (32733), July 1964 to July 2005 (all data)	106
4.6.	Moawhango at Moawhango (32733), July 1964 to July 1978 (pre-diversion)	110
4.7.	Moawhango at Moawhango (32733), July 1979 to July 2004 (post-diversion)	112
4.8.	Moawhango at Moawhango (simnat) (327330), July 1964 to July 2003 (all data)	115
4.9.	Moawhango at Moawhango (simnat) (327330), July 1964 to July 1978 (pre-diversion)	118
4.10.	Moawhango at Moawhango (simnat) (327330), July 1979 to July 2003 (post-diversion)	120
4.11.	Moawhango at Waiouru (32732), July 1960 to July 2005 (all data)	122
4.12.	Moawhango at Waiouru (32732), July 1960 to July 1978 (pre-diversion)	126
4.13.	Moawhango at Waiouru (32732), July 1979 to July 2004 (post-diversion)	128
4.14.	Moawhango at Waiouru(simnat) (46060), July 1960 to July 2003 (all data)	131
4.15.	Moawhango at Waiouru(simnat) (46060), July 1960 to July 1978 (pre-diversion)	134
4.16.	Moawhango at Waiouru(simnat) (46060), July 1979 to July 2003 (post-diversion)	137
4.17.	Porewa at Tututotara (32715), July 1963 to July 1991 (all data)	139
4.18.	Rangitawa at Halcombe (32735), July 1969 to July 1980 (all data)	142
4.19.	Rangitikei at Mangaweka (32702), July 1969 to July 2004 (all data)	144
4.20.	Rangitikei at Mangaweka (32702), July 1969 to July 1978 (pre-diversion)	147
4.21.	Rangitikei at Mangaweka (32702), July 1979 to July 2004 (post-diversion)	149
4.22.	Rangitikei at Mangaweka (simnat) (327020), July 1963 to July 2003 (all data)	151
4.23.	Rangitikei at Mangaweka (simnat) (327020), July 1963 to July 1978 (pre-diversion)	155
4.24.	Rangitikei at Mangaweka (simnat) (327020), July 1979 to July 2003 (post-diversion)	157
4.25.	Rangitikei at Onepuhi (32703), July 2002 to July 2005 (post-diversion)	159
4.26.	Rangitikei at Otara (32705), July 1963 to July 1969 (pre-diversion)	161
4.27.	Rangitikei at Pukeokahu (32763), July 1999 to July 2005 (post-diversion)	163
4.28.	Rangitikei at Springvale (32708), July 1964 to July 1973 (all data)	164
4.29.	Tutaenui at Hammond St (32739), July 1968 to July 1987 (all data)	166
5.	Turakina and Whangaehu Catchments	169
5.1.	Turakina at Otairi (33004), July 1991 to July 2004 (all data)	169
5.2.	Turakina at SH3 Br (33003), July 1977 to July 1992 (all data)	171

5.3.	Makotuku at SH 49A Br (33117), July 1968 to July 2005 (all data)	173
5.4.	Mangaetoroa at School (33115), July 1969 to July 2004 (all data)	176
5.5.	Mangawhero at Ohakune All (600), July 1975 to July 2005 (all data)	179
5.6.	Mangawhero at Ore Ore (33111), July 1962 to July 2004 (all data)	182
5.7.	Tokiahuru at Whangaehu Junction (33112), July 1980 to July 1993 (post-diversion)	185
5.8.	Wahianoa at Karioi (33116), July 1968 to July 1972 (pre-diversion)	187
5.9.	Waitangi at Tangiwai (33114), July 1968 to July 1991 (all data)	189
5.10.	Whangaehu at Karioi (33107), July 1963 to July 2003 (all data)	191
5.11.	Whangaehu at Karioi (33107), July 1963 to July 1978 (pre-diversion)	195
5.12.	Whangaehu at Karioi (33107), July 1979 to July 2003 (post-diversion)	197
5.13.	Whangaehu at Karioi (simnat) (331070), July 1963 to July 2003 (all data)	199
5.14.	Whangaehu at Karioi (simnat) (331070), July 1963 to July 1978 (pre-diversion)	203
5.15.	Whangaehu at Karioi (simnat) (331070), July 1979 to July 2003 (post-diversion)	205
5.16.	Whangaehu at Kauangaroa (33101), July 1971 to July 2004 (all data)	207
5.17.	Whangaehu at Kauangaroa (33101), July 1971 to July 1978 (pre-diversion)	210
5.18.	Whangaehu at Kauangaroa (33101), July 1979 to July 2004 (post-diversion)	212
5.19.	Whangaehu at Kauangaroa (simnat) (331010), July 1971 to July 1994 (all data)	215
5.20.	Whangaehu at Kauangaroa (simnat) (331010), July 1971 to July 1978 (pre-diversion)	217
5.21.	Whangaehu at Kauangaroa (simnat) (331010), July 1979 to July 1994 (post-diversion)	219
6.	Whanganui Catchments and Kai Iwi	222
6.1.	Manganui-o-te-ao at Ashworth (33309), July 1962 to July 1980 (all data)	222
6.2.	Mangaroa at Ohura Town Br (33341), July 1965 to July 1970 (all data)	224
6.3.	Ohura at Tokorima (33313), July 1962 to July 2005 (all data)	226
6.4.	Ongarue at Taringamotu (33316), July 1963 to July 2004 (all data)	229
6.5.	Tangarakau at Tangarakau (33311), July 1962 to July 1968 (all data)	232
6.6.	Whakapapa at Footbridge (33320), July 1960 to July 2000 (all data)	234
6.7.	Whakapapa at Footbridge (33320), July 1960 to July 1972 (pre-diversion)	237
6.8.	Whakapapa at Footbridge (33320), July 1973 to July 1983 (1972 rules)	239
6.9.	Whakapapa at Footbridge (33320), July 1984 to July 1992 (1983 rules)	241
6.10.	Whakapapa at Footbridge (33320), July 1993 to July 2000 (Planning Tribunal 1990)	243
6.11.	Whakapapa at Footbridge (simnat) (333001), July 1960 to July 2003 (all data)	245
6.12.	Whakapapa at Footbridge (simnat) (333001), July 1960 to July 1972 (pre-diversion)	248
6.13.	Whakapapa at Footbridge (simnat) (333001), July 1973 to July 1983 (1972 rules)	250
6.14.	Whakapapa at Footbridge (simnat) (333001), July 1984 to July 1992 (1983 rules)	252

6.15.	Whakapapa at Footbridge (simnat) (333001), July 1993 to July 2003 (Planning Tribunal 1990)	254
6.16.	Whakapapa at Footbridge (sim consent) (8005), July 1962 to July 2003 (all data)	256
6.17.	Whakapapa at Footbridge (sim consent) (8005), July 1962 to July 1972 (pre-diversion)	260
6.18.	Whakapapa at Footbridge (sim consent) (8005), July 1973 to July 1983 (1972 rules)	262
6.19.	Whakapapa at Footbridge (sim consent) (8005), July 1984 to July 1992 (1983 rules)	264
6.20.	Whakapapa at Footbridge (sim consent) (8005), July 1993 to July 2003 (Planning Tribunal 1990)	265
6.21.	Whanganui at Matapuna (33338), July 1964 to July 1972 (pre-diversion)	267
6.22.	Whanganui at Paetawa (33301), July 1957 to July 2004 (all data)	269
6.23.	Whanganui at Paetawa (33301), July 1957 to July 1972 (pre-diversion)	273
6.24.	Whanganui at Paetawa (33301), July 1973 to July 1983 (1972 rules)	275
6.25.	Whanganui at Paetawa (33301), July 1984 to July 1992 (1983 rules)	277
6.26.	Whanganui at Paetawa (33301), July 1993 to July 2004 (Planning Tribunal 1990)	279
6.27.	Whanganui at Paetawa(simnat) (333005), July 1951 to July 2003 (all data)	281
6.28.	Whanganui at Paetawa(simnat) (333005), July 1951 to July 1972 (pre-diversion)	284
6.29.	Whanganui at Paetawa(simnat) (333005), July 1973 to July 1983 (1972 rules)	287
6.30.	Whanganui at Paetawa(simnat) (333005), July 1984 to July 1992 (1983 rules)	289
6.31.	Whanganui at Paetawa(simnat) (333005), July 1993 to July 2003 (Planning Tribunal 1990)	291
6.32.	Whanganui at Paetawa(sim consent) (8005), July 1962 to July 2003 (all data)	292
6.33.	Whanganui at Paetawa(sim consent) (8005), July 1962 to July 1972 (pre-diversion)	296
6.34.	Whanganui at Paetawa(sim consent) (8005), July 1973 to July 1983 (1972 rules)	298
6.35.	Whanganui at Paetawa(sim consent) (8005), July 1984 to July 1992 (1983 rules)	300
6.36.	Whanganui at Paetawa(sim consent) (8005), July 1993 to July 2003 (Planning Tribunal 1990)	302
6.37.	Whanganui at Piriaka (33356), July 1971 to July 2003 (all data)	304
6.38.	Whanganui at Piriaka (33356), July 1973 to July 1983 (1972 rules)	306
6.39.	Whanganui at Piriaka (33356), July 1984 to July 1992 (1983 rules)	308
6.40.	Whanganui at Piriaka (33356), July 1993 to July 2003 (Planning Tribunal 1990)	310
6.41.	Whanganui at Piriaka(simnat) (33300), July 1964 to July 2003 (all data)	312
6.42.	Whanganui at Piriaka(simnat) (33300), July 1964 to July 1972 (pre-diversion)	315
6.43.	Whanganui at Piriaka(simnat) (33300), July 1973 to July 1983 (1972 rules)	317

6.44.	Whanganui at Piriaka(simnat) (33300), July 1984 to July 1992 (1983 rules)	319
6.45.	Whanganui at Piriaka(simnat) (33300), July 1993 to July 2003 (Planning Tribunal 1990)	321
6.46.	Whanganui at Piriaka(sim consent) (8005), July 1964 to July 2003 (all data)	323
6.47.	Whanganui at Piriaka(sim consent) (8005), July 1964 to July 1972 (pre-diversion)	326
6.48.	Whanganui at Piriaka(sim consent) (8005), July 1973 to July 1983 (1972 rules)	328
6.49.	Whanganui at Piriaka(sim consent) (8005), July 1984 to July 1992 (1983 rules)	330
6.50.	Whanganui at Piriaka(sim consent) (8005), July 1993 to July 2003 (Planning Tribunal 1990)	332
6.51.	Whanganui at Te Maire (33302), July 1962 to July 2004 (all data)	334
6.52.	Whanganui at Te Maire (33302), July 1962 to July 1972 (pre-diversion)	337
6.53.	Whanganui at Te Maire (33302), July 1973 to July 1983 (1972 rules)	339
6.54.	Whanganui at Te Maire (33302), July 1984 to July 1992 (1983 rules)	341
6.55.	Whanganui at Te Maire (33302), July 1993 to July 2004 (Planning Tribunal 1990)	343
6.56.	Whanganui at Te Maire (simnat) (33300), July 1962 to July 2003 (all data)	345
6.57.	Whanganui at Te Maire (simnat) (33300), July 1962 to July 1972 (pre-diversion)	348
6.58.	Whanganui at Te Maire (simnat) (33300), July 1973 to July 1983 (1972 rules)	350
6.59.	Whanganui at Te Maire (simnat) (33300), July 1984 to July 1992 (1983 rules)	352
6.60.	Whanganui at Te Maire (simnat) (33300), July 1993 to July 2003 (Planning Tribunal 1990)	354
6.61.	Whanganui at Te Maire (sim consent) (8005), July 1962 to July 2003 (all data)	356
6.62.	Whanganui at Te Maire (sim consent) (8005), July 1962 to July 1972 (pre-diversion)	360
6.63.	Whanganui at Te Maire (sim consent) (8005), July 1973 to July 1983 (1972 rules)	362
6.64.	Whanganui at Te Maire (sim consent) (8005), July 1984 to July 1992 (1983 rules)	364
6.65.	Whanganui at Te Maire (sim consent) (8005), July 1993 to July 2003 (Planning Tribunal 1990)	365
6.66.	Whanganui at Te Porere (33347), July 1966 to July 2001 (all data)	367
6.67.	Kai Iwi at Handley Rd (33502), July 1978 to July 2004 (all data)	370

1. Table Layout

For each flow recorder, for one or more time periods, the following data tables are presented:

- Flow duration curve tabulation for complete record, showing 101 points on the flow duration curve, from minimum (exceeded 100% of the time) to maximum (exceeded 0% of the time), in L/s;
- Flow duration curve tabulation for the dry season (November to April inclusive), showing 101 points on the flow duration curve, from minimum (exceeded 100% of the time) to maximum (exceeded 0% of the time), in L/s;
- Annual maximum series and mean annual flood, showing the largest instantaneous flow for each calendar year, and the average of these, in m³/s, defining the mean annual flood statistic reported in the tables of the main report. The major floods of February 2004 have not been registered at every site, as some were damaged by the flood. In addition, no checking has been done of the effect of missing values in the annual flood series. Thus the mean annual flood values and annual series presented in this report should be treated with caution if using them for design purposes.
- Annual minimum series and mean annual low flow (MALF), showing the lowest recorded 1-day moving average flow each water year, and the average of these, in L/s, defining the mean annual low flow statistic reported in the tables of the main report. Where partial years (with gaps) have been found to contain the lowest flow of the year and thus contribute to the average annual value, these are **highlighted in grey**, and the MALF in the main report will be different from the one shown here. Years where the low flow contains errors (some negative flows at flow sites and from simulated records, these are struck out, and the MALF in the main report will be different from the one shown here. There was also a bug in the Tideda program which used the final value in a list even if it was from a partial year. These have also been corrected and the result is **highlighted in grey**.
- Table showing days per month less than or equal to MALF. This is analysed from hourly data, and the periods below MALF in any month may be discontinuous.

A value of 'NaN' (not a number) will occur from time to time in these tables. This is generally a reflection of data problems. For example where there are no complete years of record, as for the site Kumeti at SH2, then there will be no MAF value. In the tables showing days below MALF, 'NaN' means that that month has a gap.

2. East Coast Catchments

2.1. Akitio at Weber (25003), July 1980 to July 2000 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 25003 Akitio at Weber

From 1-Jul-1980 00:00:01 to 1-Jul-2000 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	445248	27571	15823	11382	9096	7595	6469	5636	5002	4474
10	4054	3712	3431	3194	2980	2802	2638	2493	2355	2230
20	2113	2010	1912	1821	1742	1666	1598	1532	1471	1412
30	1358	1306	1253	1208	1162	1119	1077	1035	995	957
40	919	883	850	819	789	757	726	699	674	650
50	626	604	583	561	540	521	503	484	467	451
60	435	419	404	388	373	358	343	329	315	301
70	286	270	257	243	230	217	204	192	179	167
80	154	144	134	124	116	107	99	91	84	76
90	68	61	56	51	46	41	36	30	21	11

100 2

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 25003 Akitio at Weber
 From 1-Jul-1980 00:00:01 to 1-Jul-2000 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	445248	13938	7670	5096	3800	3063	2606	2230	1960	1746
10	1579	1449	1348	1263	1184	1118	1053	989	935	886
20	839	800	764	727	694	668	642	617	595	575
30	555	535	517	499	482	465	450	435	421	407
40	393	379	365	350	336	323	311	298	285	273
50	260	250	241	232	224	215	206	197	187	179
60	172	164	156	149	143	136	131	127	122	117
70	112	107	102	98	94	89	85	81	77	73
80	69	65	62	59	55	52	50	47	45	43
90	40	38	36	33	30	27	24	21	18	11
100	2									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 25003 Akitio at Weber
 From 1-Jul-1980 00:00:00 to 30-Jun-2000 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1980	96.964	23-Jul-1980 08:32
1981	109.98	21-May-1981 08:37
1982	395.70	5-Jun-1982 14:00
1983	81.669	22-May-1983 23:22
1984	80.006	16-Aug-1984 12:24
1985	240.21	26-Jul-1985 23:30
1986	180.90	17-Sep-1986 06:00
1987	132.03	22-Mar-1987 07:30
1988	287.32	2-Sep-1988 10:45
1989	124.61	25-May-1989 18:15
1990	152.77	24-Aug-1990 03:15
1991	445.25	10-Apr-1991 12:45
1992	379.08	22-Jul-1992 15:00
1993	98.518	20-Feb-1993 10:30
1994	182.49	26-Jul-1994 05:00
1995	187.39	6-Apr-1995 09:45
1996	74.582	1-Apr-1996 01:00
1997	200.52	2-Jun-1997 23:30
1998	19.513	17-Jul-1998 14:00
1999	327.78	29-Nov-1999 12:00
*2000	33.363	14-May-2000 12:15

Average Annual Maximum 194.75 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 25003 Akitio at Weber
 From 1-Jul-1980 00:00:00 to 30-Jun-2000 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1981 24:00:00	30 at interval beginning 2-Apr-1981 02:58:23
30-Jun-1982 24:00:00	20 at interval beginning 30-Jan-1982 03:00:55
30-Jun-1983 24:00:00	13 at interval beginning 7-Jan-1983 20:18:39
30-Jun-1984 24:00:00	17 at interval beginning 2-Feb-1984 08:05:54
30-Jun-1985 24:00:00	24 at interval beginning 8-Dec-1984 20:52:52
30-Jun-1986 24:00:00	113 at interval beginning 3-May-1986 02:30:00
30-Jun-1987 24:00:00	12 at interval beginning 5-Feb-1987 05:45:00
30-Jun-1988 24:00:00	17 at interval beginning 2-Feb-1988 14:00:00
30-Jun-1989 24:00:00	22 at interval beginning 27-Dec-1988 13:15:00
30-Jun-1990 24:00:00	33 at interval beginning 4-Feb-1990 22:30:00
30-Jun-1991 24:00:00	50 at interval beginning 15-Feb-1991 12:30:00
30-Jun-1992 24:00:00	171 at interval beginning 4-Feb-1992 13:15:00
30-Jun-1993 24:00:00	205 at interval beginning 25-Jan-1993 04:45:00
30-Jun-1994 24:00:00	40 at interval beginning 9-Apr-1994 17:30:00
30-Jun-1995 24:00:00	11 at interval beginning 22-Jan-1995 00:30:00
30-Jun-1996 24:00:00	59 at interval beginning 23-Jan-1996 04:00:00
30-Jun-1997 24:00:00	48 at interval beginning 25-Dec-1996 13:15:00
30-Jun-1998 24:00:00	3 at interval beginning 20-Feb-1998 07:30:00
30-Jun-1999 24:00:00	15 at interval beginning 12-Jan-1999 24:00:00
30-Jun-2000 24:00:00	39 at interval beginning 4-Mar-2000 09:15:00

Mean annual Minimum = 47
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1980 to 2000 site 25003 Akitio at Weber
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.9	9.0	0.0	0.0	18.8
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.3	20.8	0.0	0.0	0.0	0.0	37.1
1983	0.0	0.0	0.0	0.0	0.0	0.0	7.4	22.1	12.8	20.7	0.0	0.0	0.0	63.0
1984	0.0	0.0	0.0	0.0	0.0	0.0	2.4	23.1	9.7	1.7	0.0	0.0	0.0	36.8
1985	0.0	0.0	0.0	0.0	4.5	6.4	4.8	14.2	1.8	0.0	0.0	0.0	0.0	31.6
1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1987	0.0	0.0	0.0	0.0	0.0	1.3	22.0	14.4	0.0	0.0	0.0	0.0	0.0	37.7
1988	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.4	3.7	0.0	0.0	0.0	0.0	18.1
1989	0.0	0.0	0.0	0.0	0.0	0.0	9.4	4.0	0.8	18.3	24.4	0.0	0.0	56.9
1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	14.3	0.0	0.0	0.0	0.0	15.6
1991	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1994	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.8	2.8	0.0	13.5
1995	0.0	0.0	0.0	0.0	0.0	0.0	11.0	25.8	1.7	0.0	0.0	0.0	0.0	38.5
1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1997	0.0	0.0	0.0	0.0	0.0	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4
1998	0.0	0.0	0.0	0.0	0.0	1.3	20.0	23.1	30.2	15.5	0.3	0.0	0.0	90.3
1999	0.0	0.0	0.0	0.0	2.5	0.3	12.4	0.6	1.3	0.0	0.0	0.0	0.0	17.2
2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	5.2	0.0	0.0	0.0	0.0	6.0
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	0.0	0.0	0.0	0.0	4.5	11.0	25.8	23.1	30.2	24.4	2.8	0.0	0.0	
Mean	0.0	0.0	0.0	0.0	0.4	2.0	8.3	5.8	4.4	3.0	0.2	0.0	0.0	

2.2. Owahanga at Branscombe Br (1425101), July 1999 to July 2005 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 1425101 Owahanga at Branscombe Br
From 1-Jul-1999 00:00:01 to 1-Jul-2005 00:00:01
Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	664541	75689	42029	29206	23149	18955	16058	13758	12185	10949
10	9954	9150	8470	7886	7372	6899	6485	6112	5765	5448
20	5156	4910	4688	4486	4298	4098	3918	3746	3593	3447
30	3291	3156	3039	2917	2794	2683	2581	2495	2405	2309
40	2212	2121	2039	1964	1893	1828	1760	1695	1628	1559
50	1492	1426	1367	1311	1254	1198	1147	1102	1055	1009
60	964	924	885	846	807	766	730	694	653	617
70	583	551	519	493	468	443	411	380	356	332
80	310	290	269	249	230	211	192	175	159	142
90	125	110	95	80	65	54	43	32	22	11
100	0									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 1425101 Owahanga at Branscombe Br
From 1-Jul-1999 00:00:01 to 1-Jul-2005 00:00:01
Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	664541	32335	19299	13041	9763	7810	6494	5464	4727	4170
10	3728	3359	3049	2790	2586	2440	2303	2168	2050	1950
20	1861	1771	1687	1606	1528	1458	1394	1337	1285	1232
30	1184	1139	1102	1063	1022	985	950	916	885	857
40	827	799	771	742	716	688	657	628	605	581
50	559	537	518	502	487	472	457	443	426	405
60	387	370	355	341	327	313	301	289	274	259
70	245	231	219	208	197	185	174	162	150	138
80	127	115	107	100	92	85	78	72	66	59
90	55	50	46	42	38	34	30	25	16	8
100	0									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 1425101 Owahanga at Branscombe Br
From 1-Jul-1999 00:00:00 to 30-Jun-2005 24:00:00
Interval = 0
flow m³/s

Year	Maximum	Date & Time
*1999	246.91	29-Nov-1999 13:45
2000	416.72	7-Oct-2000 16:45
2001	388.46	15-Aug-2001 14:00
2002	162.34	24-Jul-2002 08:45
2003	233.65	23-Aug-2003 19:15
*2004	664.54	16-Feb-2004 03:00
*2005	126.75	14-Jun-2005 18:30

Average Annual Maximum 300.29 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 1425101 Owahanga at Branscombe Br
From 1-Jul-1999 00:00:00 to 30-Jun-2005 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
Gap from 18-Oct-1999 13:15:00 to 25-Nov-1999 10:00:00 of 37.86 Days	
30-Jun-2000 24:00:00(PARTIAL)	23 at interval beginning 6-Mar-2000 13:00:00
30-Jun-2001 24:00:00	14 at interval beginning 1-Apr-2001 05:30:00
30-Jun-2002 24:00:00	148 at interval beginning 10-Feb-2002 03:00:00
30-Jun-2003 24:00:00	0 at interval beginning 22-Feb-2003 23:15:00
Gap from 11-Jun-2004 20:15:00 to 14-Jun-2004 13:00:00 of 2.70 Days	
30-Jun-2004 24:00:00(PARTIAL)	27 at interval beginning 18-Jan-2004 02:45:00
30-Jun-2005 24:00:00	19 at interval beginning 27-Feb-2005 04:00:00

Mean annual Minimum = 45 becomes 39
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1999 to 2005 site 1425101 Owahanga at Branscombe Br
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
2000	0.0	0.0	0.0	NaN	NaN	0.0	0.4	0.0	8.7	0.0	0.0	0.0	0.0	9.0
2001	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.7	4.3	0.0	0.0	0.0	8.9
2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2003	0.0	0.0	0.0	0.0	0.0	0.0	2.9	23.5	0.3	0.0	0.0	0.0	0.0	26.7
2004	0.0	0.0	0.0	0.0	0.0	0.0	2.6	0.0	0.0	0.0	0.0	NaN	0.0	2.6
2005	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.8	7.8	0.0	0.0	0.0	0.0	17.6
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	0.0	0.0	0.0	0.0	0.0	0.0	2.9	23.5	8.7	4.3	0.0	0.0	0.0	
Mean	0.0	0.0	0.0	0.0	0.0	0.0	1.0	5.6	3.6	0.7	0.0	0.0	0.0	

3. Manawatu and Southern West Coast Catchments

3.1. Manakau at Gleasons Rd (32001), July 1979 to July 1989 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 32001 Manakau at Gleasons Rd
From 1-Jul-1979 00:00:01 to 1-Jul-1989 00:00:01
Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	32711	2807	1805	1385	1145	1000	891	816	753	699

10	654	615	576	543	513	488	465	444	422	402
20	385	371	356	345	332	321	310	300	291	282
30	274	267	259	252	247	241	236	230	225	219
40	214	209	204	198	194	190	186	182	178	175
50	171	169	166	163	160	158	155	152	148	145
60	141	139	135	130	126	123	120	118	114	110
70	106	102	99	96	92	89	87	84	81	79
80	76	73	71	68	66	64	61	58	55	53
90	50	47	44	42	40	37	34	31	27	22
100	10									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 32001 Manakau at Gleasons Rd
 From 1-Jul-1979 00:00:01 to 1-Jul-1989 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	32711	2617	1564	1150	928	788	682	599	532	485
10	443	406	377	351	331	309	294	279	264	252
20	243	234	226	218	210	202	194	188	184	178
30	173	169	165	162	159	156	152	149	145	142
40	139	136	133	129	125	122	120	117	113	110
50	107	104	102	99	97	94	92	90	88	86
60	84	82	81	79	77	75	73	72	70	68
70	67	65	64	62	61	59	57	56	54	53
80	52	50	49	47	46	44	43	42	41	39
90	38	36	35	33	31	29	28	26	22	17
100	10									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 32001 Manakau at Gleasons Rd
 From 1-Jul-1979 00:00:00 to 30-Jun-1989 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1979	7.9290	3-Dec-1979 09:00
1980	24.040	20-Jan-1980 09:00
1981	10.536	3-Jun-1981 07:45
1982	25.712	21-Dec-1982 13:30
1983	11.543	4-Nov-1983 11:30
1984	32.711	25-Nov-1984 03:45
1985	23.027	23-Dec-1985 22:00
1986	25.746	4-Oct-1986 13:15
1987	6.0430	15-Jun-1987 04:00
1988	12.195	24-Aug-1988 04:30
*1989	8.3890	19-Jun-1989 17:30

Average Annual Maximum 19.061 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 32001 Manakau at Gleasons Rd
 From 1-Jul-1979 00:00:00 to 30-Jun-1989 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1980 24:00:00	83 at interval beginning 13-Nov-1979 09:30:00
30-Jun-1981 24:00:00	33 at interval beginning 8-Mar-1981 14:00:00
30-Jun-1982 24:00:00	28 at interval beginning 13-Feb-1982 05:00:00
30-Jun-1983 24:00:00	41 at interval beginning 4-Mar-1983 10:45:00
30-Jun-1984 24:00:00	42 at interval beginning 2-Mar-1984 23:00:00
30-Jun-1985 24:00:00	32 at interval beginning 18-Apr-1985 23:30:00
30-Jun-1986 24:00:00	41 at interval beginning 13-Dec-1985 17:15:00
30-Jun-1987 24:00:00	23 at interval beginning 10-Jan-1987 09:15:00
30-Jun-1988 24:00:00	22 at interval beginning 27-Apr-1988 16:45:00
30-Jun-1989 24:00:00	11 at interval beginning 26-Feb-1989 01:45:00

Mean annual Minimum = 36
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1979 to 1989 site 32001 Manakau at Gleasons Rd
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
	1980	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	4.4	0.0	0.0	0.0	4.9
	1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.6	0.0	6.4	0.4	0.0	12.4
	1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1984	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
	1985	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	7.3	0.0	0.0	7.4
	1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1987	0.0	0.0	0.0	0.0	0.0	1.8	14.9	1.0	0.2	0.0	0.0	0.0	17.9
	1988	0.0	0.0	0.0	0.0	0.0	0.0	2.4	8.8	19.0	24.0	5.5	0.0	59.7
	1989	0.0	0.0	0.0	0.0	0.0	0.2	16.9	24.0	17.4	11.8	0.0	0.0	70.3
Min		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max		0.0	0.0	0.0	0.0	0.0	1.8	16.9	24.0	19.0	24.0	5.5	0.0	
Mean		0.0	0.0	0.0	0.0	0.0	0.2	3.4	4.0	4.1	5.0	0.6	0.0	

3.2. Ohau (Water Race) at/d/s Culvert (32107), July 1991 to July 1994 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 32107 Ohau (Water Race) at d/s Culvert
From 1-Jul-1991 00:00:01 to 1-Jul-1994 00:00:01
Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	442	268	238	223	214	207	203	199	195	192
10	189	185	183	180	176	174	171	168	166	164
20	162	160	158	156	154	152	151	150	148	147
30	146	144	143	142	140	139	137	136	135	134
40	133	131	130	128	127	125	123	122	121	119
50	118	117	115	114	113	112	111	109	108	107
60	106	105	103	102	101	100	99	98	97	96

70	95	94	93	92	91	90	89	87	86	85
80	84	83	81	80	78	77	75	74	72	70
90	68	66	64	62	60	58	56	54	52	49
100	17									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 32107 Ohau (Water Race) at d/s Culvert
 From 1-Jul-1991 00:00:01 to 1-Jul-1994 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	424	283	243	225	215	207	201	195	190	186
10	181	177	174	171	168	165	163	161	158	156
20	154	152	150	148	147	145	143	141	140	138
30	137	135	134	133	131	129	127	125	124	122
40	120	119	118	117	115	114	113	112	111	109
50	108	107	106	104	103	102	101	100	99	98
60	97	96	95	94	93	91	89	88	87	86
70	85	83	83	82	81	80	79	77	76	75
80	73	72	70	69	68	66	65	64	62	61
90	60	58	57	56	56	55	53	52	50	46
100	17									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 32107 Ohau (Water Race) at d/s Culvert
 From 1-Jul-1991 00:00:00 to 30-Jun-1994 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1991	0.42400	28-Nov-1991 16:40
*1992	0.39900	5-Feb-1992 17:45
*1993	0.44200	13-Jun-1993 11:59
*1994	0.32600	10-Jan-1994 20:00

Average Annual Maximum in the data or incomplete years

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 32107 Ohau (Water Race) at d/s Culvert
 From 1-Jul-1991 00:00:00 to 30-Jun-1994 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)	Duration
Gap from 14-Aug-1991 22:40:40 to 16-Aug-1991 10:30:00	of	1.49 Days
Gap from 13-Oct-1991 09:45:00 to 17-Oct-1991 09:00:00	of	3.97 Days
Gap from 2-Nov-1991 18:00:00 to 6-Nov-1991 14:30:00	of	3.85 Days
Gap from 26-Jan-1992 21:15:04 to 30-Jan-1992 22:43:49	of	4.06 Days
Gap from 23-Feb-1992 14:14:53 to 4-Mar-1992 08:56:46	of	9.78 Days
Gap from 17-Mar-1992 13:30:33 to 23-Mar-1992 19:00:00	of	6.23 Days
Gap from 15-Apr-1992 08:50:00 to 30-Apr-1992 16:10:00	of	15.31 Days
Gap from 10-Jun-1992 16:50:00 to 17-Jun-1992 21:58:39	of	7.21 Days
30-Jun-1992 24:00:00 (PARTIAL)	74 at interval beginning 14-Apr-1992 08:50:00	
30-Jun-1993 24:00:00	39 at interval beginning 31-May-1993 01:06:52	

Gap from 25-Aug-1993 09:30:00 to 17-Sep-1993 13:45:00 of 23.18 Days
 Gap from 25-Sep-1993 10:55:00 to 6-Oct-1993 12:35:00 of 11.07 Days
 30-Jun-1994 24:00:00(PARTIAL) 21 at interval beginning 14-Feb-1994 08:30:00

Mean annual Minimum = 30 becomes 39
 (For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
 Monthly totals 1991 to 1994 site 32107 Ohau (Water Race) atd/s Culvert
 Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
	1992	0.0	NaN	0.0	NaN	NaN	0.0	NaN	NaN	NaN	NaN	0.0	NaN	0.0
	1993	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.3	0.7
	1994	0.0	NaN	NaN	NaN	0.0	0.0	0.0	1.0	1.8	0.0	0.0	0.0	2.8
Min		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max		0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.8	0.0	0.5	0.3	
Mean		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.9	0.0	0.2	0.1	

3.3. Ohau at Rongomatane (32106), July 1978 to July 2004 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 32106 Ohau at Rongomatane
 From 14-Jul-1978 11:08:00 to 1-Jul-2004 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	492722	47687	31645	24893	21044	18467	16605	15118	13953	12994
10	12176	11484	10866	10318	9837	9419	9030	8683	8353	8057
20	7785	7533	7296	7072	6867	6675	6496	6332	6170	6013
30	5862	5717	5577	5444	5313	5191	5074	4964	4857	4757
40	4660	4564	4471	4380	4293	4209	4129	4051	3974	3897
50	3819	3749	3680	3611	3541	3472	3404	3339	3275	3212
60	3149	3087	3029	2973	2916	2859	2805	2748	2696	2641
70	2588	2534	2479	2427	2377	2327	2278	2225	2173	2120
80	2068	2013	1957	1905	1855	1802	1746	1687	1628	1573
90	1517	1457	1396	1330	1258	1189	1111	1025	928	787
100	584									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 32106 Ohau at Rongomatane
 From 14-Jul-1978 11:08:00 to 1-Jul-2004 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	410542	50985	31867	23983	19790	17058	15066	13578	12353	11398
10	10595	9884	9284	8779	8328	7944	7587	7278	6996	6736

20	6492	6275	6070	5878	5694	5517	5344	5187	5039	4903
30	4775	4654	4532	4421	4317	4220	4131	4041	3953	3863
40	3780	3702	3622	3547	3470	3400	3333	3263	3196	3131
50	3069	3012	2955	2901	2848	2795	2743	2694	2643	2597
60	2549	2500	2454	2410	2369	2329	2286	2242	2201	2159
70	2116	2075	2031	1988	1943	1901	1864	1825	1784	1740
80	1696	1653	1608	1571	1530	1488	1446	1407	1364	1323
90	1274	1232	1190	1140	1081	1027	978	912	815	665
100	584									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 32106 Ohau at Rongomatane
 From 1-Jul-1978 00:00:00 to 30-Jun-2004 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1978	160.19	12-Nov-1978 19:15
1979	159.89	26-Dec-1979 18:00
1980	220.83	20-Jan-1980 09:00
1981	209.44	7-Feb-1981 05:45
1982	247.17	11-Dec-1982 10:15
1983	228.32	5-Nov-1983 19:30
1984	209.14	25-Nov-1984 04:45
1985	160.17	23-Dec-1985 20:00
1986	492.72	4-Oct-1986 13:15
1987	80.564	30-Jun-1987 07:15
1988	171.94	14-Sep-1988 09:45
*1989	116.63	11-Jul-1989 14:28
1990	349.92	13-Mar-1990 15:30
1991	219.84	24-Jan-1991 23:46
1992	186.14	5-Feb-1992 19:30
*1993	410.54	20-Nov-1993 12:15
1994	203.64	8-Nov-1994 08:15
1995	230.66	22-Apr-1995 15:45
*1996	170.94	13-Oct-1996 08:45
1997	229.79	15-Nov-1997 19:30
1998	318.71	28-Oct-1998 09:15
1999	195.40	28-May-1999 10:30
2000	353.29	1-Oct-2000 09:00
2001	141.61	25-Aug-2001 08:35
2002	153.31	21-Mar-2002 22:15
2003	138.10	23-Dec-2003 19:00
*2004	225.38	16-Feb-2004 04:30

Average Annual Maximum 222.75 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 32106 Ohau at Rongomatane
 From 1-Jul-1978 00:00:00 to 30-Jun-2004 24:00:00
 Data starts at 14-Jul-1978 11:08:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1979 24:00:00 (PARTIAL)	1426 at interval beginning 9-Dec-1978 05:45:00
30-Jun-1980 24:00:00	1598 at interval beginning 27-Mar-1980 01:30:00
30-Jun-1981 24:00:00	952 at interval beginning 3-Feb-1981 20:15:00

30-Jun-1982 24:00:00	753	at interval beginning	7-May-1982 08:30:00
30-Jun-1983 24:00:00	1000	at interval beginning	17-Jul-1982 04:50:00
30-Jun-1984 24:00:00	1048	at interval beginning	22-Apr-1984 22:15:00
30-Jun-1985 24:00:00	778	at interval beginning	13-May-1985 13:00:00
30-Jun-1986 24:00:00	1155	at interval beginning	5-Apr-1986 04:43:51
30-Jun-1987 24:00:00	595	at interval beginning	9-Jan-1987 16:30:00
30-Jun-1988 24:00:00	830	at interval beginning	2-May-1988 14:45:00
Gap from 11-Jun-1989 06:30:00 to 14-Jun-1989 17:00:00 of 3.44 Days			
30-Jun-1989 24:00:00(PARTIAL)	585	at interval beginning	9-Mar-1989 17:40:57
30-Jun-1990 24:00:00	832	at interval beginning	25-Aug-1989 05:30:00
30-Jun-1991 24:00:00	1176	at interval beginning	26-Mar-1991 21:15:00
30-Jun-1992 24:00:00	1393	at interval beginning	5-Jun-1992 18:30:00
30-Jun-1993 24:00:00	1174	at interval beginning	11-Mar-1993 03:30:00
Gap from 7-Aug-1993 10:30:00 to 12-Aug-1993 14:30:00 of 5.17 Days			
30-Jun-1994 24:00:00(PARTIAL)	825	at interval beginning	11-Apr-1994 06:00:00
30-Jun-1995 24:00:00	1210	at interval beginning	18-Feb-1995 09:00:00
Gap from 28-May-1996 15:45:00 to 6-Jun-1996 14:30:00 of 8.95 Days			
30-Jun-1996 24:00:00(PARTIAL)	1009	at interval beginning	1-Feb-1996 18:00:00
30-Jun-1997 24:00:00	921	at interval beginning	3-Feb-1997 15:45:00
30-Jun-1998 24:00:00	1367	at interval beginning	9-Jul-1997 06:45:00
30-Jun-1999 24:00:00	919	at interval beginning	24-Feb-1999 16:15:00
30-Jun-2000 24:00:00	1166	at interval beginning	18-Mar-2000 12:15:00
30-Jun-2001 24:00:00	987	at interval beginning	24-Mar-2001 15:15:00
30-Jun-2002 24:00:00	1322	at interval beginning	13-Jul-2001 19:42:05
30-Jun-2003 24:00:00	586	at interval beginning	29-Apr-2003 09:15:00
30-Jun-2004 24:00:00	1484	at interval beginning	20-Aug-2003 20:45:00

Mean annual Minimum = 1057 becomes 1042
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1978 to 2004 site 32106 Ohau at Rongomatane
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1979	NaN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1980	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.5	3.1	0.0	0.0	0.0	0.0	6.6
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	5.9	0.0	9.9
1983	2.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8
1984	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	23.0	14.5	0.5	40.0
1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1987	0.0	0.0	0.0	0.0	0.0	0.0	7.0	11.6	0.0	0.8	0.0	0.0	0.0	19.4
1988	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	7.6	3.5	0.0	11.2
1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.5	22.8	10.3	0.0	0.0	NaN	46.5
1990	0.0	9.4	12.6	2.8	0.0	2.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	27.2
1991	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1994	0.0	NaN	0.0	0.0	0.0	0.0	0.0	0.0	3.6	17.8	13.8	0.0	0.0	35.2
1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	2.0	0.0	0.0	NaN	NaN	2.2
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	3.7	0.0	0.0	0.0	0.0	5.8
1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.2	11.3	0.0	0.0	0.0	24.4
2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2001	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.5	0.0	0.0	0.0	5.5

2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.0	29.2	27.2	1.7	0.0	68.1
2004	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NaN	0.0
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max	2.8	9.4	12.6	2.8	0.0	7.0	13.5	22.8	29.2	27.2	14.5	0.5	0.5
Mean	0.1	0.4	0.5	0.1	0.0	0.4	1.2	2.2	3.0	2.9	1.0	0.0	0.0

3.4. Ohau at Water Race (32105), July 1974 to July 1978 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 32105 Ohau at Water Race
From 1-Jul-1974 00:00:01 to 1-Jul-1978 00:00:01
Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	333913	47874	33309	25932	21694	19057	16950	15173	13884	12944
10	12027	11288	10640	10076	9581	9124	8745	8390	7980	7594
20	7287	6999	6736	6487	6265	6067	5883	5716	5584	5451
30	5332	5204	5056	4920	4797	4685	4574	4476	4375	4282
40	4214	4127	4033	3951	3864	3787	3698	3618	3566	3503
50	3429	3351	3303	3240	3186	3135	3081	3025	2972	2923
60	2872	2814	2752	2676	2613	2562	2502	2442	2386	2334
70	2261	2190	2106	2050	1984	1927	1883	1838	1784	1734
80	1692	1651	1608	1563	1515	1460	1412	1358	1302	1272
90	1232	1189	1120	1059	982	901	846	784	666	590
100	504									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 32105 Ohau at Water Race
From 1-Jul-1974 00:00:01 to 1-Jul-1978 00:00:01
Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	333913	41928	26221	19603	15997	13408	11633	10426	9422	8567
10	7780	7086	6624	6208	5844	5574	5385	5163	4940	4740
20	4539	4397	4272	4170	4023	3918	3824	3737	3643	3583
30	3513	3435	3358	3299	3225	3160	3089	3016	2964	2908
40	2851	2785	2717	2647	2585	2512	2446	2390	2336	2277
50	2232	2155	2085	2055	2002	1952	1915	1885	1853	1819
60	1783	1741	1713	1687	1664	1637	1605	1578	1556	1524
70	1500	1461	1434	1408	1376	1346	1312	1294	1278	1241
80	1225	1196	1171	1153	1121	1072	1046	1020	975	930
90	898	868	844	814	787	727	678	631	588	554
100	504									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 32105 Ohau at Water Race
From 1-Jul-1974 00:00:00 to 30-Jun-1978 24:00:00
Interval = 0
flow m3/s

Year	Maximum	Date & Time
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*1974      180.07      9-Dec-1974 01:10
1975      137.03     17-Dec-1975 02:00
1976      333.91     20-Dec-1976 06:00
1977      152.56     20-Nov-1977 22:00
*1978      95.157     21-Apr-1978 16:00
```

Average Annual Maximum 207.84 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 32105 Ohau at Water Race
From 1-Jul-1974 00:00:00 to 30-Jun-1978 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1975 24:00:00	582 at interval beginning 26-Jan-1975 06:00:00
30-Jun-1976 24:00:00	1113 at interval beginning 7-Mar-1976 18:35:50
30-Jun-1977 24:00:00	1006 at interval beginning 27-Nov-1976 24:00:00
30-Jun-1978 24:00:00	505 at interval beginning 18-Mar-1978 09:00:00

Mean annual Minimum = 802
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1974 to 1978 site 32105 Ohau at Water Race
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
	1975	0.0	0.0	0.0	0.0	0.0	0.0	7.4	9.1	0.0	0.0	0.0	0.0	16.5
	1976	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1978	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.5	19.1	0.0	0.0	0.0	31.6
Min		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max		0.0	0.0	0.0	0.0	0.0	0.0	7.4	12.5	19.1	0.0	0.0	0.0	
Mean		0.0	0.0	0.0	0.0	0.0	0.0	1.9	5.4	4.8	0.0	0.0	0.0	

3.5. Kiwitea at Spur Rd All (200), July 1977 to July 2005 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 200 Kiwitea at Spur Rd All
From 1-Jul-1977 00:00:01 to 1-Jul-2005 00:00:01
Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	357744	18261	13350	10928	9386	8327	7497	6827	6251	5793
10	5410	5090	4796	4529	4287	4068	3876	3697	3537	3393
20	3245	3112	2984	2858	2749	2643	2533	2428	2327	2230

30	2133	2043	1959	1878	1806	1739	1676	1617	1559	1505
40	1454	1407	1360	1313	1268	1229	1188	1147	1111	1075
50	1040	1006	973	940	909	878	850	821	793	765
60	739	713	690	666	645	623	604	584	565	545
70	527	509	493	476	458	440	422	406	391	376
80	361	346	333	319	305	293	280	266	253	241
90	229	217	205	193	181	169	157	143	128	105
100	38									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 200 Kiwitea at Spur Rd All

From 1-Jul-1977 00:00:01 to 1-Jul-2005 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	357744	10116	6891	5332	4315	3681	3207	2868	2588	2334
10	2130	1961	1834	1727	1633	1551	1475	1408	1351	1294
20	1248	1203	1160	1119	1078	1043	1007	970	934	900
30	871	841	812	785	758	735	712	691	670	649
40	630	612	596	578	562	548	534	520	508	497
50	485	475	462	450	438	426	416	405	396	387
60	378	369	361	352	344	337	329	321	313	305
70	298	291	284	277	269	262	255	249	242	236
80	230	224	218	212	206	200	194	187	182	176
90	170	164	158	151	144	137	129	120	108	90
100	38									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 200 Kiwitea at Spur Rd All

From 1-Jul-1977 00:00:00 to 30-Jun-2005 24:00:00

Interval = 0

flow m3/s

Year	Maximum	Date & Time
*1977	40.907	23-Jul-1977 06:13
1978	24.781	21-Oct-1978 19:40
1979	117.82	25-Aug-1979 22:15
1980	61.465	19-Oct-1980 04:15
1981	73.219	29-Jun-1981 20:45
1982	39.422	21-Jul-1982 06:00
1983	85.729	20-May-1983 19:30
1984	26.526	15-Jul-1984 07:30
1985	76.501	27-Jul-1985 15:30
1986	59.530	24-Aug-1986 19:30
1987	25.646	11-Apr-1987 17:45
1988	166.11	2-Sep-1988 17:00
1989	34.539	18-Oct-1989 23:00
1990	78.138	20-Mar-1990 21:30
1991	92.311	11-Apr-1991 02:45
1992	156.37	22-Jul-1992 21:30
1993	57.894	5-Sep-1993 11:45
1994	94.940	16-Nov-1994 14:00
1995	44.854	11-Oct-1995 01:00
1996	28.711	13-Oct-1996 19:30
1997	38.001	15-Oct-1997 08:30
1998	100.42	21-Oct-1998 07:00
1999	92.662	29-Nov-1999 02:15
2000	31.119	12-Oct-2000 21:00
2001	152.39	15-Aug-2001 16:15

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2002      67.264      30-Sep-2002 10:00
2003      127.55      28-Sep-2003 16:00
*2004      357.74      16-Feb-2004 03:45
*2005      13.922      2-Jan-2005 07:45

```

Average Annual Maximum 75.150 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 200 Kiwitea at Spur Rd All
From 1-Jul-1977 00:00:00 to 30-Jun-2005 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1978 24:00:00	86 at interval beginning 12-Mar-1978 09:56:57
30-Jun-1979 24:00:00	83 at interval beginning 3-Feb-1979 23:05:05
30-Jun-1980 24:00:00	122 at interval beginning 17-Feb-1980 09:00:00
30-Jun-1981 24:00:00	169 at interval beginning 28-Feb-1981 09:00:00
30-Jun-1982 24:00:00	104 at interval beginning 14-Feb-1982 05:45:00
30-Jun-1983 24:00:00	92 at interval beginning 22-Mar-1983 20:45:00
30-Jun-1984 24:00:00	90 at interval beginning 2-Mar-1984 23:00:00
30-Jun-1985 24:00:00	44 at interval beginning 18-Apr-1985 03:15:00
30-Jun-1986 24:00:00	125 at interval beginning 11-Feb-1986 10:30:00
30-Jun-1987 24:00:00	104 at interval beginning 10-Jan-1987 07:15:00
30-Jun-1988 24:00:00	42 at interval beginning 27-Jan-1988 13:00:00
30-Jun-1989 24:00:00	132 at interval beginning 21-Feb-1989 10:00:00
30-Jun-1990 24:00:00	138 at interval beginning 26-Jan-1990 20:45:00
30-Jun-1991 24:00:00	128 at interval beginning 23-Jan-1991 16:45:00
30-Jun-1992 24:00:00	309 at interval beginning 4-Feb-1992 16:30:00
30-Jun-1993 24:00:00	331 at interval beginning 18-Feb-1993 11:15:00
30-Jun-1994 24:00:00	132 at interval beginning 15-Feb-1994 00:15:00
30-Jun-1995 24:00:00	183 at interval beginning 19-Feb-1995 03:00:00
30-Jun-1996 24:00:00	299 at interval beginning 22-Jan-1996 18:15:00
30-Jun-1997 24:00:00	197 at interval beginning 18-Feb-1997 07:30:00
30-Jun-1998 24:00:00	156 at interval beginning 8-Feb-1998 15:45:00
30-Jun-1999 24:00:00	88 at interval beginning 19-Feb-1999 09:15:00
30-Jun-2000 24:00:00	126 at interval beginning 10-Mar-2000 20:15:00
30-Jun-2001 24:00:00	112 at interval beginning 23-Jan-2001 23:45:00
30-Jun-2002 24:00:00	407 at interval beginning 10-Feb-2002 01:30:00
30-Jun-2003 24:00:00	158 at interval beginning 20-Mar-2003 12:00:00
Gap from 16-Feb-2004 07:15:00 to 11-Mar-2004 13:30:00 of 24.26 Days	
30-Jun-2004 24:00:00(PARTIAL)	265 at interval beginning 17-Jan-2004 23:15:00
30-Jun-2005 24:00:00	288 at interval beginning 21-Feb-2005 19:00:00

Mean annual Minimum = 157 becomes 161
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1977 to 2005 site 200 Kiwitea at Spur Rd All
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1978	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	21.3	19.3	1.3	0.0	0.0	43.6
1979	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.6	13.5	4.4	0.0	0.0	0.0	29.5

1980	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.2	0.0	0.0	0.0	0.0	7.2
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.4	0.0	0.0	0.0	0.7
1982	0.0	0.0	0.0	0.0	0.0	0.0	2.7	14.1	1.3	0.0	0.0	0.0	18.0
1983	0.0	0.0	0.0	0.0	0.0	0.6	0.3	16.5	21.0	5.2	0.0	0.0	43.6
1984	0.0	0.0	0.0	0.0	0.0	0.0	9.2	9.5	4.1	0.0	0.0	0.0	22.8
1985	0.0	0.0	0.0	0.0	0.0	7.7	7.6	21.8	14.0	19.7	11.9	0.0	82.8
1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.6	2.0	0.0	0.0	0.0	8.6
1987	0.0	0.0	0.0	0.0	0.0	0.0	10.2	9.5	0.0	0.0	0.0	0.0	19.7
1988	0.0	0.0	0.0	0.0	0.0	0.0	26.7	4.0	0.3	0.4	0.0	0.0	31.4
1989	0.0	0.0	0.0	0.0	0.0	0.8	0.0	9.3	7.0	3.5	0.0	0.0	20.6
1990	0.0	0.0	0.0	0.0	0.0	1.7	4.0	0.0	2.1	0.0	0.0	0.0	7.8
1991	0.0	0.0	0.0	0.0	0.0	0.0	7.8	0.0	3.3	0.0	0.0	0.0	11.1
1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1994	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.8	0.0	0.0	0.0	5.8
1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.6	2.6	0.0	0.0	0.0	5.2
1999	0.0	0.0	0.0	0.0	0.0	2.2	8.5	20.4	6.9	2.1	0.0	0.0	40.0
2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.4	12.3	0.0	0.0	0.0	17.8
2001	0.0	0.0	0.0	0.0	0.0	0.0	4.5	7.6	18.5	0.0	0.0	0.0	30.7
2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.9
2004	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NaN	NaN	0.0	0.0	0.0	0.0
2005	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max	0.0	0.0	0.0	0.0	0.0	7.7	26.7	21.8	21.0	19.7	11.9	0.0	0.0
Mean	0.0	0.0	0.0	0.0	0.0	0.5	3.4	6.5	4.5	1.1	0.4	0.0	0.0

3.6. Kumeti at SH2(Napier) (32599), July 1975 to July 1980 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 32599 Kumeti at SH2(Napier)

From 1-Jul-1975 00:00:01 to 1-Jul-1980 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	47281	6472	4096	3147	2519	2135	1908	1703	1503	1363
10	1270	1192	1136	1086	1040	999	963	933	904	881
20	857	835	815	792	772	752	733	714	697	678
30	660	642	628	612	595	579	562	543	528	510
40	493	478	463	449	434	420	407	396	387	378
50	370	362	354	345	337	329	322	315	309	301
60	294	287	281	275	269	263	258	252	246	240
70	234	229	223	218	212	206	200	195	189	184
80	178	172	166	160	153	146	140	133	126	120
90	112	104	94	85	76	65	54	45	37	29
100	12									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 32599 Kumeti at SH2(Napier)

From 1-Jul-1975 00:00:01 to 1-Jul-1980 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	45456	4090	2096	1560	1168	948	834	758	720	694
10	668	641	617	589	561	538	520	499	481	462
20	443	428	414	401	391	382	372	363	355	347
30	339	331	323	316	309	302	295	288	283	277
40	272	266	262	258	254	250	245	241	236	232
50	227	223	219	214	210	205	201	197	194	190
60	186	183	179	176	172	168	165	161	157	153
70	149	145	141	138	134	130	126	122	119	115
80	111	107	103	98	93	88	84	79	74	69
90	64	58	53	49	45	41	37	33	29	23
100	12									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 32599 Kumeti at SH2(Napier)
 From 1-Jul-1975 00:00:00 to 30-Jun-1980 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1975	10.507	29-Aug-1975 07:40
*1976	21.675	29-Jun-1976 07:23
*1977	14.183	19-Sep-1977 23:29
*1978	25.872	20-Apr-1978 04:24
*1979	47.281	4-Sep-1979 02:11
*1980	45.456	10-Apr-1980 19:25

Average Annual Maximum in the data or incomplete years

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 32599 Kumeti at SH2(Napier)
 From 1-Jul-1975 00:00:00 to 30-Jun-1980 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
Gap from 6-Jan-1976 15:47:00 to 16-Jan-1976 12:20:00 of	9.86 Days
Gap from 13-Jun-1976 15:41:05 to 18-Jun-1976 11:46:25 of	4.84 Days
30-Jun-1976 24:00:00(PARTIAL)	45 at interval beginning 5-Feb-1976 23:42:09
Gap from 3-Aug-1976 14:40:00 to 5-Aug-1976 15:00:00 of	2.01 Days
30-Jun-1977 24:00:00(PARTIAL)	49 at interval beginning 9-Apr-1977 04:36:40
Gap from 28-Aug-1977 12:00:00 to 30-Aug-1977 10:46:00 of	1.95 Days
Gap from 30-Jun-1978 10:50:00 to 5-Jul-1978 08:46:00 of	4.91 Days
30-Jun-1978 24:00:00(PARTIAL)	15 at interval beginning 15-Apr-1978 10:36:38
Gap from 22-Nov-1978 12:40:00 to 1-Dec-1978 08:06:00 of	8.81 Days
Gap from 20-Dec-1978 05:36:24 to 12-Jan-1979 09:31:00 of	23.16 Days
Gap from 19-Feb-1979 09:58:21 to 23-Feb-1979 09:21:00 of	3.97 Days
Gap from 29-Mar-1979 11:00:00 to 6-Apr-1979 09:46:00 of	7.95 Days
30-Jun-1979 24:00:00(PARTIAL)	34 at interval beginning 3-Feb-1979 08:49:39
Gap from 16-Jul-1979 09:50:00 to 27-Jul-1979 09:16:00 of	10.98 Days
Gap from 2-Apr-1980 14:30:00 to 3-Apr-1980 09:16:00 of	18.77 Hours
30-Jun-1980 24:00:00(PARTIAL)	69 at interval beginning 22-Dec-1979 14:22:22

Mean annual Minimum = 69 becomes 42
 (For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
 Monthly totals 1975 to 1980 site 32599 Kumeti at SH2(Napier)
 Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
	1976	0.0	0.0	0.0	0.0	0.0	0.0	NaN	0.4	0.0	0.0	0.0	NaN	0.4
	1977	0.0	NaN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1978	0.0	NaN	0.0	0.0	0.0	0.0	0.0	2.4	19.7	14.0	0.0	NaN	36.1
	1979	NaN	0.0	0.0	0.0	NaN	NaN	NaN	NaN	NaN	NaN	0.0	0.0	0.0
	1980	NaN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NaN	0.0	0.0	0.0
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	19.7	14.0	0.0	0.0	0.0
Mean	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	4.9	4.7	0.0	0.0	0.0

3.7. Kumeti at Te Rehunga (1032501), July 1981 to July 2004 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 1032501 Kumeti at Te Rehunga
 From 1-Jul-1981 00:00:01 to 1-Jul-2004 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	22177	1996	1425	1132	961	849	769	711	669	631
10	595	567	543	524	508	493	480	470	459	449
20	441	433	425	418	411	404	396	389	382	375
30	368	362	357	352	346	341	336	332	327	323
40	319	314	311	307	302	297	292	288	284	280
50	276	272	268	263	258	254	250	245	240	235
60	230	226	221	217	212	208	203	198	194	190
70	186	181	176	169	164	159	154	149	144	139
80	133	129	124	120	115	111	107	103	98	93
90	88	84	79	73	67	61	54	46	39	32
100	12									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 1032501 Kumeti at Te Rehunga
 From 1-Jul-1981 00:00:01 to 1-Jul-2004 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	22177	1724	1007	766	647	565	509	476	453	436
10	421	406	392	380	369	360	352	344	338	333
20	328	322	317	312	307	301	295	289	283	278
30	273	269	264	259	255	250	245	241	236	232
40	227	224	221	217	213	209	205	202	199	196
50	193	190	187	184	180	176	171	167	164	160
60	156	152	148	145	141	138	134	131	127	125
70	122	119	116	114	112	109	106	104	101	98

80	95	92	88	86	83	80	77	74	71	68
90	64	60	56	52	48	43	40	37	33	29
100	12									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 1032501 Kumeti at Te Rehunga
 From 1-Jul-1981 00:00:00 to 30-Jun-2004 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1981	7.9240	25-Aug-1981 08:04
1982	8.9060	5-Jun-1982 16:58
1983	6.0620	22-May-1983 16:25
1984	6.1530	15-Mar-1984 12:41
*1985	2.3150	22-Jun-1985 18:00
1986	2.8430	17-Sep-1986 06:30
1987	3.4280	11-Apr-1987 16:00
1988	15.116	2-Sep-1988 11:45
1989	6.6070	25-May-1989 15:15
1990	8.4470	14-Mar-1990 01:15
1991	6.3240	11-Apr-1991 03:00
1992	14.269	22-Jul-1992 18:45
1993	4.1690	21-Nov-1993 20:15
1994	8.2100	26-Jul-1994 06:30
1995	10.152	6-Apr-1995 07:45
1996	6.3660	3-Apr-1996 22:00
1997	6.3430	6-Mar-1997 16:15
1998	5.9270	21-Oct-1998 04:45
1999	14.396	29-Nov-1999 00:15
2000	14.088	10-Apr-2000 17:00
2001	8.2630	26-Jan-2001 08:15
2002	5.5700	13-Feb-2002 13:30
2003	12.294	29-Sep-2003 09:15
*2004	22.177	16-Feb-2004 01:30

Average Annual Maximum 8.2825 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 1032501 Kumeti at Te Rehunga
 From 1-Jul-1981 00:00:00 to 30-Jun-2004 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1982 24:00:00	21 at interval beginning 2-May-1982 21:39:15
30-Jun-1983 24:00:00	59 at interval beginning 10-Apr-1983 11:01:43
30-Jun-1984 24:00:00	21 at interval beginning 29-Jan-1984 17:15:14
Gap from 19-Feb-1985 10:10:00 to 6-Mar-1985 12:30:00 of 15.10 Days	
30-Jun-1985 24:00:00(PARTIAL)	68 at interval beginning 4-Jul-1984 12:56:48
Gap from 26-Jul-1985 17:15:00 to 3-Aug-1985 15:00:00 of 7.91 Days	
Gap from 2-Dec-1985 10:00:00 to 8-Dec-1985 04:00:00 of 5.75 Days	
30-Jun-1986 24:00:00(PARTIAL)	52 at interval beginning 11-May-1986 05:30:00
30-Jun-1987 24:00:00	25 at interval beginning 30-Jan-1987 24:00:00
30-Jun-1988 24:00:00	60 at interval beginning 10-Feb-1988 06:00:00
30-Jun-1989 24:00:00	26 at interval beginning 13-Jan-1989 01:00:00
30-Jun-1990 24:00:00	86 at interval beginning 2-Dec-1989 02:00:00
30-Jun-1991 24:00:00	70 at interval beginning 26-Jan-1991 13:00:00
30-Jun-1992 24:00:00	96 at interval beginning 14-Feb-1992 08:30:00

30-Jun-1993 24:00:00	148 at interval beginning	18-Feb-1993 04:30:00
30-Jun-1994 24:00:00	40 at interval beginning	28-Mar-1994 07:45:00
30-Jun-1995 24:00:00	51 at interval beginning	30-Jan-1995 19:45:00
30-Jun-1996 24:00:00	51 at interval beginning	22-Jan-1996 10:30:00
30-Jun-1997 24:00:00	88 at interval beginning	2-Mar-1997 08:15:00
30-Jun-1998 24:00:00	25 at interval beginning	18-Feb-1998 17:30:00
30-Jun-1999 24:00:00	54 at interval beginning	23-Mar-1999 08:00:00
30-Jun-2000 24:00:00	24 at interval beginning	20-Mar-2000 08:15:00
30-Jun-2001 24:00:00	115 at interval beginning	11-Apr-2001 13:30:00
30-Jun-2002 24:00:00	83 at interval beginning	10-May-2002 08:00:00
30-Jun-2003 24:00:00	46 at interval beginning	24-Feb-2003 12:00:00
30-Jun-2004 24:00:00	98 at interval beginning	20-Aug-2003 10:45:00

Mean annual Minimum = 61 remains 61
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1981 to 2004 site 1032501 Kumeti at Te Rehunga
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1982	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	16.1	18.5	15.2	21.6	0.0	72.5
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0
1984	0.0	0.0	0.0	0.0	0.0	0.0	8.7	19.2	27.3	0.8	0.0	1.4	0.0	57.3
1985	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NaN	NaN	0.0	0.0	0.0	0.3
1986	NaN	NaN	0.0	0.0	0.0	0.0	NaN	0.0	0.0	0.0	0.3	15.8	0.0	16.1
1987	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24.1	27.9	2.8	0.0	0.0	0.0	54.8
1988	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0
1989	0.0	0.0	0.0	0.0	0.0	0.0	13.9	30.0	3.0	1.0	0.0	0.0	0.0	47.8
1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1991	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1994	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.3	20.1	0.0	0.0	40.5
1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.9	1.4	0.0	0.0	0.0	0.0	9.3
1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.9	2.5	0.0	0.0	0.0	0.0	8.5
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.9	27.0	20.5	10.0	0.0	0.0	62.5
1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.4	0.0	0.0	0.0	8.4
2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3	0.0	27.6	8.0	0.0	0.0	38.9
2001	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.7	2.1	0.0	0.0	0.0	11.8
2004	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	0.3	0.0	0.0	0.0	0.0	0.0	13.9	30.0	27.9	27.6	20.1	21.6	0.0	
Mean	0.0	0.0	0.0	0.0	0.0	0.0	1.1	4.1	5.4	4.6	2.4	1.7	0.0	

3.8. Makakahi at Hamua (1032518), July 1980 to July 2005 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 1032518 Makakahi at Hamua

From 1-Jul-1980 00:00:01 to 1-Jul-2005 00:00:01
Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	483054	52736	36492	28825	24461	21446	19163	17447	16057	14896
10	13943	13057	12292	11589	10960	10414	9926	9471	9035	8651
20	8293	7969	7653	7373	7106	6860	6636	6425	6214	6009
30	5820	5639	5468	5297	5136	4977	4829	4681	4538	4397
40	4270	4152	4033	3915	3798	3683	3576	3470	3368	3273
50	3180	3087	2996	2904	2812	2726	2644	2560	2475	2400
60	2324	2249	2177	2108	2037	1966	1899	1837	1776	1717
70	1659	1595	1535	1480	1423	1367	1313	1259	1209	1162
80	1113	1065	1015	968	919	870	824	784	735	688
90	637	587	540	488	437	389	345	306	264	195
100	91									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 1032518 Makakahi at Hamua
From 1-Jul-1980 00:00:01 to 1-Jul-2005 00:00:01
Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	298839	37491	24779	19346	16069	13804	12119	10823	9820	8962
10	8297	7703	7196	6756	6377	6028	5712	5416	5137	4890
20	4650	4433	4238	4059	3890	3738	3598	3459	3330	3210
30	3096	2979	2871	2771	2680	2591	2505	2430	2358	2287
40	2217	2149	2087	2026	1965	1908	1853	1804	1753	1703
50	1653	1599	1551	1509	1465	1424	1385	1346	1310	1272
60	1238	1204	1172	1142	1110	1081	1052	1023	994	967
70	939	910	881	851	825	801	774	745	717	691
80	664	637	611	583	558	533	506	475	450	425
90	400	376	352	330	309	289	266	236	195	160
100	91									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 1032518 Makakahi at Hamua
From 1-Jul-1980 00:00:00 to 30-Jun-2005 24:00:00
Interval = 0
flow m3/s

Year	Maximum	Date & Time
*1980	216.29	28-Nov-1980 11:36
1981	205.85	21-May-1981 18:52
1982	233.04	11-Dec-1982 20:00
1983	75.488	6-Nov-1983 01:30
1984	98.226	5-Aug-1984 06:23
1985	101.98	27-Jul-1985 14:45
1986	118.57	4-Oct-1986 19:45
1987	89.617	30-Jun-1987 12:45
1988	300.48	6-Oct-1988 06:30
1989	138.43	11-Jul-1989 18:00
1990	141.87	13-Mar-1990 22:00
1991	167.79	11-Apr-1991 02:19
1992	174.70	22-Jul-1992 21:00
1993	134.06	17-May-1993 00:45
1994	214.55	22-Nov-1994 13:45
1995	163.77	5-Apr-1995 14:45
1996	267.16	30-Jun-1996 20:15

1997	203.69	5-Oct-1997	05:15
1998	306.80	21-Oct-1998	05:15
1999	164.72	28-May-1999	15:15
2000	483.05	9-Oct-2000	14:15
2001	158.88	25-May-2001	06:30
2002	176.49	30-Sep-2002	08:15
2003	210.00	4-Oct-2003	01:30
2004	298.84	16-Feb-2004	07:30
*2005	168.76	6-Jan-2005	06:45

Average Annual Maximum 192.84 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 1032518 Makakahi at Hamua
From 1-Jul-1980 00:00:00 to 30-Jun-2005 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1981 24:00:00	113 at interval beginning 30-Jan-1981 13:17:31
30-Jun-1982 24:00:00	375 at interval beginning 16-Mar-1982 00:32:40
30-Jun-1983 24:00:00	279 at interval beginning 23-Mar-1983 02:45:00
30-Jun-1984 24:00:00	261 at interval beginning 11-Jan-1984 16:27:18
30-Jun-1985 24:00:00	137 at interval beginning 13-Apr-1985 14:00:00
30-Jun-1986 24:00:00	558 at interval beginning 12-Feb-1986 18:45:00
30-Jun-1987 24:00:00	170 at interval beginning 14-Jan-1987 15:45:00
30-Jun-1988 24:00:00	188 at interval beginning 5-Feb-1988 03:13:43
30-Jun-1989 24:00:00	170 at interval beginning 10-Mar-1989 01:45:00
30-Jun-1990 24:00:00	556 at interval beginning 8-Mar-1990 09:15:00
30-Jun-1991 24:00:00	562 at interval beginning 15-Jan-1991 02:45:00
30-Jun-1992 24:00:00	1160 at interval beginning 24-Jan-1992 14:30:00
30-Jun-1993 24:00:00	1003 at interval beginning 11-Mar-1993 16:45:00
30-Jun-1994 24:00:00	117 at interval beginning 10-Apr-1994 10:45:00
30-Jun-1995 24:00:00	161 at interval beginning 19-Feb-1995 12:15:00
30-Jun-1996 24:00:00	210 at interval beginning 23-Jan-1996 02:30:00
30-Jun-1997 24:00:00	651 at interval beginning 2-Feb-1997 19:15:00
30-Jun-1998 24:00:00	101 at interval beginning 25-Mar-1998 13:00:00
30-Jun-1999 24:00:00	106 at interval beginning 19-Feb-1999 17:00:00
30-Jun-2000 24:00:00	227 at interval beginning 12-Mar-2000 12:00:00
30-Jun-2001 24:00:00	218 at interval beginning 26-Mar-2001 14:45:00
30-Jun-2002 24:00:00	481 at interval beginning 5-Oct-2001 19:45:00
30-Jun-2003 24:00:00	156 at interval beginning 26-Mar-2003 20:45:00
30-Jun-2004 24:00:00	529 at interval beginning 18-Jan-2004 16:45:00
30-Jun-2005 24:00:00	139 at interval beginning 25-Feb-2005 15:45:00

Mean annual Minimum = 345
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1980 to 2005 site 1032518 Makakahi at Hamua
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
	1981	0.0	0.0	0.0	0.0	0.0	0.0	4.8	8.6	10.2	7.4	0.0	0.0	31.0

1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	8.3	0.0	0.0	0.0	8.6
1984	0.0	0.0	0.0	0.0	0.0	0.0	11.4	4.7	4.3	0.0	0.0	0.0	20.3
1985	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.9	20.4	20.2	6.5	0.0	56.9
1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1987	0.0	0.0	0.0	0.0	0.0	2.7	13.7	1.4	0.0	0.0	0.0	0.0	17.8
1988	0.0	0.0	0.0	0.0	0.0	0.0	2.2	5.6	0.0	0.0	0.0	0.0	7.8
1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	12.5	0.0	0.0	0.0	17.5
1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1991	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1994	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.7	22.4	16.8	1.0	0.0	54.9
1995	0.0	0.0	0.0	0.0	0.0	0.0	4.2	10.2	2.1	0.0	0.0	0.0	16.5
1996	0.0	0.0	0.0	0.0	0.0	0.0	4.3	0.0	0.0	0.0	0.0	0.0	4.3
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	11.5	0.0	0.0	0.0	12.4
1999	0.0	0.0	0.0	0.0	0.0	0.0	1.9	17.4	2.1	5.3	0.0	0.0	26.7
2000	0.0	0.0	0.0	0.0	0.0	0.0	1.9	0.0	8.5	0.0	0.0	0.0	10.4
2001	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.9	0.1	0.0	0.0	9.0
2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.8	18.6	15.2	9.1	0.0	57.7
2004	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2005	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.0	4.0	0.0	0.0	0.0	15.0
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	0.0	0.0	0.0	0.0	0.0	2.7	13.7	17.4	22.4	20.2	9.1	0.0	
Mean	0.0	0.0	0.0	0.0	0.0	0.1	1.8	4.2	5.3	2.6	0.7	0.0	

3.9. Makino at Boness Rd (1032564), July 1992 to July 2006 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 1032564 Makino at Boness Rd

From 1-Jul-1992 00:00:01 to 1-Jul-2006 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	90788	11793	7367	5573	4493	3785	3263	2821	2483	2212
10	2002	1819	1666	1534	1412	1303	1206	1113	1035	969
20	911	858	809	768	727	690	657	624	593	562
30	534	507	480	454	430	409	390	375	359	346
40	333	321	309	298	289	280	271	263	256	250
50	244	237	232	227	221	216	212	207	204	200
60	197	194	191	188	185	181	178	175	172	169
70	166	163	160	157	154	151	148	145	142	139
80	136	133	130	127	124	120	117	114	111	107
90	104	100	96	93	89	86	82	78	73	61
100	28									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 1032564 Makino at Boness Rd

From 1-Jul-1992 00:00:01 to 1-Jul-2006 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
--	---	---	---	---	---	---	---	---	---	---

0	90788	5307	3039	2020	1465	1164	961	828	725	652
10	594	537	491	451	418	391	370	351	335	320
20	307	295	285	275	265	258	250	245	238	232
30	227	221	216	212	208	205	201	199	196	193
40	191	188	185	181	178	176	173	171	168	166
50	163	161	159	156	154	152	150	148	146	144
60	142	140	138	136	134	132	131	129	127	125
70	123	121	119	118	116	114	112	111	109	107
80	105	103	101	99	97	95	93	91	89	87
90	85	83	81	79	77	75	72	69	62	48
100	28									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 1032564 Makino at Boness Rd
 From 1-Jul-1992 00:00:00 to 30-Jun-2006 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1992	19.879	5-Aug-1992 05:00
1993	14.287	5-Sep-1993 13:15
1994	53.855	16-Nov-1994 15:30
1995	27.957	18-Sep-1995 16:45
1996	26.532	23-May-1996 09:00
1997	26.124	15-Oct-1997 09:00
1998	60.656	21-Oct-1998 07:45
1999	34.702	29-Nov-1999 07:45
2000	30.777	2-Oct-2000 21:00
2001	60.802	15-Aug-2001 17:30
2002	34.795	25-Jul-2002 11:00
2003	26.937	29-Sep-2003 12:45
2004	90.788	16-Feb-2004 04:30
2005	17.846	8-Oct-2005 20:45
*2006	16.259	12-Jun-2006 23:45

Average Annual Maximum 38.928 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 1032564 Makino at Boness Rd
 From 1-Jul-1992 00:00:00 to 30-Jun-2006 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1993 24:00:00	92 at interval beginning 27-Feb-1993 12:45:00
30-Jun-1994 24:00:00	71 at interval beginning 26-Feb-1994 24:00:00
30-Jun-1995 24:00:00	66 at interval beginning 2-Mar-1995 06:00:00
30-Jun-1996 24:00:00	97 at interval beginning 10-Feb-1996 10:30:00
30-Jun-1997 24:00:00	114 at interval beginning 16-Mar-1997 21:30:00
30-Jun-1998 24:00:00	75 at interval beginning 14-Apr-1998 03:45:00
30-Jun-1999 24:00:00	63 at interval beginning 3-Mar-1999 16:15:00
30-Jun-2000 24:00:00	30 at interval beginning 10-Mar-2000 10:15:00
30-Jun-2001 24:00:00	80 at interval beginning 22-Dec-2000 09:30:00
30-Jun-2002 24:00:00	141 at interval beginning 9-Feb-2002 11:15:00
30-Jun-2003 24:00:00	59 at interval beginning 18-Mar-2003 05:30:00
30-Jun-2004 24:00:00	83 at interval beginning 17-Jan-2004 10:30:00
30-Jun-2005 24:00:00	109 at interval beginning 25-Feb-2005 09:00:00
30-Jun-2006 24:00:00	78 at interval beginning 24-Feb-2006 08:00:00

Mean annual Minimum = 83
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1992 to 2006 site 1032564 Makino at Boness Rd
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1993	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1994	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.9	13.3	4.9	0.0	0.0	32.1
1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.5	10.4	0.0	0.0	0.0	24.8
1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.7	0.0	0.0	14.7
1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.2	18.1	8.0	0.0	0.0	0.0	36.3
2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	23.8	29.1	9.5	0.1	0.0	63.5
2001	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0	1.3
2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.1	13.7	26.4	0.7	0.0	0.0	44.9
2004	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0	1.2
2005	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2006	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.7	9.2	0.0	0.0	0.0	12.9
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	0.0	0.0	0.0	0.0	0.0	0.0	1.3	10.2	23.8	29.1	14.7	0.1	0.0	
Mean	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.2	6.3	6.9	2.1	0.0	0.0	

3.10. Makuri at Tuscan Hills (1032591), July 2001 to July 2006 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 1032591 Makuri at Tuscan Hills
From 1-Jul-2001 00:00:01 to 1-Jul-2006 00:00:01
Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	278547	30807	20771	16971	14728	13118	11864	10885	10097	9492
10	8970	8519	8109	7761	7439	7154	6910	6689	6496	6312
20	6146	5995	5851	5710	5589	5480	5373	5279	5184	5102
30	5028	4960	4885	4816	4746	4682	4621	4559	4495	4436
40	4380	4327	4271	4214	4155	4103	4055	4000	3944	3892
50	3843	3792	3748	3702	3661	3626	3593	3553	3512	3471
60	3434	3391	3353	3318	3281	3246	3211	3172	3135	3095
70	3049	3007	2968	2933	2896	2859	2821	2784	2745	2707
80	2665	2632	2606	2577	2544	2501	2463	2424	2385	2348
90	2311	2274	2241	2214	2189	2158	2125	2090	2054	2005
100	1908									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 1032591 Makuri at Tuscan Hills

From 1-Jul-2001 00:00:01 to 1-Jul-2006 00:00:01
Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	278547	24747	17011	13186	11079	9679	8698	7994	7450	7007
10	6612	6271	5981	5717	5518	5332	5179	5050	4934	4820
20	4712	4618	4535	4457	4381	4314	4243	4167	4107	4052
30	3983	3921	3867	3815	3768	3724	3682	3644	3611	3579
40	3539	3499	3466	3432	3397	3361	3325	3293	3258	3229
50	3200	3171	3143	3118	3092	3061	3032	3005	2980	2955
60	2928	2903	2878	2853	2828	2804	2773	2741	2712	2682
70	2653	2630	2613	2596	2576	2556	2537	2508	2480	2453
80	2428	2403	2374	2351	2329	2303	2281	2257	2236	2221
90	2207	2192	2176	2159	2137	2112	2088	2063	2035	2003
100	1927									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 1032591 Makuri at Tuscan Hills
From 1-Jul-2001 00:00:00 to 30-Jun-2006 24:00:00
Interval = 0
flow m3/s

Year	Maximum	Date & Time
*2001	153.16	15-Aug-2001 14:15
2002	61.817	15-Jul-2002 08:45
2003	146.40	9-Jun-2003 16:30
2004	278.55	16-Feb-2004 01:00
2005	73.310	20-Jul-2005 02:30
*2006	97.947	30-Apr-2006 03:00

Average Annual Maximum 140.02 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 1032591 Makuri at Tuscan Hills
From 1-Jul-2001 00:00:00 to 30-Jun-2006 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-2002 24:00:00	2006 at interval beginning 25-Apr-2002 14:45:00
30-Jun-2003 24:00:00	1922 at interval beginning 1-May-2003 12:45:00
30-Jun-2004 24:00:00	2218 at interval beginning 18-Jan-2004 18:00:00
30-Jun-2005 24:00:00	2553 at interval beginning 25-Feb-2005 11:00:00
30-Jun-2006 24:00:00	2081 at interval beginning 19-Mar-2006 08:15:00

Mean annual Minimum = 2156
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 2001 to 2006 site 1032591 Makuri at Tuscan Hills
Days < MALF

Season
ending
in

Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	1.7	11.5	11.5	0.0	25.6
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.0	13.0	17.3	15.2	0.0	54.5
2004	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2005	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2006	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.1	0.0	0.0	0.0	8.1
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.0	13.0	17.3	15.2	0.0	
Mean	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	4.5	5.8	5.3	0.0	

3.11. Manawatu at Hopelands (32504), July 1948 to July 2005 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 32504 Manawatu at Hopelands

From 1-Jul-1948 00:00:01 to 1-Jul-2005 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	1669600	185013	129100	104180	89235	79621	73351	66747	61273	56670
10	53185	49849	46949	44134	41727	40469	38670	37029	35599	34778
20	33881	32800	31597	30460	29457	28877	28011	27131	26232	25389
30	24592	24033	23561	22929	22302	21687	21105	20557	20024	19852
40	19461	18972	18500	18019	17576	17200	16782	16344	16171	16086
50	15703	15344	15027	14696	14342	14001	13677	13335	13030	12889
60	12809	12562	12227	11904	11585	11242	10919	10614	10289	10001
70	9846	9784	9636	9342	9135	8967	8668	8391	8132	7865
80	7563	7370	7302	7145	6849	6535	6266	6046	5752	5430
90	5278	5207	4909	4583	4229	3909	3531	3429	3084	2389
100	637									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 32504 Manawatu at Hopelands

From 1-Jul-1948 00:00:01 to 1-Jul-2005 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	1669600	131462	89658	75408	62245	52395	45564	40529	36913	34764
10	32700	30568	28994	27573	26017	24675	23861	22920	22065	21251
20	20476	19855	19434	18791	18220	17671	17203	16655	16177	16080
30	15700	15281	14897	14515	14148	13797	13454	13125	12966	12789
40	12711	12425	12113	11824	11536	11255	11001	10761	10513	10261
50	10028	9894	9850	9806	9601	9371	9202	9141	9015	8793
60	8587	8399	8215	8025	7847	7656	7469	7348	7306	7265
70	7135	6961	6775	6601	6415	6234	6130	5993	5811	5618
80	5431	5268	5227	5185	5083	4884	4689	4517	4325	4158
90	4007	3818	3620	3507	3456	3360	3126	2822	2453	2182
100	637									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 32504 Manawatu at Hopelands

From 1-Jul-1948 00:00:00 to 30-Jun-2005 24:00:00

Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1948	256.73	27-Jul-1948 09:30
1949	804.93	9-Aug-1949 07:00
1950	838.64	1-Jul-1950 20:00
1951	390.74	7-Jul-1951 01:00
1952	488.22	12-Nov-1952 05:30
1953	1550.6	28-Jan-1953 09:30
1954	390.74	20-May-1954 17:30
1955	964.77	2-Jul-1955 07:00
*1956	1469.7	14-Jul-1956 23:00
1957		
1958		
1959		
1960		
1961		
1962		
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1978		
1979		
1980		
1981		
1982		
1983		
1984		
1985		
1986		
1987		
*1988	1245.5	3-Sep-1988 02:00
*1989	310.33	8-Sep-1989 23:15
1990	419.27	24-Aug-1990 10:45
1991	702.45	10-Apr-1991 21:15
*1992	1656.1	22-Jul-1992 23:30
1993	267.38	20-Feb-1993 19:30
1994	773.61	26-Jul-1994 16:00
1995	554.98	6-Apr-1995 18:15
1996	249.12	17-Jul-1996 09:45
1997	834.72	3-Jun-1997 09:15
1998	190.91	17-Jul-1998 21:30
1999	1006.9	29-Nov-1999 20:45
2000	398.97	10-Apr-2000 23:00
2001	746.49	15-Aug-2001 21:45
2002	524.03	14-Feb-2002 00:30
2003	539.88	24-Aug-2003 02:45
2004	1669.6	16-Feb-2004 08:15
*2005	148.84	15-Jun-2005 03:00

Average Annual Maximum 681.28 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 32504 Manawatu at Hopelands
From 1-Jul-1948 00:00:00 to 30-Jun-2005 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1949 24:00:00	1909 at interval beginning 30-Dec-1948 09:15:00
30-Jun-1950 24:00:00	5227 at interval beginning 10-Jan-1950 09:15:00
30-Jun-1951 24:00:00	3526 at interval beginning 14-Jan-1951 09:25:00
30-Jun-1952 24:00:00	637 at interval beginning 15-Mar-1952 09:20:00
30-Jun-1953 24:00:00	3526 at interval beginning 29-Oct-1952 09:20:00
30-Jun-1954 24:00:00	3526 at interval beginning 7-Dec-1953 09:15:00
30-Jun-1955 24:00:00	3526 at interval beginning 12-Oct-1954 09:20:00
30-Jun-1956 24:00:00	6171 at interval beginning 13-Dec-1955 09:15:00
Gap from 31-Aug-1956 09:30:00 to 6-Jul-1989 16:00:00 of 32.87 Years	
30-Jun-1957 24:00:00(PARTIAL)	24017 at interval beginning 23-Aug-1956 09:30:00
30-Jun-1958 24:00:00	No valid values for this year
30-Jun-1959 24:00:00	No valid values for this year
30-Jun-1960 24:00:00	No valid values for this year
30-Jun-1961 24:00:00	No valid values for this year
30-Jun-1962 24:00:00	No valid values for this year
30-Jun-1963 24:00:00	No valid values for this year
30-Jun-1964 24:00:00	No valid values for this year
30-Jun-1965 24:00:00	No valid values for this year
30-Jun-1966 24:00:00	No valid values for this year
30-Jun-1967 24:00:00	No valid values for this year
30-Jun-1968 24:00:00	No valid values for this year
30-Jun-1969 24:00:00	No valid values for this year
30-Jun-1970 24:00:00	No valid values for this year
30-Jun-1971 24:00:00	No valid values for this year
30-Jun-1972 24:00:00	No valid values for this year
30-Jun-1973 24:00:00	No valid values for this year
30-Jun-1974 24:00:00	No valid values for this year
30-Jun-1975 24:00:00	No valid values for this year
30-Jun-1976 24:00:00	No valid values for this year
30-Jun-1977 24:00:00	No valid values for this year
30-Jun-1978 24:00:00	No valid values for this year
30-Jun-1979 24:00:00	No valid values for this year
30-Jun-1980 24:00:00	No valid values for this year
30-Jun-1981 24:00:00	No valid values for this year
30-Jun-1982 24:00:00	No valid values for this year
30-Jun-1983 24:00:00	No valid values for this year
30-Jun-1984 24:00:00	No valid values for this year
30-Jun-1985 24:00:00	No valid values for this year
30-Jun-1986 24:00:00	No valid values for this year
30-Jun-1987 24:00:00	No valid values for this year
30-Jun-1988 24:00:00	No valid values for this year
30-Jun-1989 24:00:00	No valid values for this year
30-Jun-1990 24:00:00(PARTIAL)	4343 at interval beginning 8-Mar-1990 09:00:00
30-Jun-1991 24:00:00	2603 at interval beginning 7-Jan-1991 20:15:00
30-Jun-1992 24:00:00	5856 at interval beginning 29-Dec-1991 03:09:11
Gap from 24-Jul-1992 00:00:00 to 10-Nov-1992 15:30:00 of 109.65 Days	
30-Jun-1993 24:00:00(PARTIAL)	5869 at interval beginning 18-Feb-1993 09:45:00
30-Jun-1994 24:00:00	2383 at interval beginning 6-Mar-1994 20:00:00
30-Jun-1995 24:00:00	2876 at interval beginning 18-Jan-1995 19:15:00
30-Jun-1996 24:00:00	3791 at interval beginning 9-Jan-1996 21:30:00
30-Jun-1997 24:00:00	4134 at interval beginning 18-Feb-1997 07:00:00
30-Jun-1998 24:00:00	2068 at interval beginning 20-Feb-1998 12:00:00
30-Jun-1999 24:00:00	2508 at interval beginning 13-Jan-1999 18:45:00

30-Jun-2000 24:00:00	3007 at interval beginning	6-Mar-2000 04:45:00
30-Jun-2001 24:00:00	3570 at interval beginning	23-Jan-2001 18:45:00
30-Jun-2002 24:00:00	5423 at interval beginning	22-Apr-2002 16:45:00
30-Jun-2003 24:00:00	3062 at interval beginning	19-Feb-2003 07:45:00
30-Jun-2004 24:00:00	4581 at interval beginning	18-Jan-2004 17:15:00
30-Jun-2005 24:00:00	3672 at interval beginning	25-Feb-2005 00:45:00

Mean annual Minimum = 3526 becomes 3734
 (For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
 Monthly totals 1948 to 2005 site 32504 Manawatu at Hopelands
 Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1949	0.0	0.0	0.0	0.0	0.0	0.0	15.9	2.5	20.0	15.8	7.2	0.0	0.0	61.3
1950	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1951	0.0	0.0	0.0	0.0	0.0	0.0	0.1	6.2	3.7	0.4	0.0	0.0	0.0	10.4
1952	0.0	0.0	8.7	5.4	0.0	0.0	2.7	23.1	22.6	19.2	5.2	0.0	0.0	86.9
1953	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2
1954	0.0	0.0	0.0	0.0	0.0	0.0	6.3	4.7	12.3	2.5	0.0	0.0	0.0	25.9
1955	0.0	0.0	0.0	2.3	0.0	0.0	0.0	8.9	3.5	0.0	2.2	0.0	0.0	16.8
1956	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1957	0.0	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1958	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1959	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1960	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1961	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1962	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1963	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1964	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1965	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1966	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1967	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1968	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1969	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1970	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1971	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1972	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1973	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1974	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1975	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1976	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1977	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1978	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1979	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1980	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1981	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1982	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1983	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1984	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1985	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1986	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1987	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1988	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1989	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1990	NaN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1991	0.0	0.0	0.0	0.0	0.0	0.0	1.0	11.6	0.0	0.0	0.0	0.0	0.0	12.7

1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993	NaN	NaN	NaN	NaN	NaN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1994	0.0	0.0	0.0	0.0	0.0	0.0	4.9	11.8	13.6	9.5	0.0	0.0	39.8
1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.1	0.8	0.0	0.0	0.0	13.0
1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1998	0.0	0.0	0.0	0.0	0.0	0.0	11.0	22.4	24.3	4.8	0.0	0.0	62.3
1999	0.0	0.0	0.0	0.0	0.0	0.2	16.1	0.0	3.7	0.0	0.0	0.0	19.9
2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.9	9.3	0.0	0.0	0.0	12.3
2001	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.8
2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.5	0.4	0.0	0.0	0.0	13.9
2004	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2005	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.7
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max	0.0	0.0	8.7	5.4	0.0	15.9	16.1	23.1	24.3	19.2	5.2	0.0	0.0
Mean	0.0	0.0	0.4	0.4	0.0	1.0	3.4	4.8	3.9	1.8	0.2	0.0	0.0

3.12. Manawatu at Opiki (synthetic) (1932501), July 1980 to July 2006 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\OPIKI.MTD Site 1932501 Manawatu at Opiki
From 1-Jul-1980 00:00:01 to 1-Jul-2006 00:00:01
flow L/s

	0	1	2	3	4	5	6	7	8	9
0	3656873	655469	483777	406165	356854	322150	294114	271946	253169	237152
10	223020	211354	200649	191193	182454	174455	167342	161176	155540	150429
20	145483	140713	136262	132148	128319	124595	121105	117795	114627	111583
30	108774	106076	103364	100833	98282	95869	93565	91364	89230	87114
40	85059	83023	81070	79176	77285	75458	73694	72051	70414	68783
50	67138	65575	64067	62624	61239	59936	58621	57305	56045	54814
60	53628	52469	51363	50278	49168	48002	46875	45809	44735	43692
70	42673	41654	40599	39587	38522	37463	36489	35526	34538	33518
80	32482	31494	30507	29513	28545	27703	26868	26003	25087	24137
90	23152	22301	21413	20466	19501	18621	17658	16577	15524	14182
100	10362									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\OPIKI.MTD Site 1932501 Manawatu at Opiki
From 1-Jul-1980 00:00:01 to 1-Jul-2006 00:00:01
flow L/s

	0	1	2	3	4	5	6	7	8	9
0	NaN	490127	348178	286015	242577	212348	189729	172930	160379	149848
10	140584	132856	125676	119186	113354	108057	103274	98937	95062	91609
20	88443	85575	82801	80300	77887	75543	73332	71238	69261	67422
30	65646	63964	62379	60905	59612	58366	57138	55857	54608	53457
40	52364	51308	50217	49179	48130	47139	46190	45295	44432	43599
50	42797	42002	41207	40399	39647	38875	38110	37325	36616	35919
60	35201	34522	33840	33164	32504	31862	31254	30648	30046	29440
70	28855	28333	27830	27347	26866	26394	25873	25366	24877	24365
80	23799	23248	22725	22262	21755	21200	20691	20185	19677	19168
90	18737	18264	17764	17220	16663	16144	15549	14868	14158	13234

100 10362

Annual maximum series and mean annual flood (MAF)

Source is O:\ELFHZLC22\RAWDATA\OPIKI.MTD Site 1932501 Manawatu at Opiki
 From 1-Jul-1980 00:00:00 to 30-Jun-2006 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1980	1182.2	29-Dec-1980 02:44
1981	1485.7	22-May-1981 05:21
1982	1217.3	6-Jun-1982 10:24
1983	737.51	21-May-1983 02:13
1984	493.47	5-Aug-1984 19:45
1985	2186.2	28-Jul-1985 02:45
1986	1417.4	25-Aug-1986 09:15
1987	785.47	13-Sep-1987 21:30
1988	2245.2	3-Sep-1988 20:30
1989	739.31	10-Sep-1989 01:45
1990	1193.1	11-Mar-1990 01:00
1991	2234.4	11-Apr-1991 15:45
1992	2885.5	23-Jul-1992 08:45
1993	1156.8	22-Nov-1993 07:30
1994	1330.0	16-Nov-1994 18:00
1995	1132.7	7-Apr-1995 03:45
1996	1288.1	14-Oct-1996 02:30
1997	1303.7	3-Jun-1997 20:15
1998	1637.7	21-Oct-1998 19:45
1999	1579.4	30-Nov-1999 00:30
2000	1592.8	10-Oct-2000 05:15
*2001	1715.5	16-Aug-2001 08:00
2002	920.13	30-Sep-2002 20:15
2003	1473.7	29-Sep-2003 10:00
2004	3656.9	16-Feb-2004 16:15
*2005	735.86	22-Oct-2005 08:00
*2006	899.83	30-Apr-2006 24:00

Average Annual Maximum 1508.4 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is O:\ELFHZLC22\RAWDATA\OPIKI.MTD Site 1932501 Manawatu at Opiki
 From 1-Jul-1980 00:00:00 to 30-Jun-2006 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (flow L/s)
30-Jun-1981 24:00:00	17464 at interval beginning 5-Feb-1981 13:35:28
30-Jun-1982 24:00:00	12077 at interval beginning 22-Jan-1982 06:10:41
30-Jun-1983 24:00:00	16143 at interval beginning 28-Feb-1983 23:02:20
30-Jun-1984 24:00:00	14519 at interval beginning 2-Feb-1984 14:46:19
30-Jun-1985 24:00:00	12471 at interval beginning 16-Feb-1985 10:03:13
30-Jun-1986 24:00:00	14124 at interval beginning 26-Apr-1986 22:45:00
30-Jun-1987 24:00:00	10679 at interval beginning 15-Jan-1987 02:00:00
30-Jun-1988 24:00:00	13143 at interval beginning 3-Feb-1988 10:45:00
30-Jun-1989 24:00:00	12035 at interval beginning 9-Mar-1989 11:00:00
30-Jun-1990 24:00:00	17033 at interval beginning 8-Mar-1990 12:45:00
30-Jun-1991 24:00:00	18881 at interval beginning 14-Jan-1991 18:00:00
30-Jun-1992 24:00:00	26424 at interval beginning 24-Jan-1992 19:45:00
30-Jun-1993 24:00:00	24892 at interval beginning 19-Feb-1993 03:00:00

30-Jun-1994 24:00:00	11986	at interval beginning	1-Mar-1994 12:15:00
30-Jun-1995 24:00:00	15470	at interval beginning	26-Jan-1995 12:15:00
30-Jun-1996 24:00:00	19077	at interval beginning	23-Jan-1996 08:45:00
30-Jun-1997 24:00:00	20768	at interval beginning	2-Feb-1997 23:15:00
30-Jun-1998 24:00:00	15022	at interval beginning	10-Mar-1998 07:00:00
30-Jun-1999 24:00:00	13127	at interval beginning	4-Mar-1999 16:15:00
30-Jun-2000 24:00:00	15923	at interval beginning	5-Mar-2000 15:15:00
30-Jun-2001 24:00:00	12472	at interval beginning	11-Apr-2001 23:00:00
Gap from 22-Aug-2001 18:45:00 to 26-Aug-2001 18:45:00 of 4.00 Days			
30-Jun-2002 24:00:00(PARTIAL)	19121	at interval beginning	23-Apr-2002 06:15:00
30-Jun-2003 24:00:00	12251	at interval beginning	28-Mar-2003 08:15:00
30-Jun-2004 24:00:00	20121	at interval beginning	18-Jan-2004 20:00:00
Gap from 6-Jan-2005 08:15:00 to 12-Jan-2005 20:30:00 of 6.51 Days			
30-Jun-2005 24:00:00(PARTIAL)	14964	at interval beginning	23-Feb-2005 10:00:00
30-Jun-2006 24:00:00	13207	at interval beginning	20-Mar-2006 06:15:00

Mean annual Minimum = 15805 becomes 15900
 (For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
 Monthly totals 1980 to 2006 site 1932501 Manawatu at Opiki (synthetic)
 Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.3	5.9	4.7	0.0	0.0	0.0	19.9
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.6	2.9	0.0	0.0	0.0	0.0	6.5
1985	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.9	8.1	11.3	2.0	0.0	32.3
1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0	1.3
1987	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.7	1.0	0.0	0.0	0.0	0.0	14.7
1988	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.3	4.4	0.0	0.0	0.0	0.0	8.7
1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3	9.3	0.0	0.0	0.0	11.5
1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1991	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1994	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.2	13.1	11.3	0.0	0.0	34.5
1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7	0.0	0.0	0.0	0.0	0.0	1.7
1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0	0.0	0.0	0.0	8.0
1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.4	6.9	6.8	0.1	0.0	0.0	22.2
2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.0	1.3
2001	0.0	0.0	0.0	0.0	0.0	0.0	1.6	0.0	2.3	5.8	6.0	2.3	0.0	18.1
2002	0.0	NaN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.7	11.1	0.0	1.6	0.0	25.4
2004	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2005	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NaN	3.4	0.0	0.0	0.0	0.0	3.4
2006	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1	7.4	0.0	0.0	0.0	9.5
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max	0.0	0.0	0.0	0.0	0.0	0.0	1.6	13.7	12.7	13.1	11.3	2.3	0.0	0.0
Mean	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.6	2.5	2.9	1.2	0.2	0.0	0.0

3.13. Manawatu at Palmerston North All (300), July 1923 to July 2005 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 300 Manawatu at Palmerston North All
 From 1-Jul-1923 00:00:01 to 1-Jul-2005 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	3504700	695655	524940	443581	389366	351364	321763	297903	278254	262089
10	248017	235635	224610	214840	206122	197802	190117	183003	176255	169996
20	164281	158915	153816	149160	144694	140397	136267	132467	128868	125363
30	121943	118610	115515	112554	109652	106836	104102	101585	99098	96680
40	94266	91904	89545	87410	85271	83140	81092	79117	77134	75215
50	73404	71659	69935	68259	66565	64844	63114	61519	59948	58422
60	56926	55460	54071	52666	51324	50093	48874	47641	46405	45236
70	44051	42816	41608	40424	39305	38156	37018	35904	34852	33738
80	32616	31511	30452	29323	28208	27147	26090	25030	24020	22992
90	22008	21028	20065	19101	18145	17169	16149	15067	13904	12375
100	8395									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 300 Manawatu at Palmerston North All
 From 1-Jul-1923 00:00:01 to 1-Jul-2005 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	3504700	515528	376876	307558	264720	236638	214473	197512	182435	169784
10	159336	150454	142494	135189	128660	122728	117062	112124	107610	103288
20	99343	95670	92087	88805	85887	83042	80399	78004	75637	73503
30	71449	69447	67534	65686	63843	62155	60544	58980	57490	56077
40	54707	53350	52013	50827	49697	48581	47514	46472	45479	44496
50	43497	42534	41617	40724	39895	39057	38221	37396	36597	35826
60	35098	34337	33603	32892	32185	31498	30836	30173	29489	28824
70	28177	27549	26923	26317	25743	25145	24566	24027	23472	22903
80	22358	21839	21297	20750	20248	19738	19235	18716	18235	17747
90	17235	16727	16194	15656	15074	14476	13893	13220	12360	11372
100	8395									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 300 Manawatu at Palmerston North All
 From 1-Jul-1923 00:00:00 to 30-Jun-2005 24:00:00
 Interval = 0
 flow m³/s

Year	Maximum	Date & Time
*1923	767.08	8-Oct-1923 08:00
*1924	2057.9	1-Nov-1924 12:00
*1925	1920.3	3-Jul-1925 18:00
1926	2041.1	26-Jul-1926 12:00
1927	1230.2	24-Jun-1927 11:00
1928	1925.8	2-Nov-1928 18:00
1929	1613.2	16-May-1929 02:15
1930	1345.7	10-Jan-1930 17:14
1931	1051.9	25-Jul-1931 14:06
1932	1717.6	30-Aug-1932 13:00

1933	1170.6	29-May-1933	17:07
1934	1076.8	17-Jul-1934	01:00
1935	1672.1	23-May-1935	22:30
1936	2165.0	3-Feb-1936	12:07
1937	586.25	10-May-1937	06:00
1938	1387.0	26-Apr-1938	04:30
1939	1595.7	17-Aug-1939	23:30
1940	1069.8	5-Nov-1940	02:15
1941	2605.2	5-May-1941	05:00
1942	1833.8	14-Jul-1942	06:30
1943	1445.7	13-Jul-1943	04:30
1944	964.67	29-May-1944	07:30
1945	1966.0	29-Oct-1945	08:15
1946	1465.3	20-Aug-1946	22:00
1947	2184.7	29-Jun-1947	05:30
1948	1727.5	23-May-1948	16:00
1949	2016.3	9-Aug-1949	18:00
1950	1683.1	2-Jul-1950	10:30
1951	859.36	7-Jul-1951	07:00
1952	1136.9	12-Nov-1952	10:45
1953	3176.2	28-Jan-1953	18:00
1954	1025.0	27-Aug-1954	16:45
1955	1552.8	2-Jul-1955	17:30
1956	2513.3	15-Jul-1956	08:59
1957	1315.7	24-Jun-1957	17:30
1958	1244.0	12-May-1958	17:00
1959	1566.9	20-May-1959	18:57
1960	638.68	17-Aug-1960	06:30
1961	1872.0	3-Sep-1961	07:30
1962	748.83	8-Oct-1962	11:45
1963	1029.9	4-Jun-1963	15:30
1964	2164.6	25-Oct-1964	15:00
1965	2744.5	18-Mar-1965	15:40
1966	1175.8	31-Dec-1966	23:39
1967	1694.0	3-Feb-1967	12:44
1968	1277.2	7-Dec-1968	22:12
1969	565.15	27-Jul-1969	07:04
1970	1011.8	26-Sep-1970	10:16
1971	2018.7	5-May-1971	10:15
1972	1383.5	11-Mar-1972	02:00
1973	891.89	17-Sep-1973	17:15
1974	1421.5	10-Jul-1974	15:15
1975	1338.3	29-Aug-1975	01:00
1976	2312.3	29-Jun-1976	15:00
1977	1198.0	20-Sep-1977	09:15
1978	1121.7	13-Nov-1978	06:45
1979	1538.3	4-Sep-1979	16:15
1980	2404.1	11-Apr-1980	13:00
1981	1491.9	22-May-1981	02:15
1982	1214.5	6-Jun-1982	07:15
1983	750.97	20-May-1983	20:45
1984	477.70	5-Aug-1984	15:45
1985	2156.8	27-Jul-1985	22:45
1986	1318.8	25-Aug-1986	05:45
1987	765.16	13-Sep-1987	17:30
1988	2194.4	3-Sep-1988	16:30
1989	736.42	9-Sep-1989	21:45
1990	1156.8	10-Mar-1990	21:00
1991	2201.5	11-Apr-1991	11:45
1992	2855.0	23-Jul-1992	08:30
1993	1098.8	22-Nov-1993	03:30
1994	1266.3	9-Nov-1994	04:30
1995	1125.7	6-Apr-1995	23:45
1996	1248.2	13-Oct-1996	22:30
1997	1293.5	3-Jun-1997	16:15

1998	1568.9	21-Oct-1998	15:45
1999	1552.6	29-Nov-1999	20:30
2000	1569.1	10-Oct-2000	01:15
2001	1668.8	16-Aug-2001	05:15
2002	877.63	30-Sep-2002	16:15
2003	1419.2	29-Sep-2003	06:15
2004	3504.7	16-Feb-2004	17:15
*2005	1378.2	6-Jan-2005	15:30

Average Annual Maximum 1518.9 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 300 Manawatu at Palmerston North All
From 1-Jul-1923 00:00:00 to 30-Jun-2005 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1924 24:00:00	36640 at interval beginning 9-Feb-1924 08:00:00
Gap from 31-Jul-1924 08:00:00 to 1-Jan-1925 08:00:00 of 154.00 Days	
30-Jun-1925 24:00:00(PARTIAL)	32220 at interval beginning 16-Feb-1925 06:00:00
30-Jun-1926 24:00:00	28111 at interval beginning 23-Mar-1926 12:00:00
30-Jun-1927 24:00:00	20046 at interval beginning 10-Mar-1927 08:00:00
30-Jun-1928 24:00:00	8531 at interval beginning 21-Feb-1928 24:00:00
30-Jun-1929 24:00:00	12313 at interval beginning 28-Feb-1929 24:00:00
30-Jun-1930 24:00:00	17391 at interval beginning 8-Apr-1930 12:00:00
30-Jun-1931 24:00:00	20937 at interval beginning 15-Jul-1930 22:30:00
30-Jun-1932 24:00:00	15190 at interval beginning 15-Dec-1931 08:00:00
30-Jun-1933 24:00:00	13642 at interval beginning 30-Jan-1933 06:00:00
30-Jun-1934 24:00:00	9580 at interval beginning 20-Jan-1934 06:00:00
30-Jun-1935 24:00:00	11451 at interval beginning 10-Dec-1934 18:00:00
30-Jun-1936 24:00:00	15125 at interval beginning 8-Jan-1936 09:00:00
30-Jun-1937 24:00:00	16534 at interval beginning 22-Apr-1937 03:00:00
30-Jun-1938 24:00:00	15688 at interval beginning 22-Jan-1938 24:00:00
30-Jun-1939 24:00:00	11686 at interval beginning 19-Apr-1939 03:00:00
30-Jun-1940 24:00:00	19957 at interval beginning 13-Jan-1940 18:00:00
30-Jun-1941 24:00:00	12709 at interval beginning 12-Mar-1941 24:00:00
30-Jun-1942 24:00:00	24759 at interval beginning 1-May-1942 09:15:00
30-Jun-1943 24:00:00	21291 at interval beginning 17-Apr-1943 12:00:00
30-Jun-1944 24:00:00	10025 at interval beginning 18-Jan-1944 12:00:00
30-Jun-1945 24:00:00	21593 at interval beginning 28-Feb-1945 06:00:00
30-Jun-1946 24:00:00	23736 at interval beginning 1-Dec-1945 12:00:00
30-Jun-1947 24:00:00	11330 at interval beginning 22-Mar-1947 12:00:00
30-Jun-1948 24:00:00	10000 at interval beginning 14-Mar-1948 12:00:00
30-Jun-1949 24:00:00	14200 at interval beginning 20-Dec-1948 08:00:00
30-Jun-1950 24:00:00	10905 at interval beginning 19-Jan-1950 24:00:00
30-Jun-1951 24:00:00	10848 at interval beginning 21-Jan-1951 04:00:00
30-Jun-1952 24:00:00	18046 at interval beginning 15-Mar-1952 06:00:00
30-Jun-1953 24:00:00	31038 at interval beginning 29-Oct-1952 06:00:00
30-Jun-1954 24:00:00	13897 at interval beginning 1-Feb-1954 18:00:00
30-Jun-1955 24:00:00	12233 at interval beginning 1-Feb-1955 12:00:00
30-Jun-1956 24:00:00	13775 at interval beginning 4-Apr-1956 06:00:00
30-Jun-1957 24:00:00	15234 at interval beginning 18-Feb-1957 24:00:00
30-Jun-1958 24:00:00	15672 at interval beginning 17-Feb-1958 18:00:00
30-Jun-1959 24:00:00	14688 at interval beginning 26-Nov-1958 09:00:00
30-Jun-1960 24:00:00	13233 at interval beginning 11-Mar-1960 06:00:00
30-Jun-1961 24:00:00	13480 at interval beginning 15-Apr-1961 09:00:00
30-Jun-1962 24:00:00	12856 at interval beginning 31-Dec-1961 18:00:00
30-Jun-1963 24:00:00	11497 at interval beginning 8-Feb-1963 24:00:00
30-Jun-1964 24:00:00	10205 at interval beginning 15-Feb-1964 18:00:00
30-Jun-1965 24:00:00	20416 at interval beginning 29-Jan-1965 18:00:00

30-Jun-1966 24:00:00	15952 at interval beginning	18-Feb-1966 24:00:00
30-Jun-1967 24:00:00	22446 at interval beginning	19-Apr-1967 03:00:00
30-Jun-1968 24:00:00	14342 at interval beginning	2-Apr-1968 06:00:00
30-Jun-1969 24:00:00	14571 at interval beginning	16-Mar-1969 18:00:00
30-Jun-1970 24:00:00	11645 at interval beginning	27-Feb-1970 24:00:00
30-Jun-1971 24:00:00	15205 at interval beginning	2-May-1971 22:27:48
30-Jun-1972 24:00:00	13127 at interval beginning	20-Feb-1972 07:15:00
30-Jun-1973 24:00:00	9095 at interval beginning	2-Mar-1973 13:00:00
30-Jun-1974 24:00:00	10301 at interval beginning	5-Apr-1974 07:30:00
30-Jun-1975 24:00:00	13894 at interval beginning	6-Jan-1975 12:00:00
30-Jun-1976 24:00:00	16049 at interval beginning	27-Mar-1976 09:00:00
30-Jun-1977 24:00:00	13318 at interval beginning	8-Mar-1977 08:30:00
30-Jun-1978 24:00:00	9086 at interval beginning	17-Mar-1978 22:45:00
30-Jun-1979 24:00:00	11657 at interval beginning	22-Jan-1979 11:15:00
30-Jun-1980 24:00:00	18461 at interval beginning	23-Dec-1979 22:15:00
30-Jun-1981 24:00:00	17003 at interval beginning	6-Feb-1981 01:00:00
30-Jun-1982 24:00:00	11204 at interval beginning	22-Jan-1982 07:00:00
30-Jun-1983 24:00:00	15707 at interval beginning	1-Mar-1983 00:15:00
30-Jun-1984 24:00:00	14289 at interval beginning	2-Feb-1984 11:30:00
30-Jun-1985 24:00:00	12095 at interval beginning	16-Feb-1985 10:45:00
30-Jun-1986 24:00:00	13442 at interval beginning	26-Apr-1986 19:00:00
30-Jun-1987 24:00:00	10336 at interval beginning	15-Jan-1987 04:15:00
30-Jun-1988 24:00:00	12852 at interval beginning	3-Feb-1988 09:30:00
30-Jun-1989 24:00:00	11802 at interval beginning	9-Mar-1989 07:45:00
30-Jun-1990 24:00:00	16708 at interval beginning	8-Mar-1990 08:45:00
30-Jun-1991 24:00:00	17856 at interval beginning	15-Jan-1991 05:15:00
30-Jun-1992 24:00:00	25441 at interval beginning	4-Feb-1992 20:30:00
30-Jun-1993 24:00:00	24523 at interval beginning	18-Feb-1993 22:45:00
30-Jun-1994 24:00:00	11790 at interval beginning	1-Mar-1994 08:00:00
30-Jun-1995 24:00:00	14935 at interval beginning	26-Jan-1995 17:45:00
30-Jun-1996 24:00:00	18757 at interval beginning	23-Jan-1996 05:30:00
30-Jun-1997 24:00:00	20472 at interval beginning	2-Feb-1997 19:15:00
30-Jun-1998 24:00:00	13780 at interval beginning	26-Mar-1998 09:00:00
30-Jun-1999 24:00:00	12928 at interval beginning	4-Mar-1999 12:00:00
30-Jun-2000 24:00:00	15575 at interval beginning	6-Mar-2000 17:30:00
30-Jun-2001 24:00:00	12188 at interval beginning	11-Apr-2001 19:15:00
30-Jun-2002 24:00:00	18789 at interval beginning	23-Apr-2002 02:15:00
30-Jun-2003 24:00:00	12061 at interval beginning	28-Mar-2003 03:15:00
30-Jun-2004 24:00:00	19205 at interval beginning	18-Jan-2004 22:30:00
30-Jun-2005 24:00:00	14665 at interval beginning	23-Feb-2005 06:00:00

Mean annual Minimum = 15531 becomes 15735
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1923 to 2005 site 300 Manawatu at Palmerston North All
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1924	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1925	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0	0.0	0.0	0.0	0.0	0.0
1926	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1927	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1928	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	19.8	0.0	0.0	0.0	0.0	24.8
1929	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.1	2.5	0.0	0.0	0.0	7.6
1930	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1931	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1932	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.9

1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.8	0.0	0.0	0.0	12.8
1999	0.0	0.0	0.0	0.0	0.0	0.0	10.0	7.1	6.9	0.2	0.0	0.0	24.3
2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3	0.0	0.0	0.0	3.3
2001	0.0	0.0	0.0	0.0	0.0	2.3	0.0	2.7	6.5	6.5	2.2	0.0	20.1
2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.9	11.5	0.0	1.8	0.0	26.3
2004	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2005	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.6	0.0	0.0	0.0	0.0	3.6
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	0.0	0.0	0.0	6.3	5.5	20.6	22.9	26.6	26.5	16.9	3.1	0.0	
Mean	0.0	0.0	0.0	0.1	0.1	0.8	3.0	3.9	3.5	1.5	0.1	0.0	

3.14. Manawatu at Upper Gorge (1232566), July 1979 to July 2003 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 1232566 Manawatu at Upper Gorge

From 16-Jul-1979 11:31:00 to 1-Jul-2003 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	2469300	517904	387765	328621	288568	259244	236629	218574	203741	191219
10	179818	170095	161166	153009	145812	139648	133938	128709	124027	119225
20	115045	111148	107340	103770	100424	97291	94355	91603	88882	86249
30	83930	81789	79660	77535	75501	73640	71828	70018	68144	66339
40	64565	62901	61358	59825	58325	56854	55441	54077	52809	51569
50	50370	49198	48079	46970	45849	44860	43935	43024	42034	41033
60	40117	39206	38292	37456	36621	35730	34854	34011	33113	32222
70	31368	30498	29676	28878	28109	27360	26580	25752	24910	24097
80	23315	22470	21731	20890	20113	19385	18681	18029	17329	16679
90	15971	15271	14617	13999	13397	12777	12071	11200	10416	9643
100	7318									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 1232566 Manawatu at Upper Gorge

From 16-Jul-1979 11:31:00 to 1-Jul-2003 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	1957000	399431	285787	227902	194253	170449	152071	138557	127638	118146
10	109717	102394	95774	90436	85459	81466	77658	74136	71074	68163
20	65515	63087	60938	58929	57113	55437	53839	52424	50967	49590
30	48241	46996	45790	44717	43688	42718	41698	40781	39928	39075
40	38232	37455	36703	35951	35180	34432	33706	32932	32228	31547
50	30881	30218	29623	29054	28531	27979	27480	26961	26431	25878
60	25330	24827	24302	23791	23308	22799	22333	21910	21441	20951
70	20499	20073	19662	19238	18825	18436	18053	17634	17202	16825
80	16448	16022	15620	15241	14889	14536	14188	13866	13557	13224
90	12916	12555	12171	11753	11282	10867	10449	10018	9654	9126
100	7318									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 1232566 Manawatu at Upper Gorge

From 1-Jul-1979 00:00:00 to 30-Jun-2003 24:00:00

Interval = 0
flow m3/s

Year	Maximum	Date & Time
*1979	1114.4	4-Sep-1979 17:10
1980	1957.0	11-Apr-1980 09:38
1981	1092.4	25-Sep-1981 03:43
1982	1058.7	6-Jun-1982 05:30
1983	663.36	6-Nov-1983 05:00
1984	413.46	5-Aug-1984 12:45
1985	1794.2	27-Jul-1985 20:30
1986	1042.0	25-Aug-1986 06:30
1987	718.25	13-Sep-1987 14:45
1988	1840.0	3-Sep-1988 05:30
1989	604.67	11-Jul-1989 21:30
1990	937.53	10-Mar-1990 18:00
1991	1831.1	11-Apr-1991 11:00
1992	2469.3	23-Jul-1992 08:00
1993	895.75	22-Nov-1993 01:15
1994	1155.0	15-Nov-1994 22:45
1995	1080.8	6-Apr-1995 20:30
1996	1079.4	13-Oct-1996 19:15
1997	1216.1	3-Jun-1997 14:00
1998	1418.3	21-Oct-1998 13:00
1999	1185.1	30-Nov-1999 01:45
2000	1411.3	9-Oct-2000 22:45
2001	1355.0	16-Aug-2001 02:30
*2002	749.78	18-Jun-2002 13:15
*2003	547.01	10-Jun-2003 03:30

Average Annual Maximum 1237.2 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 1232566 Manawatu at Upper Gorge
From 1-Jul-1979 00:00:00 to 30-Jun-2003 24:00:00
Data starts at 16-Jul-1979 11:31:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1980 24:00:00 (PARTIAL)	13602 at interval beginning 20-Feb-1980 19:18:16
30-Jun-1981 24:00:00	10800 at interval beginning 14-Mar-1981 18:09:37
30-Jun-1982 24:00:00	9310 at interval beginning 17-Feb-1982 06:23:06
30-Jun-1983 24:00:00	13038 at interval beginning 1-Mar-1983 01:15:00
30-Jun-1984 24:00:00	9773 at interval beginning 2-Feb-1984 10:00:00
30-Jun-1985 24:00:00	9448 at interval beginning 28-Feb-1985 14:30:00
30-Jun-1986 24:00:00	12751 at interval beginning 26-Apr-1986 19:45:00
30-Jun-1987 24:00:00	10143 at interval beginning 14-Jan-1987 14:48:27
30-Jun-1988 24:00:00	13476 at interval beginning 3-Feb-1988 12:30:00
30-Jun-1989 24:00:00	9334 at interval beginning 9-Mar-1989 04:00:00
30-Jun-1990 24:00:00	14293 at interval beginning 8-Mar-1990 09:00:00
30-Jun-1991 24:00:00	14460 at interval beginning 14-Jan-1991 23:30:00
30-Jun-1992 24:00:00	20131 at interval beginning 24-Jan-1992 19:00:00
30-Jun-1993 24:00:00	18848 at interval beginning 18-Feb-1993 19:30:00
30-Jun-1994 24:00:00	7424 at interval beginning 12-Apr-1994 07:30:00
30-Jun-1995 24:00:00	10412 at interval beginning 26-Jan-1995 09:00:00
30-Jun-1996 24:00:00	12485 at interval beginning 23-Jan-1996 04:15:00
30-Jun-1997 24:00:00	13781 at interval beginning 2-Feb-1997 20:00:00
30-Jun-1998 24:00:00	8163 at interval beginning 26-Mar-1998 02:30:00

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30-Jun-1999 24:00:00      8975 at interval beginning 4-Mar-1999 09:45:00
30-Jun-2000 24:00:00      8810 at interval beginning 12-Mar-2000 11:45:00
30-Jun-2001 24:00:00      9724 at interval beginning 26-Mar-2001 05:30:00
30-Jun-2002 24:00:00      13232 at interval beginning 23-Apr-2002 01:45:00
Gap from 31-Aug-2002 22:30:00 to 4-Oct-2002 15:30:00 of 33.71 Days
Gap from 27-Oct-2002 11:30:00 to 29-Oct-2002 13:45:00 of 2.09 Days
Gap from 5-Nov-2002 03:15:00 to 5-Nov-2002 13:30:00 of 10.25 Hours
Gap from 10-Nov-2002 09:15:00 to 11-Nov-2002 11:30:00 of 1.09 Days
30-Jun-2003 24:00:00(PARTIAL) 8470 at interval beginning 28-Mar-2003 05:45:00

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Mean annual Minimum = 11621 becomes 11703
(For complete years only)

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Days per month below MALF

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Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1979 to 2003 site 1232566 Manawatu at Upper Gorge
Days < MALF

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Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1980	NaN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	1.4	0.0	0.0	4.4
1982	0.0	0.0	0.0	0.0	0.0	0.7	0.0	7.0	8.5	9.9	0.4	0.0	0.0	26.4
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.2	5.7	4.3	0.0	0.0	0.0	21.1
1985	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.5	9.3	20.2	7.5	0.0	50.4
1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1987	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0	0.0	0.0	0.0	0.0	0.0	8.0
1988	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	2.3	9.9	0.0	0.0	0.0	13.4
1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1991	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1994	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19.6	19.3	15.0	0.0	0.0	53.9
1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.1	0.4	0.0	0.0	0.0	0.0	6.5
1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	3.5	20.5	6.0	0.0	0.0	32.2
1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.4	9.3	8.4	3.1	0.0	0.0	29.2
2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	3.7	12.9	0.0	0.0	0.0	19.4
2001	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.1	4.9	0.0	0.0	10.0
2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2003	0.0	NaN	NaN	NaN	NaN	0.0	0.0	17.5	13.8	1.9	1.9	NaN	NaN	35.2
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max	0.0	0.0	0.0	0.0	0.7	0.0	11.2	19.6	20.5	20.2	7.5	0.0	0.0	0.0
Mean	0.0	0.0	0.0	0.0	0.0	0.0	2.0	3.5	4.8	2.2	0.4	0.0	0.0	0.0

3.15. Manawatu at Weber Rd (32503), July 1955 to July 2004 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

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Source is HORIZONS.MTD Site 32503 Manawatu at Weber Rd
From 1-Jul-1955 00:00:01 to 1-Jul-2004 00:00:01
Flow l/s

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	0	1	2	3	4	5	6	7	8	9
0	1417100	138636	87951	67005	55424	47623	42316	38362	35185	32633
10	30520	28759	27244	25783	24621	23599	22590	21672	20840	20008
20	19186	18438	17731	17061	16448	15888	15369	14888	14424	13948
30	13489	13038	12632	12252	11891	11550	11249	10956	10663	10384
40	10101	9842	9577	9314	9049	8788	8526	8278	8045	7818
50	7605	7399	7185	6980	6786	6598	6431	6262	6101	5938
60	5777	5610	5458	5309	5158	5014	4877	4738	4611	4484
70	4354	4229	4107	3994	3887	3778	3669	3553	3439	3323
80	3208	3105	3011	2922	2839	2755	2669	2581	2495	2408
90	2320	2231	2144	2053	1963	1879	1786	1687	1578	1447
100	1051									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 32503 Manawatu at Weber Rd
 From 1-Jul-1955 00:00:01 to 1-Jul-2004 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	1417100	88502	51356	38763	31504	26867	23453	21031	19083	17511
10	16253	15188	14370	13543	12741	12079	11533	11080	10624	10199
20	9823	9464	9118	8792	8510	8213	7929	7666	7440	7218
30	6991	6788	6608	6435	6267	6102	5945	5791	5634	5495
40	5356	5223	5091	4968	4843	4729	4625	4525	4422	4323
50	4229	4137	4052	3973	3896	3821	3746	3672	3596	3520
60	3448	3376	3304	3233	3165	3104	3046	2990	2937	2886
70	2837	2787	2737	2687	2635	2584	2535	2486	2436	2384
80	2338	2291	2240	2195	2150	2100	2053	2008	1965	1921
90	1875	1831	1785	1736	1685	1634	1582	1519	1446	1346
100	1051									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 32503 Manawatu at Weber Rd
 From 1-Jul-1955 00:00:00 to 30-Jun-2004 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1955	713.95	2-Jul-1955 05:00
1956	990.72	14-Jul-1956 19:00
1957	526.35	24-Jun-1957 07:00
1958	339.04	12-May-1958 05:20
1959	652.16	27-Jul-1959 11:59
1960	232.18	15-Sep-1960 17:00
1961	467.79	7-Aug-1961 07:00
1962	462.23	19-Jul-1962 21:00
1963	385.95	4-Jun-1963 07:00
1964	161.09	24-Jun-1964 03:00
1965	1021.9	17-Mar-1965 24:00
1966	436.41	9-Aug-1966 15:00
1967	571.31	1-Jan-1967 05:00
1968	505.50	22-Jun-1968 15:59
1969	393.54	26-Jul-1969 24:00
1970	238.46	19-Mar-1970 02:00
1971	775.92	4-May-1971 22:00
1972	417.68	15-Jun-1972 01:00
1973	295.87	8-Aug-1973 22:00

1974	590.92	16-Jun-1974	14:00
1975	296.81	12-Mar-1975	24:00
1976	404.67	9-Sep-1976	16:00
1977	364.96	21-Jul-1977	06:00
1978	362.95	9-Jul-1978	19:00
1979	538.87	22-Mar-1979	03:00
1980	734.94	10-Apr-1980	23:07
1981	316.20	25-Aug-1981	12:40
1982	704.14	5-Jun-1982	20:25
1983	286.22	15-Oct-1983	13:30
1984	178.78	16-Aug-1984	18:15
1985	899.43	27-Jul-1985	01:30
1986	569.30	17-Sep-1986	07:00
1987	366.28	22-Mar-1987	11:30
1988	1115.2	2-Sep-1988	20:15
1989	281.17	8-Sep-1989	20:00
1990	346.54	24-Aug-1990	08:00
1991	603.43	10-Apr-1991	17:00
1992	1374.5	22-Jul-1992	19:45
1993	243.05	20-Feb-1993	15:00
1994	710.99	26-Jul-1994	11:45
1995	536.25	6-Apr-1995	14:30
1996	200.66	17-Jul-1996	06:00
1997	789.33	3-Jun-1997	05:15
1998	109.26	28-Jul-1998	08:30
1999	865.09	29-Nov-1999	18:00
2000	305.99	7-Jul-2000	08:30
2001	661.59	15-Aug-2001	18:30
2002	506.26	13-Feb-2002	20:15
2003	505.88	23-Aug-2003	23:30
*2004	1417.1	16-Feb-2004	06:15

Average Annual Maximum 513.41 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 32503 Manawatu at Weber Rd
From 1-Jul-1955 00:00:00 to 30-Jun-2004 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1956 24:00:00	2041 at interval beginning 3-Apr-1956 05:11:03
30-Jun-1957 24:00:00	3091 at interval beginning 25-Sep-1956 09:00:00
30-Jun-1958 24:00:00	1828 at interval beginning 12-Feb-1958 09:30:00
30-Jun-1959 24:00:00	2166 at interval beginning 20-Feb-1959 12:00:00
30-Jun-1960 24:00:00	2899 at interval beginning 22-Jul-1959 22:00:00
30-Jun-1961 24:00:00	1793 at interval beginning 24-Mar-1961 21:00:00
30-Jun-1962 24:00:00	1934 at interval beginning 26-Jan-1962 20:00:00
30-Jun-1963 24:00:00	1790 at interval beginning 30-Mar-1963 02:00:00
30-Jun-1964 24:00:00	1560 at interval beginning 27-Feb-1964 14:00:00
30-Jun-1965 24:00:00	4597 at interval beginning 29-Jan-1965 17:50:26
30-Jun-1966 24:00:00	1568 at interval beginning 19-Feb-1966 20:33:00
30-Jun-1967 24:00:00	5160 at interval beginning 28-Feb-1967 13:19:30
30-Jun-1968 24:00:00	1393 at interval beginning 27-Mar-1968 10:09:00
30-Jun-1969 24:00:00	1406 at interval beginning 1-Dec-1968 24:00:00
30-Jun-1970 24:00:00	1614 at interval beginning 15-Mar-1970 09:26:20
30-Jun-1971 24:00:00	1484 at interval beginning 3-Jan-1971 18:00:00
30-Jun-1972 24:00:00	2128 at interval beginning 6-Mar-1972 20:50:15
30-Jun-1973 24:00:00	1266 at interval beginning 9-Feb-1973 09:29:15
30-Jun-1974 24:00:00	1481 at interval beginning 12-Feb-1974 12:00:00
30-Jun-1975 24:00:00	2196 at interval beginning 21-Feb-1975 10:24:18

30-Jun-1976 24:00:00	2513 at interval beginning	18-Dec-1975 10:00:00
30-Jun-1977 24:00:00	1129 at interval beginning	12-Mar-1977 18:31:52
30-Jun-1978 24:00:00	1051 at interval beginning	14-Apr-1978 19:28:30
30-Jun-1979 24:00:00	1208 at interval beginning	4-Feb-1979 07:03:56
30-Jun-1980 24:00:00	1981 at interval beginning	27-Nov-1979 00:15:58
30-Jun-1981 24:00:00	1716 at interval beginning	19-Dec-1980 09:36:16
30-Jun-1982 24:00:00	1296 at interval beginning	17-Feb-1982 07:02:07
30-Jun-1983 24:00:00	1290 at interval beginning	4-Feb-1983 10:55:39
30-Jun-1984 24:00:00	1245 at interval beginning	27-Jan-1984 09:30:00
30-Jun-1985 24:00:00	1281 at interval beginning	14-Feb-1985 08:45:00
30-Jun-1986 24:00:00	2173 at interval beginning	26-Apr-1986 16:00:00
30-Jun-1987 24:00:00	1599 at interval beginning	3-Feb-1987 17:30:00
30-Jun-1988 24:00:00	1422 at interval beginning	2-Feb-1988 12:45:00
30-Jun-1989 24:00:00	1495 at interval beginning	27-Apr-1989 04:15:00
30-Jun-1990 24:00:00	2227 at interval beginning	7-Feb-1990 03:30:00
30-Jun-1991 24:00:00	1504 at interval beginning	15-Jan-1991 11:00:00
30-Jun-1992 24:00:00	2544 at interval beginning	4-Feb-1992 16:00:00
30-Jun-1993 24:00:00	2553 at interval beginning	18-Feb-1993 07:15:00
30-Jun-1994 24:00:00	1461 at interval beginning	23-Jan-1994 14:15:00
30-Jun-1995 24:00:00	1424 at interval beginning	18-Jan-1995 09:15:00
30-Jun-1996 24:00:00	2180 at interval beginning	9-Jan-1996 18:00:00
30-Jun-1997 24:00:00	1927 at interval beginning	18-Feb-1997 04:45:00
30-Jun-1998 24:00:00	1149 at interval beginning	18-Feb-1998 01:45:00
30-Jun-1999 24:00:00	1661 at interval beginning	13-Jan-1999 13:45:00
30-Jun-2000 24:00:00	1375 at interval beginning	5-Mar-2000 04:30:00
30-Jun-2001 24:00:00	1666 at interval beginning	10-Feb-2001 19:00:00
30-Jun-2002 24:00:00	2356 at interval beginning	22-Apr-2002 22:45:00
30-Jun-2003 24:00:00	1482 at interval beginning	18-Feb-2003 18:15:00
30-Jun-2004 24:00:00	1755 at interval beginning	18-Jan-2004 05:45:00

Mean annual Minimum = 1879
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1955 to 2004 site 32503 Manawatu at Weber Rd
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1956	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1957	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1958	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.1	0.0	0.0	0.0	0.0	15.1
1959	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1960	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1961	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.3	5.5	4.8	0.0	0.0	14.6
1962	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1963	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.9	0.0	0.0	0.0	6.9
1964	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	27.8	0.0	13.3	0.0	0.0	41.8
1965	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1966	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.0	1.8	0.0	0.0	0.0	11.8
1967	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1968	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.4	27.5	1.9	0.0	0.0	40.8
1969	0.0	0.0	0.0	0.0	0.0	4.5	2.9	0.0	0.0	0.0	0.0	0.0	0.0	7.4
1970	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	15.0	0.0	0.0	0.0	15.5
1971	0.0	0.0	0.0	0.0	0.0	0.0	5.0	3.8	8.2	0.0	5.0	0.0	0.0	21.9
1972	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1973	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.5	26.1	8.2	2.5	0.0	0.0	42.3
1974	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.8	12.7	0.0	0.0	0.0	0.0	18.5
1975	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

1976	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.3	22.8	0.0	0.0	0.0	28.0
1978	0.0	0.0	0.0	0.0	0.0	0.0	8.8	8.1	18.3	12.7	0.0	0.0	47.9
1979	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.4	19.0	0.0	0.0	0.0	40.4
1980	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0	1.3
1982	0.0	0.0	0.0	0.0	0.0	2.4	11.0	17.0	0.9	0.0	0.0	0.0	31.2
1983	0.0	0.0	0.0	0.0	5.0	0.2	6.8	15.3	27.3	7.7	0.0	0.0	62.3
1984	0.0	0.0	0.0	0.0	0.0	2.0	31.0	11.0	4.8	0.0	0.0	0.0	48.8
1985	0.0	0.0	0.0	0.0	2.7	8.6	4.0	20.7	7.9	0.3	0.0	0.0	44.2
1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1987	0.0	0.0	0.0	0.0	0.0	0.0	15.1	12.0	0.0	0.0	0.0	0.0	27.1
1988	0.0	0.0	0.0	0.0	0.0	0.0	15.4	3.9	0.0	0.0	0.0	0.0	19.3
1989	0.0	0.0	0.0	0.0	0.0	13.6	6.8	1.8	15.6	27.3	0.0	0.0	65.2
1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1991	0.0	0.0	0.0	0.0	0.0	0.0	10.5	8.2	0.0	0.0	0.0	0.0	18.7
1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1994	0.0	0.0	0.0	0.0	0.0	0.0	10.3	13.3	12.9	13.6	1.9	0.0	52.0
1995	0.0	0.0	0.0	0.0	0.0	0.0	15.3	1.5	0.0	0.0	0.0	0.0	16.8
1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1998	0.0	0.0	0.0	0.0	0.0	0.0	23.3	23.5	28.3	15.3	0.0	0.0	90.4
1999	0.0	0.0	0.0	0.0	0.0	0.0	7.9	0.0	3.2	0.0	0.0	0.0	11.1
2000	0.0	0.0	0.0	0.0	0.0	0.0	0.1	6.8	14.5	0.0	0.0	0.0	21.3
2001	0.0	0.0	0.0	0.0	0.0	0.0	1.3	4.8	0.7	2.8	0.0	0.0	9.7
2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.0	0.0	0.0	0.0	0.0	16.0
2004	0.0	0.0	0.0	0.0	0.0	0.0	2.7	0.0	0.0	0.0	0.0	0.0	2.7
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	0.0	0.0	0.0	0.0	5.0	13.6	31.0	27.8	28.3	27.3	1.9	0.0	
Mean	0.0	0.0	0.0	0.0	0.2	0.7	4.2	6.2	4.5	2.2	0.0	0.0	

3.16. Manga-Atua at Hopelands Rd (1232564), July 1980 to July 1989 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 1232564 Manga-Atua at Hopelands Rd

From 1-Jul-1980 00:00:01 to 1-Jul-1989 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	131266	12106	8022	6202	5148	4413	3913	3549	3270	3016
10	2798	2599	2435	2283	2147	2033	1936	1850	1770	1694
20	1623	1553	1492	1437	1391	1345	1298	1254	1213	1179
30	1145	1113	1086	1064	1037	1010	986	963	941	918
40	896	874	852	831	811	791	772	753	735	718
50	702	685	668	651	633	616	600	584	567	550
60	535	522	508	494	480	466	452	439	424	411
70	398	386	375	364	353	342	331	319	309	299
80	287	277	267	257	246	235	224	214	205	196
90	187	177	166	156	146	137	129	119	102	85
100	42									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 1232564 Manga-Atua at Hopelands Rd

From 1-Jul-1980 00:00:01 to 1-Jul-1989 00:00:01
Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	44537	7120	4517	3398	2774	2320	2013	1807	1662	1547
10	1457	1377	1296	1225	1174	1122	1087	1066	1035	999
20	962	928	892	855	820	789	762	737	712	689
30	668	650	633	616	600	584	569	552	538	526
40	512	498	484	470	457	445	432	421	410	400
50	390	382	374	365	357	350	342	334	327	319
60	311	304	296	288	281	275	269	263	257	251
70	244	238	232	226	220	215	210	206	201	195
80	190	186	181	176	170	164	159	154	149	144
90	140	135	130	125	119	113	104	94	86	74
100	42									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 1232564 Manga-Atua at Hopelands Rd
From 1-Jul-1980 00:00:00 to 30-Jun-1989 24:00:00
Interval = 0
flow m3/s

Year	Maximum	Date & Time
*1980	52.034	18-Oct-1980 11:18
1981	60.256	25-Aug-1981 07:00
1982	74.441	21-Jul-1982 02:15
1983	77.785	20-May-1983 15:45
1984	22.458	12-Dec-1984 12:45
1985	44.537	24-Nov-1985 18:00
1986	71.329	24-Aug-1986 20:30
1987	63.337	13-Sep-1987 14:00
1988	131.27	19-Jun-1988 20:30
*1989	31.734	5-Feb-1989 14:00

Average Annual Maximum 68.176 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 1232564 Manga-Atua at Hopelands Rd
From 1-Jul-1980 00:00:00 to 30-Jun-1989 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1981 24:00:00	103 at interval beginning 6-Apr-1981 06:11:14
30-Jun-1982 24:00:00	55 at interval beginning 16-Feb-1982 14:00:00
30-Jun-1983 24:00:00	86 at interval beginning 22-Mar-1983 20:30:00
30-Jun-1984 24:00:00	52 at interval beginning 1-Feb-1984 13:00:00
30-Jun-1985 24:00:00	61 at interval beginning 13-Feb-1985 09:15:00
30-Jun-1986 24:00:00	104 at interval beginning 26-Apr-1986 03:30:00
30-Jun-1987 24:00:00	76 at interval beginning 11-Jan-1987 22:15:00
30-Jun-1988 24:00:00	58 at interval beginning 2-Feb-1988 07:45:00
30-Jun-1989 24:00:00	83 at interval beginning 18-Dec-1988 11:15:00

Mean annual Minimum = 75
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
 Monthly totals 1980 to 1989 site 1232564 Manga-Atua at Hopelands Rd
 Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
	1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.4	0.0	0.0	0.0	0.0	3.4
	1983	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
	1984	0.0	0.0	0.0	0.0	0.0	0.0	1.5	2.3	0.0	0.0	0.0	0.0	3.8
	1985	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	0.0	0.0	0.9	0.0	3.7
	1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1987	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.4	0.0	0.0	0.0	0.0	1.9
	1988	0.0	0.0	0.0	0.0	0.0	0.0	1.8	3.3	0.0	0.0	0.0	0.0	5.1
	1989	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Min		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max		0.0	0.0	0.0	0.0	0.4	0.1	1.8	3.4	0.0	0.0	0.9	0.0	
Mean		0.0	0.0	0.0	0.0	0.0	0.0	0.5	1.4	0.0	0.0	0.1	0.0	

3.17. Mangahao at Ballance (32526), July 1962 to July 2004 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 32526 Mangahao at Ballance
 From 1-Jul-1962 00:00:01 to 1-Jul-2004 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	815374	144360	98683	75788	61514	52141	45257	39898	35671	32252
10	29574	27325	25453	23841	22455	21264	20208	19257	18415	17633
20	16927	16265	15640	15087	14572	14096	13640	13215	12815	12437
30	12072	11730	11405	11102	10816	10536	10273	10013	9766	9530
40	9300	9083	8870	8665	8465	8275	8074	7887	7709	7535
50	7366	7198	7039	6885	6724	6569	6418	6273	6130	5987
60	5840	5697	5560	5423	5292	5164	5041	4921	4805	4692
70	4581	4472	4366	4261	4160	4060	3962	3866	3768	3667
80	3568	3470	3375	3284	3191	3099	3002	2900	2799	2700
90	2603	2501	2393	2277	2155	2003	1831	1619	1335	1113
100	541									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 32526 Mangahao at Ballance
 From 1-Jul-1962 00:00:01 to 1-Jul-2004 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	815374	138345	86446	62446	49829	41017	34855	30386	26941	24323
10	22192	20412	18944	17633	16489	15490	14618	13874	13214	12595
20	12052	11563	11106	10685	10314	9954	9621	9311	9022	8754
30	8504	8266	8019	7791	7585	7398	7209	7028	6856	6681

40	6519	6361	6208	6063	5920	5776	5640	5512	5387	5266
50	5151	5043	4935	4832	4736	4644	4554	4467	4384	4302
60	4221	4140	4062	3987	3913	3838	3761	3683	3606	3533
70	3460	3388	3318	3250	3184	3116	3048	2979	2911	2844
80	2777	2712	2647	2583	2516	2446	2379	2307	2230	2154
90	2067	1974	1880	1782	1663	1522	1350	1220	1113	968
100	541									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 32526 Mangahao at Ballance
 From 1-Jul-1962 00:00:00 to 30-Jun-2004 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1962	287.75	8-Oct-1962 02:10
1963	507.46	31-Dec-1963 16:00
1964	719.69	25-Oct-1964 02:50
1965	450.56	28-Oct-1965 07:45
1966	442.06	7-Jul-1966 08:20
1967	591.47	4-Aug-1967 15:40
1968	615.28	3-Feb-1968 19:00
1969	495.14	27-Oct-1969 14:25
1970	444.31	14-Dec-1970 13:30
1971	564.90	27-Dec-1971 05:40
1972	682.75	14-May-1972 08:30
*1973	564.90	12-May-1973 09:00
*1974	534.52	3-Jul-1974 12:00
1975	435.25	26-May-1975 09:21
1976	577.24	8-Oct-1976 06:00
1977	375.31	30-Sep-1977 17:20
1978	327.96	13-Nov-1978 00:16
1979	276.10	26-Dec-1979 22:42
1980	437.93	20-Jan-1980 13:34
1981	565.97	7-Feb-1981 09:45
1982	735.31	11-Dec-1982 18:00
1983	496.98	5-Nov-1983 24:00
1984	354.55	25-Nov-1984 09:00
1985	416.87	23-Dec-1985 23:45
1986	757.45	4-Oct-1986 18:45
1987	303.41	13-Sep-1987 09:30
1988	606.99	24-Aug-1988 09:00
1989	341.48	24-Mar-1989 21:30
1990	708.40	13-Mar-1990 20:45
1991	545.26	25-Jan-1991 06:45
1992	512.53	16-Mar-1992 14:15
1993	815.37	20-Nov-1993 17:00
1994	734.07	15-Nov-1994 17:15
1995	394.84	16-Sep-1995 18:15
1996	681.55	13-Oct-1996 13:00
1997	505.44	15-Nov-1997 23:45
1998	756.18	28-Oct-1998 14:15
1999	535.78	28-May-1999 14:30
2000	720.92	1-Oct-2000 14:00
2001	713.29	26-Jan-2001 09:15
2002	380.31	26-Dec-2002 05:45
2003	496.23	17-Jul-2003 05:15
*2004	647.58	12-Feb-2004 05:30

Average Annual Maximum 539.04 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 32526 Mangahao at Ballance
From 1-Jul-1962 00:00:00 to 30-Jun-2004 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)			
30-Jun-1963 24:00:00	1088	at interval beginning	8-Feb-1963	09:00:00
30-Jun-1964 24:00:00	1932	at interval beginning	14-Feb-1964	09:00:00
30-Jun-1965 24:00:00	3220	at interval beginning	18-Jan-1965	08:00:00
30-Jun-1966 24:00:00	3340	at interval beginning	19-Feb-1966	20:20:00
30-Jun-1967 24:00:00	1693	at interval beginning	7-Sep-1966	24:00:00
30-Jun-1968 24:00:00	1176	at interval beginning	9-Apr-1968	07:30:00
30-Jun-1969 24:00:00	918	at interval beginning	16-Mar-1969	04:00:00
30-Jun-1970 24:00:00	1189	at interval beginning	21-Nov-1969	24:00:00
30-Jun-1971 24:00:00	1339	at interval beginning	14-Feb-1971	21:25:00
30-Jun-1972 24:00:00	2095	at interval beginning	16-Apr-1972	24:00:00
30-Jun-1973 24:00:00	1106	at interval beginning	3-Mar-1973	02:00:00
Gap from 10-Oct-1973 00:00:00 to 27-Sep-1974 10:00:00 of 352.42 Days				
30-Jun-1974 24:00:00(PARTIAL)	2087	at interval beginning	2-Aug-1973	08:00:00
30-Jun-1975 24:00:00(PARTIAL)	565	at interval beginning	28-Jan-1975	03:00:00
30-Jun-1976 24:00:00	1494	at interval beginning	19-Mar-1976	21:09:59
30-Jun-1977 24:00:00	2047	at interval beginning	13-Mar-1977	06:07:10
30-Jun-1978 24:00:00	745	at interval beginning	17-Mar-1978	08:00:00
30-Jun-1979 24:00:00	1970	at interval beginning	9-Nov-1978	11:13:31
30-Jun-1980 24:00:00	2720	at interval beginning	25-Dec-1979	03:12:50
30-Jun-1981 24:00:00	1311	at interval beginning	5-Feb-1981	03:45:00
30-Jun-1982 24:00:00	1590	at interval beginning	16-Feb-1982	22:00:00
30-Jun-1983 24:00:00	1875	at interval beginning	24-Feb-1983	01:30:00
30-Jun-1984 24:00:00	2226	at interval beginning	2-Feb-1984	06:30:00
30-Jun-1985 24:00:00	1087	at interval beginning	13-Apr-1985	07:00:00
30-Jun-1986 24:00:00	1640	at interval beginning	11-Feb-1986	23:00:00
30-Jun-1987 24:00:00	720	at interval beginning	12-Jan-1987	15:30:00
30-Jun-1988 24:00:00	1684	at interval beginning	3-Feb-1988	12:15:00
30-Jun-1989 24:00:00	1596	at interval beginning	8-Mar-1989	14:45:00
30-Jun-1990 24:00:00	2126	at interval beginning	22-Aug-1989	06:15:00
30-Jun-1991 24:00:00	2122	at interval beginning	25-May-1991	13:00:00
30-Jun-1992 24:00:00	2102	at interval beginning	5-Jun-1992	15:45:00
30-Jun-1993 24:00:00	1994	at interval beginning	11-Mar-1993	14:00:00
30-Jun-1994 24:00:00	943	at interval beginning	12-Apr-1994	02:15:00
30-Jun-1995 24:00:00	1581	at interval beginning	18-Feb-1995	09:15:00
30-Jun-1996 24:00:00	1258	at interval beginning	2-Feb-1996	14:15:00
30-Jun-1997 24:00:00	2474	at interval beginning	2-Feb-1997	19:15:00
30-Jun-1998 24:00:00	2175	at interval beginning	22-Apr-1998	20:45:00
30-Jun-1999 24:00:00	965	at interval beginning	19-Feb-1999	15:45:00
30-Jun-2000 24:00:00	1820	at interval beginning	12-Mar-2000	07:45:00
30-Jun-2001 24:00:00	1126	at interval beginning	25-Mar-2001	06:15:00
30-Jun-2002 24:00:00	1690	at interval beginning	13-Mar-2002	19:45:00
30-Jun-2003 24:00:00	759	at interval beginning	27-Mar-2003	22:15:00
30-Jun-2004 24:00:00	2102	at interval beginning	20-Aug-2003	21:45:00

Mean annual Minimum = 1676 becomes 1649
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1962 to 2004 site 32526 Mangahao at Ballance
Days < MALF

Season ending in

Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
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1963	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.8	0.0	0.0	0.0	0.0	6.8
1964	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1965	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1966	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1967	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1968	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	6.5	0.0	0.0	6.8
1969	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.7	0.0	0.0	0.0	14.7
1970	0.0	0.0	0.0	0.8	6.9	1.0	0.0	10.5	6.2	0.0	0.0	0.0	25.3
1971	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	0.0	0.0	0.0	0.0	4.0
1972	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1973	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.0	3.7	0.0	0.0	0.0	10.7
1974	0.0	0.0	0.0	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1975	NaN	NaN	NaN	0.0	0.1	5.8	26.4	17.6	0.0	0.0	0.0	0.0	49.8
1976	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.7	0.0	0.0	0.0	4.7
1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1978	0.0	0.0	0.0	0.0	0.0	0.0	10.0	22.5	22.8	0.0	0.0	0.0	55.3
1979	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1980	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.5	4.2	0.0	0.0	0.0	0.0	4.8
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	19.7	18.9	0.0	42.6
1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.8
1987	0.0	0.0	0.0	0.0	0.0	4.0	13.8	0.0	0.7	0.0	0.0	0.0	18.4
1988	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	0.0	0.0	0.0	4.0
1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1991	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1994	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.8	19.5	13.5	0.0	0.0	54.8
1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7	1.7	0.0	0.0	0.0	3.4
1996	0.0	0.0	0.0	0.0	0.0	0.0	4.3	3.4	0.0	0.0	0.0	0.0	7.7
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1999	0.0	0.0	0.0	0.0	0.0	0.0	9.9	23.3	13.3	2.5	3.8	0.0	52.7
2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2001	0.0	0.0	0.0	0.0	0.0	1.8	0.0	0.0	12.6	0.0	0.0	0.0	14.4
2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2003	0.0	0.0	0.0	0.0	0.0	0.0	3.0	23.6	25.7	24.2	9.6	0.0	86.1
2004	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	0.0	0.0	0.0	0.8	6.9	5.8	26.4	23.6	25.7	24.2	18.9	0.0	
Mean	0.0	0.0	0.0	0.0	0.2	0.3	1.7	3.7	3.2	1.6	0.8	0.0	

3.18. Mangatainoka at Larsons Br (1032555), July 1983 to July 2006 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 1032555 Mangatainoka at Larsons Br

From 20-Jul-1983 15:30:00 to 1-Jul-2006 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	273571	53930	37285	28676	23078	19286	16481	14402	12791	11518
10	10524	9677	8956	8372	7839	7369	6944	6563	6230	5926

20	5651	5399	5170	4957	4760	4582	4411	4254	4102	3958
30	3818	3692	3572	3456	3349	3247	3151	3059	2973	2890
40	2807	2731	2657	2589	2517	2447	2378	2312	2249	2190
50	2130	2075	2022	1971	1918	1868	1820	1770	1724	1679
60	1633	1591	1550	1511	1473	1437	1401	1365	1330	1297
70	1264	1232	1201	1170	1139	1109	1080	1051	1022	993
80	963	935	908	880	852	823	794	764	736	708
90	680	649	613	578	541	504	467	430	389	335
100	211									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 1032555 Mangatainoka at Larsons Br
 From 20-Jul-1983 15:30:00 to 1-Jul-2006 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	273571	49574	31500	22900	17896	14429	12100	10485	9237	8283
10	7494	6854	6316	5859	5479	5142	4843	4578	4340	4126
20	3931	3748	3588	3433	3295	3166	3048	2941	2839	2742
30	2651	2567	2482	2400	2325	2254	2186	2121	2060	2000
40	1945	1889	1836	1786	1737	1691	1644	1600	1559	1522
50	1486	1451	1417	1382	1350	1317	1288	1260	1232	1204
60	1177	1150	1126	1101	1077	1055	1032	1008	985	963
70	942	920	898	877	855	835	815	795	775	756
80	737	717	698	679	658	636	614	592	571	551
90	529	507	484	462	441	419	397	372	339	284
100	211									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 1032555 Mangatainoka at Larsons Br
 From 1-Jul-1983 00:00:00 to 30-Jun-2006 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1983	171.71	5-Nov-1983 19:45
1984	117.22	5-Aug-1984 01:45
1985	113.57	23-Jan-1985 04:15
1986	212.20	4-Oct-1986 13:45
1987	105.80	3-Dec-1987 23:45
1988	203.29	24-Aug-1988 04:00
1989	192.84	9-Jan-1989 15:45
1990	209.59	13-Mar-1990 16:15
1991	200.25	17-Feb-1991 19:45
1992	188.13	5-Feb-1992 19:30
1993	223.20	20-Nov-1993 12:45
1994	244.91	14-Nov-1994 19:45
1995	157.39	24-Aug-1995 18:00
1996	223.96	13-Oct-1996 08:30
1997	170.19	16-Dec-1997 17:45
1998	239.57	6-Sep-1998 07:45
1999	158.42	28-May-1999 10:15
2000	262.83	30-Sep-2000 19:15
2001	234.63	26-Jan-2001 04:00
2002	157.76	18-Jun-2002 02:00
2003	150.74	16-Jul-2003 19:00
2004	273.57	12-Feb-2004 01:30
2005	238.46	6-Jan-2005 02:00
*2006	100.77	10-Apr-2006 06:00

Average Annual Maximum 194.48 (complete yrs)

"" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 1032555 Mangatainoka at Larsons Br
 From 1-Jul-1983 00:00:00 to 30-Jun-2006 24:00:00
 Data starts at 20-Jul-1983 15:30:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1984 24:00:00 (PARTIAL)	400 at interval beginning 24-Apr-1984 24:00:00
30-Jun-1985 24:00:00	212 at interval beginning 13-Apr-1985 14:15:00
30-Jun-1986 24:00:00	277 at interval beginning 11-Feb-1986 14:00:00
30-Jun-1987 24:00:00	381 at interval beginning 12-Jan-1987 01:00:00
30-Jun-1988 24:00:00	444 at interval beginning 3-May-1988 12:45:00
30-Jun-1989 24:00:00	335 at interval beginning 8-Mar-1989 23:15:00
30-Jun-1990 24:00:00	430 at interval beginning 18-Feb-1990 11:30:00
30-Jun-1991 24:00:00	491 at interval beginning 28-Mar-1991 02:15:00
30-Jun-1992 24:00:00	526 at interval beginning 25-Apr-1992 16:30:00
30-Jun-1993 24:00:00	508 at interval beginning 11-Mar-1993 08:45:00
30-Jun-1994 24:00:00	333 at interval beginning 11-Apr-1994 13:30:00
30-Jun-1995 24:00:00	395 at interval beginning 18-Feb-1995 13:45:00
30-Jun-1996 24:00:00	402 at interval beginning 23-Jan-1996 00:15:00
30-Jun-1997 24:00:00	612 at interval beginning 2-Feb-1997 24:00:00
30-Jun-1998 24:00:00	670 at interval beginning 27-Jan-1998 19:00:00
30-Jun-1999 24:00:00	233 at interval beginning 19-Feb-1999 15:30:00
30-Jun-2000 24:00:00	294 at interval beginning 12-Mar-2000 04:00:00
30-Jun-2001 24:00:00	287 at interval beginning 25-Mar-2001 02:15:00
30-Jun-2002 24:00:00	482 at interval beginning 25-Apr-2002 14:15:00
30-Jun-2003 24:00:00	266 at interval beginning 27-Mar-2003 18:45:00
30-Jun-2004 24:00:00	481 at interval beginning 10-Aug-2003 15:30:00
30-Jun-2005 24:00:00	221 at interval beginning 25-Feb-2005 13:00:00
30-Jun-2006 24:00:00	396 at interval beginning 13-Sep-2005 18:00:00

Mean annual Minimum = 394 becomes 395
 (For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
 Monthly totals 1983 to 2006 site 1032555 Mangatainoka at Larsons Br
 Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
	1984	NaN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1
	1985	0.0	0.0	0.0	0.0	0.0	0.0	1.7	8.5	11.0	19.4	10.1	0.0	50.7
	1986	0.0	0.0	1.2	0.0	0.0	1.7	0.0	4.8	0.0	0.0	0.0	0.0	7.7
	1987	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0
	1988	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.3	0.0	0.0	0.0	6.3
	1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1991	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1993	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

1994	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	10.7	11.7	0.0	0.0	26.4
1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.5
1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1999	0.0	0.0	0.0	0.0	0.0	0.0	3.1	18.5	2.1	0.0	0.0	0.0	23.8
2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.2	0.0	0.0	0.0	9.2
2001	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.8	0.0	0.0	0.0	11.8
2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.2	11.4	9.1	1.7	0.0	25.5
2004	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2005	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.9	0.0	0.0	0.0	0.0	11.9
2006	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NaN	0.8
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	0.0	0.0	1.2	0.0	0.0	1.7	3.1	18.5	11.8	19.4	10.1	0.0	
Mean	0.0	0.0	0.1	0.0	0.0	0.1	0.3	2.2	2.7	1.8	0.5	0.0	

3.19. Mangatainoka at Pahiatua All (400), July 1954 to July 2005 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 400 Mangatainoka at Pahiatua All
From 1-Jul-1954 00:00:01 to 1-Jul-2005 00:00:01
Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	885771	143946	100938	80711	68289	59652	53288	48389	44528	41382
10	38670	36286	34181	32299	30631	29195	27864	26595	25424	24331
20	23337	22390	21482	20644	19890	19180	18504	17858	17243	16662
30	16115	15576	15063	14581	14142	13707	13284	12865	12465	12084
40	11735	11397	11081	10771	10468	10185	9910	9642	9382	9137
50	8900	8678	8462	8248	8043	7831	7612	7405	7210	7017
60	6833	6651	6473	6301	6139	5969	5797	5636	5473	5314
70	5158	5007	4861	4715	4572	4430	4293	4149	4008	3865
80	3727	3588	3455	3325	3198	3075	2944	2815	2673	2541
90	2412	2287	2169	2049	1919	1758	1597	1422	1202	959
100	231									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 400 Mangatainoka at Pahiatua All
From 1-Jul-1954 00:00:01 to 1-Jul-2005 00:00:01
Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	601799	105418	70694	54180	45517	39287	34522	30808	27955	25569
10	23576	21875	20321	19044	17909	16864	15911	15038	14287	13618
20	12968	12369	11825	11348	10892	10471	10088	9745	9409	9109
30	8824	8558	8298	8051	7810	7573	7353	7149	6957	6775
40	6600	6434	6273	6118	5962	5810	5665	5526	5392	5264
50	5145	5029	4914	4805	4695	4589	4489	4388	4296	4198
60	4104	4012	3920	3830	3743	3657	3571	3487	3406	3325
70	3245	3172	3097	3024	2947	2874	2796	2712	2629	2553
80	2479	2410	2343	2276	2211	2151	2087	2022	1952	1871
90	1784	1701	1617	1529	1441	1331	1218	1092	961	816
100	231									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 400 Mangatainoka at Pahiatua All

From 1-Jul-1954 00:00:00 to 30-Jun-2005 24:00:00

Interval = 0

flow m3/s

Year	Maximum	Date & Time
*1954	509.43	17-Jul-1954 20:00
1955	594.60	26-Feb-1955 14:00
1956	395.06	14-Jul-1956 21:30
1957	466.95	12-Oct-1957 05:30
1958	324.63	27-May-1958 12:30
1959	477.98	29-May-1959 11:30
1960	424.70	2-Nov-1960 15:00
1961	453.08	2-Sep-1961 18:00
1962	396.83	14-Jan-1962 02:30
1963	292.11	10-Nov-1963 05:00
1964	885.77	25-Oct-1964 03:30
1965	422.22	7-Nov-1965 24:00
1966	358.07	7-Jul-1966 13:00
1967	415.54	12-Aug-1967 12:00
1968	285.56	7-Dec-1968 15:00
1969	223.55	27-Oct-1969 17:00
1970	293.80	6-Jun-1970 09:00
1971	384.22	21-Oct-1971 15:30
1972	378.50	14-May-1972 12:30
1973	313.24	30-May-1973 16:00
1974	400.81	10-Jul-1974 09:00
1975	467.64	28-Aug-1975 22:45
1976	471.97	29-Jun-1976 01:30
1977	242.03	30-Sep-1977 20:49
1978	282.59	12-Nov-1978 17:06
1979	177.16	14-Oct-1979 21:26
1980	291.06	21-Sep-1980 18:34
1981	524.91	25-Sep-1981 02:00
1982	510.34	11-Dec-1982 22:45
1983	227.99	6-Nov-1983 03:15
1984	202.93	5-Aug-1984 10:15
1985	209.67	27-Jul-1985 18:00
1986	419.95	4-Oct-1986 21:30
1987	207.70	30-Jun-1987 13:45
1988	575.45	24-Aug-1988 11:30
1989	268.02	11-Jul-1989 20:30
1990	340.66	13-Mar-1990 23:45
1991	453.83	11-Apr-1991 04:00
1992	358.80	15-Feb-1992 21:00
1993	289.74	20-Nov-1993 23:45
1994	508.72	22-Nov-1994 14:30
1995	251.11	5-Apr-1995 16:30
1996	507.00	30-Jun-1996 22:30
1997	404.06	5-Oct-1997 08:15
1998	566.99	21-Oct-1998 09:45
1999	338.79	28-May-1999 17:45
2000	860.63	9-Oct-2000 19:00
2001	504.75	26-Jan-2001 12:15
2002	406.46	18-Jun-2002 11:00
2003	424.87	4-Oct-2003 08:45
2004	702.67	28-Sep-2004 17:15
*2005	589.17	6-Jan-2005 10:30

Average Annual Maximum 403.71 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 400 Mangatainoka at Pahiatua All

From 1-Jul-1954 00:00:00 to 30-Jun-2005 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1955 24:00:00	1431 at interval beginning 31-Jan-1955 24:00:00
30-Jun-1956 24:00:00	1777 at interval beginning 22-Jan-1956 18:35:00
30-Jun-1957 24:00:00	957 at interval beginning 21-Feb-1957 21:00:00
30-Jun-1958 24:00:00	1944 at interval beginning 17-Feb-1958 21:35:00
30-Jun-1959 24:00:00	1703 at interval beginning 28-Jan-1959 12:00:00
30-Jun-1960 24:00:00	2584 at interval beginning 10-Mar-1960 24:00:00
30-Jun-1961 24:00:00	3065 at interval beginning 14-Feb-1961 24:00:00
30-Jun-1962 24:00:00	2874 at interval beginning 30-Dec-1961 24:00:00
30-Jun-1963 24:00:00	769 at interval beginning 8-Feb-1963 13:30:00
30-Jun-1964 24:00:00	1615 at interval beginning 26-Dec-1963 11:10:00
30-Jun-1965 24:00:00	2096 at interval beginning 8-Feb-1965 10:00:00
30-Jun-1966 24:00:00	1830 at interval beginning 29-Mar-1966 23:00:00
30-Jun-1967 24:00:00	1932 at interval beginning 23-Mar-1967 12:00:00
30-Jun-1968 24:00:00	993 at interval beginning 8-Apr-1968 24:00:00
30-Jun-1969 24:00:00	1556 at interval beginning 30-Mar-1969 22:00:00
30-Jun-1970 24:00:00	706 at interval beginning 16-Mar-1970 02:00:00
30-Jun-1971 24:00:00	1586 at interval beginning 3-Jan-1971 06:00:00
30-Jun-1972 24:00:00	832 at interval beginning 4-Mar-1972 22:00:00
30-Jun-1973 24:00:00	608 at interval beginning 5-Mar-1973 12:00:00
30-Jun-1974 24:00:00	1211 at interval beginning 2-Feb-1974 24:00:00
30-Jun-1975 24:00:00	784 at interval beginning 16-Feb-1975 12:30:00
30-Jun-1976 24:00:00	1461 at interval beginning 10-Dec-1975 22:30:00
30-Jun-1977 24:00:00	1175 at interval beginning 13-Mar-1977 04:17:17
30-Jun-1978 24:00:00	540 at interval beginning 19-Mar-1978 04:33:41
30-Jun-1979 24:00:00	1588 at interval beginning 11-Feb-1979 14:13:08
30-Jun-1980 24:00:00	2597 at interval beginning 9-Feb-1980 14:15:00
30-Jun-1981 24:00:00	1300 at interval beginning 16-Mar-1981 09:45:00
30-Jun-1982 24:00:00	1007 at interval beginning 18-Feb-1982 06:00:00
30-Jun-1983 24:00:00	1985 at interval beginning 15-Mar-1983 22:14:25
30-Jun-1984 24:00:00	1384 at interval beginning 27-Jan-1984 08:04:48
30-Jun-1985 24:00:00	721 at interval beginning 17-Apr-1985 06:00:00
30-Jun-1986 24:00:00	1450 at interval beginning 12-Feb-1986 16:30:00
30-Jun-1987 24:00:00	991 at interval beginning 14-Jan-1987 14:45:00
30-Jun-1988 24:00:00	1573 at interval beginning 3-Feb-1988 14:15:00
30-Jun-1989 24:00:00	1038 at interval beginning 10-Mar-1989 11:30:00
30-Jun-1990 24:00:00	2037 at interval beginning 8-Mar-1990 09:00:00
30-Jun-1991 24:00:00	2841 at interval beginning 28-Mar-1991 11:30:00
30-Jun-1992 24:00:00	3418 at interval beginning 27-Oct-1991 12:30:00
30-Jun-1993 24:00:00	3161 at interval beginning 22-Nov-1992 01:45:00
30-Jun-1994 24:00:00	719 at interval beginning 12-Apr-1994 07:30:00
30-Jun-1995 24:00:00	1084 at interval beginning 19-Feb-1995 11:15:00
30-Jun-1996 24:00:00	1623 at interval beginning 23-Jan-1996 03:30:00
30-Jun-1997 24:00:00	3142 at interval beginning 22-May-1997 20:00:00
30-Jun-1998 24:00:00	1432 at interval beginning 25-Mar-1998 22:45:00
30-Jun-1999 24:00:00	763 at interval beginning 19-Feb-1999 16:00:00
30-Jun-2000 24:00:00	1270 at interval beginning 12-Mar-2000 11:45:00
30-Jun-2001 24:00:00	886 at interval beginning 26-Mar-2001 23:30:00
30-Jun-2002 24:00:00	2200 at interval beginning 20-May-2002 04:15:00
30-Jun-2003 24:00:00	698 at interval beginning 25-Mar-2003 13:15:00
30-Jun-2004 24:00:00	2045 at interval beginning 28-Apr-2004 19:00:00
30-Jun-2005 24:00:00	1516 at interval beginning 25-Feb-2005 22:30:00

Mean annual Minimum = 1578
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
 Monthly totals 1954 to 2005 site 400 Mangatainoka at Pahiatua All
 Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1955	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	2.2	0.0	0.0	0.0	0.0	4.7
1956	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1957	0.0	0.0	0.0	0.0	2.4	4.5	2.0	13.0	8.3	7.8	0.0	0.0	0.0	38.2
1958	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1959	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1960	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1961	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1962	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1963	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.1	14.7	0.0	0.0	0.0	0.0	25.8
1964	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1965	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1966	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1967	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1968	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.5	8.7	0.0	0.0	15.3
1969	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1	0.0	0.0	0.0	2.1
1970	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.7	15.8	0.8	0.0	0.0	35.3
1971	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.3
1972	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.8	7.7	0.0	0.0	0.0	26.4
1973	0.0	0.0	0.0	0.0	3.0	9.3	21.5	16.8	10.4	14.2	0.0	0.0	0.0	75.2
1974	0.0	0.0	0.0	0.0	0.0	0.0	5.3	7.6	12.3	2.3	7.5	0.0	0.0	35.0
1975	0.0	0.0	0.0	0.0	0.0	0.0	0.9	21.8	24.5	4.8	0.0	0.0	0.0	52.0
1976	0.0	0.0	0.0	0.0	0.0	0.0	3.2	0.0	0.0	0.0	0.0	0.0	0.0	3.2
1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.5	1.2	0.0	0.0	6.8
1978	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.4	27.7	25.1	16.7	0.0	0.0	78.9
1979	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.4
1980	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3	4.5	4.7	0.0	0.0	11.6
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.0	10.2	10.3	7.0	0.0	37.5
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	0.0	5.3	5.9	0.0	0.0	13.3
1985	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0	16.8	20.4	12.0	0.0	57.2
1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.0	0.0	1.3
1987	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.7	0.0	0.0	0.0	0.0	0.0	9.7
1988	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.6
1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.7	0.0	0.0	0.0	9.7
1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1991	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1994	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.4	22.1	17.0	0.0	0.0	56.6
1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.2	3.3	0.0	0.0	0.0	12.5
1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.3	0.0	0.0	0.0	4.3
1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1	20.5	3.8	4.5	0.0	0.0	30.9
2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.4	0.0	0.0	0.0	9.4
2001	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	7.9	0.0	0.0	0.0	8.4
2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.7	21.2	18.3	6.1	0.0	59.2
2004	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2005	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3	0.0	0.0	0.0	0.0	2.3

Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max	0.0	0.0	0.0	0.0	3.0	9.3	21.8	27.7	25.1	20.4	12.0	0.0
Mean	0.0	0.0	0.0	0.0	0.1	0.5	1.8	4.6	4.1	2.7	0.5	0.0

3.20. Mangatera at Dannevirke 1 (synthetic) (32541), July 1955 to July 2004 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 32541 Mangatera at Dannevirke 1

From 1-Jul-1955 00:00:01 to 1-Jul-2004 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	138398	13620	8673	6629	5498	4736	4219	3833	3523	3274
10	3067	2895	2748	2605	2492	2391	2294	2204	2123	2041
20	1961	1888	1819	1754	1694	1639	1589	1541	1496	1450
30	1405	1361	1321	1284	1249	1216	1187	1158	1129	1102
40	1074	1049	1023	998	972	946	921	896	874	852
50	831	811	790	770	751	733	716	700	684	668
60	652	636	621	607	592	578	564	551	539	526
70	513	501	489	478	468	457	446	435	424	413
80	402	392	382	374	366	357	349	341	332	324
90	315	307	298	289	281	272	263	253	243	230
100	191									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 32541 Mangatera at Dannevirke 1

From 1-Jul-1955 00:00:01 to 1-Jul-2004 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	138398	8726	5101	3872	3163	2711	2377	2141	1951	1798
10	1675	1571	1491	1410	1332	1267	1214	1170	1126	1084
20	1047	1012	978	947	919	890	862	837	815	793
30	771	751	734	717	700	684	669	654	639	625
40	611	598	586	573	561	550	540	530	520	511
50	501	492	484	476	469	461	454	447	439	432
60	425	418	411	404	397	392	386	381	375	370
70	365	361	356	351	346	341	336	331	326	322
80	317	312	307	303	298	294	289	285	280	276
90	272	267	263	258	253	248	243	237	230	219
100	191									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 32541 Mangatera at Dannevirke 1

From 1-Jul-1955 00:00:00 to 30-Jun-2004 24:00:00

Interval = 0

flow m3/s

Year	Maximum	Date & Time
*1955	69.770	2-Jul-1955 05:00
1956	96.783	14-Jul-1956 19:00
1957	51.460	24-Jun-1957 07:00
1958	33.179	12-May-1958 05:20

1959	63.739	27-Jul-1959	11:59
1960	22.749	15-Sep-1960	17:00
1961	45.745	7-Aug-1961	07:00
1962	45.202	19-Jul-1962	21:00
1963	37.757	4-Jun-1963	07:00
1964	15.811	24-Jun-1964	03:00
1965	99.823	17-Mar-1965	24:00
1966	42.682	9-Aug-1966	15:00
1967	55.848	1-Jan-1967	05:00
1968	49.425	22-Jun-1968	15:59
1969	38.498	26-Jul-1969	24:00
1970	23.362	19-Mar-1970	02:00
1971	75.818	4-May-1971	22:00
1972	40.854	15-Jun-1972	01:00
1973	28.965	8-Aug-1973	22:00
1974	57.762	16-Jun-1974	14:00
1975	29.057	12-Mar-1975	24:00
1976	39.584	9-Sep-1976	16:00
1977	35.709	21-Jul-1977	06:00
1978	35.512	9-Jul-1978	19:00
1979	52.683	22-Mar-1979	03:00
1980	71.819	10-Apr-1980	23:07
1981	30.950	25-Aug-1981	12:40
1982	68.812	5-Jun-1982	20:25
1983	28.023	15-Oct-1983	13:30
1984	17.537	16-Aug-1984	18:15
1985	87.873	27-Jul-1985	01:30
1986	55.652	17-Sep-1986	07:00
1987	35.837	22-Mar-1987	11:30
1988	108.94	2-Sep-1988	20:15
1989	27.531	8-Sep-1989	20:00
1990	33.911	24-Aug-1990	08:00
1991	58.983	10-Apr-1991	17:00
1992	134.24	22-Jul-1992	19:45
1993	23.810	20-Feb-1993	15:00
1994	69.481	26-Jul-1994	11:45
1995	52.427	6-Apr-1995	14:30
1996	19.673	17-Jul-1996	06:00
1997	77.127	3-Jun-1997	05:15
1998	10.752	28-Jul-1998	08:30
1999	84.521	29-Nov-1999	19:00
2000	29.953	7-Jul-2000	08:30
2001	64.659	15-Aug-2001	18:30
2002	49.499	13-Feb-2002	20:15
2003	49.463	23-Aug-2003	23:30
*2004	138.40	16-Feb-2004	06:15

Average Annual Maximum 50.197 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 32541 Mangatera at Dannevirke 1
From 1-Jul-1955 00:00:00 to 30-Jun-2004 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1956 24:00:00	288 at interval beginning 3-Apr-1956 05:11:03
30-Jun-1957 24:00:00	391 at interval beginning 25-Sep-1956 09:00:00
30-Jun-1958 24:00:00	267 at interval beginning 11-Feb-1958 09:30:00
30-Jun-1959 24:00:00	300 at interval beginning 7-Dec-1958 17:03:05
30-Jun-1960 24:00:00	371 at interval beginning 22-Jul-1959 22:00:00

30-Jun-1961 24:00:00	264 at interval beginning	28-Feb-1961 09:58:07
30-Jun-1962 24:00:00	277 at interval beginning	26-Jan-1962 20:00:00
30-Jun-1963 24:00:00	263 at interval beginning	30-Mar-1963 02:00:00
30-Jun-1964 24:00:00	241 at interval beginning	27-Feb-1964 14:00:00
30-Jun-1965 24:00:00	537 at interval beginning	29-Jan-1965 17:50:26
30-Jun-1966 24:00:00	242 at interval beginning	19-Feb-1966 20:33:00
30-Jun-1967 24:00:00	592 at interval beginning	28-Feb-1967 13:19:30
30-Jun-1968 24:00:00	225 at interval beginning	27-Mar-1968 10:09:00
30-Jun-1969 24:00:00	226 at interval beginning	1-Dec-1968 24:00:00
30-Jun-1970 24:00:00	246 at interval beginning	15-Mar-1970 09:26:20
30-Jun-1971 24:00:00	234 at interval beginning	2-Jan-1971 21:04:07
30-Jun-1972 24:00:00	296 at interval beginning	6-Mar-1972 20:50:15
30-Jun-1973 24:00:00	212 at interval beginning	9-Feb-1973 09:29:15
30-Jun-1974 24:00:00	233 at interval beginning	12-Feb-1974 12:00:00
30-Jun-1975 24:00:00	303 at interval beginning	20-Feb-1975 18:42:00
30-Jun-1976 24:00:00	334 at interval beginning	18-Dec-1975 10:00:00
30-Jun-1977 24:00:00	199 at interval beginning	12-Mar-1977 18:31:52
30-Jun-1978 24:00:00	191 at interval beginning	14-Apr-1978 19:28:30
30-Jun-1979 24:00:00	206 at interval beginning	3-Feb-1979 16:46:07
30-Jun-1980 24:00:00	282 at interval beginning	26-Nov-1979 12:16:05
30-Jun-1981 24:00:00	256 at interval beginning	19-Dec-1980 07:43:09
30-Jun-1982 24:00:00	215 at interval beginning	17-Feb-1982 06:27:18
30-Jun-1983 24:00:00	214 at interval beginning	4-Feb-1983 10:55:39
30-Jun-1984 24:00:00	210 at interval beginning	27-Jan-1984 07:15:00
30-Jun-1985 24:00:00	213 at interval beginning	14-Feb-1985 08:45:00
30-Jun-1986 24:00:00	300 at interval beginning	25-Apr-1986 02:45:00
30-Jun-1987 24:00:00	244 at interval beginning	3-Feb-1987 18:15:00
30-Jun-1988 24:00:00	227 at interval beginning	2-Feb-1988 10:15:00
30-Jun-1989 24:00:00	234 at interval beginning	27-Apr-1989 03:00:00
30-Jun-1990 24:00:00	306 at interval beginning	6-Feb-1990 23:15:00
30-Jun-1991 24:00:00	235 at interval beginning	15-Jan-1991 09:30:00
30-Jun-1992 24:00:00	337 at interval beginning	4-Feb-1992 11:45:00
30-Jun-1993 24:00:00	337 at interval beginning	18-Feb-1993 05:30:00
30-Jun-1994 24:00:00	231 at interval beginning	23-Jan-1994 10:30:00
30-Jun-1995 24:00:00	227 at interval beginning	18-Jan-1995 06:45:00
30-Jun-1996 24:00:00	301 at interval beginning	9-Jan-1996 17:00:00
30-Jun-1997 24:00:00	277 at interval beginning	17-Feb-1997 21:00:00
30-Jun-1998 24:00:00	201 at interval beginning	17-Feb-1998 18:15:00
30-Jun-1999 24:00:00	251 at interval beginning	13-Jan-1999 09:15:00
30-Jun-2000 24:00:00	223 at interval beginning	4-Mar-2000 22:45:00
30-Jun-2001 24:00:00	251 at interval beginning	10-Feb-2001 16:45:00
30-Jun-2002 24:00:00	318 at interval beginning	22-Apr-2002 21:15:00
30-Jun-2003 24:00:00	233 at interval beginning	18-Feb-2003 11:30:00
30-Jun-2004 24:00:00	260 at interval beginning	18-Jan-2004 00:30:00

Mean annual Minimum = 272
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1955 to 2004 site 32541 Mangatera at Dannevirke 1 (synthetic)
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1956	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1957	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1958	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.1	0.0	0.0	0.0	0.0	15.1
1959	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1960	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

1961	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.4	5.6	5.0	0.0	0.0	15.0
1962	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1963	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.8	0.0	0.0	0.0	6.8
1964	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	27.8	0.0	13.3	0.0	41.9
1965	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1966	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.0	1.9	0.0	0.0	0.0	11.9
1967	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1968	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.5	27.5	1.9	0.0	0.0	40.9
1969	0.0	0.0	0.0	0.0	4.5	2.9	0.0	0.0	0.0	0.0	0.0	0.0	7.4
1970	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	15.0	0.0	0.0	0.0	15.7
1971	0.0	0.0	0.0	0.0	0.0	5.0	3.8	8.3	0.0	5.0	0.0	0.0	22.1
1972	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1973	0.0	0.0	0.0	0.0	0.0	0.0	5.5	26.1	8.2	2.5	0.0	0.0	42.3
1974	0.0	0.0	0.0	0.0	0.0	0.0	5.8	12.7	0.0	0.0	0.0	0.0	18.5
1975	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1976	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.3	22.8	0.0	0.0	0.0	28.0
1978	0.0	0.0	0.0	0.0	0.0	0.0	8.9	8.2	18.3	12.7	0.0	0.0	48.0
1979	0.0	0.0	0.0	0.0	0.0	0.0	21.5	19.0	0.0	0.0	0.0	0.0	40.5
1980	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0	1.3
1982	0.0	0.0	0.0	0.0	0.0	2.4	11.0	17.1	0.9	0.0	0.0	0.0	31.3
1983	0.0	0.0	0.0	0.0	5.0	0.2	6.8	15.3	27.3	7.8	0.0	0.0	62.4
1984	0.0	0.0	0.0	0.0	0.0	2.1	31.0	11.1	4.8	0.0	0.0	0.0	49.0
1985	0.0	0.0	0.0	0.0	2.7	8.6	4.2	20.7	8.0	0.7	0.0	0.0	44.9
1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1987	0.0	0.0	0.0	0.0	0.0	0.0	15.3	12.4	0.0	0.0	0.0	0.0	27.7
1988	0.0	0.0	0.0	0.0	0.0	0.0	15.5	3.9	0.0	0.0	0.0	0.0	19.4
1989	0.0	0.0	0.0	0.0	0.0	13.7	7.0	1.8	15.9	27.3	0.0	0.0	65.8
1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1991	0.0	0.0	0.0	0.0	0.0	0.0	10.5	8.3	0.0	0.0	0.0	0.0	18.8
1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1994	0.0	0.0	0.0	0.0	0.0	0.0	10.3	13.4	13.0	13.9	2.1	0.0	52.7
1995	0.0	0.0	0.0	0.0	0.0	0.0	15.4	1.5	0.0	0.0	0.0	0.0	17.0
1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1998	0.0	0.0	0.0	0.0	0.0	0.0	23.6	23.5	28.3	15.3	0.0	0.0	90.8
1999	0.0	0.0	0.0	0.0	0.0	0.0	8.1	0.0	3.2	0.0	0.0	0.0	11.3
2000	0.0	0.0	0.0	0.0	0.1	0.0	0.1	7.3	14.5	0.0	0.0	0.0	22.0
2001	0.0	0.0	0.0	0.0	0.0	0.0	1.5	4.8	0.7	3.4	0.0	0.0	10.4
2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.3	0.0	0.0	0.0	0.0	16.3
2004	0.0	0.0	0.0	0.0	0.0	0.0	2.8	0.0	0.0	0.0	0.0	0.0	2.8
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	0.0	0.0	0.0	0.0	5.0	13.7	31.0	27.8	28.3	27.3	2.1	0.0	
Mean	0.0	0.0	0.0	0.0	0.3	0.7	4.3	6.3	4.5	2.2	0.0	0.0	

3.21. Mangatera at Dannevirke 2 (synthetic) (500), July 1955 to July 2004 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 500 Mangatera at Dannevirke 2

From 1-Jul-1955 00:00:01 to 1-Jul-2004 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	165802	16221	10290	7840	6485	5572	4951	4488	4117	3818
10	3571	3365	3188	3016	2881	2761	2643	2536	2438	2341

20	2245	2157	2075	1996	1924	1859	1798	1742	1688	1632
30	1578	1525	1478	1433	1391	1351	1316	1282	1247	1215
40	1182	1151	1121	1090	1059	1028	998	969	941	915
50	890	866	841	817	794	772	752	733	714	695
60	676	656	639	621	604	587	571	555	540	525
70	510	495	481	467	455	442	429	416	402	389
80	376	363	352	342	332	322	312	302	292	282
90	272	262	251	241	230	220	209	197	185	169
100	123									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 500 Mangatera at Dannevirke 2

From 1-Jul-1955 00:00:01 to 1-Jul-2004 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	165802	10354	6009	4536	3686	3144	2744	2461	2233	2049
10	1902	1777	1681	1584	1491	1413	1349	1296	1243	1193
20	1149	1107	1067	1029	996	961	928	897	871	845
30	818	794	773	753	733	714	696	678	659	643
40	627	611	596	581	567	553	541	529	518	506
50	495	484	474	465	456	447	438	430	421	412
60	404	395	387	378	370	363	357	350	344	338
70	332	326	320	314	308	302	297	291	285	279
80	273	268	262	257	251	246	240	235	230	225
90	220	214	209	203	197	191	185	178	169	158
100	123									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 500 Mangatera at Dannevirke 2

From 1-Jul-1955 00:00:00 to 30-Jun-2004 24:00:00

Interval = 0

flow m3/s

Year	Maximum	Date & Time
*1955	83.532	2-Jul-1955 05:00
1956	115.92	14-Jul-1956 19:00
1957	61.583	24-Jun-1957 07:00
1958	39.667	12-May-1958 05:20
1959	76.302	27-Jul-1959 11:59
1960	27.165	15-Sep-1960 17:00
1961	54.732	7-Aug-1961 07:00
1962	54.081	19-Jul-1962 21:00
1963	45.156	4-Jun-1963 07:00
1964	18.848	24-Jun-1964 03:00
1965	119.56	17-Mar-1965 24:00
1966	51.060	9-Aug-1966 15:00
1967	66.843	1-Jan-1967 05:00
1968	59.143	22-Jun-1968 15:59
1969	46.044	26-Jul-1969 24:00
1970	27.899	19-Mar-1970 02:00
1971	90.783	4-May-1971 21:00
1972	48.869	15-Jun-1972 01:00
1973	34.616	8-Aug-1973 22:00
1974	69.137	16-Jun-1974 14:00
1975	34.726	12-Mar-1975 24:00
1976	47.346	9-Sep-1976 16:00
1977	42.700	21-Jul-1977 06:00
1978	42.465	9-Jul-1978 19:00

1979	63.048	22-Mar-1979	03:00
1980	85.988	10-Apr-1980	23:07
1981	36.996	25-Aug-1981	12:40
1982	82.384	5-Jun-1982	20:25
1983	33.487	15-Oct-1983	13:30
1984	20.917	16-Aug-1984	18:15
1985	105.23	27-Jul-1985	01:30
1986	66.608	17-Sep-1986	07:00
1987	42.855	22-Mar-1987	11:30
1988	130.48	2-Sep-1988	20:15
1989	32.897	8-Sep-1989	20:00
1990	40.545	24-Aug-1990	08:00
1991	70.601	10-Apr-1991	17:00
1992	160.82	22-Jul-1992	19:45
1993	28.437	20-Feb-1993	15:00
1994	83.185	26-Jul-1994	11:45
1995	62.741	6-Apr-1995	14:30
1996	23.477	17-Jul-1996	06:00
1997	92.351	3-Jun-1997	05:15
1998	12.784	28-Jul-1998	08:30
1999	101.22	29-Nov-1999	19:00
2000	35.800	7-Jul-2000	08:30
2001	77.406	15-Aug-2001	18:30
2002	59.232	13-Feb-2002	20:15
2003	59.188	23-Aug-2003	23:30
*2004	165.80	16-Feb-2004	06:15

Average Annual Maximum 60.069 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 500 Mangatera at Dannevirke 2
From 1-Jul-1955 00:00:00 to 30-Jun-2004 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1956 24:00:00	239 at interval beginning 3-Apr-1956 05:11:03
30-Jun-1957 24:00:00	362 at interval beginning 25-Sep-1956 09:00:00
30-Jun-1958 24:00:00	214 at interval beginning 11-Feb-1958 09:30:00
30-Jun-1959 24:00:00	253 at interval beginning 8-Dec-1958 01:48:00
30-Jun-1960 24:00:00	339 at interval beginning 22-Jul-1959 22:00:00
30-Jun-1961 24:00:00	210 at interval beginning 28-Feb-1961 09:58:07
30-Jun-1962 24:00:00	226 at interval beginning 26-Jan-1962 20:00:00
30-Jun-1963 24:00:00	210 at interval beginning 30-Mar-1963 02:00:00
30-Jun-1964 24:00:00	182 at interval beginning 27-Feb-1964 14:00:00
30-Jun-1965 24:00:00	538 at interval beginning 29-Jan-1965 17:50:26
30-Jun-1966 24:00:00	184 at interval beginning 19-Feb-1966 20:33:00
30-Jun-1967 24:00:00	604 at interval beginning 28-Feb-1967 13:19:30
30-Jun-1968 24:00:00	163 at interval beginning 27-Mar-1968 10:09:00
30-Jun-1969 24:00:00	164 at interval beginning 1-Dec-1968 24:00:00
30-Jun-1970 24:00:00	189 at interval beginning 12-Mar-1970 13:00:00
30-Jun-1971 24:00:00	174 at interval beginning 2-Jan-1971 21:04:07
30-Jun-1972 24:00:00	249 at interval beginning 6-Mar-1972 20:50:15
30-Jun-1973 24:00:00	148 at interval beginning 9-Feb-1973 09:29:15
30-Jun-1974 24:00:00	173 at interval beginning 12-Feb-1974 12:00:00
30-Jun-1975 24:00:00	257 at interval beginning 20-Feb-1975 18:42:00
30-Jun-1976 24:00:00	294 at interval beginning 18-Dec-1975 10:00:00
30-Jun-1977 24:00:00	132 at interval beginning 12-Mar-1977 18:31:52
30-Jun-1978 24:00:00	123 at interval beginning 14-Apr-1978 19:28:30
30-Jun-1979 24:00:00	141 at interval beginning 3-Feb-1979 16:46:07
30-Jun-1980 24:00:00	231 at interval beginning 27-Nov-1979 00:15:58

30-Jun-1981 24:00:00	201 at interval beginning	19-Dec-1980 07:43:09
30-Jun-1982 24:00:00	152 at interval beginning	17-Feb-1982 05:56:06
30-Jun-1983 24:00:00	151 at interval beginning	4-Feb-1983 10:55:39
30-Jun-1984 24:00:00	146 at interval beginning	27-Jan-1984 07:15:00
30-Jun-1985 24:00:00	150 at interval beginning	14-Feb-1985 08:45:00
30-Jun-1986 24:00:00	254 at interval beginning	25-Apr-1986 00:15:00
30-Jun-1987 24:00:00	187 at interval beginning	3-Feb-1987 12:15:00
30-Jun-1988 24:00:00	167 at interval beginning	2-Feb-1988 05:00:00
30-Jun-1989 24:00:00	175 at interval beginning	27-Apr-1989 01:00:00
30-Jun-1990 24:00:00	260 at interval beginning	7-Mar-1990 06:38:47
30-Jun-1991 24:00:00	176 at interval beginning	15-Jan-1991 08:45:00
30-Jun-1992 24:00:00	298 at interval beginning	4-Feb-1992 12:00:00
30-Jun-1993 24:00:00	299 at interval beginning	18-Feb-1993 03:30:00
30-Jun-1994 24:00:00	171 at interval beginning	23-Jan-1994 10:30:00
30-Jun-1995 24:00:00	166 at interval beginning	18-Jan-1995 07:00:00
30-Jun-1996 24:00:00	255 at interval beginning	9-Jan-1996 17:30:00
30-Jun-1997 24:00:00	226 at interval beginning	17-Feb-1997 21:30:00
30-Jun-1998 24:00:00	134 at interval beginning	18-Feb-1998 01:30:00
30-Jun-1999 24:00:00	194 at interval beginning	13-Jan-1999 12:15:00
30-Jun-2000 24:00:00	161 at interval beginning	4-Mar-2000 23:30:00
30-Jun-2001 24:00:00	195 at interval beginning	10-Feb-2001 17:15:00
30-Jun-2002 24:00:00	276 at interval beginning	22-Apr-2002 18:45:00
30-Jun-2003 24:00:00	174 at interval beginning	18-Feb-2003 07:45:00
30-Jun-2004 24:00:00	205 at interval beginning	18-Jan-2004 04:00:00

Mean annual Minimum = 220
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1955 to 2004 site 500 Mangatera at Dannevirke 2 (synthetic)
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1956	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1957	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1958	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.1	0.0	0.0	0.0	0.0	15.1
1959	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1960	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1961	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.4	5.5	4.9	0.0	0.0	14.9
1962	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1963	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.2	0.0	0.0	0.0	7.2
1964	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	27.8	0.0	13.3	0.0	0.0	41.9
1965	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1966	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.0	1.9	0.0	0.0	0.0	11.8
1967	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1968	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.5	27.5	1.9	0.0	0.0	40.9
1969	0.0	0.0	0.0	0.0	0.0	4.4	2.9	0.0	0.0	0.0	0.0	0.0	0.0	7.3
1970	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	15.0	0.0	0.0	0.0	15.7
1971	0.0	0.0	0.0	0.0	0.0	0.0	5.0	3.8	8.3	0.0	5.0	0.0	0.0	22.0
1972	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1973	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.5	26.1	8.2	2.5	0.0	0.0	42.3
1974	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.8	12.7	0.0	0.0	0.0	0.0	18.5
1975	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1976	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.3	22.8	0.0	0.0	0.0	28.1
1978	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.8	8.2	18.3	12.7	0.0	0.0	48.0
1979	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.5	19.0	0.0	0.0	0.0	0.0	40.5
1980	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

1981	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0	1.2
1982	0.0	0.0	0.0	0.0	0.0	2.4	11.0	17.0	0.9	0.0	0.0	0.0	31.2
1983	0.0	0.0	0.0	0.0	5.1	0.2	6.9	15.4	27.3	7.8	0.0	0.0	62.6
1984	0.0	0.0	0.0	0.0	0.0	2.1	31.0	11.0	4.8	0.0	0.0	0.0	48.9
1985	0.0	0.0	0.0	0.0	2.7	8.7	4.1	20.8	8.0	0.7	0.0	0.0	45.0
1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1987	0.0	0.0	0.0	0.0	0.0	0.0	15.3	12.4	0.0	0.0	0.0	0.0	27.7
1988	0.0	0.0	0.0	0.0	0.0	0.0	15.5	3.9	0.0	0.0	0.0	0.0	19.4
1989	0.0	0.0	0.0	0.0	0.0	13.7	7.0	1.9	15.9	27.3	0.0	0.0	65.8
1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1991	0.0	0.0	0.0	0.0	0.0	0.0	10.5	8.3	0.0	0.0	0.0	0.0	18.8
1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1994	0.0	0.0	0.0	0.0	0.0	0.0	10.3	13.4	13.0	13.9	2.1	0.0	52.7
1995	0.0	0.0	0.0	0.0	0.0	0.0	15.4	1.5	0.0	0.0	0.0	0.0	17.0
1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1998	0.0	0.0	0.0	0.0	0.0	0.0	23.6	23.5	28.3	15.3	0.0	0.0	90.8
1999	0.0	0.0	0.0	0.0	0.0	0.0	8.1	0.0	3.2	0.0	0.0	0.0	11.3
2000	0.0	0.0	0.0	0.0	0.1	0.0	0.1	7.3	14.5	0.0	0.0	0.0	22.0
2001	0.0	0.0	0.0	0.0	0.0	0.0	1.5	4.8	0.7	3.4	0.0	0.0	10.4
2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.3	0.0	0.0	0.0	0.0	16.3
2004	0.0	0.0	0.0	0.0	0.0	0.0	2.8	0.0	0.0	0.0	0.0	0.0	2.8
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	0.0	0.0	0.0	0.0	5.1	13.7	31.0	27.8	28.3	27.3	2.1	0.0	
Mean	0.0	0.0	0.0	0.0	0.3	0.7	4.3	6.3	4.5	2.2	0.0	0.0	

3.22. Oroua at Almadale All (800), July 1948 to July 2004 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 800 Oroua at Almadale All

From 1-Jul-1948 00:00:01 to 1-Jul-2004 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	449847	60239	45072	38032	33707	30706	28325	26441	24863	23565
10	22392	21440	20572	19748	19066	18381	17790	17175	16603	16075
20	15562	15122	14614	14167	13787	13372	12997	12667	12307	11955
30	11685	11370	11054	10801	10528	10258	9998	9781	9546	9322
40	9086	8860	8661	8437	8211	8006	7817	7632	7451	7268
50	7104	6920	6746	6560	6378	6195	6025	5873	5712	5556
60	5411	5283	5145	4995	4851	4714	4580	4466	4335	4218
70	4095	3975	3860	3739	3620	3499	3377	3271	3153	3042
80	2930	2823	2722	2612	2502	2391	2290	2183	2077	1974
90	1874	1782	1688	1594	1499	1396	1287	1191	1074	927
100	413									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 800 Oroua at Almadale All

From 1-Jul-1948 00:00:01 to 1-Jul-2004 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
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0	449847	47465	32469	26176	22277	20162	18368	16799	15613	14554
10	13599	12838	12072	11474	10895	10449	10010	9627	9256	8897
20	8581	8249	7947	7673	7430	7193	6978	6784	6565	6359
30	6165	6007	5834	5661	5510	5360	5248	5120	4994	4873
40	4753	4635	4542	4449	4350	4261	4173	4083	3997	3916
50	3841	3762	3686	3611	3532	3455	3381	3317	3254	3181
60	3113	3044	2974	2904	2838	2779	2715	2650	2584	2516
70	2452	2389	2330	2270	2210	2148	2091	2037	1982	1927
80	1876	1828	1782	1736	1687	1640	1593	1545	1497	1450
90	1395	1337	1285	1237	1190	1130	1073	1011	926	813
100	413									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 800 Oroua at Almadale All
 From 1-Jul-1948 00:00:00 to 30-Jun-2004 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1948	50.746	27-Oct-1948 08:30
1949	244.94	9-Aug-1949 06:00
1950	264.08	2-Jul-1950 12:00
1951	107.35	25-Aug-1951 22:30
1952	111.02	8-Jun-1952 13:00
1953	150.61	28-Jan-1953 10:00
1954	185.48	19-May-1954 12:00
1955	150.30	23-Jul-1955 04:52
1956	298.89	15-Jul-1956 12:16
1957	162.02	17-Jun-1957 19:02
1958	412.02	12-May-1958 06:10
1959	125.23	23-Feb-1959 10:19
1960	70.327	15-Sep-1960 19:04
1961	116.40	7-Aug-1961 01:34
1962	164.32	5-Dec-1962 22:15
1963	174.01	10-Jan-1963 07:40
1964	95.320	24-Jun-1964 13:12
1965	313.43	18-Mar-1965 06:20
1966	173.96	31-Jul-1966 19:00
1967	259.11	1-Jan-1967 04:34
1968	162.85	8-May-1968 19:41
1969	84.810	27-Sep-1969 01:06
1970	189.89	19-Mar-1970 07:45
1971	211.97	4-May-1971 17:54
1972	186.16	11-Mar-1972 03:19
1973	139.61	15-Jun-1973 05:16
1974	166.45	4-Sep-1974 01:54
1975	242.46	12-Mar-1975 20:49
1976	197.45	9-Sep-1976 15:41
1977	137.35	27-Aug-1977 14:41
1978	116.44	11-Nov-1978 21:36
*1979	4.8450	29-Jan-1979 03:53
1980		
1981		
1982		
1983		
1984		
1985		
1986		
1987		
1988		
1989		
1990		
1991		

*1992	87.869	25-Oct-1992	04:45
1993	94.716	22-Nov-1993	01:45
1994	184.15	26-Jul-1994	11:15
1995	84.840	4-Jul-1995	00:45
1996	139.07	13-Oct-1996	19:00
1997	152.58	2-Jul-1997	03:45
1998	110.67	21-Oct-1998	11:15
1999	268.59	29-Nov-1999	06:15
2000	197.00	10-Apr-2000	23:45
2001	175.63	25-May-2001	19:45
2002	142.53	24-Jul-2002	05:45
2003	163.95	23-Aug-2003	23:30
*2004	449.85	16-Feb-2004	05:00

Average Annual Maximum 173.85 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 800 Oroua at Almadale All
From 1-Jul-1948 00:00:00 to 30-Jun-2004 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1949 24:00:00	1698 at interval beginning 5-Mar-1949 08:30:00
30-Jun-1950 24:00:00	1200 at interval beginning 11-Mar-1950 02:06:45
30-Jun-1951 24:00:00	1336 at interval beginning 22-Jan-1951 08:30:00
30-Jun-1952 24:00:00	1465 at interval beginning 14-Mar-1952 08:30:00
30-Jun-1953 24:00:00	2810 at interval beginning 21-Jan-1953 20:00:16
30-Jun-1954 24:00:00	774 at interval beginning 1-Feb-1954 08:00:00
30-Jun-1955 24:00:00	1103 at interval beginning 21-Jan-1955 16:54:26
30-Jun-1956 24:00:00	778 at interval beginning 23-Jan-1956 12:05:16
30-Jun-1957 24:00:00	937 at interval beginning 10-Apr-1957 12:02:11
30-Jun-1958 24:00:00	1736 at interval beginning 16-Feb-1958 01:00:36
30-Jun-1959 24:00:00	1821 at interval beginning 7-Dec-1958 00:42:17
30-Jun-1960 24:00:00	437 at interval beginning 11-Mar-1960 15:01:35
30-Jun-1961 24:00:00	1414 at interval beginning 16-Apr-1961 09:00:00
30-Jun-1962 24:00:00	541 at interval beginning 7-Feb-1962 15:58:27
30-Jun-1963 24:00:00	1457 at interval beginning 8-Feb-1963 18:34:24
30-Jun-1964 24:00:00	1027 at interval beginning 26-Feb-1964 18:16:22
30-Jun-1965 24:00:00	2927 at interval beginning 7-Dec-1964 03:44:27
30-Jun-1966 24:00:00	1563 at interval beginning 16-Feb-1966 12:50:16
30-Jun-1967 24:00:00	1599 at interval beginning 20-Apr-1967 09:15:00
30-Jun-1968 24:00:00	779 at interval beginning 31-Mar-1968 18:07:00
30-Jun-1969 24:00:00	1055 at interval beginning 18-Mar-1969 19:59:27
30-Jun-1970 24:00:00	933 at interval beginning 6-Mar-1970 23:04:53
30-Jun-1971 24:00:00	894 at interval beginning 8-Apr-1971 23:28:05
30-Jun-1972 24:00:00	1074 at interval beginning 20-Feb-1972 03:47:48
30-Jun-1973 24:00:00	985 at interval beginning 3-Mar-1973 10:12:24
30-Jun-1974 24:00:00	804 at interval beginning 13-Feb-1974 10:09:55
30-Jun-1975 24:00:00	480 at interval beginning 23-Feb-1975 05:26:03
30-Jun-1976 24:00:00	605 at interval beginning 26-Mar-1976 16:57:51
30-Jun-1977 24:00:00	879 at interval beginning 22-Mar-1977 02:24:54
30-Jun-1978 24:00:00	504 at interval beginning 29-Mar-1978 14:49:22
Gap from 31-Jan-1979 13:00:00 to 31-Jul-1992 15:30:00 of 13.51 Years	
30-Jun-1979 24:00:00(PARTIAL)	597 at interval beginning 27-Jan-1979 07:28:04
30-Jun-1980 24:00:00	No valid values for this year
30-Jun-1981 24:00:00	No valid values for this year
30-Jun-1982 24:00:00	No valid values for this year
30-Jun-1983 24:00:00	No valid values for this year
30-Jun-1984 24:00:00	No valid values for this year
30-Jun-1985 24:00:00	No valid values for this year

30-Jun-1986 24:00:00	No valid values for this year
30-Jun-1987 24:00:00	No valid values for this year
30-Jun-1988 24:00:00	No valid values for this year
30-Jun-1989 24:00:00	No valid values for this year
30-Jun-1990 24:00:00	No valid values for this year
30-Jun-1991 24:00:00	No valid values for this year
30-Jun-1992 24:00:00	No valid values for this year
30-Jun-1993 24:00:00 (PARTIAL)	1762 at interval beginning 18-Feb-1993 07:00:00
30-Jun-1994 24:00:00	1073 at interval beginning 14-Feb-1994 16:15:00
30-Jun-1995 24:00:00	1605 at interval beginning 10-Mar-1995 05:00:00
30-Jun-1996 24:00:00	1597 at interval beginning 9-Jan-1996 14:30:00
30-Jun-1997 24:00:00	1220 at interval beginning 18-Feb-1997 12:00:00
30-Jun-1998 24:00:00	908 at interval beginning 25-Mar-1998 17:45:00
30-Jun-1999 24:00:00	892 at interval beginning 13-Jan-1999 05:15:00
30-Jun-2000 24:00:00	732 at interval beginning 11-Mar-2000 18:15:00
30-Jun-2001 24:00:00	862 at interval beginning 25-Mar-2001 16:00:00
30-Jun-2002 24:00:00	1667 at interval beginning 23-Apr-2002 04:45:00
30-Jun-2003 24:00:00	1138 at interval beginning 18-Feb-2003 13:00:00
30-Jun-2004 24:00:00	1810 at interval beginning 18-Jan-2004 11:00:00

Mean annual Minimum = 1198 becomes 1211
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1948 to 2004 site 800 Oroua at Almadale All
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1949	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1950	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	1.1	0.0	0.0	0.0	1.4
1951	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1952	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1953	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1954	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.7	19.2	0.0	0.0	0.0	0.0	28.9
1955	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.2	1.8	0.0	0.0	0.0	0.0	8.0
1956	0.0	0.0	0.0	0.0	0.0	0.0	3.3	14.3	1.7	13.1	0.4	0.0	0.0	32.8
1957	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.7	0.0	0.0	10.7
1958	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1959	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1960	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.9	7.2	14.0	0.0	0.0	0.0	32.1
1961	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1962	0.0	0.0	0.0	0.0	0.0	0.0	9.2	12.1	10.8	3.2	0.0	0.0	0.0	35.3
1963	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1964	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.9	0.0	4.4	0.0	0.0	14.3
1965	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1966	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1967	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1968	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.6	25.0	2.0	0.0	0.0	29.6
1969	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.3	0.0	0.0	0.0	9.3
1970	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	13.4	7.1	0.0	0.0	0.0	22.3
1971	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.4	9.6	0.0	0.0	17.0
1972	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.0	0.0	0.0	0.0	0.0	11.0
1973	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0	5.2	0.0	0.0	0.0	13.3
1974	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3	13.7	0.0	0.0	0.0	0.0	17.0
1975	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	23.8	3.0	4.1	0.0	0.0	31.8
1976	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.6	6.8	0.0	0.0	19.4
1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	7.4	0.0	0.0	0.0	8.0
1978	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.1	28.3	7.0	0.0	0.0	43.3

1979	0.0	0.0	0.0	0.0	0.0	0.0	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1980	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1981	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1982	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1983	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1984	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1985	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1986	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1987	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1988	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1989	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1990	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1991	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1992	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1993	NaN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1994	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.3	1.3	0.3	0.0	0.0	7.8
1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.4
1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7	13.9	12.5	0.0	0.0	28.0
1999	0.0	0.0	0.0	0.0	0.0	0.0	14.0	1.8	6.8	0.0	0.0	0.0	22.6
2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.2	15.9	0.0	0.0	0.0	21.1
2001	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	11.9	1.4	0.0	0.0	13.8
2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	2.6	0.0	0.0	7.5
2004	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max	0.0	0.0	0.0	0.0	0.0	9.2	14.3	23.8	28.3	10.7	0.0	0.0	0.0
Mean	0.0	0.0	0.0	0.0	0.0	0.3	1.8	3.9	4.5	1.1	0.0	0.0	0.0

3.23. Oroua at Awahuri Br (1932512), July 1992 to July 2004 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 1932512 Oroua at Awahuri Br

From 1-Jul-1992 00:00:01 to 1-Jul-2004 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	879955	72875	55566	47359	42446	38484	35311	32754	30635	28671
10	26923	25552	24352	23223	22280	21375	20579	19827	19124	18402
20	17749	17140	16595	16094	15587	15125	14659	14231	13798	13393
30	13009	12653	12317	11984	11667	11356	11067	10796	10534	10269
40	10018	9751	9508	9262	9023	8804	8596	8392	8199	8003
50	7816	7642	7467	7285	7105	6935	6752	6578	6408	6227
60	6058	5886	5728	5588	5450	5301	5163	5028	4905	4783
70	4655	4529	4413	4293	4172	4057	3940	3817	3699	3586
80	3480	3367	3249	3136	3019	2913	2818	2712	2598	2489
90	2385	2270	2173	2070	1973	1854	1727	1593	1473	1312
100	900									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 1932512 Oroua at Awahuri Br

From 1-Jul-1992 00:00:01 to 1-Jul-2004 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	879955	48359	33616	26953	23597	21127	19215	17676	16409	15360
10	14500	13745	13088	12491	11930	11427	10973	10575	10209	9879
20	9564	9269	8993	8741	8493	8257	8007	7789	7598	7383
30	7181	7010	6836	6652	6479	6320	6129	5965	5809	5666
40	5541	5420	5300	5183	5080	4978	4886	4792	4696	4601
50	4503	4417	4330	4242	4160	4078	4001	3920	3837	3759
60	3681	3611	3541	3475	3408	3339	3268	3200	3134	3065
70	2994	2927	2865	2807	2746	2684	2624	2567	2509	2453
80	2401	2339	2276	2225	2178	2126	2072	2023	1975	1920
90	1854	1790	1719	1650	1585	1531	1475	1403	1307	1189
100	900									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 1932512 Oroua at Awahuri Br
 From 1-Jul-1992 00:00:00 to 30-Jun-2004 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1992	383.13	22-Jul-1992 21:45
1993	137.28	22-Nov-1993 02:45
1994	228.22	16-Nov-1994 14:45
1995	128.05	18-Sep-1995 17:45
1996	185.88	13-Oct-1996 20:15
1997	154.65	2-Jul-1997 04:45
1998	227.40	21-Oct-1998 12:45
1999	377.41	29-Nov-1999 07:45
2000	206.58	11-Apr-2000 01:00
2001	294.65	15-Aug-2001 16:30
2002	168.10	30-Sep-2002 11:00
2003	268.58	28-Sep-2003 18:00
*2004	879.96	16-Feb-2004 06:15

Average Annual Maximum 216.07 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 1932512 Oroua at Awahuri Br
 From 1-Jul-1992 00:00:00 to 30-Jun-2004 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1993 24:00:00	2202 at interval beginning 18-Feb-1993 02:15:00
30-Jun-1994 24:00:00	1329 at interval beginning 15-Feb-1994 08:15:00
30-Jun-1995 24:00:00	1906 at interval beginning 10-Mar-1995 04:30:00
30-Jun-1996 24:00:00	2184 at interval beginning 9-Jan-1996 22:15:00
30-Jun-1997 24:00:00	1549 at interval beginning 18-Feb-1997 11:15:00
30-Jun-1998 24:00:00	1188 at interval beginning 25-Mar-1998 11:30:00
30-Jun-1999 24:00:00	1152 at interval beginning 4-Mar-1999 11:30:00
30-Jun-2000 24:00:00	905 at interval beginning 11-Mar-2000 18:30:00
30-Jun-2001 24:00:00	1120 at interval beginning 25-Mar-2001 13:00:00
30-Jun-2002 24:00:00	2266 at interval beginning 23-Apr-2002 05:45:00
30-Jun-2003 24:00:00	1440 at interval beginning 27-Mar-2003 20:00:00
Gap from 16-Feb-2004 08:15:00 to 11-Mar-2004 14:15:00 of 24.25 Days	
30-Jun-2004 24:00:00 (PARTIAL)	2195 at interval beginning 18-Jan-2004 11:30:00

Mean annual Minimum = 1620 remains 1620

(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
 Monthly totals 1992 to 2004 site 1932512 Oroua at Awahuri Br
 Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1993	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1994	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.0	4.1	2.5	0.0	0.0	18.5
1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.0	0.0	0.0	0.0	1.8
1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	14.3	15.0	0.0	0.0	0.0	31.8
1999	0.0	0.0	0.0	0.0	0.0	1.5	16.3	6.6	7.6	0.0	0.0	0.0	0.0	31.9
2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.4	16.3	0.0	0.0	0.0	0.0	23.7
2001	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	14.2	2.6	0.0	0.0	0.0	19.0
2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.3	5.6	0.0	0.0	0.0	0.0	15.0
2004	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NaN	NaN	0.0	0.0	0.0	0.0	0.0
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	0.0	0.0	0.0	0.0	0.0	1.5	16.3	14.3	16.3	2.6	0.0	0.0	0.0	
Mean	0.0	0.0	0.0	0.0	0.0	0.1	1.6	4.9	5.7	0.4	0.0	0.0	0.0	

3.24. Oroua at Kawa Wool (synthetic) (700), July 1967 to July 2004 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 700 Oroua at Kawa Wool All
 From 1-Jul-1967 00:00:01 to 1-Jul-2004 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	790154	70317	51267	42641	37514	33919	31200	28990	27142	25558
10	24187	22983	21940	20975	20100	19278	18546	17854	17215	16629
20	16078	15566	15081	14603	14133	13701	13282	12890	12508	12153
30	11809	11477	11170	10876	10592	10309	10049	9790	9526	9273
40	9027	8794	8564	8353	8150	7944	7741	7538	7339	7153
50	6971	6796	6629	6457	6292	6129	5975	5822	5680	5541
60	5409	5276	5148	5028	4908	4790	4670	4553	4436	4321
70	4204	4086	3969	3855	3738	3623	3518	3405	3301	3198
80	3094	2988	2882	2784	2685	2582	2477	2383	2288	2189
90	2092	1995	1901	1806	1699	1593	1485	1380	1253	1092
100	638									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 700 Oroua at Kawa Wool All
 From 1-Jul-1967 00:00:01 to 1-Jul-2004 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	790154	47726	32524	26089	22345	19631	17605	16153	14902	13862
10	13003	12280	11606	11029	10519	10060	9651	9261	8894	8582
20	8302	8031	7768	7519	7288	7067	6859	6672	6484	6300
30	6133	5972	5816	5675	5539	5415	5295	5180	5073	4973
40	4873	4777	4681	4586	4488	4398	4309	4221	4137	4044
50	3960	3879	3799	3721	3644	3571	3500	3426	3358	3296
60	3232	3168	3107	3044	2983	2920	2862	2805	2748	2690
70	2633	2575	2520	2467	2418	2369	2320	2268	2216	2162
80	2111	2061	2008	1957	1908	1859	1813	1758	1702	1651
90	1594	1540	1485	1430	1377	1321	1253	1179	1092	969
100	638									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 700 Oroua at Kawa Wool All
 From 1-Jul-1967 00:00:00 to 30-Jun-2004 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1967	104.92	24-Aug-1967 01:56
1968	249.43	8-Dec-1968 01:41
1969	91.925	26-Sep-1969 23:50
1970	221.72	19-Mar-1970 11:27
1971	230.36	5-May-1971 03:43
1972	225.46	11-Mar-1972 03:08
1973	150.56	15-Jun-1973 05:40
1974	219.94	4-Sep-1974 03:24
1975	258.05	13-Mar-1975 01:25
1976	303.18	29-Jun-1976 10:33
1977	138.91	27-Aug-1977 17:26
1978	141.09	11-Nov-1978 23:36
1979	215.51	25-Aug-1979 16:02
1980	276.13	11-Apr-1980 17:15
1981	240.48	29-Jun-1981 22:45
1982	61.519	21-Jul-1982 07:30
1983	179.97	20-May-1983 21:45
1984	101.52	16-Aug-1984 22:30
1985	311.75	27-Jul-1985 04:00
1986	163.35	17-Sep-1986 14:00
1987	171.20	5-Mar-1987 02:15
1988	403.84	2-Sep-1988 21:15
1989	178.14	26-May-1989 01:00
1990	164.80	21-Mar-1990 04:15
1991	203.77	11-Apr-1991 04:45
1992	369.11	22-Jul-1992 23:29
1993	125.25	22-Nov-1993 02:30
1994	189.03	26-Jul-1994 12:15
1995	101.04	18-Sep-1995 18:45
1996	166.26	13-Oct-1996 20:00
1997	154.27	2-Jul-1997 04:30
1998	174.84	21-Oct-1998 12:30
1999	342.85	29-Nov-1999 07:30
2000	204.79	11-Apr-2000 00:45
2001	239.65	15-Aug-2001 16:00
2002	150.58	30-Sep-2002 02:00
2003	253.42	28-Sep-2003 17:45
*2004	790.15	16-Feb-2004 06:00

Average Annual Maximum 204.83 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 700 Oroua at Kawa Wool All
 From 1-Jul-1967 00:00:00 to 30-Jun-2004 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1968 24:00:00	980 at interval beginning 27-Mar-1968 06:48:53
30-Jun-1969 24:00:00	1283 at interval beginning 20-Mar-1969 04:58:45
30-Jun-1970 24:00:00	965 at interval beginning 29-Apr-1970 14:19:05
30-Jun-1971 24:00:00	929 at interval beginning 9-Apr-1971 11:31:34
30-Jun-1972 24:00:00	981 at interval beginning 3-Mar-1972 22:36:58
30-Jun-1973 24:00:00	755 at interval beginning 26-Feb-1973 07:15:50
30-Jun-1974 24:00:00	653 at interval beginning 13-Feb-1974 04:19:32
30-Jun-1975 24:00:00	1201 at interval beginning 15-Feb-1975 07:02:19
30-Jun-1976 24:00:00	797 at interval beginning 18-Apr-1976 02:52:09
30-Jun-1977 24:00:00	871 at interval beginning 21-Mar-1977 06:10:37
30-Jun-1978 24:00:00	733 at interval beginning 18-Mar-1978 12:15:54
30-Jun-1979 24:00:00	827 at interval beginning 10-Feb-1979 21:35:35
30-Jun-1980 24:00:00	1450 at interval beginning 25-Dec-1979 14:51:49
30-Jun-1981 24:00:00	1469 at interval beginning 16-Mar-1981 02:03:01
30-Jun-1982 24:00:00	1114 at interval beginning 18-Feb-1982 16:00:00
30-Jun-1983 24:00:00	1364 at interval beginning 12-Mar-1983 07:15:00
30-Jun-1984 24:00:00	1111 at interval beginning 2-Feb-1984 08:45:00
30-Jun-1985 24:00:00	849 at interval beginning 14-Feb-1985 05:45:00
30-Jun-1986 24:00:00	1625 at interval beginning 23-Apr-1986 18:15:00
30-Jun-1987 24:00:00	1234 at interval beginning 12-Jan-1987 23:40:22
30-Jun-1988 24:00:00	692 at interval beginning 2-Feb-1988 17:00:00
30-Jun-1989 24:00:00	892 at interval beginning 9-Mar-1989 11:23:14
30-Jun-1990 24:00:00	1467 at interval beginning 8-Mar-1990 07:08:54
30-Jun-1991 24:00:00	1303 at interval beginning 6-Jan-1991 22:45:00
30-Jun-1992 24:00:00	2241 at interval beginning 4-Feb-1992 19:00:00
30-Jun-1993 24:00:00	2095 at interval beginning 18-Feb-1993 05:00:00
30-Jun-1994 24:00:00	1211 at interval beginning 14-Feb-1994 18:00:00
30-Jun-1995 24:00:00	1826 at interval beginning 10-Mar-1995 06:15:00
30-Jun-1996 24:00:00	1933 at interval beginning 9-Jan-1996 15:15:00
30-Jun-1997 24:00:00	1425 at interval beginning 18-Feb-1997 11:30:00
30-Jun-1998 24:00:00	1077 at interval beginning 25-Mar-1998 14:45:00
30-Jun-1999 24:00:00	1084 at interval beginning 4-Mar-1999 07:30:00
30-Jun-2000 24:00:00	874 at interval beginning 11-Mar-2000 17:15:00
30-Jun-2001 24:00:00	1016 at interval beginning 25-Mar-2001 08:45:00
30-Jun-2002 24:00:00	2088 at interval beginning 23-Apr-2002 05:30:00
30-Jun-2003 24:00:00	1360 at interval beginning 27-Mar-2003 19:45:00
Gap from 16-Feb-2004 08:15:00 to 11-Mar-2004 13:45:00 of 24.23 Days	
30-Jun-2004 24:00:00 (PARTIAL)	2108 at interval beginning 18-Jan-2004 11:15:00

Mean annual Minimum = 1240 remains 1240
 (For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
 Monthly totals 1967 to 2004 site 700 Oroua at Kawa Wool (synthetic)
 Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
	1968	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.2	0.5	0.0	0.0	9.7

1969	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1970	0.0	0.0	0.0	0.0	0.0	0.0	1.3	3.9	7.2	4.0	1.4	0.0	17.8
1971	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	11.6	0.0	0.0	12.6
1972	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3	1.8	0.0	0.0	0.0	5.1
1973	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.5	4.4	0.0	0.0	0.0	16.9
1974	0.0	0.0	0.0	0.0	0.0	0.0	3.3	10.0	0.0	3.5	0.0	0.0	16.9
1975	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.0	0.0	0.0	0.0	1.8
1976	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.6	5.1	0.0	0.0	11.8
1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.4	13.4	0.0	0.0	33.8
1978	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7	21.5	1.8	0.0	0.0	25.0
1979	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.6	0.0	0.0	0.0	0.0	7.6
1980	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.6	0.0	0.0	0.0	0.0	4.6
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.0	0.0	0.0	0.0	1.8
1985	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.5	0.0	0.0	0.0	0.0	10.5
1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1987	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	0.0	0.0	0.0	0.0	2.5
1988	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.7	4.0	0.0	0.0	0.0	13.8
1989	0.0	0.0	0.0	0.0	0.0	2.8	0.5	0.8	6.8	2.3	0.0	0.0	13.2
1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1991	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.4
1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1994	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3	0.0	0.0	0.0	0.0	2.3
1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.3	5.6	0.0	0.0	0.0	12.9
1999	0.0	0.0	0.0	0.0	0.0	0.0	5.1	0.0	4.1	0.0	0.0	0.0	9.2
2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.6	13.8	0.0	0.0	0.0	17.4
2001	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.3	0.0	0.0	0.0	9.3
2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2004	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NaN	NaN	0.0	0.0	0.0	0.0
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max	0.0	0.0	0.0	0.0	0.0	2.8	9.7	12.5	21.5	13.4	1.4	0.0	0.0
Mean	0.0	0.0	0.0	0.0	0.0	0.1	0.6	2.1	3.1	1.1	0.0	0.0	0.0

3.25. Pohangina at Mais Reach (32576), July 1969 to July 2005 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 32576 Pohangina at Mais Reach

From 1-Jul-1969 00:00:01 to 1-Jul-2005 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	1109100	129110	84790	66820	56381	49660	44919	41117	38137	35645
10	33517	31744	30188	28730	27453	26327	25296	24338	23439	22598
20	21819	21112	20444	19825	19229	18643	18089	17574	17072	16601
30	16160	15745	15313	14933	14569	14214	13861	13534	13200	12894
40	12589	12286	12004	11729	11458	11198	10949	10710	10471	10244
50	10012	9784	9568	9358	9154	8946	8749	8557	8370	8181
60	7997	7816	7642	7469	7297	7128	6963	6796	6644	6488
70	6337	6183	6033	5886	5737	5591	5450	5311	5182	5051
80	4919	4781	4640	4501	4362	4227	4088	3953	3828	3707
90	3582	3461	3329	3194	3068	2931	2795	2643	2465	2222

100 1350

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 32576 Pohangina at Mais Reach

From 1-Jul-1969 00:00:01 to 1-Jul-2005 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	1109100	102497	65662	50140	41379	35444	31418	28293	25709	23672
10	21929	20529	19363	18270	17329	16477	15745	15072	14441	13856
20	13337	12858	12419	12032	11666	11327	10996	10687	10387	10095
30	9802	9534	9284	9052	8825	8615	8405	8205	8011	7831
40	7660	7496	7327	7166	7016	6865	6721	6588	6455	6324
50	6199	6077	5961	5847	5733	5626	5525	5427	5329	5242
60	5154	5064	4979	4893	4808	4725	4639	4555	4473	4390
70	4309	4229	4148	4070	3995	3923	3851	3789	3724	3658
80	3592	3524	3464	3399	3330	3258	3191	3128	3065	2995
90	2927	2860	2789	2718	2640	2563	2456	2347	2222	1971
100	1350									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 32576 Pohangina at Mais Reach

From 1-Jul-1969 00:00:00 to 30-Jun-2005 24:00:00

Interval = 0

flow m3/s

Year	Maximum	Date & Time
*1969	293.62	26-Sep-1969 20:00
1970	420.61	18-Mar-1970 20:45
1971	776.05	4-May-1971 21:30
1972	618.07	10-Mar-1972 15:45
1973	359.85	14-Jun-1973 17:15
1974	604.98	4-Sep-1974 00:15
1975	696.97	12-Mar-1975 18:45
1976	366.58	9-Sep-1976 13:30
1977	249.30	27-Aug-1977 13:30
1978	367.71	20-Apr-1978 05:15
1979	602.00	4-Sep-1979 10:30
1980	695.63	10-Apr-1980 23:45
1981	565.52	21-May-1981 22:15
1982	280.53	5-Jun-1982 17:00
1983	540.24	20-May-1983 15:45
1984	287.80	15-Mar-1984 11:45
1985	699.70	27-Jul-1985 01:00
1986	508.79	17-Sep-1986 11:45
1987	386.47	4-Mar-1987 22:30
1988	889.17	2-Sep-1988 15:00
1989	397.32	23-Nov-1989 13:45
1990	287.68	10-Mar-1990 15:30
1991	416.44	11-Apr-1991 00:15
1992	1046.3	22-Jul-1992 18:45
1993	223.76	21-Nov-1993 21:30
1994	349.33	26-Jul-1994 09:00
1995	195.61	6-Apr-1995 10:00
1996	221.84	1-Apr-1996 03:30
1997	327.70	2-Jul-1997 01:00
1998	215.25	21-Oct-1998 07:45
1999	749.70	29-Nov-1999 03:45
2000	643.03	10-Apr-2000 21:15

2001	319.25	15-Aug-2001	15:30
2002	325.18	13-Feb-2002	14:30
2003	406.12	23-Aug-2003	23:45
2004	1109.1	16-Feb-2004	01:15
*2005	240.62	18-Mar-2005	04:15

Average Annual Maximum 489.99 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 32576 Pohangina at Mais Reach
From 1-Jul-1969 00:00:00 to 30-Jun-2005 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1970 24:00:00	1621 at interval beginning 7-Mar-1970 18:30:00
30-Jun-1971 24:00:00	2207 at interval beginning 15-Feb-1971 00:45:00
30-Jun-1972 24:00:00	2636 at interval beginning 8-Feb-1972 05:45:00
30-Jun-1973 24:00:00	1773 at interval beginning 2-Mar-1973 12:30:00
30-Jun-1974 24:00:00	1815 at interval beginning 11-Feb-1974 10:00:00
30-Jun-1975 24:00:00	2255 at interval beginning 24-Feb-1975 16:00:00
30-Jun-1976 24:00:00	2556 at interval beginning 22-Mar-1976 20:30:00
30-Jun-1977 24:00:00	2366 at interval beginning 22-Mar-1977 00:45:00
30-Jun-1978 24:00:00	2263 at interval beginning 3-Mar-1978 02:45:00
30-Jun-1979 24:00:00	1979 at interval beginning 4-Feb-1979 02:45:00
30-Jun-1980 24:00:00	2920 at interval beginning 9-Feb-1980 14:00:00
30-Jun-1981 24:00:00	2378 at interval beginning 15-Mar-1981 22:30:00
30-Jun-1982 24:00:00	1814 at interval beginning 16-Feb-1982 23:30:00
30-Jun-1983 24:00:00	2603 at interval beginning 28-Feb-1983 16:30:00
30-Jun-1984 24:00:00	2242 at interval beginning 2-Feb-1984 05:45:00
30-Jun-1985 24:00:00	1650 at interval beginning 12-Mar-1985 17:15:00
30-Jun-1986 24:00:00	2470 at interval beginning 27-Apr-1986 13:15:00
30-Jun-1987 24:00:00	1544 at interval beginning 14-Jan-1987 24:00:00
30-Jun-1988 24:00:00	1713 at interval beginning 3-Feb-1988 11:45:00
30-Jun-1989 24:00:00	2101 at interval beginning 27-Dec-1988 16:45:00
30-Jun-1990 24:00:00	2148 at interval beginning 17-Nov-1989 17:30:00
30-Jun-1991 24:00:00	2180 at interval beginning 15-Jan-1991 03:00:00
30-Jun-1992 24:00:00	3411 at interval beginning 4-Feb-1992 18:00:00
30-Jun-1993 24:00:00	3083 at interval beginning 18-Feb-1993 13:45:00
30-Jun-1994 24:00:00	2479 at interval beginning 1-Mar-1994 06:15:00
30-Jun-1995 24:00:00	2827 at interval beginning 18-Dec-1994 14:15:00
30-Jun-1996 24:00:00	2585 at interval beginning 9-Jan-1996 19:30:00
30-Jun-1997 24:00:00	2800 at interval beginning 18-Feb-1997 11:30:00
30-Jun-1998 24:00:00	2136 at interval beginning 8-Feb-1998 20:00:00
30-Jun-1999 24:00:00	1840 at interval beginning 3-Mar-1999 20:45:00
30-Jun-2000 24:00:00	1391 at interval beginning 6-Mar-2000 07:45:00
30-Jun-2001 24:00:00	2315 at interval beginning 25-Mar-2001 11:15:00
30-Jun-2002 24:00:00	2663 at interval beginning 22-Apr-2002 16:30:00
30-Jun-2003 24:00:00	2478 at interval beginning 13-Feb-2003 04:30:00
30-Jun-2004 24:00:00	3175 at interval beginning 18-Jan-2004 02:45:00
Gap from 23-May-2005 20:15:00 to 24-May-2005 14:00:00 of 17.75 Hours	
30-Jun-2005 24:00:00 (PARTIAL)	2937 at interval beginning 31-Jan-2005 07:15:00

Mean annual Minimum = 2315 remains 2315
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1969 to 2005 site 32576 Pohangina at Mais Reach
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1970	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.3	2.5	10.0	0.0	0.0	0.0	13.2
1971	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	3.0	0.0	0.0	0.0	0.0	4.1
1972	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1973	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0	4.6	0.0	0.0	0.0	12.6
1974	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3	11.0	0.0	0.0	0.0	0.0	13.3
1975	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3	0.0	0.0	0.0	0.0	2.3
1976	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1978	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.4	13.4	0.0	0.0	0.0	16.8
1979	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.9	4.8	0.0	0.0	0.0	0.0	7.7
1980	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.6	0.0	0.0	0.0	0.0	9.6
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	1.5	0.0	0.0	0.0	0.0	2.8
1985	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	11.9	7.5	0.0	0.0	0.0	20.1
1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1987	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.3	2.2	0.0	0.0	0.0	0.0	18.4
1988	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.5	3.8	0.0	0.0	0.0	0.0	10.3
1989	0.0	0.0	0.0	0.0	0.0	0.0	4.8	0.0	0.0	3.9	0.0	0.0	0.0	8.7
1990	0.0	0.0	0.0	0.0	0.0	3.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.2
1991	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9	0.0	0.0	0.0	0.0	0.0	1.9
1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1994	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.5	0.0	0.0	0.0	0.0	3.5
1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.4	2.5	7.2	0.0	0.0	0.0	17.0
2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	11.0	0.0	0.0	0.0	13.8
2001	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7	0.0	0.0	0.0	1.7
2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2004	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2005	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NaN	0.0	0.0
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	0.0	0.0	0.0	0.0	3.2	4.8	16.3	11.9	13.4	0.0	0.0	0.0	0.0	
Mean	0.0	0.0	0.0	0.0	0.1	0.1	1.1	2.0	1.6	0.0	0.0	0.0	0.0	

3.26. Tamaki at SH2(Napier) (1032503), July 1977 to July 1983 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is tamaki-spike.MTD Site 1032503 Tamaki at SH2(Napier)

From 1-Jul-1977 00:00:00 to 30-Jun-1983 24:00:00

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	77504	21593	15743	13414	11730	10374	9387	8508	7789	7147
10	6554	6082	5705	5368	5089	4829	4563	4336	4149	3985
20	3828	3681	3550	3419	3297	3192	3083	2984	2903	2815

30	2728	2645	2566	2487	2418	2355	2298	2235	2171	2115
40	2055	1995	1939	1893	1850	1805	1757	1710	1670	1634
50	1599	1562	1524	1485	1448	1413	1385	1357	1328	1299
60	1271	1242	1213	1184	1160	1132	1100	1070	1046	1025
70	996	967	941	919	891	863	834	811	782	757
80	727	695	669	640	618	596	574	551	531	507
90	475	444	410	386	356	313	276	241	195	152
100	30									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is tamaki-spike.MTD Site 1032503 Tamaki at SH2(Napier)

From 1-Jul-1977 00:00:00 to 30-Jun-1983 24:00:00

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	56980	15107	9790	7853	6658	5638	4878	4316	3951	3678
10	3456	3232	3064	2915	2767	2623	2480	2368	2256	2156
20	2061	1964	1877	1821	1768	1720	1681	1646	1608	1567
30	1527	1484	1447	1411	1378	1344	1311	1279	1251	1224
40	1199	1176	1153	1125	1100	1073	1055	1037	1018	996
50	974	956	938	923	904	884	865	846	830	814
60	797	777	760	743	724	706	687	672	655	641
70	624	612	600	586	572	558	545	533	522	508
80	491	473	457	438	420	407	392	380	363	345
90	321	299	282	262	242	220	199	173	154	124
100	30									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 1032503 Tamaki at SH2(Napier)

From 1-Jul-1977 00:00:00 to 30-Jun-1983 24:00:00

Interval = 0

flow m3/s

Year	Maximum	Date & Time
*1977	33.770	27-Aug-1977 09:10
1978	40.972	21-Oct-1978 06:36
1979	77.504	4-Sep-1979 03:16
1980	52.357	10-Apr-1980 22:06
1981	42.116	24-Sep-1981 20:45
1982	68.767	5-Jun-1982 17:30
*1983	36.132	2-Jun-1983 11:45

Average Annual Maximum 56.343 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 1032503 Tamaki at SH2(Napier)

From 1-Jul-1977 00:00:00 to 30-Jun-1983 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1978 24:00:00	72 at interval beginning 29-Mar-1978 08:20:00
30-Jun-1979 24:00:00	117 at interval beginning 2-Jul-1978 18:10:00
30-Jun-1980 24:00:00	260 at interval beginning 24-Dec-1979 04:50:26
30-Jun-1981 24:00:00	65 at interval beginning 11-Apr-1981 00:54:49

30-Jun-1982 24:00:00 191 at interval beginning 16-Feb-1982 14:45:00
 30-Jun-1983 24:00:00 538 at interval beginning 1-Apr-1983 05:00:00

Mean annual Minimum = 207
 (For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
 Monthly totals 1977 to 1983 site 1032503 Tamaki at SH2(Napier)
 Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
	1978	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	23.1	9.1	0.0	0.0	32.6
	1979	2.5	0.0	0.0	0.0	0.0	0.2	2.9	8.0	0.0	0.0	0.0	0.0	13.5
	1980	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.6	0.0	0.0	2.6
	1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	0.0	0.0	0.0	0.0	2.2
	1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max		2.5	0.0	0.0	0.0	0.0	0.2	2.9	8.0	23.1	9.1	0.0	0.0	
Mean		0.4	0.0	0.0	0.0	0.0	0.0	0.5	1.8	3.9	2.0	0.0	0.0	

3.27. Tamaki at Stephensons (1332556), December 2003 to April 2005 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 1332556 Tamaki at Stephensons
 From 16-Dec-2003 18:30:00 to 30-Apr-2005 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	158471	22569	17907	15890	14303	12940	11934	10825	9920	9259
10	8609	8113	7655	7294	6920	6606	6320	6079	5830	5595
20	5401	5236	5043	4862	4693	4547	4369	4222	4069	3924
30	3813	3711	3595	3492	3406	3321	3231	3151	3076	3014
40	2954	2907	2858	2801	2744	2691	2635	2582	2540	2495
50	2453	2407	2363	2333	2298	2256	2210	2167	2133	2089
60	2046	2000	1961	1907	1846	1778	1718	1669	1638	1606
70	1559	1521	1476	1442	1403	1357	1328	1298	1262	1230
80	1205	1176	1152	1130	1111	1095	1075	1046	1019	995
90	964	918	810	740	678	635	574	509	432	368
100	305									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 1332556 Tamaki at Stephensons
 From 16-Dec-2003 18:30:00 to 30-Apr-2005 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
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0	158471	24574	18344	16830	15369	14033	12871	12014	10784	9706
10	9034	8376	7890	7325	6873	6544	6202	5920	5578	5372
20	5189	4948	4765	4621	4441	4254	4074	3883	3759	3624
30	3489	3380	3251	3128	3040	2931	2842	2743	2646	2562
40	2485	2395	2327	2268	2189	2111	2057	2004	1956	1900
50	1849	1789	1717	1671	1631	1591	1545	1506	1463	1432
60	1388	1357	1334	1312	1291	1266	1244	1226	1210	1192
70	1175	1160	1146	1132	1119	1108	1098	1088	1073	1054
80	1036	1020	1004	990	969	941	905	831	778	739
90	701	660	638	599	564	522	473	429	379	348
100	305									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 1332556 Tamaki at Stephenson's
 From 16-Dec-2003 18:30:00 to 30-Apr-2005 23:45:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*2003	10.971	24-Dec-2003 15:15
2004	158.47	16-Feb-2004 03:45
*2005	31.289	18-Mar-2005 03:00

Average Annual Maximum 158.47 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 1332556 Tamaki at Stephenson's
 From 16-Dec-2003 18:30:00 to 30-Apr-2005 23:45:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
16-Dec-2004 18:30:00	461 at interval beginning 17-Jan-2004 11:15:00
30-Apr-2005 23:45:00 (PARTIAL)	328 at interval beginning 25-Feb-2005 07:15:00

Mean annual Minimum = 461 becomes 395
 (For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
 Monthly totals 2004 to 2005 site 1332556 Tamaki at Stephenson's
 Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
	2005	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.4	3.7	NaN	NaN	NaN	7.1
Min		0.0												
Max		3.7												
Mean		0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.4	3.7	NaN	NaN	NaN	

3.28. Tamaki at Water Supply Weir (1032504), July 1983 to July 2004 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 1032504 Tamaki at Water Supply Weir
From 1-Jul-1983 00:00:01 to 1-Jul-2004 00:00:01
Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	91272	8927	6825	5653	4890	4352	3948	3625	3363	3149
10	2963	2802	2659	2534	2423	2326	2235	2144	2064	1996
20	1934	1878	1824	1774	1731	1686	1646	1606	1568	1533
30	1498	1467	1433	1402	1370	1342	1313	1285	1256	1226
40	1199	1174	1148	1123	1098	1075	1055	1032	1010	991
50	973	953	934	916	898	880	865	848	831	814
60	799	784	767	753	737	721	706	692	677	662
70	648	632	617	603	588	572	557	540	524	509
80	493	476	459	442	425	407	391	373	357	339
90	322	302	281	264	245	224	200	177	155	123
100	23									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 1032504 Tamaki at Water Supply Weir
From 1-Jul-1983 00:00:01 to 1-Jul-2004 00:00:01
Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	91272	8393	5808	4441	3690	3098	2714	2447	2235	2066
10	1936	1830	1746	1669	1604	1545	1492	1451	1409	1363
20	1327	1288	1252	1217	1182	1149	1117	1087	1061	1036
30	1012	990	969	948	928	911	891	873	858	842
40	826	808	792	778	761	746	731	717	704	690
50	677	664	651	638	625	613	601	589	578	566
60	554	540	527	515	504	492	479	466	455	443
70	431	420	408	397	386	374	363	354	343	333
80	325	314	304	294	283	274	264	255	245	235
90	224	213	200	189	177	166	155	139	122	96
100	23									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 1032504 Tamaki at Water Supply Weir
From 1-Jul-1983 00:00:00 to 30-Jun-2004 24:00:00
Interval = 0
flow m³/s

Year	Maximum	Date & Time
*1983	15.344	15-Oct-1983 07:53
*1984	11.177	16-Aug-1984 17:06
*1985	9.2770	21-Dec-1985 21:54
1986	21.940	17-Sep-1986 10:45
1987	18.047	4-Mar-1987 20:15
1988	68.406	2-Sep-1988 13:15
1989	24.697	25-May-1989 19:00
1990	18.844	10-Mar-1990 17:15
1991	28.246	11-Apr-1991 03:15
1992	43.141	22-Jul-1992 16:00

1993	15.775	20-Feb-1993	05:45
1994	29.733	26-Jul-1994	06:30
1995	25.673	6-Apr-1995	10:30
1996	9.8250	29-Jan-1996	06:15
1997	19.827	3-Jun-1997	00:45
1998	13.056	17-Jul-1998	15:15
1999	57.177	29-Nov-1999	00:15
2000	91.272	10-Apr-2000	15:00
2001	17.923	25-May-2001	13:00
2002	14.777	13-Feb-2002	13:30
2003	19.063	23-Aug-2003	11:15
*2004	56.847	16-Feb-2004	01:15

Average Annual Maximum 29.857 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 1032504 Tamaki at Water Supply Weir
From 1-Jul-1983 00:00:00 to 30-Jun-2004 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1984 24:00:00	63 at interval beginning 29-Jan-1984 12:03:05
Gap from 27-Nov-1984 11:40:00 to 20-Dec-1985 12:26:00 of 1.06 Years	
30-Jun-1985 24:00:00(PARTIAL)	233 at interval beginning 12-Nov-1984 18:26:04
30-Jun-1986 24:00:00(PARTIAL)	237 at interval beginning 26-Apr-1986 19:00:00
30-Jun-1987 24:00:00	72 at interval beginning 9-Jan-1987 07:45:00
30-Jun-1988 24:00:00	79 at interval beginning 1-Feb-1988 14:00:00
30-Jun-1989 24:00:00	106 at interval beginning 28-Dec-1988 01:00:00
30-Jun-1990 24:00:00	105 at interval beginning 8-Mar-1990 07:45:00
30-Jun-1991 24:00:00	104 at interval beginning 15-Jan-1991 12:45:00
30-Jun-1992 24:00:00	274 at interval beginning 3-Feb-1992 15:30:00
30-Jun-1993 24:00:00	324 at interval beginning 18-Feb-1993 07:15:00
30-Jun-1994 24:00:00	128 at interval beginning 13-Mar-1994 12:30:00
30-Jun-1995 24:00:00	169 at interval beginning 27-Jan-1995 02:30:00
30-Jun-1996 24:00:00	623 at interval beginning 9-Jan-1996 13:30:00
30-Jun-1997 24:00:00	186 at interval beginning 17-Feb-1997 09:30:00
30-Jun-1998 24:00:00	36 at interval beginning 8-Feb-1998 09:00:00
30-Jun-1999 24:00:00	136 at interval beginning 7-Jan-1999 11:15:00
30-Jun-2000 24:00:00	78 at interval beginning 24-Jan-2000 02:15:00
30-Jun-2001 24:00:00	366 at interval beginning 27-Mar-2001 03:00:00
30-Jun-2002 24:00:00	171 at interval beginning 5-Oct-2001 20:15:00
30-Jun-2003 24:00:00	150 at interval beginning 18-Feb-2003 04:15:00
Gap from 16-Feb-2004 01:15:00 to 11-Mar-2004 10:30:00 of 24.39 Days	
30-Jun-2004 24:00:00(PARTIAL)	260 at interval beginning 3-Apr-2004 19:00:00

Mean annual Minimum = 181 remains 181
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1983 to 2004 site 1032504 Tamaki at Water Supply Weir
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total

1984	0.0	0.0	0.0	0.0	0.0	1.7	29.6	8.5	3.7	0.0	0.0	0.0	43.5
1985	0.0	0.0	0.0	0.0	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1986	NaN	NaN	NaN	NaN	NaN	NaN	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1987	0.0	0.0	0.0	0.0	0.0	2.8	18.7	14.6	4.5	0.0	0.0	0.0	40.7
1988	0.0	0.0	0.0	0.0	0.0	0.0	7.9	3.6	0.0	0.0	0.0	0.0	11.5
1989	0.0	0.0	0.0	0.0	0.0	13.8	0.0	0.0	0.0	3.5	0.0	0.0	17.4
1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.4	0.0	0.0	0.0	6.4
1991	0.0	0.0	0.0	0.0	0.0	0.0	10.4	0.0	0.0	0.0	0.0	0.0	10.4
1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1994	0.0	0.0	0.0	0.0	0.0	0.0	1.2	3.3	12.8	7.1	0.0	0.0	24.3
1995	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0
1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.4
1998	0.0	0.0	0.0	0.0	0.0	0.0	12.3	17.3	22.0	0.0	0.0	0.0	51.6
1999	0.0	0.0	0.0	0.0	0.0	0.0	8.5	0.0	0.0	0.0	0.0	0.0	8.5
2000	0.0	0.0	0.0	0.0	0.0	0.0	5.0	0.0	3.3	0.0	0.0	0.0	8.3
2001	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2002	0.0	0.0	0.0	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.4	0.0	0.0	0.0	0.0	4.4
2004	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NaN	NaN	0.0	0.0	0.0	0.0
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max	0.0	0.0	0.0	2.1	0.0	13.8	29.6	17.3	22.0	7.1	0.0	0.0	0.0
Mean	0.0	0.0	0.0	0.1	0.0	1.0	4.8	2.7	2.8	0.5	0.0	0.0	0.0

3.29. Tiraumea at Ngaturi (32529), July 1980 to July 2004 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 32529 Tiraumea at Ngaturi

From 1-Jul-1980 00:00:01 to 1-Jul-2004 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	739057	137364	93581	74488	62910	55098	48803	44112	40151	36888
10	34020	31637	29613	27792	26144	24711	23326	22135	21044	20064
20	19195	18375	17597	16898	16240	15629	15034	14481	13974	13487
30	13058	12639	12240	11866	11499	11153	10797	10459	10147	9846
40	9566	9289	9036	8785	8523	8282	8056	7835	7615	7404
50	7211	7017	6837	6669	6511	6365	6211	6054	5908	5764
60	5622	5482	5352	5219	5092	4960	4851	4738	4627	4524
70	4414	4310	4204	4105	3998	3895	3793	3696	3605	3521
80	3443	3368	3290	3217	3147	3077	3005	2929	2855	2774
90	2705	2643	2583	2524	2467	2412	2354	2290	2191	2045
100	1567									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 32529 Tiraumea at Ngaturi

From 1-Jul-1980 00:00:01 to 1-Jul-2004 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	739057	83346	50711	39779	31445	25797	22018	19453	17585	15968
10	14629	13504	12596	11800	11105	10491	9986	9543	9127	8723
20	8360	8046	7768	7492	7251	7030	6832	6656	6498	6345

30	6191	6049	5914	5787	5668	5551	5435	5327	5220	5124
40	5025	4929	4847	4766	4685	4609	4537	4459	4383	4315
50	4252	4186	4117	4045	3983	3918	3858	3794	3738	3683
60	3629	3577	3524	3477	3431	3384	3338	3292	3245	3208
70	3170	3133	3094	3049	3003	2958	2917	2878	2840	2793
80	2749	2708	2675	2645	2614	2581	2548	2517	2488	2461
90	2435	2406	2376	2344	2311	2270	2218	2167	2089	1956
100	1612									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 32529 Tiraumea at Ngaturi
 From 1-Jul-1980 00:00:00 to 30-Jun-2004 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1980	202.59	24-Jul-1980 07:00
1981	288.46	7-Jun-1981 21:44
1982	249.37	6-Jun-1982 07:35
1983	179.87	21-May-1983 09:45
1984	80.510	6-Aug-1984 03:19
1985	607.43	27-Jul-1985 15:30
1986	300.78	12-Aug-1986 16:00
1987	164.52	5-Mar-1987 10:00
1988	223.10	25-Jul-1988 15:45
1989	188.91	9-Sep-1989 17:45
1990	144.87	8-Aug-1990 05:45
1991	733.37	11-Apr-1991 08:30
1992	651.28	23-Jul-1992 04:45
1993	200.76	15-Jun-1993 03:45
1994	308.86	9-Nov-1994 05:00
1995	410.04	5-Apr-1995 22:15
1996	190.52	1-Jul-1996 06:15
1997	289.91	3-Jun-1997 18:45
1998	255.28	21-Oct-1998 12:15
1999	206.00	30-Nov-1999 00:45
2000	337.71	7-Oct-2000 17:30
2001	419.05	16-Aug-2001 02:30
2002	202.59	16-Jul-2002 01:00
2003	316.25	29-Sep-2003 09:45
*2004	739.06	16-Feb-2004 16:45

Average Annual Maximum 302.15 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 32529 Tiraumea at Ngaturi
 From 1-Jul-1980 00:00:00 to 30-Jun-2004 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1981 24:00:00	1576 at interval beginning 10-May-1981 23:02:47
30-Jun-1982 24:00:00	1888 at interval beginning 22-Feb-1982 13:06:13
30-Jun-1983 24:00:00	2432 at interval beginning 2-Mar-1983 18:45:00
30-Jun-1984 24:00:00	2151 at interval beginning 27-Jan-1984 00:45:00
30-Jun-1985 24:00:00	1703 at interval beginning 13-Apr-1985 09:00:00
30-Jun-1986 24:00:00	2237 at interval beginning 26-Apr-1986 19:00:00
30-Jun-1987 24:00:00	2119 at interval beginning 12-Feb-1987 11:30:00
30-Jun-1988 24:00:00	2598 at interval beginning 2-Feb-1988 13:00:00

30-Jun-1989 24:00:00	2146 at interval beginning	28-Apr-1989 23:30:00
30-Jun-1990 24:00:00	2434 at interval beginning	16-Feb-1990 16:45:00
30-Jun-1991 24:00:00	2394 at interval beginning	14-Jan-1991 18:00:00
30-Jun-1992 24:00:00	3342 at interval beginning	16-Jan-1992 15:45:00
30-Jun-1993 24:00:00	3190 at interval beginning	18-Feb-1993 08:30:00
30-Jun-1994 24:00:00	1986 at interval beginning	11-Apr-1994 18:00:00
30-Jun-1995 24:00:00	2582 at interval beginning	22-Jan-1995 18:30:00
30-Jun-1996 24:00:00	3036 at interval beginning	23-Jan-1996 03:00:00
30-Jun-1997 24:00:00	3102 at interval beginning	18-Feb-1997 13:15:00
30-Jun-1998 24:00:00	2028 at interval beginning	23-Mar-1998 04:30:00
30-Jun-1999 24:00:00	2150 at interval beginning	19-Feb-1999 12:45:00
30-Jun-2000 24:00:00	2058 at interval beginning	4-Mar-2000 15:00:00
30-Jun-2001 24:00:00	2248 at interval beginning	8-Apr-2001 00:15:00
30-Jun-2002 24:00:00	2874 at interval beginning	12-Mar-2002 23:15:00
30-Jun-2003 24:00:00	2574 at interval beginning	24-Mar-2003 18:30:00
30-Jun-2004 24:00:00	2345 at interval beginning	17-Jan-2004 20:45:00

Mean annual Minimum = 2383
 (For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
 Monthly totals 1980 to 2004 site 32529 Tiraumea at Ngaturi
 Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.6	6.5	0.0	7.3
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.9	8.0	1.8	0.2	0.0	0.0	12.8
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.9	8.3	4.9	5.9	1.3	0.0	34.2
1985	0.0	0.0	0.0	0.0	0.2	13.3	15.0	24.8	21.3	23.5	14.3	0.0	0.0	112.3
1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.3	0.0	0.0	7.3
1987	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	6.6	0.0	0.0	0.0	0.0	9.1
1988	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.9	11.4	12.5	0.0	0.0	26.8
1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1991	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.3
1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1994	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.6	24.6	23.2	8.4	0.0	68.8
1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.6	26.0	14.1	0.0	0.0	42.7
1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	14.2	10.1	4.9	0.0	0.0	30.8
2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	4.2	12.9	0.0	0.1	0.0	19.0
2001	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.2	8.6	0.2	0.0	16.0
2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2004	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7	0.0	0.0	0.0	0.0	0.0	1.7
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	0.0	0.0	0.0	0.0	0.2	13.3	15.0	24.8	26.0	23.5	14.3	0.0	0.0	
Mean	0.0	0.0	0.0	0.0	0.0	0.6	1.7	3.5	5.0	4.2	1.3	0.0	0.0	

3.30. Tokomaru All (900), July 1980 to July 2005 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 900 Tokomaru All
 From 1-Jul-1980 00:00:01 to 1-Jul-2005 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	169711	19115	13329	10480	8681	7406	6504	5803	5258	4835
10	4509	4228	3998	3793	3612	3450	3291	3151	3023	2906
20	2796	2697	2605	2520	2440	2365	2292	2225	2160	2099
30	2041	1983	1931	1881	1835	1791	1747	1706	1667	1627
40	1588	1550	1510	1473	1439	1406	1374	1342	1308	1278
50	1249	1221	1192	1163	1135	1110	1085	1059	1033	1008
60	985	961	939	916	894	873	853	832	810	788
70	770	751	731	713	696	677	659	641	623	606
80	588	571	554	537	520	503	486	468	452	434
90	415	395	375	354	332	309	283	250	218	184
100	108									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 900 Tokomaru All
 From 1-Jul-1980 00:00:01 to 1-Jul-2005 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	169711	18247	12002	8998	7106	5928	5119	4557	4126	3788
10	3503	3252	3035	2855	2702	2561	2434	2325	2226	2131
20	2049	1969	1891	1826	1766	1709	1654	1600	1547	1500
30	1456	1416	1378	1337	1299	1264	1233	1201	1169	1137
40	1108	1080	1054	1028	1004	982	959	938	918	897
50	877	857	838	818	801	785	769	754	738	723
60	709	695	680	665	651	638	625	612	601	587
70	575	563	551	538	526	513	501	487	474	462
80	451	438	426	413	401	388	376	363	351	338
90	325	312	298	284	267	247	228	208	185	161
100	108									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 900 Tokomaru All
 From 1-Jul-1980 00:00:00 to 30-Jun-2005 24:00:00
 Interval = 0
 flow m³/s

Year	Maximum	Date & Time
*1980	61.895	1-Dec-1980 03:34
1981	108.67	3-Jun-1981 19:24
1982	104.52	26-Dec-1982 03:25
1983	50.825	5-Nov-1983 20:04
1984	67.969	27-Jun-1984 22:45
1985	118.43	23-Jan-1985 04:45
1986	101.74	4-Oct-1986 12:30
1987	57.018	22-Jan-1987 15:15
1988	89.117	14-Sep-1988 09:00
1989	64.819	11-Jul-1989 09:00

1990	143.99	10-Mar-1990	09:30
1991	126.39	28-Nov-1991	19:30
1992	84.655	15-Feb-1992	08:15
1993	126.16	2-Jun-1993	04:00
1994	91.020	15-Nov-1994	09:15
1995	98.287	21-Mar-1995	08:00
1996	77.310	19-Dec-1996	14:30
1997	83.420	14-Oct-1997	07:45
1998	139.71	21-Oct-1998	01:45
1999	111.58	28-May-1999	10:45
2000	169.71	29-Dec-2000	08:15
*2001	55.952	22-Nov-2001	13:30
2002	51.283	17-Mar-2002	10:00
2003	51.976	28-Sep-2003	19:45
2004	155.70	1-Dec-2004	03:30
*2005	97.154	6-Jan-2005	03:45

Average Annual Maximum 98.882 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 900 Tokomaru All
From 1-Jul-1980 00:00:00 to 30-Jun-2005 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1981 24:00:00	223 at interval beginning 13-Mar-1981 04:19:18
30-Jun-1982 24:00:00	159 at interval beginning 4-May-1982 08:32:23
30-Jun-1983 24:00:00	277 at interval beginning 24-Feb-1983 00:16:38
30-Jun-1984 24:00:00	180 at interval beginning 2-Feb-1984 08:16:32
30-Jun-1985 24:00:00	171 at interval beginning 17-Apr-1985 18:45:00
30-Jun-1986 24:00:00	295 at interval beginning 20-Oct-1985 13:15:00
30-Jun-1987 24:00:00	190 at interval beginning 9-Jan-1987 18:15:00
30-Jun-1988 24:00:00	304 at interval beginning 3-Feb-1988 16:00:00
30-Jun-1989 24:00:00	220 at interval beginning 10-Mar-1989 01:15:00
30-Jun-1990 24:00:00	354 at interval beginning 21-Dec-1989 17:30:00
30-Jun-1991 24:00:00	300 at interval beginning 27-Mar-1991 08:45:00
30-Jun-1992 24:00:00	387 at interval beginning 5-Jun-1992 14:00:00
30-Jun-1993 24:00:00	347 at interval beginning 10-Mar-1993 24:00:00
30-Jun-1994 24:00:00	185 at interval beginning 13-Mar-1994 23:00:00
30-Jun-1995 24:00:00	232 at interval beginning 18-Feb-1995 14:15:00
30-Jun-1996 24:00:00	239 at interval beginning 2-Feb-1996 02:45:00
30-Jun-1997 24:00:00	283 at interval beginning 2-Feb-1997 19:00:00
30-Jun-1998 24:00:00	331 at interval beginning 22-Apr-1998 19:45:00
30-Jun-1999 24:00:00	123 at interval beginning 4-Mar-1999 11:30:00
30-Jun-2000 24:00:00	255 at interval beginning 18-Mar-2000 20:00:00
30-Jun-2001 24:00:00	232 at interval beginning 25-Mar-2001 02:45:00
Gap from 22-Aug-2001 14:15:00 to 26-Aug-2001 14:15:00 of 4.00 Days	
30-Jun-2002 24:00:00(PARTIAL)	316 at interval beginning 9-Feb-2002 24:00:00
30-Jun-2003 24:00:00	112 at interval beginning 27-Mar-2003 15:45:00
30-Jun-2004 24:00:00	268 at interval beginning 28-Apr-2004 19:30:00
Gap from 6-Jan-2005 03:45:00 to 12-Jan-2005 16:00:00 of 6.51 Days	
30-Jun-2005 24:00:00(PARTIAL)	202 at interval beginning 22-Feb-2005 00:30:00

Mean annual Minimum = 245 becomes 247
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1980 to 2005 site 900 Tokomaru All

Days < MALF

Season ending in Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	2.4	0.0	0.0	0.0	3.2
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.4	4.7	0.0	9.0
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	0.0	0.0	0.0	0.0	0.0	0.0	1.4	2.6	0.4	0.0	0.0	0.0	4.4
1985	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.6	20.4	18.0	0.0	45.0
1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1987	0.0	0.0	0.0	0.0	0.0	0.0	9.0	0.0	0.0	0.0	0.0	0.0	9.0
1988	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1	4.3	0.0	0.0	0.0	6.4
1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1991	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1994	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	12.0	13.9	0.0	0.0	28.7
1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3	0.0	0.0	0.0	0.0	3.3
1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	1.1
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1999	0.0	0.0	0.0	0.0	0.0	0.0	4.0	20.5	24.9	14.3	8.2	0.0	71.9
2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2001	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7	0.0	0.0	0.0	2.7
2002	0.0	NaN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19.1	25.3	21.3	8.5	0.0	74.1
2004	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2005	0.0	0.0	0.0	0.0	0.0	0.0	NaN	6.2	0.0	0.0	0.0	0.0	6.2
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	0.0	0.0	0.0	0.0	0.0	0.0	9.0	20.5	25.3	21.3	18.0	0.0	
Mean	0.0	0.0	0.0	0.0	0.0	0.0	0.6	2.3	3.1	3.0	1.6	0.0	

3.31. Turitea at Ngahere Park Rd (1132501), July 2001 to July 2006 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 1132501 Turitea at Ngahere Park Rd

From 1-Jul-2001 00:00:01 to 1-Jul-2006 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	52729	6000	4164	3278	2816	2505	2282	2087	1939	1809
10	1693	1592	1503	1430	1364	1300	1241	1186	1136	1091
20	1051	1015	977	943	912	882	853	824	800	775
30	753	730	710	690	670	653	635	616	601	584
40	569	550	534	517	497	477	456	435	417	400
50	385	370	356	343	330	318	306	295	284	273
60	263	253	244	234	224	213	202	192	182	172
70	162	151	141	131	122	115	108	103	99	95
80	91	89	86	83	80	78	76	73	71	69
90	66	64	61	58	56	53	51	47	44	40
100	7									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 1132501 Turitea at Ngahere Park Rd
 From 1-Jul-2001 00:00:01 to 1-Jul-2006 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	50150	5665	3504	2770	2309	1942	1699	1504	1385	1279
10	1185	1112	1049	987	932	883	838	802	770	742
20	714	691	667	639	617	598	579	562	544	526
30	503	480	456	432	410	391	372	355	340	325
40	313	299	287	276	266	256	246	237	228	218
50	208	199	191	183	175	166	157	149	140	132
60	124	117	112	108	103	100	97	95	92	89
70	88	86	83	81	80	78	76	75	73	72
80	70	69	67	65	64	62	60	58	57	55
90	54	52	51	49	48	46	44	42	40	37
100	7									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 1132501 Turitea at Ngahere Park Rd
 From 1-Jul-2001 00:00:00 to 30-Jun-2006 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*2001	22.535	22-Nov-2001 15:15
2002	15.433	7-Jul-2002 15:45
2003	29.846	17-Jul-2003 03:30
*2004	52.729	28-Sep-2004 12:00
*2005	37.385	6-Jan-2005 06:25
*2006	9.1470	17-Jun-2006 09:35

Average Annual Maximum 22.639 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 1132501 Turitea at Ngahere Park Rd
 From 1-Jul-2001 00:00:00 to 30-Jun-2006 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-2002 24:00:00	50 at interval beginning 13-Mar-2002 11:45:00
30-Jun-2003 24:00:00	10 at interval beginning 29-Jan-2003 14:15:00
30-Jun-2004 24:00:00	68 at interval beginning 20-Aug-2003 17:15:00
Gap from 13-Nov-2004 12:45:00 to 18-Nov-2004 09:50:00 of 4.88 Days	
30-Jun-2005 24:00:00(PARTIAL)	28 at interval beginning 4-Apr-2005 17:20:00
Gap from 19-Aug-2005 12:45:00 to 30-Aug-2005 11:30:00 of 10.95 Days	
Gap from 3-Dec-2005 22:05:00 to 4-Dec-2005 00:15:00 of 2.17 Hours	
Gap from 17-Feb-2006 12:45:00 to 20-Feb-2006 09:55:00 of 2.88 Days	
Gap from 9-Mar-2006 18:55:00 to 15-Mar-2006 09:40:00 of 5.61 Days	
Gap from 13-May-2006 12:45:00 to 15-May-2006 10:40:00 of 1.91 Days	
30-Jun-2006 24:00:00(PARTIAL)	38 at interval beginning 11-Jan-2006 13:35:00

Mean annual Minimum = 42 becomes 39
 (For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
 Monthly totals 2001 to 2006 site 1132501 Turitea at Ngahere Park Rd
 Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
	2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	2003	0.0	0.0	0.0	0.0	0.0	0.0	3.0	2.5	4.0	0.0	0.0	0.0	9.5
	2004	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	2005	0.0	0.0	0.0	0.0	NaN	0.0	0.0	0.0	1.2	1.8	0.0	0.0	3.0
	2006	0.0	NaN	0.0	0.0	0.0	NaN	0.7	NaN	NaN	0.0	NaN	0.0	0.7
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	2.5	4.0	1.8	0.0	0.0	0.0
Mean	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.6	1.3	0.4	0.0	0.0	0.0

3.32. Puke Puke at Lake Outlet (32602), July 1971 to July 1980 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 32602 Puke Puke at Lake Outlet
 From 1-Jul-1971 00:00:01 to 1-Jul-1980 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	2256	924	712	622	551	492	448	415	382	354
10	331	311	291	273	255	238	223	210	197	182
20	170	161	151	143	136	129	122	115	109	104
30	99	93	89	86	82	78	75	72	68	64
40	60	56	52	49	47	43	41	39	36	34
50	32	30	28	26	24	21	19	17	15	14
60	13	12	11	10	10	10	9	9	8	8
70	8	8	7	7	7	7	6	6	6	5
80	5	5	5	4	4	4	4	4	3	3
90	3	3	2	2	2	2	2	2	1	1
100	0									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 32602 Puke Puke at Lake Outlet
 From 1-Jul-1971 00:00:01 to 1-Jul-1980 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	490	166	125	100	87	78	70	64	60	55
10	51	48	44	41	39	36	34	33	31	30
20	29	27	26	24	22	21	20	18	17	16
30	15	14	14	13	12	12	11	11	11	10
40	10	10	10	9	9	9	8	8	8	8
50	8	7	7	7	7	7	6	6	6	6
60	6	6	5	5	5	5	5	5	4	4
70	4	4	4	4	4	4	3	3	3	3

80	3	3	3	3	3	2	2	2	2	2
90	2	2	2	2	2	1	1	1	1	1
100	0									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 32602 Puke Puke at Lake Outlet
 From 1-Jul-1971 00:00:00 to 30-Jun-1980 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1971	0.88832	30-Jun-1971 24:00
1972	1.0540	18-Jul-1972 13:32
1973	0.63100	18-Sep-1973 14:00
1974	1.7150	27-Jul-1974 17:00
1975	2.2560	30-Aug-1975 12:30
1976	1.9150	30-Jun-1976 06:15
1977	0.97900	4-Sep-1977 02:45
1978	0.81900	14-Jul-1978 00:30
1979	1.1260	16-May-1979 21:45
*1980	0.60400	13-Jun-1980 00:30

Average Annual Maximum 1.3119 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 32602 Puke Puke at Lake Outlet
 From 1-Jul-1971 00:00:00 to 30-Jun-1980 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1972 24:00:00	4 at interval beginning 16-Feb-1972 00:30:00
30-Jun-1973 24:00:00	1 at interval beginning 20-Jan-1973 05:15:00
30-Jun-1974 24:00:00	1 at interval beginning 27-Jan-1974 08:00:00
30-Jun-1975 24:00:00	2 at interval beginning 14-Mar-1975 14:00:00
30-Jun-1976 24:00:00	2 at interval beginning 18-Mar-1976 01:15:00
30-Jun-1977 24:00:00	6 at interval beginning 18-Apr-1977 10:00:00
30-Jun-1978 24:00:00	1 at interval beginning 5-Mar-1978 00:15:00
30-Jun-1979 24:00:00	2 at interval beginning 21-Feb-1979 04:00:00
30-Jun-1980 24:00:00	8 at interval beginning 19-Feb-1980 05:00:00

Mean annual Minimum = 3
 (For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
 Monthly totals 1971 to 1980 site 32602 Puke Puke at Lake Outlet
 Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1972	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1973	0.0	0.0	0.0	0.0	0.0	14.9	31.0	28.0	28.1	30.0	11.0	0.0	143.0	

1974	0.0	0.0	0.0	0.0	0.0	0.0	28.1	28.0	31.0	20.3	25.5	0.0	132.9
1975	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.6	30.4	23.2	0.0	0.0	63.2
1976	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	23.6	14.9	0.0	0.0	38.5
1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1978	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.2	31.0	16.3	0.0	72.4
1979	0.0	0.0	0.0	0.0	0.0	0.0	2.9	19.8	18.1	0.0	0.0	0.0	40.8
1980	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max	0.0	0.0	0.0	0.0	0.0	14.9	31.0	28.0	31.0	30.0	25.5	0.0	0.0
Mean	0.0	0.0	0.0	0.0	0.0	1.7	6.9	12.3	18.0	11.6	4.1	0.0	0.0

4. Rangitikei Catchments

4.1. Forest Rd Drain at Drop Structure (32747), July 1974 to July 2006 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 32747 Forest Rd Drain at Drop Structure

From 1-Jul-1974 00:00:01 to 1-Jul-2006 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	2569	170	105	82	68	60	53	49	45	42
10	39	37	35	33	32	30	29	28	26	25
20	24	23	22	21	21	20	19	18	17	16
30	15	15	14	13	12	12	11	11	10	10
40	9	8	8	7	7	6	6	5	5	4
50	3	2	1	1	1	1	1	1	1	1
60	1	1	1	1	1	1	1	1	1	1
70	1	1	1	1	1	1	1	0	0	0
80	0	0	0	0	0	0	0	0	0	0
90	0	0	0	0	0	0	0	0	0	0
100	0									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 32747 Forest Rd Drain at Drop Structure

From 1-Jul-1974 00:00:01 to 1-Jul-2006 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	617	66	28	21	18	15	13	12	11	10
10	9	8	7	7	6	6	5	5	4	4
20	4	3	3	2	1	1	1	1	1	1
30	1	1	1	1	1	1	1	1	1	1
40	1	1	1	1	1	1	1	1	1	1
50	1	1	1	1	1	1	1	1	1	1
60	1	1	1	0	0	0	0	0	0	0
70	0	0	0	0	0	0	0	0	0	0
80	0	0	0	0	0	0	0	0	0	0
90	0	0	0	0	0	0	0	0	0	0
100	0									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 32747 Forest Rd Drain at Drop Structure
 From 1-Jul-1974 00:00:00 to 30-Jun-2006 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1974	1.0460	18-Jul-1974 00:45
1975	0.80000	28-Aug-1975 16:30
1976	2.5690	29-Jun-1976 06:30
*1977	1.90000E-02	4-Jan-1977 02:30
1978		
1979		
1980		
1981		
1982		
1983		
1984		
1985		
1986		
1987		
1988		
1989		
1990		
1991		
1992		
1993		
1994		
1995		
1996		
1997		
1998		
1999		
2000		
2001		
2002		
*2003	9.90000E-02	29-Sep-2003 15:00
2004	0.61700	29-Feb-2004 00:30
2005	0.34300	6-Jan-2005 04:45
*2006	7.90000E-02	18-Jun-2006 22:00

Average Annual Maximum 1.0822 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 32747 Forest Rd Drain at Drop Structure
 From 1-Jul-1974 00:00:00 to 30-Jun-2006 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1975 24:00:00	0 at interval beginning 30-Nov-1974 15:30:00
30-Jun-1976 24:00:00	0 at interval beginning 13-Nov-1975 07:30:00
Gap from 11-Jan-1977 08:00:00 to 23-Jan-2003 14:15:00 of 26.05 Years	
30-Jun-1977 24:00:00(PARTIAL)	0 at interval beginning 21-Nov-1976 08:00:00
30-Jun-1978 24:00:00	No valid values for this year
30-Jun-1979 24:00:00	No valid values for this year
30-Jun-1980 24:00:00	No valid values for this year
30-Jun-1981 24:00:00	No valid values for this year
30-Jun-1982 24:00:00	No valid values for this year
30-Jun-1983 24:00:00	No valid values for this year

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30-Jun-1984 24:00:00      No valid values for this year
30-Jun-1985 24:00:00      No valid values for this year
30-Jun-1986 24:00:00      No valid values for this year
30-Jun-1987 24:00:00      No valid values for this year
30-Jun-1988 24:00:00      No valid values for this year
30-Jun-1989 24:00:00      No valid values for this year
30-Jun-1990 24:00:00      No valid values for this year
30-Jun-1991 24:00:00      No valid values for this year
30-Jun-1992 24:00:00      No valid values for this year
30-Jun-1993 24:00:00      No valid values for this year
30-Jun-1994 24:00:00      No valid values for this year
30-Jun-1995 24:00:00      No valid values for this year
30-Jun-1996 24:00:00      No valid values for this year
30-Jun-1997 24:00:00      No valid values for this year
30-Jun-1998 24:00:00      No valid values for this year
30-Jun-1999 24:00:00      No valid values for this year
30-Jun-2000 24:00:00      No valid values for this year
30-Jun-2001 24:00:00      No valid values for this year
30-Jun-2002 24:00:00      No valid values for this year
30-Jun-2003 24:00:00(PARTIAL) 0 at interval beginning 23-Jan-2003 14:15:00
30-Jun-2004 24:00:00      0 at interval beginning 17-Aug-2003 20:30:00
30-Jun-2005 24:00:00      0 at interval beginning 19-Nov-2004 11:00:00
30-Jun-2006 24:00:00      0 at interval beginning 4-Sep-2005 08:45:00

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Mean annual Minimum = 0
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1974 to 2006 site 32747 Forest Rd Drain at Drop Structure
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1975	0.0	0.0	0.0	0.0	0.0	24.4	31.0	28.0	31.0	30.0	21.3	0.0	165.7	
1976	0.0	0.0	0.0	0.0	13.6	29.0	31.0	29.0	29.3	28.2	2.3	0.0	162.4	
1977	0.0	0.0	0.0	0.0	5.9	26.8	NaN	NaN	NaN	NaN	NaN	NaN	32.7	
1978	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0	
1979	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0	
1980	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0	
1981	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0	
1982	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0	
1983	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0	
1984	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0	
1985	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0	
1986	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0	
1987	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0	
1988	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0	
1989	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0	
1990	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0	
1991	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0	
1992	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0	
1993	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0	
1994	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0	
1995	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0	
1996	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0	
1997	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0	
1998	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0	
1999	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0	
2000	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0	

2001	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
2002	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
2003	NaN	NaN	NaN	NaN	NaN	NaN	NaN	28.0	31.0	30.0	31.0	8.6	128.6
2004	0.0	11.4	0.9	0.0	19.3	29.0	31.0	14.6	0.0	10.1	7.8	0.0	124.1
2005	0.0	0.0	0.0	0.0	11.4	20.9	16.5	28.0	31.0	30.0	31.0	21.5	190.2
2006	0.0	0.0	12.7	0.0	24.2	24.6	31.0	28.0	31.0	30.0	31.0	10.8	223.4
Min	0.0	0.0	0.0	0.0	0.0	20.9	16.5	14.6	0.0	10.1	2.3	0.0	
Max	0.0	11.4	12.7	0.0	24.2	29.0	31.0	29.0	31.0	30.0	31.0	21.5	
Mean	0.0	1.9	2.3	0.0	12.4	25.8	28.1	25.9	25.5	26.4	20.7	6.8	

4.2. Hautapu Taihape All (100), July 1963 to July 2004 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 100 Hautapu Taihape All
From 1-Jul-1963 00:00:01 to 1-Jul-2004 00:00:01
Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	206409	24327	19130	16471	14603	13349	12325	11576	10948	10343
10	9794	9296	8880	8490	8129	7809	7511	7219	6952	6705
20	6472	6254	6043	5843	5645	5466	5306	5144	4996	4849
30	4705	4569	4431	4310	4190	4075	3966	3855	3758	3667
40	3576	3484	3396	3304	3224	3152	3077	3003	2933	2865
50	2800	2739	2681	2621	2556	2493	2433	2371	2313	2258
60	2207	2156	2108	2060	2015	1965	1914	1867	1821	1776
70	1730	1687	1642	1599	1556	1514	1468	1423	1382	1344
80	1303	1266	1232	1194	1161	1125	1089	1057	1022	982
90	944	909	873	831	785	737	694	652	606	536
100	272									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 100 Hautapu Taihape All
From 1-Jul-1963 00:00:01 to 1-Jul-2004 00:00:01
Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	206409	17878	11939	9562	8114	7128	6435	5885	5418	5055
10	4739	4443	4231	4042	3867	3719	3594	3480	3349	3234
20	3128	3030	2941	2856	2782	2716	2649	2579	2514	2460
30	2403	2350	2298	2252	2210	2170	2133	2099	2060	2024
40	1987	1954	1919	1882	1848	1815	1784	1752	1721	1692
50	1661	1634	1607	1578	1555	1528	1500	1472	1443	1416
60	1392	1368	1346	1324	1298	1275	1252	1231	1212	1192
70	1172	1152	1132	1111	1095	1076	1057	1039	1015	994
80	971	951	930	909	889	872	844	821	796	772
90	749	725	702	679	658	639	612	575	534	456
100	272									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 100 Hautapu Taihape All
From 1-Jul-1963 00:00:00 to 30-Jun-2004 24:00:00
Interval = 0
flow m3/s

Year	Maximum	Date & Time
*1963	24.257	21-Sep-1963 22:00
1964	31.241	25-Sep-1964 03:00
1965	61.314	18-Mar-1965 18:00
1966	25.084	9-Jul-1966 16:00
1967	77.857	29-Dec-1967 06:00
*1968	42.365	30-Jun-1968 16:00
1969		
1970		
1971		
1972		
1973		
1974		
1975		
1976		
1977		
1978		
1979		
*1980	59.557	9-Jul-1980 10:15
1981	26.396	9-Jul-1981 08:45
1982	30.042	2-Aug-1982 19:15
1983	41.663	22-May-1983 17:00
1984	23.258	6-Aug-1984 17:45
1985	73.181	28-Jul-1985 11:30
1986	63.990	26-Jul-1986 18:15
1987	37.545	5-Mar-1987 11:45
1988	67.270	2-Sep-1988 12:45
1989	37.777	18-Oct-1989 21:00
1990	21.447	4-May-1990 03:30
1991	36.725	9-Aug-1991 14:15
1992	69.174	23-Jul-1992 05:15
1993	31.878	15-Jun-1993 11:45
1994	55.115	26-Jun-1994 08:45
1995	38.080	15-Jul-1995 08:15
1996	37.225	22-Apr-1996 06:00
1997	27.224	23-Aug-1997 21:00
1998	65.276	15-Jul-1998 12:45
1999	55.286	29-Nov-1999 20:15
2000	40.322	13-Oct-2000 03:00
2001	87.544	25-May-2001 13:45
2002	49.136	30-Sep-2002 10:15
2003	36.160	6-Sep-2003 04:55
*2004	206.41	16-Feb-2004 08:00

Average Annual Maximum 46.193 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 100 Hautapu Taihape All
From 1-Jul-1963 00:00:00 to 30-Jun-2004 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1964 24:00:00	615 at interval beginning 26-Feb-1964 17:20:00
30-Jun-1965 24:00:00	954 at interval beginning 10-Feb-1965 24:00:00
30-Jun-1966 24:00:00	1180 at interval beginning 21-Apr-1966 24:00:00
30-Jun-1967 24:00:00	773 at interval beginning 21-Apr-1967 24:00:00
30-Jun-1968 24:00:00	617 at interval beginning 27-Mar-1968 24:00:00
Gap from 31-Aug-1968 00:00:00 to 25-Jun-1980 11:00:00 of 11.83 Years	

```

30-Jun-1969 24:00:00(PARTIAL)      3923 at interval beginning 12-Aug-1968 15:00:00
30-Jun-1970 24:00:00              No valid values for this year
30-Jun-1971 24:00:00              No valid values for this year
30-Jun-1972 24:00:00              No valid values for this year
30-Jun-1973 24:00:00              No valid values for this year
30-Jun-1974 24:00:00              No valid values for this year
30-Jun-1975 24:00:00              No valid values for this year
30-Jun-1976 24:00:00              No valid values for this year
30-Jun-1977 24:00:00              No valid values for this year
30-Jun-1978 24:00:00              No valid values for this year
30-Jun-1979 24:00:00              No valid values for this year
30-Jun-1980 24:00:00(PARTIAL)      2561 at interval beginning 30-Jun-1980 07:15:00
30-Jun-1981 24:00:00              847 at interval beginning 16-Mar-1981 21:30:00
30-Jun-1982 24:00:00              525 at interval beginning 16-Feb-1982 20:45:00
30-Jun-1983 24:00:00              555 at interval beginning 18-Apr-1983 16:30:00
30-Jun-1984 24:00:00              592 at interval beginning 1-Feb-1984 14:30:00
30-Jun-1985 24:00:00              453 at interval beginning 14-Feb-1985 04:45:00
30-Jun-1986 24:00:00              805 at interval beginning 26-Apr-1986 18:15:00
30-Jun-1987 24:00:00              731 at interval beginning 8-Jan-1987 19:00:00
30-Jun-1988 24:00:00              590 at interval beginning 3-Feb-1988 09:00:00
30-Jun-1989 24:00:00              713 at interval beginning 28-Apr-1989 04:15:00
30-Jun-1990 24:00:00              887 at interval beginning 7-Mar-1990 11:45:00
30-Jun-1991 24:00:00              627 at interval beginning 10-Feb-1991 17:45:00
30-Jun-1992 24:00:00              1122 at interval beginning 6-Mar-1992 08:00:00
30-Jun-1993 24:00:00              882 at interval beginning 17-Mar-1993 00:15:00
30-Jun-1994 24:00:00              750 at interval beginning 16-Feb-1994 03:45:00
30-Jun-1995 24:00:00              971 at interval beginning 18-Jan-1995 17:30:00
30-Jun-1996 24:00:00              623 at interval beginning 6-Jan-1996 07:45:00
30-Jun-1997 24:00:00              1043 at interval beginning 20-Mar-1997 22:00:00
30-Jun-1998 24:00:00              281 at interval beginning 9-Feb-1998 10:30:00
30-Jun-1999 24:00:00              287 at interval beginning 7-Jan-1999 17:00:00
30-Jun-2000 24:00:00              506 at interval beginning 7-Apr-2000 10:45:00
30-Jun-2001 24:00:00              895 at interval beginning 9-Apr-2001 18:00:00
30-Jun-2002 24:00:00              1031 at interval beginning 24-Apr-2002 23:40:00
30-Jun-2003 24:00:00              639 at interval beginning 20-Mar-2003 16:00:00
30-Jun-2004 24:00:00              1109 at interval beginning 15-Aug-2003 02:00:00

```

Mean annual Minimum = 745
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1963 to 2004 site 100 Hautapu Taihape All
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1964	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.3	0.3	5.9	0.0	0.0	17.5
1965	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1966	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1967	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1968	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.1	5.6	0.0	0.0	18.8
1969	0.0	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1970	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1971	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1972	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1973	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1974	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1975	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1976	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0

1977	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1978	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1979	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1980	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	0.0	0.0	0.0	0.0	0.0	0.0	2.0	23.2	0.0	0.0	0.0	0.0	25.2
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.4	27.9	20.5	1.3	0.0	60.1
1984	0.0	0.0	0.0	0.0	0.0	0.0	6.0	8.5	4.7	1.7	0.0	0.0	20.8
1985	0.0	0.0	0.0	0.0	0.0	0.0	3.2	23.8	23.9	26.1	13.8	0.0	90.7
1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1987	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.0	0.0	0.0	0.0	0.0	1.4
1988	0.0	0.0	0.0	0.0	0.0	0.0	7.9	3.7	0.0	0.0	0.0	0.0	11.6
1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.5	0.0	0.0	5.5
1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1991	0.0	0.0	0.0	0.0	0.0	0.0	8.6	9.3	17.0	5.1	0.0	0.0	39.9
1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1994	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.5
1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1996	0.0	0.0	0.0	0.0	0.0	0.0	4.3	0.0	0.3	0.0	0.0	0.0	4.5
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1998	0.0	0.0	0.0	0.0	0.0	0.0	24.6	23.4	28.8	20.5	0.7	0.0	97.9
1999	0.0	0.0	0.0	0.0	0.0	10.5	15.6	10.0	18.0	7.8	0.0	0.0	62.0
2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.5	25.8	10.6	0.0	0.0	40.9
2001	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	22.8	16.7	16.6	0.0	56.2
2004	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	0.0	0.0	0.0	0.0	0.0	10.5	24.6	23.8	28.8	26.1	16.6	0.0	
Mean	0.0	0.0	0.0	0.0	0.0	0.4	2.5	4.4	6.3	4.3	1.1	0.0	

4.3. Makohine at Viaduct (32754), July 1977 to July 2004 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 32754 Makohine at Viaduct
From 1-Jul-1977 00:00:01 to 1-Jul-2004 00:00:01
Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	198549	14000	9063	6958	5715	4877	4204	3676	3273	2934
10	2653	2419	2225	2042	1891	1757	1643	1541	1448	1369
20	1295	1223	1158	1096	1037	980	930	884	839	798
30	764	725	694	664	633	610	582	556	535	510
40	490	466	447	427	412	396	378	365	351	337
50	325	307	295	284	274	264	254	244	234	225
60	217	210	202	194	188	182	176	169	162	155
70	149	142	138	133	129	124	118	113	108	103
80	99	95	91	87	84	80	77	73	70	66
90	62	60	57	55	52	49	46	42	38	31
100	12									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 32754 Makohine at Viaduct
From 1-Jul-1977 00:00:01 to 1-Jul-2004 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	198549	8861	5186	3463	2583	2079	1745	1528	1364	1235
10	1084	959	862	785	716	656	608	564	524	488
20	456	429	405	384	364	343	324	310	294	282
30	268	258	244	235	226	216	209	202	196	188
40	181	176	171	166	161	157	152	148	144	141
50	137	133	130	126	121	117	114	111	109	106
60	103	101	98	96	93	91	89	88	86	84
70	82	80	78	76	74	72	70	69	67	65
80	64	62	61	59	58	57	55	54	53	51
90	50	49	47	46	44	41	39	36	32	27
100	12									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 32754 Makohine at Viaduct
 From 1-Jul-1977 00:00:00 to 30-Jun-2004 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1977	28.796	3-Nov-1977 16:00
1978	52.666	21-Oct-1978 02:30
1979	52.434	30-Dec-1979 15:00
1980	78.154	9-Jul-1980 09:45
1981	31.016	25-Aug-1981 06:30
1982	36.410	4-Jun-1982 23:15
1983	140.59	20-May-1983 16:30
1984	27.616	5-Aug-1984 06:15
1985	60.233	28-Jul-1985 11:30
1986	54.369	26-Jul-1986 14:45
1987	51.814	11-Apr-1987 00:45
1988	182.66	2-Sep-1988 12:45
1989	57.690	3-Jan-1989 20:15
1990	61.706	20-Mar-1990 20:00
*1991	62.945	10-Apr-1991 21:45
1992	65.832	15-Oct-1992 16:45
1993	80.039	15-Jun-1993 08:00
1994	40.093	20-May-1994 22:00
1995	71.709	29-May-1995 03:00
1996	58.897	21-Apr-1996 07:45
1997	60.259	23-Aug-1997 19:00
1998	113.92	15-Jul-1998 08:15
1999	103.37	29-Nov-1999 16:00
2000	41.051	25-Jan-2000 17:45
2001	101.76	25-May-2001 13:30
2002	51.487	10-Jan-2002 17:00
2003	96.840	28-Sep-2003 12:20
*2004	198.55	16-Feb-2004 04:15

Average Annual Maximum 70.905 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 32754 Makohine at Viaduct
 From 1-Jul-1977 00:00:00 to 30-Jun-2004 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1978 24:00:00	16 at interval beginning 10-Apr-1978 24:00:00
30-Jun-1979 24:00:00	50 at interval beginning 26-Jan-1979 24:00:00
30-Jun-1980 24:00:00	13 at interval beginning 11-Feb-1980 24:00:00
30-Jun-1981 24:00:00	23 at interval beginning 16-Mar-1981 06:00:00
30-Jun-1982 24:00:00	25 at interval beginning 15-Feb-1982 16:30:00
30-Jun-1983 24:00:00	47 at interval beginning 4-Feb-1983 16:15:00
30-Jun-1984 24:00:00	31 at interval beginning 1-Feb-1984 19:00:00
30-Jun-1985 24:00:00	32 at interval beginning 26-Feb-1985 12:30:00
30-Jun-1986 24:00:00	34 at interval beginning 14-Feb-1986 04:15:00
30-Jun-1987 24:00:00	22 at interval beginning 9-Jan-1987 10:30:00
30-Jun-1988 24:00:00	29 at interval beginning 29-Jan-1988 21:30:00
30-Jun-1989 24:00:00	38 at interval beginning 9-Apr-1989 16:30:00
30-Jun-1990 24:00:00	31 at interval beginning 8-Mar-1990 06:45:00
30-Jun-1991 24:00:00	30 at interval beginning 10-Jan-1991 19:00:00
Gap from 6-Nov-1991 06:30:00 to 19-Nov-1991 15:00:00 of 13.35 Days	
30-Jun-1992 24:00:00 (PARTIAL)	38 at interval beginning 4-Feb-1992 02:15:00
30-Jun-1993 24:00:00	35 at interval beginning 17-Feb-1993 23:45:00
30-Jun-1994 24:00:00	23 at interval beginning 16-Feb-1994 13:00:00
30-Jun-1995 24:00:00	42 at interval beginning 19-Feb-1995 10:15:00
30-Jun-1996 24:00:00	70 at interval beginning 14-Dec-1995 04:00:00
30-Jun-1997 24:00:00	55 at interval beginning 31-Jan-1997 14:15:00
30-Jun-1998 24:00:00	47 at interval beginning 25-Mar-1998 13:00:00
30-Jun-1999 24:00:00	37 at interval beginning 18-Feb-1999 16:30:00
30-Jun-2000 24:00:00	52 at interval beginning 11-Mar-2000 00:45:00
30-Jun-2001 24:00:00	49 at interval beginning 28-Feb-2001 15:45:00
30-Jun-2002 24:00:00	81 at interval beginning 22-Apr-2002 10:25:00
30-Jun-2003 24:00:00	46 at interval beginning 19-Mar-2003 07:41:31
30-Jun-2004 24:00:00	72 at interval beginning 17-Jan-2004 18:20:00

Mean annual Minimum = 40 remains 40
 (For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
 Monthly totals 1977 to 2004 site 32754 Makohine at Viaduct
 Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1978	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.8	26.9	10.1	12.8	0.0	0.0	56.7
1979	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1980	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.1	3.5	0.0	0.0	0.0	13.6
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	5.8	0.0	0.0	0.0	6.0
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.3	0.0	0.0	0.0	0.0	11.3
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.6	3.0	0.5	0.0	0.0	0.0	8.0
1985	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.5	0.7	9.4	0.0	0.0	14.6
1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.6	4.5	0.0	0.0	0.0	8.0
1987	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.8	1.0	0.0	0.0	0.0	0.0	10.9
1988	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.2	3.7	0.0	0.0	0.0	0.0	28.8
1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.4	0.0	0.0	5.4
1990	0.0	0.0	0.0	0.0	0.4	1.5	4.5	1.1	7.1	0.0	0.0	0.0	0.0	14.5
1991	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.2	0.0	18.0	0.0	0.0	0.0	27.3
1992	0.0	0.0	0.0	0.0	NaN	0.0	0.0	2.4	0.0	0.0	0.0	0.0	0.0	2.4
1993	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.9	0.0	0.0	0.0	0.0	0.0	3.9
1994	0.0	0.0	0.0	0.0	0.0	0.0	0.8	13.1	3.6	0.0	0.0	0.0	0.0	17.5
1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1999	0.0	0.0	0.0	0.0	0.0	0.0	4.5	4.3	0.0	0.0	0.0	0.0	8.8
2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2001	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2004	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max	0.0	0.0	0.0	0.0	0.4	1.5	25.2	26.9	18.0	12.8	0.0	0.0	0.0
Mean	0.0	0.0	0.0	0.0	0.0	0.1	2.4	3.3	2.0	1.0	0.0	0.0	0.0

4.4. Maungaraupi at Maungaraupi (32723), July 1970 to July 1975 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 32723 Maungaraupi at Maungaraupi

From 1-Jul-1970 00:00:01 to 1-Jul-1975 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	28681	2680	1753	1345	1108	936	815	725	658	601
10	547	494	455	425	402	377	353	331	308	288
20	271	260	249	236	224	214	204	194	185	177
30	170	164	159	154	148	142	134	126	118	111
40	105	100	93	86	80	74	67	59	52	46
50	39	34	30	25	21	17	15	12	9	7
60	5	5	5	4	4	4	4	3	3	3
70	3	2	2	2	2	2	2	2	2	2
80	1	1	1	1	1	1	1	1	1	1
90	1	1	1	1	0	0	0	0	0	0
100	0									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 32723 Maungaraupi at Maungaraupi

From 1-Jul-1970 00:00:01 to 1-Jul-1975 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	14574	680	361	254	183	152	124	106	86	73
10	60	49	41	35	30	25	22	19	17	15
20	13	11	10	8	7	6	5	5	4	4
30	3	3	3	3	3	3	3	3	3	3
40	2	2	2	2	2	2	2	2	2	2
50	2	1	1	1	1	1	1	1	1	1
60	1	1	1	1	1	1	1	1	1	1
70	1	1	1	1	1	1	1	0	0	0
80	0	0	0	0	0	0	0	0	0	0
90	0	0	0	0	0	0	0	0	0	0
100	0									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 32723 Maungaraupi at Maungaraupi

From 1-Jul-1970 00:00:00 to 30-Jun-1975 24:00:00

Interval = 0
flow m3/s

Year	Maximum	Date & Time
*1970	19.822	22-Aug-1970 13:40
1971	28.681	21-Oct-1971 23:30
1972	27.591	16-Oct-1972 11:35
1973	7.4170	31-Dec-1973 17:45
1974	20.188	3-Jul-1974 24:00
*1975	10.879	15-Jun-1975 20:00

Average Annual Maximum 20.969 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 32723 Maungaraupi at Maungaraupi
From 1-Jul-1970 00:00:00 to 30-Jun-1975 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
Gap from 30-Jul-1970 13:30:00 to 31-Jul-1970 13:30:00 of 1.00 Days	
Gap from 29-Sep-1970 09:00:00 to 2-Oct-1970 16:10:00 of 3.30 Days	
30-Jun-1971 24:00:00 (PARTIAL)	0 at interval beginning 23-Nov-1970 18:00:00
30-Jun-1972 24:00:00	2 at interval beginning 9-Nov-1971 13:40:00
30-Jun-1973 24:00:00	0 at interval beginning 15-Nov-1972 09:05:00
30-Jun-1974 24:00:00	0 at interval beginning 10-Oct-1973 09:00:00
30-Jun-1975 24:00:00	0 at interval beginning 2-Dec-1974 09:00:00

Mean annual Minimum = 1 becomes 0
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1970 to 1975 site 32723 Maungaraupi at Maungaraupi
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
	1971	NaN	0.0	NaN	NaN	6.8	31.0	5.4	0.0	0.0	0.0	0.0	0.0	43.2
	1972	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1973	0.0	0.0	0.0	0.0	3.9	15.6	16.8	28.0	26.5	23.0	0.0	0.0	113.8
	1974	0.0	0.0	0.0	13.8	19.6	27.9	26.2	28.0	26.9	19.2	14.8	0.0	176.3
	1975	0.0	0.0	0.0	0.0	0.0	7.1	6.5	22.0	31.0	30.0	9.1	0.0	105.8
Min		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max		0.0	0.0	0.0	13.8	19.6	31.0	26.2	28.0	31.0	30.0	14.8	0.0	
Mean		0.0	0.0	0.0	3.4	6.1	16.3	11.0	15.6	16.9	14.4	4.8	0.0	

4.5. Moawhango at Moawhango (32733), July 1964 to July 2005 (all data)

Flow duration curve tabulation (FDC), all data
Exceedance percentiles

Source is HORIZONS.MTD Site 32733 Moawhango at Moawhango
 From 1-Jul-1964 00:00:01 to 1-Jul-2005 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	282267	43885	35173	30739	27528	25194	23101	21580	20295	18935
10	18036	17040	16048	15230	14479	13798	13244	12673	12114	11593
20	11176	10757	10366	10009	9656	9324	9005	8695	8410	8130
30	7908	7658	7419	7158	6954	6734	6529	6313	6117	5920
40	5744	5563	5405	5244	5082	4938	4808	4683	4572	4456
50	4334	4222	4117	4006	3904	3800	3695	3596	3497	3405
60	3312	3219	3124	3041	2958	2876	2803	2729	2658	2584
70	2514	2445	2374	2307	2243	2173	2106	2035	1968	1901
80	1839	1783	1729	1670	1614	1562	1505	1446	1389	1334
90	1272	1213	1157	1109	1050	992	936	868	797	732
100	489									

Flow duration curve tabulation (FDC), summer season
 Exceedance percentiles

Source is HORIZONS.MTD Site 32733 Moawhango at Moawhango
 From 1-Jul-1964 00:00:01 to 1-Jul-2005 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	282267	30223	21558	18154	16061	14656	13639	12691	11837	11230
10	10628	10004	9477	9007	8586	8206	7885	7547	7200	6904
20	6604	6320	6073	5815	5583	5371	5146	4958	4792	4632
30	4476	4321	4191	4046	3929	3813	3689	3566	3458	3347
40	3251	3162	3075	2993	2917	2847	2783	2720	2662	2601
50	2537	2478	2425	2372	2322	2270	2222	2176	2124	2079
60	2031	1988	1946	1905	1863	1822	1786	1750	1713	1678
70	1645	1613	1575	1544	1511	1478	1443	1413	1376	1342
80	1309	1275	1244	1212	1182	1154	1126	1097	1068	1036
90	1004	975	947	914	880	837	802	771	732	670
100	489									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 32733 Moawhango at Moawhango
 From 1-Jul-1964 00:00:00 to 30-Jun-2005 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1964	109.11	15-Jul-1964 24:00
1965	249.49	18-Mar-1965 09:00
1966	130.01	27-Apr-1966 02:00
1967	282.27	3-Feb-1967 10:00
*1968	131.08	29-Jun-1968 20:00
1969		
1970		
1971		
1972		
1973		
*1974	142.98	16-Jun-1974 09:00
1975	122.91	7-Jun-1975 08:30
1976	137.68	16-Jul-1976 21:00
1977	149.59	15-Sep-1977 12:00
1978	110.79	21-Jul-1978 02:00

1979	65.572	4-Sep-1979	03:15
1980	61.444	15-Mar-1980	23:00
1981	35.602	12-Jan-1981	22:00
1982	23.740	25-Feb-1982	04:00
1983	56.526	28-Jun-1983	00:15
1984	10.313	6-Aug-1984	16:45
1985	39.450	5-Sep-1985	03:00
1986	64.921	5-Jan-1986	20:00
1987	54.410	21-Mar-1987	22:30
1988	70.236	2-Sep-1988	12:00
1989	45.815	6-Feb-1989	23:15
1990	40.135	20-Mar-1990	23:30
*1991	60.883	9-Aug-1991	16:15
1992	72.354	22-Jul-1992	20:15
1993	31.055	17-May-1993	01:00
1994	272.82	8-Nov-1994	14:00
1995	253.91	7-Sep-1995	10:00
1996	66.345	15-Sep-1996	04:30
1997	23.988	24-Sep-1997	04:15
1998	160.33	15-Jul-1998	11:00
1999	111.60	29-Nov-1999	15:15
2000	32.266	15-Oct-2000	21:00
2001	144.37	9-Dec-2001	19:15
2002	57.029	29-Sep-2002	23:15
2003	83.021	6-Sep-2003	03:30
2004	191.50	16-Feb-2004	05:30
*2005	32.136	30-Mar-2005	10:20

Average Annual Maximum 101.61 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 32733 Moawhango at Moawhango
From 1-Jul-1964 00:00:00 to 30-Jun-2005 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1965 24:00:00	5332 at interval beginning 7-Dec-1964 06:00:00
30-Jun-1966 24:00:00	3451 at interval beginning 21-Apr-1966 13:55:00
30-Jun-1967 24:00:00	4146 at interval beginning 22-Apr-1967 24:00:00
30-Jun-1968 24:00:00	2171 at interval beginning 27-Mar-1968 24:00:00
Gap from 31-Dec-1968 23:59:00 to 3-May-1974 16:00:00 of 5.34 Years	
30-Jun-1969 24:00:00(PARTIAL)	7969 at interval beginning 30-Nov-1968 24:00:00
30-Jun-1970 24:00:00	No valid values for this year
30-Jun-1971 24:00:00	No valid values for this year
30-Jun-1972 24:00:00	No valid values for this year
30-Jun-1973 24:00:00	No valid values for this year
30-Jun-1974 24:00:00(PARTIAL)	7808 at interval beginning 22-May-1974 15:30:00
30-Jun-1975 24:00:00	4033 at interval beginning 21-Apr-1975 08:15:00
30-Jun-1976 24:00:00	4137 at interval beginning 26-Mar-1976 14:30:00
30-Jun-1977 24:00:00	3094 at interval beginning 22-Mar-1977 09:00:00
30-Jun-1978 24:00:00	1916 at interval beginning 7-Apr-1978 08:45:00
30-Jun-1979 24:00:00	1480 at interval beginning 7-May-1979 03:00:00
30-Jun-1980 24:00:00	1030 at interval beginning 25-Dec-1979 08:15:00
30-Jun-1981 24:00:00	1099 at interval beginning 10-Apr-1981 12:30:00
30-Jun-1982 24:00:00	669 at interval beginning 16-Feb-1982 08:15:00
30-Jun-1983 24:00:00	518 at interval beginning 22-Mar-1983 15:30:00
30-Jun-1984 24:00:00	725 at interval beginning 1-Feb-1984 02:00:00
30-Jun-1985 24:00:00	601 at interval beginning 27-Feb-1985 22:45:00
30-Jun-1986 24:00:00	992 at interval beginning 16-May-1986 07:30:00
30-Jun-1987 24:00:00	869 at interval beginning 8-Jan-1987 15:45:00

30-Jun-1988 24:00:00	744	at interval beginning	3-Feb-1988 05:00:00
30-Jun-1989 24:00:00	739	at interval beginning	25-Apr-1989 07:15:00
30-Jun-1990 24:00:00	1012	at interval beginning	8-Feb-1990 03:15:00
30-Jun-1991 24:00:00	600	at interval beginning	16-Feb-1991 00:45:00
Gap from 5-Nov-1991 09:15:00 to 13-Nov-1991 08:45:00 of 7.98 Days			
30-Jun-1992 24:00:00 (PARTIAL)	1027	at interval beginning	6-Mar-1992 05:15:00
30-Jun-1993 24:00:00	1129	at interval beginning	18-Feb-1993 09:45:00
30-Jun-1994 24:00:00	722	at interval beginning	2-Feb-1994 01:00:00
30-Jun-1995 24:00:00	854	at interval beginning	2-Mar-1995 12:15:00
30-Jun-1996 24:00:00	853	at interval beginning	8-Jan-1996 04:30:00
30-Jun-1997 24:00:00	847	at interval beginning	18-Feb-1997 07:45:00
30-Jun-1998 24:00:00	764	at interval beginning	25-Mar-1998 16:00:00
30-Jun-1999 24:00:00	690	at interval beginning	23-Mar-1999 11:30:00
30-Jun-2000 24:00:00	640	at interval beginning	11-Mar-2000 10:15:00
30-Jun-2001 24:00:00	1265	at interval beginning	9-Apr-2001 13:15:00
30-Jun-2002 24:00:00	1617	at interval beginning	22-Apr-2002 20:45:00
30-Jun-2003 24:00:00	1227	at interval beginning	26-Mar-2003 03:15:00
30-Jun-2004 24:00:00	1852	at interval beginning	18-Jan-2004 13:30:00
30-Jun-2005 24:00:00	1141	at interval beginning	14-Mar-2005 01:15:00

Mean annual Minimum = 1558 becomes 1542
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1964 to 2005 site 32733 Moawhango at Moawhango
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1965	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1966	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.4	0.0	0.0	5.4
1967	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1968	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.2	31.0	8.3	0.0	0.0	50.5
1969	0.0	0.0	0.0	0.0	0.0	0.0	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1970	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1971	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1972	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1973	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1974	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0	0.0
1975	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1976	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.4	0.0	0.0	0.0	8.4
1978	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.6	25.2	31.0	20.5	0.7	3.9	87.8
1979	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9	NaN	1.9
1980	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19.0	0.0	0.0	0.0	0.0	19.0
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0	22.8	31.0	22.6	5.5	0.0	87.8
1984	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.6	6.5	0.0	0.0	0.0	0.0	15.1
1985	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.4	23.0	11.8	23.2	13.3	0.0	77.7
1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1987	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	4.0
1988	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.8	4.1	0.0	0.0	0.0	0.0	13.9
1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	27.4	5.0	0.0	35.4
1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1991	0.0	0.0	0.0	0.0	0.0	1.8	22.9	19.2	22.9	7.5	0.0	0.0	0.0	74.3
1992	0.0	0.0	0.0	0.0	NaN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1994	0.0	0.0	0.0	0.0	0.0	0.0	11.0	9.3	0.5	0.0	0.0	0.0	0.0	20.9

1995	0.0	0.0	0.0	0.0	0.0	0.0	1.8	3.8	6.3	0.0	0.0	0.0	11.8
1996	0.0	0.0	0.0	0.0	0.0	1.8	4.4	0.0	0.0	0.0	0.0	0.0	6.2
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.1	4.8	0.0	0.0	0.0	9.8
1998	0.0	0.0	0.0	0.0	0.0	0.0	0.8	5.5	17.1	1.3	3.5	0.0	28.3
1999	0.0	0.0	0.0	0.0	0.0	0.0	9.4	8.1	21.9	9.9	0.0	0.0	49.3
2000	0.0	0.0	0.0	0.0	0.0	0.0	1.9	7.9	24.0	8.8	0.0	0.0	42.6
2001	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2004	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2005	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.3	16.8	4.3	0.0	0.0	35.4
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max	0.0	0.0	0.0	0.0	0.0	1.8	22.9	25.2	31.0	27.4	13.3	3.9	
Mean	0.0	0.0	0.0	0.0	0.0	0.1	2.7	5.3	6.6	4.0	0.9	0.1	

4.6. Moawhango at Moawhango (32733), July 1964 to July 1978 (pre-diversion)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 32733 Moawhango at Moawhango

From 1-Jul-1964 00:00:01 to 1-Jul-1978 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	282267	57325	48407	43608	40191	37651	35571	34186	32631	31352
10	30188	29179	28173	27258	26415	25721	24986	24216	23543	22921
20	22375	21897	21459	21054	20612	20191	19686	19255	18802	18419
30	18130	17965	17611	17291	16898	16534	16151	15854	15517	15234
40	14971	14657	14395	14078	13816	13643	13391	13130	12916	12640
50	12448	12157	11879	11654	11403	11243	11086	10880	10671	10476
60	10248	10072	9866	9644	9459	9195	9001	8783	8537	8359
70	8153	7998	7872	7729	7539	7389	7145	6989	6824	6633
80	6434	6244	6042	5851	5702	5503	5321	5105	4938	4791
90	4615	4435	4251	4060	3876	3621	3231	2874	2611	2210
100	1885									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 32733 Moawhango at Moawhango

From 1-Jul-1964 00:00:01 to 1-Jul-1978 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	282267	39811	30937	25776	22829	21198	20060	18802	18023	17312
10	16618	15927	15461	15136	14744	14374	14041	13789	13556	13305
20	13052	12745	12494	12229	11945	11717	11478	11294	11218	11040
30	10828	10634	10413	10183	10046	9864	9663	9512	9366	9186
40	9021	8923	8764	8596	8491	8355	8212	8094	8004	7910
50	7804	7700	7591	7492	7381	7231	7083	7020	6905	6786
60	6646	6544	6405	6280	6166	6034	5897	5818	5744	5635
70	5528	5442	5335	5219	5113	5015	4944	4877	4793	4701
80	4619	4537	4440	4336	4253	4183	4067	3988	3886	3790
90	3617	3414	3142	2953	2851	2768	2522	2335	2193	2026
100	1885									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 32733 Moawhango at Moawhango
 From 1-Jul-1964 00:00:00 to 30-Jun-1978 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1964	109.11	15-Jul-1964 24:00
1965	249.49	18-Mar-1965 09:00
1966	130.01	27-Apr-1966 02:00
1967	282.27	3-Feb-1967 10:00
*1968	131.08	29-Jun-1968 20:00
1969		
1970		
1971		
1972		
1973		
*1974	142.98	16-Jun-1974 09:00
1975	122.91	7-Jun-1975 08:30
1976	137.68	16-Jul-1976 21:00
1977	149.59	15-Sep-1977 12:00
*1978	31.793	20-Apr-1978 06:15

Average Annual Maximum 178.66 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 32733 Moawhango at Moawhango
 From 1-Jul-1964 00:00:00 to 30-Jun-1978 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1965 24:00:00	5332 at interval beginning 7-Dec-1964 06:00:00
30-Jun-1966 24:00:00	3451 at interval beginning 21-Apr-1966 13:55:00
30-Jun-1967 24:00:00	4146 at interval beginning 22-Apr-1967 24:00:00
30-Jun-1968 24:00:00	2171 at interval beginning 27-Mar-1968 24:00:00
Gap from 31-Dec-1968 23:59:00 to 3-May-1974 16:00:00 of 5.34 Years	
30-Jun-1969 24:00:00(PARTIAL)	7969 at interval beginning 30-Nov-1968 24:00:00
30-Jun-1970 24:00:00	No valid values for this year
30-Jun-1971 24:00:00	No valid values for this year
30-Jun-1972 24:00:00	No valid values for this year
30-Jun-1973 24:00:00	No valid values for this year
30-Jun-1974 24:00:00(PARTIAL)	7808 at interval beginning 22-May-1974 15:30:00
30-Jun-1975 24:00:00	4033 at interval beginning 21-Apr-1975 08:15:00
30-Jun-1976 24:00:00	4137 at interval beginning 26-Mar-1976 14:30:00
30-Jun-1977 24:00:00	3094 at interval beginning 22-Mar-1977 09:00:00
30-Jun-1978 24:00:00	1916 at interval beginning 7-Apr-1978 08:45:00

Mean annual Minimum = 3535
 (For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
 Monthly totals 1964 to 1978 site 32733 Moawhango at Moawhango
 Days < MALF

Season
 ending
 in

Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1965	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1966	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.4	0.0	0.0	5.4
1967	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1968	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.2	31.0	8.3	0.0	0.0	50.5
1969	0.0	0.0	0.0	0.0	0.0	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1970	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1971	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1972	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1973	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1974	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0	0.0
1975	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1976	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.4	0.0	0.0	0.0	8.4
1978	0.0	0.0	0.0	0.0	0.0	0.0	6.6	25.2	31.0	20.5	0.7	3.9	87.8
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	0.0	0.0	0.0	0.0	0.0	0.0	6.6	25.2	31.0	20.5	0.7	3.9	
Mean	0.0	0.0	0.0	0.0	0.0	0.0	0.8	4.6	8.8	4.3	0.1	0.4	

4.7. Moawhango at Moawhango (32733), July 1979 to July 2004 (post-diversion)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 32733 Moawhango at Moawhango

From 1-Jul-1979 00:00:01 to 1-Jul-2004 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	272815	28692	21492	17864	15444	13748	12517	11559	10812	10234
10	9727	9289	8899	8529	8197	7897	7588	7292	7046	6812
20	6579	6352	6132	5946	5749	5574	5417	5265	5104	4966
30	4834	4717	4605	4503	4401	4298	4199	4108	4018	3928
40	3841	3755	3667	3589	3515	3441	3368	3294	3223	3147
50	3076	3004	2942	2876	2819	2760	2698	2646	2595	2540
60	2485	2435	2383	2331	2281	2231	2178	2123	2072	2016
70	1963	1912	1862	1819	1778	1734	1691	1646	1606	1563
80	1517	1479	1433	1396	1355	1313	1267	1224	1180	1144
90	1108	1069	1027	988	949	903	854	801	762	700
100	489									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 32733 Moawhango at Moawhango

From 1-Jul-1979 00:00:01 to 1-Jul-2004 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	272815	22379	14051	10394	8382	7163	6466	6033	5585	5215
10	4879	4641	4426	4243	4078	3936	3804	3684	3570	3472
20	3374	3291	3210	3137	3061	2987	2917	2858	2794	2735
30	2686	2639	2594	2546	2497	2455	2414	2372	2331	2291
40	2250	2212	2174	2137	2103	2062	2021	1985	1954	1920
50	1889	1855	1829	1799	1773	1742	1717	1688	1665	1634
60	1611	1584	1560	1536	1506	1484	1459	1432	1411	1388

70	1361	1339	1313	1284	1262	1238	1215	1191	1170	1151
80	1132	1113	1093	1071	1045	1024	1002	981	961	939
90	915	890	863	833	806	786	765	738	700	648
100	489									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 32733 Moawhango at Moawhango
 From 1-Jul-1979 00:00:00 to 30-Jun-2004 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1979	65.572	4-Sep-1979 03:15
1980	61.444	15-Mar-1980 23:00
1981	35.602	12-Jan-1981 22:00
1982	23.740	25-Feb-1982 04:00
1983	56.526	28-Jun-1983 00:15
1984	10.313	6-Aug-1984 16:45
1985	39.450	5-Sep-1985 03:00
1986	64.921	5-Jan-1986 20:00
1987	54.410	21-Mar-1987 22:30
1988	70.236	2-Sep-1988 12:00
1989	45.815	6-Feb-1989 23:15
1990	40.135	20-Mar-1990 23:30
*1991	60.883	9-Aug-1991 16:15
1992	72.354	22-Jul-1992 20:15
1993	31.055	17-May-1993 01:00
1994	272.82	8-Nov-1994 14:00
1995	253.91	7-Sep-1995 10:00
1996	66.345	15-Sep-1996 04:30
1997	23.988	24-Sep-1997 04:15
1998	160.33	15-Jul-1998 11:00
1999	111.60	29-Nov-1999 15:15
2000	32.266	15-Oct-2000 21:00
2001	144.37	9-Dec-2001 19:15
2002	57.029	29-Sep-2002 23:15
2003	83.021	6-Sep-2003 03:30
*2004	191.50	16-Feb-2004 05:30

Average Annual Maximum 78.768 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 32733 Moawhango at Moawhango
 From 1-Jul-1979 00:00:00 to 30-Jun-2004 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1980 24:00:00	1030 at interval beginning 25-Dec-1979 08:15:00
30-Jun-1981 24:00:00	1099 at interval beginning 10-Apr-1981 12:30:00
30-Jun-1982 24:00:00	669 at interval beginning 16-Feb-1982 08:15:00
30-Jun-1983 24:00:00	518 at interval beginning 22-Mar-1983 15:30:00
30-Jun-1984 24:00:00	725 at interval beginning 1-Feb-1984 02:00:00
30-Jun-1985 24:00:00	601 at interval beginning 27-Feb-1985 22:45:00
30-Jun-1986 24:00:00	992 at interval beginning 16-May-1986 07:30:00
30-Jun-1987 24:00:00	869 at interval beginning 8-Jan-1987 15:45:00
30-Jun-1988 24:00:00	744 at interval beginning 3-Feb-1988 05:00:00
30-Jun-1989 24:00:00	739 at interval beginning 25-Apr-1989 07:15:00
30-Jun-1990 24:00:00	1012 at interval beginning 8-Feb-1990 03:15:00

30-Jun-1991 24:00:00 600 at interval beginning 16-Feb-1991 00:45:00
 Gap from 5-Nov-1991 09:15:00 to 13-Nov-1991 08:45:00 of 7.98 Days
 30-Jun-1992 24:00:00 (PARTIAL) 1027 at interval beginning 6-Mar-1992 05:15:00
 30-Jun-1993 24:00:00 1129 at interval beginning 18-Feb-1993 09:45:00
 30-Jun-1994 24:00:00 722 at interval beginning 2-Feb-1994 01:00:00
 30-Jun-1995 24:00:00 854 at interval beginning 2-Mar-1995 12:15:00
 30-Jun-1996 24:00:00 853 at interval beginning 8-Jan-1996 04:30:00
 30-Jun-1997 24:00:00 847 at interval beginning 18-Feb-1997 07:45:00
 30-Jun-1998 24:00:00 764 at interval beginning 25-Mar-1998 16:00:00
 30-Jun-1999 24:00:00 690 at interval beginning 23-Mar-1999 11:30:00
 30-Jun-2000 24:00:00 640 at interval beginning 11-Mar-2000 10:15:00
 30-Jun-2001 24:00:00 1265 at interval beginning 9-Apr-2001 13:15:00
 30-Jun-2002 24:00:00 1617 at interval beginning 22-Apr-2002 20:45:00
 30-Jun-2003 24:00:00 1227 at interval beginning 26-Mar-2003 03:15:00
 30-Jun-2004 24:00:00 1852 at interval beginning 18-Jan-2004 13:30:00

Mean annual Minimum = 919 becomes 923
 (For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
 Monthly totals 1979 to 2004 site 32733 Moawhango at Moawhango
 Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1980	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19.0	0.0	0.0	0.0	0.0	19.0
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0	22.8	31.0	22.6	5.5	0.0	87.8
1984	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.6	6.5	0.0	0.0	0.0	0.0	15.1
1985	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.4	23.0	11.8	23.2	13.3	0.0	77.7
1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1987	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	4.0
1988	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.8	4.1	0.0	0.0	0.0	0.0	13.9
1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	27.4	5.0	0.0	35.4
1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1991	0.0	0.0	0.0	0.0	0.0	0.0	1.8	22.9	19.2	22.9	7.5	0.0	0.0	74.3
1992	0.0	0.0	0.0	0.0	0.0	NaN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1994	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.0	9.3	0.5	0.0	0.0	0.0	20.9
1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	3.8	6.3	0.0	0.0	0.0	11.8
1996	0.0	0.0	0.0	0.0	0.0	0.0	1.8	4.4	0.0	0.0	0.0	0.0	0.0	6.2
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.1	4.8	0.0	0.0	0.0	9.8
1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	5.5	17.1	1.3	3.5	0.0	28.3
1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.4	8.1	21.9	9.9	0.0	0.0	49.3
2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9	7.9	24.0	8.8	0.0	0.0	42.6
2001	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2004	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max	0.0	0.0	0.0	0.0	0.0	0.0	1.8	22.9	23.0	31.0	27.4	13.3	0.0	0.0
Mean	0.0	0.0	0.0	0.0	0.0	0.0	0.1	3.5	5.4	5.7	4.0	1.1	0.0	0.0

4.8. Moawhango at Moawhango (simnat) (327330), July 1964 to July 2003 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 327330 Simulated Natural at Moawhango
From 1-Jul-1964 00:00:01 to 1-Jul-2003 00:00:01
flow l/s

	0	1	2	3	4	5	6	7	8	9
0	373838	53516	44522	39844	36540	34181	32223	30647	29349	28108
10	26976	26066	25250	24474	23733	23092	22487	21908	21396	20915
20	20447	19993	19531	19083	18657	18264	17946	17591	17235	16870
30	16526	16178	15861	15547	15251	14967	14660	14385	14097	13845
40	13609	13371	13133	12901	12651	12436	12214	11993	11782	11576
50	11376	11190	10987	10792	10606	10412	10209	10026	9845	9648
60	9470	9272	9078	8900	8703	8514	8336	8147	7992	7843
70	7662	7496	7334	7157	7005	6849	6697	6543	6398	6243
80	6083	5927	5776	5632	5487	5347	5205	5064	4929	4795
90	4644	4493	4351	4213	4050	3890	3691	3447	3080	2713
100	1910									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 327330 Simulated Natural at Moawhango
From 1-Jul-1964 00:00:01 to 1-Jul-2003 00:00:01
flow l/s

	0	1	2	3	4	5	6	7	8	9
0	279351	44159	34449	29949	26722	24637	23066	21764	20687	19664
10	18761	18027	17397	16793	16194	15668	15222	14796	14402	14033
20	13726	13409	13113	12828	12536	12290	12039	11796	11564	11348
30	11156	10947	10737	10537	10328	10128	9957	9784	9605	9445
40	9275	9115	8981	8824	8666	8525	8399	8248	8106	7991
50	7873	7750	7621	7494	7373	7235	7110	6999	6878	6761
60	6641	6535	6430	6324	6211	6101	5991	5887	5789	5694
70	5598	5503	5411	5317	5227	5142	5062	4987	4913	4838
80	4756	4678	4601	4512	4433	4355	4277	4204	4120	4019
90	3937	3841	3730	3612	3474	3295	3099	2911	2731	2361
100	1910									

Annual maximum series and mean annual flood (MAF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 327330 Simulated Natural at Moawhango
From 1-Jul-1964 00:00:00 to 30-Jun-2003 24:00:00
Interval = 0
flow m3/s

Year	Maximum	Date & Time
*1964	103.87	15-Sep-1964 24:00
1965	210.03	18-Mar-1965 12:00
1966	94.798	3-May-1966 03:00
1967	245.89	3-Feb-1967 09:00
*1968	118.85	29-Jun-1968 21:00
1969		
1970		
1971		
1972		
1973		

*1974	126.79	16-Jun-1974 09:00
1975	118.57	7-Jun-1975 12:00
1976	134.79	16-Jul-1976 21:00
1977	145.84	15-Sep-1977 12:00
1978	107.72	21-Jul-1978 03:00
1979	109.95	15-Oct-1979 03:00
1980	92.368	23-Jan-1980 12:00
1981	63.882	16-Nov-1981 12:00
1982	106.31	25-Feb-1982 12:00
1983	91.854	10-Jul-1983 21:00
1984	56.979	19-Oct-1984 03:00
1985	107.36	20-Aug-1985 09:00
1986	169.47	4-Jan-1986 21:00
1987	79.506	5-Aug-1987 18:00
1988	80.590	25-Jul-1988 15:00
1989	109.61	12-Jun-1989 18:00
1990	117.23	11-Mar-1990 03:00
1991	149.41	9-Aug-1991 18:00
1992	118.25	22-Jul-1992 21:00
1993	124.80	17-May-1993 06:00
1994	279.35	8-Nov-1994 12:00
1995	373.84	7-Sep-1995 12:00
1996	91.469	15-Sep-1996 06:00
1997	75.202	9-Apr-1997 15:00
1998	177.58	2-Jul-1998 12:00
1999	152.43	11-Nov-1999 15:00
2000	145.64	3-Oct-2000 06:00
2001	207.85	9-Dec-2001 21:00
2002	107.15	8-Dec-2002 06:00
*2003	133.19	22-May-2003 06:00

Average Annual Maximum 136.96 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 327330 Simulated Natural at Moawhango
From 1-Jul-1964 00:00:00 to 30-Jun-2003 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (flow l/s)
30-Jun-1965 24:00:00	5332 at interval beginning 7-Dec-1964 06:00:00
30-Jun-1966 24:00:00	3451 at interval beginning 21-Apr-1966 09:00:00
30-Jun-1967 24:00:00	4146 at interval beginning 22-Apr-1967 24:00:00
30-Jun-1968 24:00:00	2099 at interval beginning 28-Mar-1968 09:00:00
Gap from 31-Dec-1968 21:00:00 to 3-May-1974 24:00:00 of 5.34 Years	
30-Jun-1969 24:00:00(PARTIAL)	7742 at interval beginning 5-Dec-1968 12:00:00
30-Jun-1970 24:00:00	No valid values for this year
30-Jun-1971 24:00:00	No valid values for this year
30-Jun-1972 24:00:00	No valid values for this year
30-Jun-1973 24:00:00	No valid values for this year
30-Jun-1974 24:00:00(PARTIAL)	7809 at interval beginning 22-May-1974 15:00:00
30-Jun-1975 24:00:00	4035 at interval beginning 21-Apr-1975 09:00:00
30-Jun-1976 24:00:00	4129 at interval beginning 26-Mar-1976 18:00:00
30-Jun-1977 24:00:00	3094 at interval beginning 22-Mar-1977 09:00:00
30-Jun-1978 24:00:00	1916 at interval beginning 7-Apr-1978 09:00:00
30-Jun-1979 24:00:00	2199 at interval beginning 13-Feb-1979 03:00:00
30-Jun-1980 24:00:00	3771 at interval beginning 5-Nov-1979 09:00:00
30-Jun-1981 24:00:00	4198 at interval beginning 28-Feb-1981 15:00:00
30-Jun-1982 24:00:00	2737 at interval beginning 16-Feb-1982 12:00:00
30-Jun-1983 24:00:00	2230 at interval beginning 22-Mar-1983 24:00:00
30-Jun-1984 24:00:00	3919 at interval beginning 25-Apr-1984 21:00:00

30-Jun-1985 24:00:00	2934 at interval beginning	16-Apr-1985 12:00:00
30-Jun-1986 24:00:00	3609 at interval beginning	25-Apr-1986 12:00:00
30-Jun-1987 24:00:00	3276 at interval beginning	17-Jan-1987 21:00:00
30-Jun-1988 24:00:00	3026 at interval beginning	3-Feb-1988 12:00:00
30-Jun-1989 24:00:00	3619 at interval beginning	28-Apr-1989 15:00:00
30-Jun-1990 24:00:00	3505 at interval beginning	7-Mar-1990 09:00:00
30-Jun-1991 24:00:00	2984 at interval beginning	2-Apr-1991 21:00:00
30-Jun-1992 24:00:00	4341 at interval beginning	6-Mar-1992 12:00:00
30-Jun-1993 24:00:00	3360 at interval beginning	18-Feb-1993 15:00:00
30-Jun-1994 24:00:00	2937 at interval beginning	15-Feb-1994 21:00:00
30-Jun-1995 24:00:00	3701 at interval beginning	26-Jan-1995 03:00:00
30-Jun-1996 24:00:00	5162 at interval beginning	13-Dec-1995 12:00:00
30-Jun-1997 24:00:00	3743 at interval beginning	5-Apr-1997 15:00:00
30-Jun-1998 24:00:00	3559 at interval beginning	20-Jan-1998 15:00:00
30-Jun-1999 24:00:00	3174 at interval beginning	24-Feb-1999 24:00:00
30-Jun-2000 24:00:00	2677 at interval beginning	2-Apr-2000 03:00:00
30-Jun-2001 24:00:00	3483 at interval beginning	26-Mar-2001 21:00:00
30-Jun-2002 24:00:00	3951 at interval beginning	23-Apr-2002 21:00:00
30-Jun-2003 24:00:00	3053 at interval beginning	26-Mar-2003 03:00:00

Mean annual Minimum = 3206 becomes 3424
 (For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
 Monthly totals 1964 to 2003 site 327330 Moawhango at Moawhango (simnat)
 Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1965	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1966	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.3	0.0	0.0	5.3
1967	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1968	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.1	31.0	8.4	0.0	0.0	50.5
1969	0.0	0.0	0.0	0.0	0.0	0.0	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1970	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1971	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1972	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1973	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1974	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1975	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1976	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.1	0.0	0.0	0.0	8.1
1978	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.5	25.1	31.0	20.4	12.9	3.9	99.8
1979	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.6	14.6	3.8	0.1	0.0	NaN	32.1
1980	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.0	0.0	0.0	0.0	0.0	15.0
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.1	31.0	2.0	0.0	0.0	50.1
1984	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.3	12.1	0.0	0.0	13.8
1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1987	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3	0.0	0.0	0.0	0.0	0.0	2.3
1988	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	4.0	0.0	0.0	1.5	0.0	10.5
1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.3
1991	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.5	0.0	6.5	3.1	0.0	0.0	21.1
1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	0.0	0.0	0.0	0.0	2.8
1994	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	8.5	2.4	0.0	0.0	0.0	13.6

1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.5	0.0	0.0	0.0	5.5
2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24.1	4.4	0.0	0.0	28.5
2001	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.6	4.1	1.9	0.0	16.6
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	0.0	0.0	0.0	0.0	1.1	0.0	13.6	25.1	31.0	20.4	12.9	3.9	
Mean	0.0	0.0	0.0	0.0	0.0	0.0	1.3	3.2	4.5	1.8	0.5	0.1	

4.9. Moawhango at Moawhango (simnat) (327330), July 1964 to July 1978 (pre-diversion)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 327330 Simulated Natural at Moawhango
From 1-Jul-1964 00:00:01 to 1-Jul-1978 00:00:01
flow l/s

	0	1	2	3	4	5	6	7	8	9
0	245888	57276	48440	43547	40189	37669	35606	34170	32618	31360
10	30172	29214	28242	27304	26415	25715	24989	24250	23563	22926
20	22410	21900	21457	21056	20620	20220	19702	19276	18808	18414
30	18139	17950	17609	17292	16912	16541	16160	15846	15506	15237
40	14966	14657	14402	14084	13818	13642	13395	13146	12930	12646
50	12450	12164	11887	11659	11415	11238	11081	10879	10663	10470
60	10246	10072	9869	9633	9437	9173	8977	8749	8513	8323
70	8123	7974	7843	7671	7495	7299	7076	6906	6717	6515
80	6316	6111	5870	5736	5534	5366	5150	4966	4834	4655
90	4486	4303	4157	3974	3795	3473	3060	2823	2539	2208
100	1894									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 327330 Simulated Natural at Moawhango
From 1-Jul-1964 00:00:01 to 1-Jul-1978 00:00:01
flow l/s

	0	1	2	3	4	5	6	7	8	9
0	245888	40561	30905	25745	22839	21218	20134	18808	17996	17289
10	16611	15952	15457	15132	14751	14382	14055	13798	13573	13347
20	13083	12782	12503	12269	11977	11756	11496	11310	11214	11049
30	10848	10644	10438	10221	10068	9871	9682	9517	9377	9200
40	9041	8930	8773	8619	8495	8374	8223	8098	8007	7924
50	7817	7711	7597	7508	7403	7249	7114	7037	6922	6804
60	6663	6545	6410	6283	6171	6035	5901	5822	5745	5623
70	5518	5432	5326	5212	5110	5010	4939	4872	4786	4695
80	4618	4528	4438	4332	4251	4181	4063	3979	3883	3788
90	3607	3405	3135	2951	2853	2768	2525	2335	2194	2029
100	1894									

Annual maximum series and mean annual flood (MAF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 327330 Simulated Natural at Moawhango
 From 1-Jul-1964 00:00:00 to 30-Jun-1978 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1964	103.87	15-Sep-1964 24:00
1965	210.03	18-Mar-1965 12:00
1966	94.798	3-May-1966 03:00
1967	245.89	3-Feb-1967 09:00
*1968	118.85	29-Jun-1968 21:00
1969		
1970		
1971		
1972		
1973		
*1974	126.79	16-Jun-1974 09:00
1975	118.57	7-Jun-1975 12:00
1976	134.79	16-Jul-1976 21:00
1977	145.84	15-Sep-1977 12:00
*1978	31.028	20-Apr-1978 06:00

Average Annual Maximum 158.32 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 327330 Simulated Natural at Moawhango
 From 1-Jul-1964 00:00:00 to 30-Jun-1978 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (flow l/s)
30-Jun-1965 24:00:00	5332 at interval beginning 7-Dec-1964 06:00:00
30-Jun-1966 24:00:00	3451 at interval beginning 21-Apr-1966 09:00:00
30-Jun-1967 24:00:00	4146 at interval beginning 22-Apr-1967 24:00:00
30-Jun-1968 24:00:00	2099 at interval beginning 28-Mar-1968 09:00:00
Gap from 31-Dec-1968 21:00:00 to 3-May-1974 24:00:00 of 5.34 Years	
30-Jun-1969 24:00:00(PARTIAL)	7742 at interval beginning 5-Dec-1968 12:00:00
30-Jun-1970 24:00:00	No valid values for this year
30-Jun-1971 24:00:00	No valid values for this year
30-Jun-1972 24:00:00	No valid values for this year
30-Jun-1973 24:00:00	No valid values for this year
30-Jun-1974 24:00:00(PARTIAL)	7809 at interval beginning 22-May-1974 15:00:00
30-Jun-1975 24:00:00	4035 at interval beginning 21-Apr-1975 09:00:00
30-Jun-1976 24:00:00	4129 at interval beginning 26-Mar-1976 18:00:00
30-Jun-1977 24:00:00	3094 at interval beginning 22-Mar-1977 09:00:00
30-Jun-1978 24:00:00	1916 at interval beginning 7-Apr-1978 09:00:00

Mean annual Minimum = 3525
 (For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
 Monthly totals 1964 to 1978 site 327330 Moawhango at Moawhango (simnat)
 Days < MALF

Season
 ending
 in

Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1965	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1966	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.3	0.0	0.0	5.3
1967	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1968	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.1	31.0	8.4	0.0	0.0	50.5
1969	0.0	0.0	0.0	0.0	0.0	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1970	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1971	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1972	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1973	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1974	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0	0.0
1975	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1976	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.1	0.0	0.0	0.0	8.1
1978	0.0	0.0	0.0	0.0	0.0	0.0	6.5	25.1	31.0	20.4	12.9	3.9	99.8
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	0.0	0.0	0.0	0.0	0.0	0.0	6.5	25.1	31.0	20.4	12.9	3.9	
Mean	0.0	0.0	0.0	0.0	0.0	0.0	0.8	4.5	8.8	4.3	1.6	0.4	

4.10. Moawhango at Moawhango (simnat) (327330), July 1979 to July 2003 (post-diversion)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 327330 Simulated Natural at Moawhango
From 1-Jul-1979 00:00:01 to 1-Jul-2003 00:00:01
flow l/s

	0	1	2	3	4	5	6	7	8	9
0	373838	52210	43150	38445	35106	32766	30957	29440	28089	26903
10	25952	25126	24351	23627	22979	22376	21802	21255	20757	20304
20	19855	19406	18978	18562	18163	17795	17446	17086	16739	16396
30	16066	15762	15451	15157	14856	14560	14271	14011	13754	13506
40	13270	13028	12796	12557	12343	12132	11928	11725	11539	11344
50	11131	10934	10746	10562	10370	10180	9995	9819	9629	9454
60	9267	9084	8906	8717	8536	8362	8177	8008	7847	7671
70	7508	7355	7190	7039	6890	6750	6595	6464	6327	6181
80	6037	5895	5755	5620	5486	5358	5234	5106	4985	4856
90	4718	4578	4439	4310	4180	4021	3860	3664	3421	3059
100	1910									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 327330 Simulated Natural at Moawhango
From 1-Jul-1979 00:00:01 to 1-Jul-2003 00:00:01
flow l/s

	0	1	2	3	4	5	6	7	8	9
0	279351	46122	35584	31033	28005	25725	24195	22857	21743	20729
10	19750	18926	18227	17590	17018	16431	15896	15422	14976	14554
20	14180	13821	13466	13150	12869	12589	12329	12085	11850	11630
30	11394	11173	10958	10749	10549	10344	10140	9965	9794	9613
40	9443	9273	9114	8970	8810	8648	8502	8364	8202	8065
50	7936	7803	7660	7527	7396	7260	7136	7010	6888	6773

60	6657	6548	6451	6350	6243	6138	6032	5935	5833	5738
70	5645	5557	5459	5368	5287	5204	5127	5053	4984	4909
80	4834	4756	4682	4603	4520	4446	4375	4301	4228	4151
90	4060	3974	3889	3787	3678	3564	3426	3255	3054	2777
100	1910									

Annual maximum series and mean annual flood (MAF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 327330 Simulated Natural at Moawhango
 From 1-Jul-1979 00:00:00 to 30-Jun-2003 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1979	109.95	15-Oct-1979 03:00
1980	92.368	23-Jan-1980 12:00
1981	63.882	16-Nov-1981 12:00
1982	106.31	25-Feb-1982 12:00
1983	91.854	10-Jul-1983 21:00
1984	56.979	19-Oct-1984 03:00
1985	107.36	20-Aug-1985 09:00
1986	169.47	4-Jan-1986 21:00
1987	79.506	5-Aug-1987 18:00
1988	80.590	25-Jul-1988 15:00
1989	109.61	12-Jun-1989 18:00
1990	117.23	11-Mar-1990 03:00
1991	149.41	9-Aug-1991 18:00
1992	118.25	22-Jul-1992 21:00
1993	124.80	17-May-1993 06:00
1994	279.35	8-Nov-1994 12:00
1995	373.84	7-Sep-1995 12:00
1996	91.469	15-Sep-1996 06:00
1997	75.202	9-Apr-1997 15:00
1998	177.58	2-Jul-1998 12:00
1999	152.43	11-Nov-1999 15:00
2000	145.64	3-Oct-2000 06:00
2001	207.85	9-Dec-2001 21:00
2002	107.15	8-Dec-2002 06:00
*2003	133.19	22-May-2003 06:00

Average Annual Maximum 133.83 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 327330 Simulated Natural at Moawhango
 From 1-Jul-1979 00:00:00 to 30-Jun-2003 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (flow l/s)
30-Jun-1980 24:00:00	3771 at interval beginning 5-Nov-1979 09:00:00
30-Jun-1981 24:00:00	4198 at interval beginning 28-Feb-1981 15:00:00
30-Jun-1982 24:00:00	2737 at interval beginning 16-Feb-1982 12:00:00
30-Jun-1983 24:00:00	2230 at interval beginning 22-Mar-1983 24:00:00
30-Jun-1984 24:00:00	3919 at interval beginning 25-Apr-1984 21:00:00
30-Jun-1985 24:00:00	2934 at interval beginning 16-Apr-1985 12:00:00
30-Jun-1986 24:00:00	3609 at interval beginning 25-Apr-1986 12:00:00
30-Jun-1987 24:00:00	3276 at interval beginning 17-Jan-1987 21:00:00
30-Jun-1988 24:00:00	3026 at interval beginning 3-Feb-1988 12:00:00
30-Jun-1989 24:00:00	3619 at interval beginning 28-Apr-1989 15:00:00
30-Jun-1990 24:00:00	3505 at interval beginning 7-Mar-1990 09:00:00

30-Jun-1991 24:00:00	2984 at interval beginning	2-Apr-1991 21:00:00
30-Jun-1992 24:00:00	4341 at interval beginning	6-Mar-1992 12:00:00
30-Jun-1993 24:00:00	3360 at interval beginning	18-Feb-1993 15:00:00
30-Jun-1994 24:00:00	2937 at interval beginning	15-Feb-1994 21:00:00
30-Jun-1995 24:00:00	3701 at interval beginning	26-Jan-1995 03:00:00
30-Jun-1996 24:00:00	5162 at interval beginning	13-Dec-1995 12:00:00
30-Jun-1997 24:00:00	3743 at interval beginning	5-Apr-1997 15:00:00
30-Jun-1998 24:00:00	3559 at interval beginning	20-Jan-1998 15:00:00
30-Jun-1999 24:00:00	3174 at interval beginning	24-Feb-1999 24:00:00
30-Jun-2000 24:00:00	2677 at interval beginning	2-Apr-2000 03:00:00
30-Jun-2001 24:00:00	3483 at interval beginning	26-Mar-2001 21:00:00
30-Jun-2002 24:00:00	3951 at interval beginning	23-Apr-2002 21:00:00
30-Jun-2003 24:00:00	3053 at interval beginning	26-Mar-2003 03:00:00

Mean annual Minimum = 3142 becomes 3443
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1979 to 2003 site 327330 Moawhango at Moawhango (simnat)
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1980	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.0	0.0	0.0	0.0	0.0	15.0
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.1	31.0	2.0	0.0	0.0	50.1
1984	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.3	12.1	0.0	0.0	13.8
1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1987	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3	0.0	0.0	0.0	0.0	0.0	2.3
1988	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	4.0	0.0	0.0	1.5	0.0	10.5
1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.3
1991	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.5	0.0	6.5	3.1	0.0	0.0	21.1
1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	0.0	0.0	0.0	0.0	2.8
1994	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	8.5	2.4	0.0	0.0	0.0	13.6
1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.5	0.0	0.0	0.0	0.0	5.5
2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24.1	4.4	0.0	0.0	28.5
2001	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.6	4.1	1.9	0.0	16.6
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	0.0	0.0	0.0	0.0	1.1	0.0	11.5	17.1	31.0	12.1	1.9	0.0	0.0	
Mean	0.0	0.0	0.0	0.0	0.0	0.0	0.9	2.3	3.1	1.1	0.1	0.0	0.0	

4.11. Moawhango at Waiouru (32732), July 1960 to July 2005 (all data)

Flow duration curve tabulation (FDC), all data
Exceedance percentiles

Source is HORIZONS.MTD Site 32732 Moawhango at Waiouru
 From 1-Jul-1960 00:00:01 to 1-Jul-2005 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	173784	38538	30619	26609	23967	22081	20604	19446	18489	17741
10	16992	16346	15764	15237	14763	14296	13896	13502	13119	12735
20	12386	12068	11764	11468	11200	10957	10703	10454	10211	9976
30	9759	9547	9347	9160	8951	8744	8554	8356	8179	8005
40	7826	7651	7461	7268	7093	6931	6776	6612	6426	6252
50	6094	5948	5796	5648	5501	5340	5200	5082	4943	4798
60	4654	4517	4409	4278	4137	4022	3917	3805	3699	3595
70	3497	3398	3310	3228	3136	3043	2943	2832	2730	2655
80	2548	2434	2314	2204	2105	1973	1842	1746	1640	988
90	878	852	838	816	785	743	203	110	79	63
100	5									

Flow duration curve tabulation (FDC), summer season
 Exceedance percentiles

Source is HORIZONS.MTD Site 32732 Moawhango at Waiouru
 From 1-Jul-1960 00:00:01 to 1-Jul-2005 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	173784	26036	19561	16413	14525	13278	12249	11471	10837	10275
10	9767	9329	8955	8641	8364	8119	7880	7630	7383	7193
20	7007	6831	6667	6476	6297	6126	5983	5858	5724	5594
30	5475	5350	5242	5151	5053	4945	4844	4736	4632	4533
40	4449	4366	4259	4160	4079	4004	3936	3874	3804	3732
50	3666	3605	3547	3492	3436	3383	3333	3287	3247	3200
60	3151	3097	3047	3002	2938	2873	2808	2750	2707	2665
70	2604	2546	2478	2415	2351	2290	2236	2171	2121	2070
80	1994	1921	1852	1805	1754	1703	1653	1573	905	865
90	854	842	831	814	778	513	117	87	65	54
100	5									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 32732 Moawhango at Waiouru
 From 1-Jul-1960 00:00:00 to 30-Jun-2005 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1960	84.359	6-Sep-1960 09:00
1961	69.361	7-Jul-1961 06:00
1962	135.64	8-Mar-1962 23:59
1963	121.20	6-Jun-1963 12:00
1964	148.80	11-Mar-1964 12:00
1965	96.820	12-Feb-1965 18:00
1966	122.83	26-Apr-1966 20:00
1967	173.78	3-Feb-1967 07:03
1968	99.688	29-Jun-1968 14:54
1969	59.641	23-Apr-1969 22:06
1970	86.043	17-Sep-1970 14:50
1971	109.46	1-Jun-1971 11:00
1972	77.188	17-May-1972 11:00
1973	38.295	9-Jun-1973 23:45
1974	86.988	3-Jul-1974 11:15

1975	99.928	7-Jun-1975	08:15
1976	106.15	16-Jul-1976	16:30
1977	116.43	15-Sep-1977	09:00
1978	88.337	21-Jul-1978	00:45
1979	66.013	12-Apr-1979	03:45
*1980	14.743	30-Jan-1980	09:00
1981			
1982			
1983			
1984			
1985			
1986			
1987			
1988			
1989			
1990			
1991			
1992			
1993			
1994			
1995			
1996			
1997			
1998			
1999			
2000			
2001			
2002			
*2003	1.0830	10-Dec-2003	11:35
2004	126.85	29-Feb-2004	07:25
*2005	35.457	27-Feb-2005	23:45

Average Annual Maximum 101.47 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 32732 Moawhango at Waiouru
From 1-Jul-1960 00:00:00 to 30-Jun-2005 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1961 24:00:00	2373 at interval beginning 19-Mar-1961 24:00:00
30-Jun-1962 24:00:00	1594 at interval beginning 21-Jan-1962 12:00:00
30-Jun-1963 24:00:00	1816 at interval beginning 30-Apr-1963 24:00:00
30-Jun-1964 24:00:00	1521 at interval beginning 26-Feb-1964 12:00:00
30-Jun-1965 24:00:00	3053 at interval beginning 6-Dec-1964 24:00:00
30-Jun-1966 24:00:00	2619 at interval beginning 24-Apr-1966 20:00:00
30-Jun-1967 24:00:00	2215 at interval beginning 22-Apr-1967 11:00:00
30-Jun-1968 24:00:00	1582 at interval beginning 24-Mar-1968 17:59:00
30-Jun-1969 24:00:00	2164 at interval beginning 17-Apr-1969 18:42:00
30-Jun-1970 24:00:00	1568 at interval beginning 13-Mar-1970 05:40:44
30-Jun-1971 24:00:00	2231 at interval beginning 12-Apr-1971 14:49:32
30-Jun-1972 24:00:00	1899 at interval beginning 3-Mar-1972 12:45:00
30-Jun-1973 24:00:00	1651 at interval beginning 5-Mar-1973 24:00:00
30-Jun-1974 24:00:00	1568 at interval beginning 14-Mar-1974 18:00:00
30-Jun-1975 24:00:00	2687 at interval beginning 9-Mar-1975 14:15:00
30-Jun-1976 24:00:00	3054 at interval beginning 28-Apr-1976 12:45:00
30-Jun-1977 24:00:00	2441 at interval beginning 21-Mar-1977 14:15:00
30-Jun-1978 24:00:00	1482 at interval beginning 7-Apr-1978 01:45:00
30-Jun-1979 24:00:00	46 at interval beginning 7-May-1979 03:45:00
Gap from 9-Jun-1980 16:15:00 to 21-Nov-2003 15:30:00 of 23.47 Years	

```

30-Jun-1980 24:00:00(PARTIAL)      37 at interval beginning 2-Dec-1979 08:15:00
30-Jun-1981 24:00:00              No valid values for this year
30-Jun-1982 24:00:00              No valid values for this year
30-Jun-1983 24:00:00              No valid values for this year
30-Jun-1984 24:00:00              No valid values for this year
30-Jun-1985 24:00:00              No valid values for this year
30-Jun-1986 24:00:00              No valid values for this year
30-Jun-1987 24:00:00              No valid values for this year
30-Jun-1988 24:00:00              No valid values for this year
30-Jun-1989 24:00:00              No valid values for this year
30-Jun-1990 24:00:00              No valid values for this year
30-Jun-1991 24:00:00              No valid values for this year
30-Jun-1992 24:00:00              No valid values for this year
30-Jun-1993 24:00:00              No valid values for this year
30-Jun-1994 24:00:00              No valid values for this year
30-Jun-1995 24:00:00              No valid values for this year
30-Jun-1996 24:00:00              No valid values for this year
30-Jun-1997 24:00:00              No valid values for this year
30-Jun-1998 24:00:00              No valid values for this year
30-Jun-1999 24:00:00              No valid values for this year
30-Jun-2000 24:00:00              No valid values for this year
30-Jun-2001 24:00:00              No valid values for this year
30-Jun-2002 24:00:00              No valid values for this year
30-Jun-2003 24:00:00              No valid values for this year
30-Jun-2004 24:00:00(PARTIAL)    614 at interval beginning 3-Dec-2003 15:10:00
30-Jun-2005 24:00:00              466 at interval beginning 16-Jan-2005 23:30:00

```

Mean annual Minimum = 1902
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1960 to 2005 site 32732 Moawhango at Waiouru
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1961	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1962	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.6	11.1	2.0	0.0	0.0	0.0	22.8
1963	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.1	1.4	0.0	6.5
1964	0.0	0.0	0.0	0.0	0.0	0.0	5.3	0.0	26.6	0.0	0.3	0.0	0.0	32.2
1965	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1966	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1967	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1968	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	23.7	7.3	0.0	0.0	31.8
1969	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1970	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.7	17.3	0.0	0.0	0.0	31.0
1971	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1972	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	3.7	0.0	0.0	0.0	6.4
1973	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3	26.8	28.1	19.2	0.2	0.0	77.5
1974	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.2	25.0	16.0	13.3	0.0	0.0	60.4
1975	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1976	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1978	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.1	30.5	15.4	0.0	0.0	56.1
1979	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	6.7	0.0	5.9	30.5	NaN	44.3
1980	26.8	31.0	0.1	16.1	30.0	30.5	28.4	29.0	30.7	30.0	31.0	NaN	NaN	283.5
1981	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1982	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1983	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0

1984	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1985	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1986	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1987	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1988	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1989	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1990	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1991	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1992	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1993	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1994	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1995	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1996	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1997	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1998	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1999	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
2000	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
2001	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
2002	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
2003	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
2004	NaN	NaN	NaN	NaN	NaN	0.6	0.0	0.0	0.0	0.0	0.0	0.5	1.0
2005	31.0	31.0	30.0	31.0	28.3	30.5	30.4	27.5	30.5	30.0	31.0	30.0	361.3
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	31.0	31.0	30.0	31.0	30.0	30.5	30.4	29.0	30.7	30.0	31.0	30.0	
Mean	2.8	3.0	1.4	2.2	2.8	3.0	3.6	8.2	8.3	5.8	4.3	1.5	

4.12. Moawhango at Waiouru (32732), July 1960 to July 1978 (pre-diversion)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 32732 Moawhango at Waiouru

From 1-Jul-1960 00:00:01 to 1-Jul-1978 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	173784	39702	31483	27529	24869	23003	21482	20269	19309	18461
10	17751	17076	16475	15969	15469	15041	14617	14212	13868	13522
20	13186	12852	12527	12236	11967	11699	11448	11215	11001	10783
30	10564	10341	10141	9936	9752	9567	9390	9223	9041	8850
40	8666	8489	8317	8161	8005	7849	7697	7532	7362	7194
50	7043	6898	6756	6613	6447	6289	6144	6007	5875	5735
60	5594	5463	5319	5197	5087	4967	4839	4708	4578	4464
70	4359	4232	4115	4016	3926	3829	3739	3648	3560	3477
80	3391	3315	3247	3170	3087	3012	2918	2821	2734	2668
90	2577	2478	2378	2277	2172	2090	1955	1835	1752	1670
100	366									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 32732 Moawhango at Waiouru

From 1-Jul-1960 00:00:01 to 1-Jul-1978 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	173784	25114	19459	16515	14698	13498	12464	11728	11159	10627
10	10149	9723	9342	9015	8734	8476	8261	8043	7842	7619

20	7400	7222	7058	6893	6740	6598	6423	6262	6111	5984
30	5873	5750	5633	5529	5417	5309	5222	5141	5053	4960
40	4872	4775	4679	4588	4502	4434	4358	4264	4176	4100
50	4036	3972	3919	3863	3804	3743	3686	3633	3583	3534
60	3488	3440	3394	3349	3311	3274	3239	3199	3158	3113
70	3069	3031	2990	2934	2878	2822	2769	2727	2694	2654
80	2600	2549	2490	2437	2382	2328	2279	2230	2175	2130
90	2092	2025	1956	1890	1835	1796	1750	1709	1673	1604
100	671									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 32732 Moawhango at Waiouru
 From 1-Jul-1960 00:00:00 to 30-Jun-1978 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1960	84.359	6-Sep-1960 09:00
1961	69.361	7-Jul-1961 06:00
1962	135.64	8-Mar-1962 23:59
1963	121.20	6-Jun-1963 12:00
1964	148.80	11-Mar-1964 12:00
1965	96.820	12-Feb-1965 18:00
1966	122.83	26-Apr-1966 20:00
1967	173.78	3-Feb-1967 07:03
1968	99.688	29-Jun-1968 14:54
1969	59.641	23-Apr-1969 22:06
1970	86.043	17-Sep-1970 14:50
1971	109.46	1-Jun-1971 11:00
1972	77.188	17-May-1972 11:00
1973	38.295	9-Jun-1973 23:45
1974	86.988	3-Jul-1974 11:15
1975	99.928	7-Jun-1975 08:15
1976	106.15	16-Jul-1976 16:30
1977	116.43	15-Sep-1977 09:00
*1978	22.494	20-Apr-1978 01:15

Average Annual Maximum 102.84 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 32732 Moawhango at Waiouru
 From 1-Jul-1960 00:00:00 to 30-Jun-1978 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1961 24:00:00	2373 at interval beginning 19-Mar-1961 24:00:00
30-Jun-1962 24:00:00	1594 at interval beginning 21-Jan-1962 12:00:00
30-Jun-1963 24:00:00	1816 at interval beginning 30-Apr-1963 24:00:00
30-Jun-1964 24:00:00	1521 at interval beginning 26-Feb-1964 12:00:00
30-Jun-1965 24:00:00	3053 at interval beginning 6-Dec-1964 24:00:00
30-Jun-1966 24:00:00	2619 at interval beginning 24-Apr-1966 20:00:00
30-Jun-1967 24:00:00	2215 at interval beginning 22-Apr-1967 11:00:00
30-Jun-1968 24:00:00	1582 at interval beginning 24-Mar-1968 17:59:00
30-Jun-1969 24:00:00	2164 at interval beginning 17-Apr-1969 18:42:00
30-Jun-1970 24:00:00	1568 at interval beginning 13-Mar-1970 05:40:44
30-Jun-1971 24:00:00	2231 at interval beginning 12-Apr-1971 14:49:32
30-Jun-1972 24:00:00	1899 at interval beginning 3-Mar-1972 12:45:00
30-Jun-1973 24:00:00	1651 at interval beginning 5-Mar-1973 24:00:00

30-Jun-1974 24:00:00 1568 at interval beginning 14-Mar-1974 18:00:00
 30-Jun-1975 24:00:00 2687 at interval beginning 9-Mar-1975 14:15:00
 30-Jun-1976 24:00:00 3054 at interval beginning 28-Apr-1976 12:45:00
 30-Jun-1977 24:00:00 2441 at interval beginning 21-Mar-1977 14:15:00
 30-Jun-1978 24:00:00 1482 at interval beginning 7-Apr-1978 01:45:00

Mean annual Minimum = 2084
 (For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
 Monthly totals 1960 to 1978 site 32732 Moawhango at Waiouru
 Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1961	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1962	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.6	11.1	2.0	0.0	0.0	0.0	22.8
1963	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.1	1.4	0.0	6.5
1964	0.0	0.0	0.0	0.0	0.0	0.0	5.3	0.0	26.6	0.0	0.3	0.0	0.0	32.2
1965	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1966	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1967	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1968	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	23.7	7.3	0.0	0.0	31.8
1969	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1970	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.7	17.3	0.0	0.0	0.0	31.0
1971	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1972	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	3.7	0.0	0.0	0.0	6.4
1973	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3	26.8	28.1	19.2	0.2	0.0	77.5
1974	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.2	25.0	16.0	13.3	0.0	0.0	60.4
1975	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1976	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1978	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.1	30.5	15.4	0.0	0.0	56.1
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	0.0	0.0	0.0	0.0	0.1	5.3	9.6	26.8	30.5	19.2	1.4	0.0		
Mean	0.0	0.0	0.0	0.0	0.0	0.3	1.1	6.5	6.7	3.4	0.1	0.0		

4.13. Moawhango at Waiouru (32732), July 1979 to July 2004 (post-diversion)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 32732 Moawhango at Waiouru
 From 1-Jul-1979 00:00:01 to 1-Jul-2004 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	126846	31887	22701	19354	17707	15506	14296	12721	10691	8321
10	4632	2619	2101	1372	1033	971	904	885	874	866
20	858	852	849	845	842	838	835	832	827	816
30	806	799	793	787	781	777	773	770	766	763
40	759	756	751	743	736	727	715	700	660	290
50	225	200	189	178	167	155	145	134	127	123
60	119	115	111	108	104	101	99	97	94	92

70	90	87	85	83	80	78	77	76	75	74
80	72	71	70	69	67	66	65	64	62	61
90	60	59	57	56	55	53	48	43	38	33
100	5									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 32732 Moawhango at Waiouru
 From 1-Jul-1979 00:00:01 to 1-Jul-2004 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	126846	41625	23689	17869	14381	10713	3784	1835	1364	1033
10	999	942	908	896	886	876	872	868	865	862
20	859	855	852	849	846	843	839	836	833	830
30	827	824	821	818	815	810	804	798	792	787
40	782	778	774	770	766	762	758	755	752	724
50	174	148	131	122	120	117	114	112	109	107
60	104	101	99	96	94	92	90	88	86	84
70	82	81	79	77	75	73	71	69	68	66
80	64	62	61	59	58	56	55	53	52	50
90	49	47	46	44	43	41	40	38	37	35
100	5									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 32732 Moawhango at Waiouru
 From 1-Jul-1979 00:00:00 to 30-Jun-2004 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1979	62.878	19-Dec-1979 11:15
*1980	14.743	30-Jan-1980 09:00
1981		
1982		
1983		
1984		
1985		
1986		
1987		
1988		
1989		
1990		
1991		
1992		
1993		
1994		
1995		
1996		
1997		
1998		
1999		
2000		
2001		
2002		
*2003	1.0830	10-Dec-2003 11:35
*2004	126.85	29-Feb-2004 07:25

Average Annual Maximum in the data or incomplete years

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 32732 Moawhango at Waiouru

From 1-Jul-1979 00:00:00 to 30-Jun-2004 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
Gap from 9-Jun-1980 16:15:00 to 21-Nov-2003 15:30:00 of 23.47 Years	
30-Jun-1980 24:00:00(PARTIAL)	37 at interval beginning 2-Dec-1979 08:15:00
30-Jun-1981 24:00:00	No valid values for this year
30-Jun-1982 24:00:00	No valid values for this year
30-Jun-1983 24:00:00	No valid values for this year
30-Jun-1984 24:00:00	No valid values for this year
30-Jun-1985 24:00:00	No valid values for this year
30-Jun-1986 24:00:00	No valid values for this year
30-Jun-1987 24:00:00	No valid values for this year
30-Jun-1988 24:00:00	No valid values for this year
30-Jun-1989 24:00:00	No valid values for this year
30-Jun-1990 24:00:00	No valid values for this year
30-Jun-1991 24:00:00	No valid values for this year
30-Jun-1992 24:00:00	No valid values for this year
30-Jun-1993 24:00:00	No valid values for this year
30-Jun-1994 24:00:00	No valid values for this year
30-Jun-1995 24:00:00	No valid values for this year
30-Jun-1996 24:00:00	No valid values for this year
30-Jun-1997 24:00:00	No valid values for this year
30-Jun-1998 24:00:00	No valid values for this year
30-Jun-1999 24:00:00	No valid values for this year
30-Jun-2000 24:00:00	No valid values for this year
30-Jun-2001 24:00:00	No valid values for this year
30-Jun-2002 24:00:00	No valid values for this year
30-Jun-2003 24:00:00	No valid values for this year
30-Jun-2004 24:00:00(PARTIAL)	614 at interval beginning 3-Dec-2003 15:10:00

Mean annual Minimum = 614
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD

Monthly totals 1979 to 2004 site 32732 Moawhango at Waiouru

Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
	1980	26.8	31.0	0.1	16.1	30.0	30.5	28.4	29.0	30.7	30.0	31.0	NaN	283.5
	1981	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
	1982	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
	1983	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
	1984	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
	1985	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
	1986	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
	1987	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
	1988	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
	1989	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
	1990	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
	1991	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0

1992	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1993	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1994	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1995	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1996	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1997	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1998	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1999	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
2000	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
2001	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
2002	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
2003	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
2004	NaN	NaN	NaN	NaN	NaN	0.6	0.0	0.0	0.0	0.0	0.0	0.5	1.0
Min	26.8	31.0	0.1	16.1	30.0	0.6	0.0	0.0	0.0	0.0	0.0	0.5	
Max	26.8	31.0	0.1	16.1	30.0	30.5	28.4	29.0	30.7	30.0	31.0	0.5	
Mean	26.8	31.0	0.1	16.1	30.0	15.5	14.2	14.5	15.4	15.0	15.5	0.5	

4.14. Moawhango at Waiouru(simnat) (46060), July 1960 to July 2003 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 46060 Simulated Natural at Waiouru
From 1-Jul-1960 00:00:01 to 1-Jul-2003 00:00:01
flow l/s

	0	1	2	3	4	5	6	7	8	9
0	156762	39476	31440	27786	25256	23299	21823	20641	19658	18791
10	18052	17412	16781	16237	15722	15261	14816	14394	14008	13643
20	13303	12967	12651	12365	12084	11826	11563	11320	11097	10866
30	10652	10446	10235	10046	9850	9668	9481	9311	9134	8950
40	8772	8597	8426	8264	8105	7957	7806	7649	7497	7348
50	7203	7064	6926	6798	6664	6522	6384	6257	6133	6010
60	5892	5774	5651	5531	5405	5272	5154	5045	4931	4813
70	4699	4588	4483	4385	4285	4182	4092	4008	3924	3836
80	3755	3672	3592	3511	3435	3355	3284	3207	3123	3041
90	2952	2847	2746	2652	2539	2416	2286	2142	1975	1774
100	654									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 46060 Simulated Natural at Waiouru
From 1-Jul-1960 00:00:01 to 1-Jul-2003 00:00:01
flow l/s

	0	1	2	3	4	5	6	7	8	9
0	152499	33849	26139	22297	20123	18391	17062	15892	14905	14060
10	13323	12680	12191	11748	11326	10914	10563	10223	9920	9627
20	9342	9071	8822	8583	8361	8151	7958	7765	7571	7393
30	7231	7081	6937	6804	6669	6529	6387	6254	6127	6009
40	5902	5798	5690	5583	5484	5375	5272	5175	5083	4992
50	4906	4807	4714	4628	4542	4464	4393	4314	4232	4158
60	4094	4035	3977	3921	3859	3800	3744	3687	3633	3580
70	3526	3476	3426	3374	3329	3286	3242	3195	3146	3094
80	3043	2994	2934	2874	2813	2754	2701	2645	2579	2509
90	2439	2366	2293	2223	2146	2075	1974	1859	1773	1687
100	654									

Annual maximum series and mean annual flood (MAF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 46060 Simulated Natural at Waiouru
 From 1-Jul-1960 00:00:00 to 30-Jun-2003 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1960	68.549	6-Sep-1960 12:00
1961	62.879	7-Jul-1961 09:00
1962	120.98	9-Mar-1962 03:00
1963	116.47	6-Jun-1963 15:00
1964	127.35	11-Mar-1964 15:00
1965	88.372	18-Mar-1965 09:00
1966	102.67	26-Apr-1966 21:00
1967	143.66	3-Feb-1967 09:00
1968	83.899	29-Jun-1968 18:00
1969	54.634	23-Apr-1969 24:00
1970	77.382	26-Sep-1970 03:00
1971	104.48	1-Jun-1971 12:00
1972	75.097	17-May-1972 12:00
1973	37.588	10-Jun-1973 03:00
1974	82.816	3-Jul-1974 15:00
1975	96.431	7-Jun-1975 09:00
1976	103.90	16-Jul-1976 18:00
1977	114.23	15-Sep-1977 12:00
1978	86.038	21-Jul-1978 03:00
1979	84.285	14-Oct-1979 18:00
1980	80.290	23-Jan-1980 03:00
1981	57.152	16-Nov-1981 03:00
1982	98.414	25-Feb-1982 03:00
1983	78.114	10-Jul-1983 12:00
1984	51.495	18-Oct-1984 18:00
1985	85.782	19-Aug-1985 24:00
1986	152.50	4-Jan-1986 12:00
1987	72.161	22-Jan-1987 15:00
1988	65.660	25-Jul-1988 06:00
1989	103.76	12-Jun-1989 09:00
1990	111.12	10-Mar-1990 18:00
1991	114.09	18-Feb-1991 09:00
1992	58.510	8-Jul-1992 15:00
1993	108.55	16-May-1993 21:00
1994	111.36	7-Nov-1994 18:00
1995	156.76	7-Sep-1995 03:00
1996	71.337	21-Apr-1996 09:00
1997	64.544	9-Apr-1997 06:00
1998	155.85	2-Jul-1998 06:00
1999	146.04	11-Nov-1999 06:00
2000	128.90	2-Oct-2000 21:00
2001	112.90	7-Dec-2001 12:00
2002	86.275	7-Dec-2002 21:00
*2003	124.53	22-May-2003 09:00

Average Annual Maximum 96.065 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 46060 Simulated Natural at Waiouru
 From 1-Jul-1960 00:00:00 to 30-Jun-2003 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (flow l/s)
30-Jun-1961 24:00:00	2357 at interval beginning 20-Mar-1961 06:00:00
30-Jun-1962 24:00:00	1583 at interval beginning 21-Jan-1962 15:00:00
30-Jun-1963 24:00:00	1816 at interval beginning 30-Apr-1963 24:00:00
30-Jun-1964 24:00:00	1521 at interval beginning 26-Feb-1964 12:00:00
30-Jun-1965 24:00:00	3048 at interval beginning 6-Dec-1964 21:00:00
30-Jun-1966 24:00:00	2613 at interval beginning 24-Apr-1966 21:00:00
30-Jun-1967 24:00:00	2203 at interval beginning 22-Apr-1967 15:00:00
30-Jun-1968 24:00:00	1578 at interval beginning 24-Mar-1968 21:00:00
30-Jun-1969 24:00:00	2165 at interval beginning 17-Apr-1969 18:00:00
30-Jun-1970 24:00:00	1568 at interval beginning 13-Mar-1970 06:00:00
30-Jun-1971 24:00:00	2232 at interval beginning 12-Apr-1971 12:00:00
30-Jun-1972 24:00:00	1899 at interval beginning 3-Mar-1972 12:00:00
30-Jun-1973 24:00:00	1651 at interval beginning 5-Mar-1973 24:00:00
30-Jun-1974 24:00:00	1565 at interval beginning 14-Mar-1974 24:00:00
30-Jun-1975 24:00:00	2688 at interval beginning 9-Mar-1975 15:00:00
30-Jun-1976 24:00:00	3048 at interval beginning 28-Apr-1976 15:00:00
30-Jun-1977 24:00:00	2436 at interval beginning 21-Mar-1977 06:00:00
30-Jun-1978 24:00:00	1483 at interval beginning 6-Apr-1978 24:00:00
30-Jun-1979 24:00:00	1583 at interval beginning 12-Feb-1979 15:00:00
30-Jun-1980 24:00:00	3020 at interval beginning 21-Jul-1979 03:00:00
30-Jun-1981 24:00:00	2635 at interval beginning 28-Feb-1981 15:00:00
30-Jun-1982 24:00:00	2055 at interval beginning 17-Feb-1982 12:00:00
30-Jun-1983 24:00:00	1711 at interval beginning 22-Mar-1983 15:00:00
30-Jun-1984 24:00:00	2917 at interval beginning 25-Apr-1984 15:00:00
30-Jun-1985 24:00:00	2137 at interval beginning 16-Apr-1985 06:00:00
30-Jun-1986 24:00:00	2545 at interval beginning 25-Apr-1986 03:00:00
30-Jun-1987 24:00:00	2312 at interval beginning 17-Jan-1987 09:00:00
30-Jun-1988 24:00:00	2281 at interval beginning 3-Feb-1988 06:00:00
30-Jun-1989 24:00:00	2854 at interval beginning 28-Apr-1989 06:00:00
30-Jun-1990 24:00:00	2443 at interval beginning 6-Mar-1990 24:00:00
30-Jun-1991 24:00:00	2262 at interval beginning 2-Apr-1991 12:00:00
30-Jun-1992 24:00:00	2275 at interval beginning 5-Jun-1992 12:00:00
30-Jun-1993 24:00:00	2219 at interval beginning 18-Feb-1993 15:00:00
30-Jun-1994 24:00:00	2161 at interval beginning 15-Feb-1994 18:00:00
30-Jun-1995 24:00:00	2689 at interval beginning 25-Jan-1995 18:00:00
30-Jun-1996 24:00:00	4093 at interval beginning 14-Mar-1996 06:00:00
30-Jun-1997 24:00:00	2279 at interval beginning 22-May-1997 18:00:00
30-Jun-1998 24:00:00	2599 at interval beginning 20-Jan-1998 06:00:00
30-Jun-1999 24:00:00	2323 at interval beginning 24-Feb-1999 15:00:00
30-Jun-2000 24:00:00	1927 at interval beginning 3-Apr-2000 06:00:00
30-Jun-2001 24:00:00	2097 at interval beginning 26-Mar-2001 18:00:00
30-Jun-2002 24:00:00	2349 at interval beginning 23-Apr-2002 15:00:00
30-Jun-2003 24:00:00	1960 at interval beginning 25-Mar-2003 18:00:00

Mean annual Minimum = 2260
 (For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
 Monthly totals 1960 to 2003 site 46060 Moawhango at Waiouru(simmat)
 Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
	1961	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1962	0.0	0.0	0.0	0.0	0.0	0.0	9.5	11.1	2.0	0.0	0.0	0.0	22.6
	1963	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	1.4	0.0	6.4

1964	0.0	0.0	0.0	0.0	0.0	5.1	0.0	26.5	0.0	0.3	0.0	0.0	31.9	
1965	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1966	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1967	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1968	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	23.4	7.4	0.0	31.5	
1969	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1970	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.5	17.3	0.0	0.0	0.0	30.8	
1971	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1972	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	3.6	0.0	0.0	6.1	
1973	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.1	26.8	28.1	19.3	0.0	77.3	
1974	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.1	24.9	16.0	13.4	0.0	60.4	
1975	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1976	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1978	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.0	30.5	15.4	2.8	58.6	
1979	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.6	12.6	0.0	0.0	0.0	NaN	22.3
1980	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.6	0.0	0.0	0.0	13.6	
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.8	30.5	1.4	0.0	42.6	
1984	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1985	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.6	0.0	8.6	
1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1987	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.9	0.0	0.0	0.0	0.0	2.9	
1988	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	5.3	0.0	0.0	2.4	8.1	
1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1991	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.9	0.0	1.9	2.5	0.0	9.3	
1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.3	4.3	
1993	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.4	2.9	0.0	0.0	9.3	
1994	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1	7.6	2.4	0.0	0.0	12.1	
1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.9	5.9	
1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	0.0	0.0	0.0	4.0	
2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	22.5	3.9	0.0	26.4	
2001	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0	0.0	0.4	8.4	
2002	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	2.8	
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.0	16.3	8.0	1.5	43.8	
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	0.8	0.0	0.0	0.0	0.0	5.1	9.6	26.8	30.5	19.3	5.9	4.3		
Mean	0.0	0.0	0.0	0.0	0.0	0.1	0.9	4.5	4.8	2.0	0.3	0.1		

4.15. Moawhango at Waiouru(simnat) (46060), July 1960 to July 1978 (pre-diversion)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 46060 Simulated Natural at Waiouru
From 1-Jul-1960 00:00:01 to 1-Jul-1978 00:00:01
flow l/s

	0	1	2	3	4	5	6	7	8	9
0	143655	39785	31451	27581	24914	23001	21508	20265	19292	18475
10	17771	17088	16489	15973	15485	15057	14631	14215	13877	13530
20	13188	12864	12531	12242	11976	11707	11453	11222	11000	10782
30	10564	10344	10142	9942	9762	9574	9395	9230	9046	8852
40	8670	8494	8324	8160	8006	7846	7697	7531	7361	7187
50	7037	6890	6746	6599	6437	6275	6128	5987	5852	5707

60	5563	5425	5281	5161	5050	4924	4790	4655	4528	4425
70	4314	4188	4079	3982	3892	3796	3705	3618	3531	3447
80	3365	3292	3223	3146	3065	2994	2897	2802	2722	2654
90	2565	2464	2366	2270	2169	2087	1955	1836	1752	1671
100	1472									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 46060 Simulated Natural at Waiouru
 From 1-Jul-1960 00:00:01 to 1-Jul-1978 00:00:01
 flow l/s

	0	1	2	3	4	5	6	7	8	9
0	143655	25247	19453	16570	14715	13356	12375	11659	11114	10571
10	10105	9703	9320	8982	8710	8463	8245	8028	7821	7601
20	7386	7205	7040	6875	6721	6573	6407	6244	6099	5981
30	5864	5742	5622	5523	5408	5299	5209	5129	5040	4949
40	4855	4754	4660	4569	4486	4421	4343	4247	4163	4093
50	4025	3964	3913	3854	3794	3735	3677	3626	3575	3527
60	3481	3432	3388	3344	3307	3269	3233	3193	3153	3106
70	3062	3026	2983	2928	2876	2821	2768	2725	2693	2651
80	2597	2547	2487	2435	2381	2327	2277	2228	2174	2129
90	2089	2022	1954	1888	1836	1796	1751	1710	1673	1605
100	1472									

Annual maximum series and mean annual flood (MAF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 46060 Simulated Natural at Waiouru
 From 1-Jul-1960 00:00:00 to 30-Jun-1978 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1960	68.549	6-Sep-1960 12:00
1961	62.879	7-Jul-1961 09:00
1962	120.98	9-Mar-1962 03:00
1963	116.47	6-Jun-1963 15:00
1964	127.35	11-Mar-1964 15:00
1965	88.372	18-Mar-1965 09:00
1966	102.67	26-Apr-1966 21:00
1967	143.66	3-Feb-1967 09:00
1968	83.899	29-Jun-1968 18:00
1969	54.634	23-Apr-1969 24:00
1970	77.382	26-Sep-1970 03:00
1971	104.48	1-Jun-1971 12:00
1972	75.097	17-May-1972 12:00
1973	37.588	10-Jun-1973 03:00
1974	82.816	3-Jul-1974 15:00
1975	96.431	7-Jun-1975 09:00
1976	103.90	16-Jul-1976 18:00
1977	114.23	15-Sep-1977 12:00
*1978	21.340	20-Apr-1978 03:00

Average Annual Maximum 93.696 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 46060 Simulated Natural at Waiouru

From 1-Jul-1960 00:00:00 to 30-Jun-1978 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (flow l/s)
30-Jun-1961 24:00:00	2357 at interval beginning 20-Mar-1961 06:00:00
30-Jun-1962 24:00:00	1583 at interval beginning 21-Jan-1962 15:00:00
30-Jun-1963 24:00:00	1816 at interval beginning 30-Apr-1963 24:00:00
30-Jun-1964 24:00:00	1521 at interval beginning 26-Feb-1964 12:00:00
30-Jun-1965 24:00:00	3048 at interval beginning 6-Dec-1964 21:00:00
30-Jun-1966 24:00:00	2613 at interval beginning 24-Apr-1966 21:00:00
30-Jun-1967 24:00:00	2203 at interval beginning 22-Apr-1967 15:00:00
30-Jun-1968 24:00:00	1578 at interval beginning 24-Mar-1968 21:00:00
30-Jun-1969 24:00:00	2165 at interval beginning 17-Apr-1969 18:00:00
30-Jun-1970 24:00:00	1568 at interval beginning 13-Mar-1970 06:00:00
30-Jun-1971 24:00:00	2232 at interval beginning 12-Apr-1971 12:00:00
30-Jun-1972 24:00:00	1899 at interval beginning 3-Mar-1972 12:00:00
30-Jun-1973 24:00:00	1651 at interval beginning 5-Mar-1973 24:00:00
30-Jun-1974 24:00:00	1565 at interval beginning 14-Mar-1974 24:00:00
30-Jun-1975 24:00:00	2688 at interval beginning 9-Mar-1975 15:00:00
30-Jun-1976 24:00:00	3048 at interval beginning 28-Apr-1976 15:00:00
30-Jun-1977 24:00:00	2436 at interval beginning 21-Mar-1977 06:00:00
30-Jun-1978 24:00:00	1483 at interval beginning 6-Apr-1978 24:00:00

Mean annual Minimum = 2081
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1960 to 1978 site 46060 Moawhango at Waiouru(simnat)
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1961	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1962	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.5	11.1	2.0	0.0	0.0	0.0	22.6
1963	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	1.4	0.0	6.4
1964	0.0	0.0	0.0	0.0	0.0	0.0	5.1	0.0	26.5	0.0	0.3	0.0	0.0	31.9
1965	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1966	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1967	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1968	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	23.4	7.4	0.0	0.0	31.5
1969	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1970	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.5	17.3	0.0	0.0	0.0	30.8
1971	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1972	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	3.6	0.0	0.0	0.0	6.1
1973	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.1	26.8	28.1	19.3	0.0	0.0	77.3
1974	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.1	24.9	16.0	13.4	0.0	0.0	60.4
1975	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1976	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1978	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.0	30.5	15.4	2.8	0.0	58.6
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	0.0	0.0	0.0	0.0	0.0	5.1	9.5	26.8	30.5	19.3	2.8	0.0	0.0	
Mean	0.0	0.0	0.0	0.0	0.0	0.3	1.0	6.4	6.7	3.4	0.2	0.0	0.0	

4.16. Moawhango at Waiouru(simnat) (46060), July 1979 to July 2003 (post-diversion)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 46060 Simulated Natural at Waiouru
From 1-Jul-1979 00:00:01 to 1-Jul-2003 00:00:01
flow l/s

	0	1	2	3	4	5	6	7	8	9
0	156762	39410	31472	27993	25621	23575	22089	20961	19994	19122
10	18336	17668	17071	16492	15970	15489	15029	14596	14186	13818
20	13456	13123	12806	12525	12237	11969	11721	11472	11237	11009
30	10787	10582	10380	10186	9992	9804	9620	9445	9268	9082
40	8904	8730	8558	8387	8229	8071	7921	7777	7621	7479
50	7344	7211	7080	6948	6826	6699	6570	6442	6324	6213
60	6100	5989	5878	5770	5657	5544	5429	5304	5179	5072
70	4964	4858	4746	4644	4542	4445	4351	4263	4170	4090
80	4014	3937	3853	3777	3700	3626	3546	3472	3399	3326
90	3254	3170	3085	2997	2890	2788	2662	2521	2371	2179
100	1704									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 46060 Simulated Natural at Waiouru
From 1-Jul-1979 00:00:01 to 1-Jul-2003 00:00:01
flow l/s

	0	1	2	3	4	5	6	7	8	9
0	152499	37728	29547	25503	22918	21181	19725	18498	17503	16625
10	15803	15057	14403	13816	13263	12772	12378	11991	11656	11321
20	10986	10672	10394	10151	9900	9653	9424	9188	8954	8738
30	8509	8303	8106	7914	7742	7563	7405	7253	7108	6973
40	6853	6726	6598	6470	6343	6222	6111	6000	5894	5793
50	5689	5585	5484	5379	5268	5161	5066	4972	4887	4786
60	4696	4611	4528	4449	4374	4302	4227	4156	4100	4044
70	3990	3932	3866	3811	3758	3704	3649	3595	3537	3484
80	3434	3376	3327	3281	3226	3172	3116	3057	2998	2935
90	2866	2804	2736	2652	2571	2482	2391	2290	2178	2046
100	1704									

Annual maximum series and mean annual flood (MAF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 46060 Simulated Natural at Waiouru
From 1-Jul-1979 00:00:00 to 30-Jun-2003 24:00:00
Interval = 0
flow m3/s

Year	Maximum	Date & Time
*1979	84.285	14-Oct-1979 18:00
1980	80.290	23-Jan-1980 03:00
1981	57.152	16-Nov-1981 03:00
1982	98.414	25-Feb-1982 03:00
1983	78.114	10-Jul-1983 12:00
1984	51.495	18-Oct-1984 18:00
1985	85.782	19-Aug-1985 24:00
1986	152.50	4-Jan-1986 12:00
1987	72.161	22-Jan-1987 15:00
1988	65.660	25-Jul-1988 06:00

1989	103.76	12-Jun-1989 09:00
1990	111.12	10-Mar-1990 18:00
1991	114.09	18-Feb-1991 09:00
1992	58.510	8-Jul-1992 15:00
1993	108.55	16-May-1993 21:00
1994	111.36	7-Nov-1994 18:00
1995	156.76	7-Sep-1995 03:00
1996	71.337	21-Apr-1996 09:00
1997	64.544	9-Apr-1997 06:00
1998	155.85	2-Jul-1998 06:00
1999	146.04	11-Nov-1999 06:00
2000	128.90	2-Oct-2000 21:00
2001	112.90	7-Dec-2001 12:00
2002	86.275	7-Dec-2002 21:00
*2003	124.53	22-May-2003 09:00

Average Annual Maximum 98.764 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 46060 Simulated Natural at Waiouru
From 1-Jul-1979 00:00:00 to 30-Jun-2003 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (flow l/s)
30-Jun-1980 24:00:00	3020 at interval beginning 21-Jul-1979 03:00:00
30-Jun-1981 24:00:00	2635 at interval beginning 28-Feb-1981 15:00:00
30-Jun-1982 24:00:00	2055 at interval beginning 17-Feb-1982 12:00:00
30-Jun-1983 24:00:00	1711 at interval beginning 22-Mar-1983 15:00:00
30-Jun-1984 24:00:00	2917 at interval beginning 25-Apr-1984 15:00:00
30-Jun-1985 24:00:00	2137 at interval beginning 16-Apr-1985 06:00:00
30-Jun-1986 24:00:00	2545 at interval beginning 25-Apr-1986 03:00:00
30-Jun-1987 24:00:00	2312 at interval beginning 17-Jan-1987 09:00:00
30-Jun-1988 24:00:00	2281 at interval beginning 3-Feb-1988 06:00:00
30-Jun-1989 24:00:00	2854 at interval beginning 28-Apr-1989 06:00:00
30-Jun-1990 24:00:00	2443 at interval beginning 6-Mar-1990 24:00:00
30-Jun-1991 24:00:00	2262 at interval beginning 2-Apr-1991 12:00:00
30-Jun-1992 24:00:00	2275 at interval beginning 5-Jun-1992 12:00:00
30-Jun-1993 24:00:00	2219 at interval beginning 18-Feb-1993 15:00:00
30-Jun-1994 24:00:00	2161 at interval beginning 15-Feb-1994 18:00:00
30-Jun-1995 24:00:00	2689 at interval beginning 25-Jan-1995 18:00:00
30-Jun-1996 24:00:00	4093 at interval beginning 14-Mar-1996 06:00:00
30-Jun-1997 24:00:00	2279 at interval beginning 22-May-1997 18:00:00
30-Jun-1998 24:00:00	2599 at interval beginning 20-Jan-1998 06:00:00
30-Jun-1999 24:00:00	2323 at interval beginning 24-Feb-1999 15:00:00
30-Jun-2000 24:00:00	1927 at interval beginning 3-Apr-2000 06:00:00
30-Jun-2001 24:00:00	2097 at interval beginning 26-Mar-2001 18:00:00
30-Jun-2002 24:00:00	2349 at interval beginning 23-Apr-2002 15:00:00
30-Jun-2003 24:00:00	1960 at interval beginning 25-Mar-2003 18:00:00

Mean annual Minimum = 2423
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1979 to 2003 site 46060 Moawhango at Waiouru(simnat)
Days < MALF

Season
ending

in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
	1980	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.6	0.0	0.0	0.0	0.0	13.6
	1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.8	30.5	1.4	0.0	0.0	42.6
	1984	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1985	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.6	0.0	0.0	8.6
	1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1987	0.0	0.0	0.0	0.0	0.0	0.0	2.9	0.0	0.0	0.0	0.0	0.0	2.9
	1988	0.0	0.0	0.0	0.0	0.0	0.0	0.5	5.3	0.0	0.0	2.4	0.0	8.1
	1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1991	0.0	0.0	0.0	0.0	0.0	0.0	4.9	0.0	1.9	2.5	0.0	0.0	9.3
	1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.3	4.3
	1993	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.4	2.9	0.0	0.0	0.0	9.3
	1994	0.0	0.0	0.0	0.0	0.0	0.0	2.1	7.6	2.4	0.0	0.0	0.0	12.1
	1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.9	0.0	5.9
	1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	0.0	0.0	0.0	0.0	4.0
	2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	22.5	3.9	0.0	0.0	26.4
	2001	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0	0.0	0.4	0.0	8.4
	2002	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.8
	2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.0	16.3	8.0	1.5	0.0	43.8
	Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	Max	0.8	0.0	0.0	0.0	0.0	0.0	4.9	18.0	30.5	8.6	5.9	4.3	
	Mean	0.0	0.0	0.0	0.0	0.0	0.0	0.4	2.7	3.5	1.1	0.4	0.2	

4.17. Porewa at Tututotara (32715), July 1963 to July 1991 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 32715 Porewa at Tututotara
From 1-Jul-1963 00:00:01 to 1-Jul-1991 00:00:01
Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	105351	10698	7285	5668	4560	3753	3184	2768	2425	2149
10	1932	1756	1614	1492	1383	1285	1208	1137	1073	1013
20	958	906	858	812	770	732	698	664	632	605
30	577	551	526	502	479	457	435	415	395	379
40	362	346	330	315	302	289	276	263	251	239
50	228	217	208	198	189	180	172	163	155	147
60	139	132	125	118	111	104	97	92	86	80
70	74	68	62	57	52	47	43	39	35	32
80	28	25	22	20	17	15	12	9	8	7
90	6	6	5	4	4	3	3	2	1	1
100	0									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 32715 Porewa at Tututotara
From 1-Jul-1963 00:00:01 to 1-Jul-1991 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	105351	6165	3486	2329	1676	1331	1108	939	804	698
10	616	554	502	458	417	385	358	331	308	289
20	272	255	240	225	213	201	190	181	172	164
30	156	148	141	134	128	121	114	109	103	99
40	94	90	86	82	78	74	69	66	63	60
50	57	54	51	48	46	43	41	39	36	34
60	32	30	27	26	24	23	21	20	19	17
70	16	14	13	12	10	9	8	7	6	6
80	5	5	5	5	4	4	4	3	3	3
90	3	2	2	2	2	1	1	1	1	0
100	0									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 32715 Porewa at Tututotara
 From 1-Jul-1963 00:00:00 to 30-Jun-1991 24:00:00
 Interval = 0
 flow m³/s

Year	Maximum	Date & Time
*1963	11.752	26-Sep-1963 04:00
1964	22.620	2-Sep-1964 09:00
1965	38.862	4-Mar-1965 02:00
1966	23.640	9-Jul-1966 18:00
1967	48.153	3-Feb-1967 08:00
1968	28.472	7-Dec-1968 20:00
1969	17.363	8-Aug-1969 12:00
1970	40.391	22-Aug-1970 24:00
1971	34.638	22-Oct-1971 07:00
1972	21.236	14-Jun-1972 24:00
1973	24.295	17-Sep-1973 02:00
1974	41.429	4-Jul-1974 01:00
1975	35.488	16-Jun-1975 09:00
1976	49.758	29-Jun-1976 10:00
1977	15.110	3-Jun-1977 04:00
1978	34.149	21-Oct-1978 16:00
1979	41.791	25-Aug-1979 17:00
1980	40.977	19-Oct-1980 02:00
1981	21.523	20-Aug-1981 22:00
1982	20.152	21-Jul-1982 07:15
1983	28.073	20-May-1983 20:45
1984	16.773	5-Aug-1984 16:30
1985	14.522	27-Jul-1985 19:00
1986	19.573	26-Jul-1986 21:30
1987	20.093	11-Apr-1987 19:00
1988	25.625	5-Oct-1988 24:00
1989	11.962	18-Oct-1989 07:30
1990	32.930	10-Mar-1990 16:45
*1991	105.35	11-Apr-1991 04:30

Average Annual Maximum 28.504 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 32715 Porewa at Tututotara
 From 1-Jul-1963 00:00:00 to 30-Jun-1991 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1964 24:00:00	0 at interval beginning 3-Feb-1964 10:55:00
30-Jun-1965 24:00:00	18 at interval beginning 4-Dec-1964 06:00:00
30-Jun-1966 24:00:00	2 at interval beginning 16-Feb-1966 06:00:00
30-Jun-1967 24:00:00	4 at interval beginning 1-Feb-1967 06:00:00
30-Jun-1968 24:00:00	0 at interval beginning 17-Jan-1968 12:00:00
30-Jun-1969 24:00:00	0 at interval beginning 24-Jan-1969 24:00:00
30-Jun-1970 24:00:00	0 at interval beginning 12-Nov-1969 12:00:00
30-Jun-1971 24:00:00	0 at interval beginning 29-Nov-1970 12:00:00
30-Jun-1972 24:00:00	0 at interval beginning 3-Mar-1972 06:00:00
30-Jun-1973 24:00:00	0 at interval beginning 6-Jan-1973 12:00:00
30-Jun-1974 24:00:00	0 at interval beginning 12-Dec-1973 11:20:00
30-Jun-1975 24:00:00	0 at interval beginning 26-Dec-1974 24:00:00
30-Jun-1976 24:00:00	0 at interval beginning 10-Dec-1975 24:00:00
30-Jun-1977 24:00:00	0 at interval beginning 16-Jan-1977 24:00:00
30-Jun-1978 24:00:00	0 at interval beginning 8-Mar-1978 08:45:00
30-Jun-1979 24:00:00	0 at interval beginning 25-Jan-1979 15:20:00
30-Jun-1980 24:00:00	0 at interval beginning 7-Feb-1980 01:04:39
30-Jun-1981 24:00:00	0 at interval beginning 14-Mar-1981 00:51:32
30-Jun-1982 24:00:00	0 at interval beginning 24-Nov-1981 17:15:00
30-Jun-1983 24:00:00	0 at interval beginning 25-Nov-1982 22:15:00
30-Jun-1984 24:00:00	0 at interval beginning 28-Dec-1983 12:00:00
30-Jun-1985 24:00:00	0 at interval beginning 13-Nov-1984 24:00:00
30-Jun-1986 24:00:00	0 at interval beginning 18-Dec-1985 15:00:00
30-Jun-1987 24:00:00	0 at interval beginning 12-Dec-1986 10:15:00
30-Jun-1988 24:00:00	0 at interval beginning 14-Jan-1988 11:15:00
30-Jun-1989 24:00:00	3 at interval beginning 19-Dec-1988 19:45:00
30-Jun-1990 24:00:00	1 at interval beginning 14-Dec-1989 01:00:00
30-Jun-1991 24:00:00	1 at interval beginning 31-Dec-1990 15:00:00

Mean annual Minimum = 1
 (For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
 Monthly totals 1963 to 1991 site 32715 Porewa at Tututotara
 Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1964	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	26.8	0.0	27.5	1.3	0.0	55.6
1965	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1966	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.6
1967	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1968	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	8.0	31.0	9.4	0.0	0.0	50.0
1969	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.9	1.2	7.5	0.0	0.0	0.0	15.6
1970	0.0	0.0	0.0	0.0	0.0	11.9	0.0	9.3	28.0	18.3	9.5	1.1	0.0	78.2
1971	0.0	0.0	0.0	0.0	0.0	1.8	19.4	7.9	24.1	6.8	10.3	2.6	0.0	72.8
1972	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	3.1	0.0	0.0	0.0	4.5
1973	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	14.7	12.4	0.8	0.0	0.0	30.3
1974	0.0	0.0	0.0	0.0	0.0	0.0	6.4	9.7	25.7	15.3	18.3	0.0	0.0	75.4
1975	0.0	0.0	0.0	0.0	0.0	0.0	5.8	0.0	10.9	8.7	4.7	0.0	0.0	30.1
1976	0.0	0.0	0.0	0.0	0.0	0.0	4.9	0.0	0.0	7.6	3.2	0.0	0.0	15.7
1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.3	5.6	0.0	0.0	0.0	0.0	9.9
1978	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24.0	17.0	0.0	0.0	41.0
1979	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.7	17.6	0.0	0.0	0.0	0.0	24.3
1980	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.8	0.0	0.0	0.0	0.0	6.8
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.2	0.0	0.0	0.0	6.2

1982	0.0	0.0	0.0	0.0	5.7	4.4	17.8	24.4	21.4	10.8	0.4	0.0	85.0
1983	0.0	0.0	0.0	0.0	1.2	0.0	0.0	11.3	24.2	3.0	0.0	0.0	39.7
1984	0.0	0.0	0.0	0.0	0.0	3.6	20.3	12.6	5.0	0.0	0.0	0.0	41.6
1985	0.0	0.0	0.0	0.0	2.2	4.8	8.3	19.8	31.0	24.6	15.1	0.0	105.8
1986	0.0	0.0	0.0	0.0	0.0	2.7	0.0	4.5	3.8	4.2	0.0	0.0	15.3
1987	0.0	0.0	0.0	0.0	0.0	11.8	22.1	6.6	0.0	0.0	0.0	0.0	40.5
1988	0.0	0.0	0.0	0.0	0.0	0.0	16.9	4.9	0.0	3.4	0.0	0.0	25.3
1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1990	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	1.3	0.0	0.0	0.0	4.3
1991	0.0	0.0	0.0	0.0	0.0	0.0	2.3	0.0	0.0	0.0	0.0	0.0	2.3
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	0.0	0.0	0.0	0.0	11.9	19.4	22.1	28.0	31.0	27.5	15.1	0.0	
Mean	0.0	0.0	0.0	0.0	0.8	2.4	4.9	9.1	8.1	5.2	0.7	0.0	

4.18. Rangitawa at Halcombe (32735), July 1969 to July 1980 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 32735 Rangitawa at Halcombe

From 1-Jul-1969 00:00:01 to 1-Jul-1980 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	80793	6317	3801	2659	1987	1507	1183	959	796	676
10	578	502	436	378	327	283	242	211	186	165
20	146	129	116	102	90	79	69	61	53	46
30	40	34	29	24	21	18	16	14	13	11
40	10	10	9	9	8	8	7	7	6	5
50	5	5	5	5	5	4	4	4	4	4
60	4	4	4	4	4	3	3	3	3	3
70	3	3	3	3	3	2	2	2	2	2
80	2	2	2	2	2	1	1	1	1	1
90	1	1	1	1	1	0	0	0	0	0
100	0									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 32735 Rangitawa at Halcombe

From 1-Jul-1969 00:00:01 to 1-Jul-1980 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	37654	269	101	50	29	18	13	12	10	9
10	8	7	7	6	6	6	5	5	5	5
20	5	5	4	4	4	4	4	4	4	4
30	3	3	3	3	3	3	3	3	3	3
40	3	3	3	3	3	3	2	2	2	2
50	2	2	2	2	2	2	2	2	2	2
60	2	2	2	2	2	2	2	2	2	2
70	2	2	2	2	2	2	2	1	1	1
80	1	1	1	1	1	1	1	1	1	1
90	1	1	1	1	1	1	1	1	1	0
100	0									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 32735 Rangitawa at Halcombe
 From 1-Jul-1969 00:00:00 to 30-Jun-1980 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1969	10.272	8-Aug-1969 09:00
1970	37.732	5-Aug-1970 19:30
1971	19.828	23-Sep-1971 21:30
1972	31.525	17-Jul-1972 19:45
1973	19.131	17-Sep-1973 05:30
1974	30.052	17-Jul-1974 22:15
1975	33.366	28-Aug-1975 18:00
1976	80.793	29-Jun-1976 06:30
1977	19.863	19-Sep-1977 20:30
1978	23.122	20-Jul-1978 23:00
1979	64.857	25-Aug-1979 14:15
*1980	9.6360	11-Apr-1980 00:15

Average Annual Maximum 36.027 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 32735 Rangitawa at Halcombe
 From 1-Jul-1969 00:00:00 to 30-Jun-1980 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1970 24:00:00	0 at interval beginning 5-Feb-1970 09:00:00
30-Jun-1971 24:00:00	1 at interval beginning 2-May-1971 13:30:00
30-Jun-1972 24:00:00	1 at interval beginning 23-Jan-1972 17:00:00
30-Jun-1973 24:00:00	1 at interval beginning 14-Dec-1972 09:45:00
30-Jun-1974 24:00:00	0 at interval beginning 14-Dec-1973 10:45:00
30-Jun-1975 24:00:00	0 at interval beginning 4-Jan-1975 12:00:00
30-Jun-1976 24:00:00	0 at interval beginning 4-Feb-1976 12:45:00
30-Jun-1977 24:00:00	1 at interval beginning 7-Jan-1977 09:15:00
30-Jun-1978 24:00:00	1 at interval beginning 20-Dec-1977 12:00:00
30-Jun-1979 24:00:00	1 at interval beginning 12-Jan-1979 15:00:00
30-Jun-1980 24:00:00	1 at interval beginning 1-Dec-1979 16:30:00

Mean annual Minimum = 1
 (For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
 Monthly totals 1969 to 1980 site 32735 Rangitawa at Halcombe
 Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1970	0.0	0.0	0.0	0.0	13.6	4.5	26.9	28.0	17.2	0.0	0.0	0.0	90.2	
1971	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1972	0.0	0.0	0.0	0.0	0.0	0.0	3.8	3.3	0.0	0.0	0.0	0.0	7.1	
1973	0.0	0.0	0.0	0.0	0.0	0.0	15.1	28.0	1.8	0.0	0.0	0.0	44.9	

1974	0.0	0.0	0.0	0.0	8.3	20.3	25.9	14.8	28.7	14.4	0.0	0.0	112.4
1975	0.0	0.0	0.0	0.0	0.0	11.1	19.9	25.7	26.5	18.5	0.0	0.0	101.6
1976	0.0	0.0	0.0	0.0	0.0	9.2	18.9	23.0	27.4	25.7	0.0	0.0	104.1
1977	0.0	0.0	0.0	0.0	0.0	0.0	6.4	15.1	19.9	0.0	0.0	0.0	41.4
1978	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.5	23.8	28.0	12.3	0.0	76.6
1979	0.0	0.0	0.0	0.0	0.0	0.0	16.4	17.8	8.5	0.0	0.0	0.0	42.7
1980	0.0	0.0	0.0	0.0	0.0	6.2	2.6	18.1	4.8	0.0	0.0	0.0	31.7
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	0.0	0.0	0.0	0.0	13.6	20.3	26.9	28.0	28.7	25.7	0.0	0.0	
Mean	0.0	0.0	0.0	0.0	2.0	4.7	13.5	18.0	14.8	6.4	0.0	0.0	

4.19. Rangitikei at Mangaweka (32702), July 1969 to July 2004 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 32702 Rangitikei at Mangaweka

From 1-Jul-1969 00:00:01 to 1-Jul-2004 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	2493100	312213	239438	202805	181064	165714	153504	143341	134956	128415
10	122460	117105	112421	108287	104528	101052	97854	94971	92281	89722
20	87318	85070	82930	80885	78976	77129	75332	73590	71924	70379
30	68839	67331	65870	64532	63200	61874	60604	59310	58107	56914
40	55743	54613	53441	52298	51182	50081	49036	48023	46993	46022
50	45037	44092	43175	42279	41418	40602	39804	39058	38274	37526
60	36741	35973	35247	34535	33820	33147	32444	31739	31057	30395
70	29772	29097	28440	27801	27148	26544	25921	25349	24761	24211
80	23661	23137	22578	22023	21495	20980	20475	19920	19394	18830
90	18308	17783	17207	16630	16104	15535	14812	14032	13265	12013
100	9038									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 32702 Rangitikei at Mangaweka

From 1-Jul-1969 00:00:01 to 1-Jul-2004 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	2493100	231700	164713	131848	114590	102880	94100	87171	81625	77191
10	73350	70006	66954	64206	61820	59705	57686	55863	54105	52501
20	51063	49714	48475	47204	46030	44955	43910	42909	41983	41064
30	40243	39406	38606	37852	37136	36395	35733	35106	34498	33926
40	33379	32846	32317	31769	31288	30785	30317	29866	29411	28954
50	28494	28072	27651	27254	26844	26483	26122	25744	25378	25012
60	24655	24323	24001	23705	23388	23078	22750	22425	22091	21779
70	21461	21150	20850	20536	20218	19926	19641	19353	19023	18742
80	18454	18194	17918	17620	17314	17001	16702	16414	16145	15876
90	15576	15250	14874	14437	14058	13715	13301	12754	12012	11427
100	9038									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 32702 Rangitikei at Mangaweka

From 1-Jul-1969 00:00:00 to 30-Jun-2004 24:00:00

Interval = 0

flow m3/s

Year	Maximum	Date & Time
*1969	333.57	26-Sep-1969 23:45
1970	676.11	6-Aug-1970 03:30
1971	876.15	4-May-1971 24:00
1972	783.94	10-Mar-1972 21:45
1973	565.04	15-Jun-1973 01:30
1974	906.26	16-Jun-1974 11:45
1975	710.08	12-Mar-1975 17:45
1976	661.60	9-Sep-1976 14:00
1977	504.08	29-Jun-1977 03:30
1978	538.32	12-Jul-1978 13:15
1979	635.82	4-Sep-1979 09:30
1980	1015.2	28-Dec-1980 09:30
1981	570.63	21-May-1981 23:45
1982	480.70	25-Feb-1982 01:15
1983	418.51	28-Jun-1983 06:45
1984	338.58	16-Aug-1984 17:15
1985	743.67	28-Jul-1985 09:45
1986	773.97	26-Jul-1986 08:30
1987	491.87	22-Mar-1987 06:45
1988	994.32	2-Sep-1988 13:00
1989	580.52	9-Sep-1989 01:15
1990	553.16	10-Mar-1990 20:45
1991	788.39	9-Aug-1991 21:00
1992	1265.5	22-Jul-1992 22:00
1993	619.29	17-May-1993 04:15
1994	762.25	26-Jul-1994 07:30
1995	947.83	7-Sep-1995 10:00
1996	524.94	21-Apr-1996 10:00
1997	634.35	2-Jul-1997 06:15
1998	750.52	2-Jul-1998 10:30
1999	1068.0	29-Nov-1999 14:45
2000	689.35	3-Oct-2000 03:00
2001	844.12	25-May-2001 16:45
2002	553.11	16-Jun-2002 01:00
2003	1214.2	4-Oct-2003 08:30
*2004	2493.1	16-Feb-2004 06:15

Average Annual Maximum 720.01 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 32702 Rangitikei at Mangaweka
From 1-Jul-1969 00:00:00 to 30-Jun-2004 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1970 24:00:00	12237 at interval beginning 7-Mar-1970 20:00:00
30-Jun-1971 24:00:00	15616 at interval beginning 8-Apr-1971 18:00:00
30-Jun-1972 24:00:00	15994 at interval beginning 3-Mar-1972 21:30:00
30-Jun-1973 24:00:00	11708 at interval beginning 26-Feb-1973 09:00:00
30-Jun-1974 24:00:00	10699 at interval beginning 15-Mar-1974 20:45:00
30-Jun-1975 24:00:00	15527 at interval beginning 22-Apr-1975 04:45:00
30-Jun-1976 24:00:00	14854 at interval beginning 26-Mar-1976 22:00:00
30-Jun-1977 24:00:00	12914 at interval beginning 21-Mar-1977 03:30:00
30-Jun-1978 24:00:00	10570 at interval beginning 23-Mar-1978 09:15:00
30-Jun-1979 24:00:00	13789 at interval beginning 11-Feb-1979 17:45:00
30-Jun-1980 24:00:00	17308 at interval beginning 25-Dec-1979 05:15:00

30-Jun-1981 24:00:00	13660 at interval beginning	9-Apr-1981 14:45:00
30-Jun-1982 24:00:00	11198 at interval beginning	16-Feb-1982 23:30:00
30-Jun-1983 24:00:00	10521 at interval beginning	22-Mar-1983 20:30:00
30-Jun-1984 24:00:00	14616 at interval beginning	1-Feb-1984 23:30:00
30-Jun-1985 24:00:00	12679 at interval beginning	28-Feb-1985 10:15:00
30-Jun-1986 24:00:00	13204 at interval beginning	26-Apr-1986 18:30:00
30-Jun-1987 24:00:00	13262 at interval beginning	18-Jan-1987 03:30:00
30-Jun-1988 24:00:00	11695 at interval beginning	3-Feb-1988 05:45:00
30-Jun-1989 24:00:00	13379 at interval beginning	29-Apr-1989 01:30:00
30-Jun-1990 24:00:00	13846 at interval beginning	8-Mar-1990 07:30:00
30-Jun-1991 24:00:00	11339 at interval beginning	14-Jan-1991 21:30:00
30-Jun-1992 24:00:00	18186 at interval beginning	4-Feb-1992 18:30:00
30-Jun-1993 24:00:00	16059 at interval beginning	18-Feb-1993 12:15:00
30-Jun-1994 24:00:00	12811 at interval beginning	16-Feb-1994 03:45:00
30-Jun-1995 24:00:00	16461 at interval beginning	26-Jan-1995 22:45:00
30-Jun-1996 24:00:00	16389 at interval beginning	13-Dec-1995 21:00:00
30-Jun-1997 24:00:00	14778 at interval beginning	1-Mar-1997 02:45:00
30-Jun-1998 24:00:00	13389 at interval beginning	18-Feb-1998 00:45:00
30-Jun-1999 24:00:00	18682 at interval beginning	5-Mar-1999 18:15:00
30-Jun-2000 24:00:00	9141 at interval beginning	21-Mar-2000 04:15:00
30-Jun-2001 24:00:00	12591 at interval beginning	26-Mar-2001 15:15:00
30-Jun-2002 24:00:00	15272 at interval beginning	22-Apr-2002 18:45:00
30-Jun-2003 24:00:00	10681 at interval beginning	26-Mar-2003 18:15:00
30-Jun-2004 24:00:00	15336 at interval beginning	27-Apr-2004 05:45:00

Mean annual Minimum = 13725
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1969 to 2004 site 32702 Rangitikei at Mangaweka
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1970	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	6.9	0.0	0.0	0.0	7.5
1971	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1972	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1973	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.8	4.8	0.0	0.0	0.0	18.6
1974	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.2	14.5	6.3	1.8	0.0	0.0	25.6
1975	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1976	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3	0.0	0.0	0.0	2.3
1978	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.6	27.4	10.5	0.0	0.0	48.4
1979	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	NaN	0.2
1980	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.0	0.0	1.4
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.8	0.0	0.0	0.0	0.0	18.8
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.6	21.0	1.1	0.0	0.0	24.7
1984	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.7	2.9	0.0	0.0	0.0	10.6
1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.5	0.0	0.0	5.5
1987	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.2	0.0	0.0	0.0	0.0	0.0	4.2
1988	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.7	3.8	0.0	0.0	0.0	0.0	12.5
1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3	0.0	0.0	3.3
1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.6
1991	0.0	0.0	0.0	0.0	0.0	0.4	17.3	2.3	0.0	1.5	0.0	0.0	0.0	21.5
1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1994	0.0	0.0	0.0	0.0	0.0	0.0	1.0	5.2	3.2	5.1	0.0	0.0	0.0	14.5

1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1998	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.6	0.0	0.0	0.0	0.0	1.7
1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2000	0.0	0.0	0.0	0.0	0.0	0.0	1.7	10.0	23.2	5.0	0.0	0.0	39.8
2001	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.6	0.0	0.0	0.0	9.6
2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.7	15.4	15.5	7.1	0.0	50.7
2004	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max	0.0	0.0	0.0	0.0	0.0	0.4	17.3	18.8	27.4	15.5	7.1	0.0	0.0
Mean	0.0	0.0	0.0	0.0	0.0	0.0	1.0	3.0	3.5	1.4	0.2	0.0	0.0

4.20. Rangitikei at Mangaweka (32702), July 1969 to July 1978 (pre-diversion)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 32702 Rangitikei at Mangaweka

From 1-Jul-1969 00:00:01 to 1-Jul-1978 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	906259	325182	255183	218033	192984	177169	165306	154929	146268	137753
10	130757	124505	119037	114384	110094	106758	103521	100728	98087	95411
20	92971	90766	88733	86690	84760	82944	81136	79447	77818	76241
30	74640	73159	71637	70360	68983	67654	66342	65082	63862	62609
40	61406	60237	59045	57943	56826	55623	54543	53315	52173	51133
50	50038	49004	47880	46692	45630	44560	43583	42602	41722	40855
60	40025	39105	38117	37144	36044	34996	34029	33134	32249	31385
70	30612	29745	28865	28141	27428	26704	26056	25336	24595	23922
80	23342	22781	22144	21544	20952	20388	19833	19366	18800	18280
90	17789	17188	16659	16171	15733	14989	13941	13264	12277	11625
100	10496									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 32702 Rangitikei at Mangaweka

From 1-Jul-1969 00:00:01 to 1-Jul-1978 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	783943	200329	137170	111480	99309	89852	83682	78482	74524	71320
10	67933	64917	62179	59939	57839	55827	53898	52379	51061	49751
20	48507	47171	46002	45000	43931	42904	41966	41091	40205	39328
30	38411	37625	36831	35958	35203	34508	33899	33302	32756	32209
40	31700	31250	30752	30280	29769	29278	28810	28384	28029	27652
50	27266	26900	26526	26208	25848	25447	25040	24630	24259	23900
60	23584	23310	23040	22715	22382	22022	21693	21371	21053	20720
70	20408	20107	19831	19588	19346	19048	18777	18507	18259	18013
80	17758	17469	17156	16880	16627	16359	16150	15969	15705	15377
90	14944	14377	13917	13612	13243	12774	12262	11853	11606	11111
100	10496									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 32702 Rangitikei at Mangaweka
 From 1-Jul-1969 00:00:00 to 30-Jun-1978 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1969	333.57	26-Sep-1969 23:45
1970	676.11	6-Aug-1970 03:30
1971	876.15	4-May-1971 24:00
1972	783.94	10-Mar-1972 21:45
1973	565.04	15-Jun-1973 01:30
1974	906.26	16-Jun-1974 11:45
1975	710.08	12-Mar-1975 17:45
1976	661.60	9-Sep-1976 14:00
1977	504.08	29-Jun-1977 03:30
*1978	363.73	20-Apr-1978 06:45

Average Annual Maximum 710.41 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 32702 Rangitikei at Mangaweka
 From 1-Jul-1969 00:00:00 to 30-Jun-1978 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1970 24:00:00	12237 at interval beginning 7-Mar-1970 20:00:00
30-Jun-1971 24:00:00	15616 at interval beginning 8-Apr-1971 18:00:00
30-Jun-1972 24:00:00	15994 at interval beginning 3-Mar-1972 21:30:00
30-Jun-1973 24:00:00	11708 at interval beginning 26-Feb-1973 09:00:00
30-Jun-1974 24:00:00	10699 at interval beginning 15-Mar-1974 20:45:00
30-Jun-1975 24:00:00	15527 at interval beginning 22-Apr-1975 04:45:00
30-Jun-1976 24:00:00	14854 at interval beginning 26-Mar-1976 22:00:00
30-Jun-1977 24:00:00	12914 at interval beginning 21-Mar-1977 03:30:00
30-Jun-1978 24:00:00	10570 at interval beginning 23-Mar-1978 09:15:00

Mean annual Minimum = 13347
 (For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
 Monthly totals 1969 to 1978 site 32702 Rangitikei at Mangaweka
 Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1970	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	6.9	0.0	0.0	0.0	7.5
1971	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1972	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1973	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.8	4.8	0.0	0.0	0.0	18.6
1974	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.2	14.5	6.3	1.8	0.0	0.0	25.6
1975	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1976	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3	0.0	0.0	0.0	2.3

```

1978  0.0  0.0  0.0  0.0  0.0  0.0  0.0  10.6  27.4  10.5  0.0  0.0  48.4

Min   0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0
Max   0.0  0.0  0.0  0.0  0.0  0.0  3.2  14.5  27.4  10.5  0.0  0.0  0.0
Mean  0.0  0.0  0.0  0.0  0.0  0.0  0.4  4.4  5.3  1.4  0.0  0.0  0.0

```

4.21. Rangitikei at Mangaweka (32702), July 1979 to July 2004 (post-diversion)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 32702 Rangitikei at Mangaweka
 From 1-Jul-1979 00:00:01 to 1-Jul-2004 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	2493100	307575	233322	198144	176905	161299	149110	139438	131869	125553
10	119889	114794	110326	106255	102436	98860	95811	92959	90244	87646
20	85272	82997	80871	78857	76904	75014	73184	71465	69785	68153
30	66563	65158	63733	62319	60963	59622	58319	57064	55876	54698
40	53508	52370	51236	50113	49066	48072	47067	46123	45184	44211
50	43296	42394	41538	40704	39925	39205	38484	37775	37033	36319
60	35655	34982	34355	33696	33040	32383	31759	31134	30495	29917
70	29342	28722	28109	27478	26891	26297	25736	25181	24646	24128
80	23648	23131	22569	22048	21549	21044	20579	20085	19541	18992
90	18448	17953	17401	16801	16236	15650	15004	14231	13519	12363
100	9038									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 32702 Rangitikei at Mangaweka
 From 1-Jul-1979 00:00:01 to 1-Jul-2004 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	2493100	239477	171629	137024	118808	106276	96980	89819	83729	79069
10	74917	71212	68056	65296	62780	60609	58531	56647	54885	53180
20	51618	50175	48883	47664	46427	45326	44241	43258	42284	41338
30	40503	39679	38897	38154	37439	36746	36048	35437	34838	34252
40	33718	33181	32642	32116	31601	31102	30594	30155	29731	29284
50	28821	28363	27935	27506	27103	26703	26317	25966	25605	25247
60	24893	24556	24237	23948	23646	23313	22982	22669	22323	22014
70	21707	21417	21098	20813	20514	20222	19919	19623	19317	19007
80	18712	18422	18154	17873	17567	17280	16944	16616	16333	16044
90	15722	15430	15069	14668	14298	13960	13567	13129	12457	11503
100	9038									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 32702 Rangitikei at Mangaweka
 From 1-Jul-1979 00:00:00 to 30-Jun-2004 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1979	635.82	4-Sep-1979 09:30
1980	1015.2	28-Dec-1980 09:30

1981	570.63	21-May-1981	23:45
1982	480.70	25-Feb-1982	01:15
1983	418.51	28-Jun-1983	06:45
1984	338.58	16-Aug-1984	17:15
1985	743.67	28-Jul-1985	09:45
1986	773.97	26-Jul-1986	08:30
1987	491.87	22-Mar-1987	06:45
1988	994.32	2-Sep-1988	13:00
1989	580.52	9-Sep-1989	01:15
1990	553.16	10-Mar-1990	20:45
1991	788.39	9-Aug-1991	21:00
1992	1265.5	22-Jul-1992	22:00
1993	619.29	17-May-1993	04:15
1994	762.25	26-Jul-1994	07:30
1995	947.83	7-Sep-1995	10:00
1996	524.94	21-Apr-1996	10:00
1997	634.35	2-Jul-1997	06:15
1998	750.52	2-Jul-1998	10:30
1999	1068.0	29-Nov-1999	14:45
2000	689.35	3-Oct-2000	03:00
2001	844.12	25-May-2001	16:45
2002	553.11	16-Jun-2002	01:00
2003	1214.2	4-Oct-2003	08:30
*2004	2493.1	16-Feb-2004	06:15

Average Annual Maximum 734.29 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 32702 Rangitikei at Mangaweka
From 1-Jul-1979 00:00:00 to 30-Jun-2004 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)			
30-Jun-1980 24:00:00	17308	at interval beginning	25-Dec-1979	05:15:00
30-Jun-1981 24:00:00	13660	at interval beginning	9-Apr-1981	14:45:00
30-Jun-1982 24:00:00	11198	at interval beginning	16-Feb-1982	23:30:00
30-Jun-1983 24:00:00	10521	at interval beginning	22-Mar-1983	20:30:00
30-Jun-1984 24:00:00	14616	at interval beginning	1-Feb-1984	23:30:00
30-Jun-1985 24:00:00	12679	at interval beginning	28-Feb-1985	10:15:00
30-Jun-1986 24:00:00	13204	at interval beginning	26-Apr-1986	18:30:00
30-Jun-1987 24:00:00	13262	at interval beginning	18-Jan-1987	03:30:00
30-Jun-1988 24:00:00	11695	at interval beginning	3-Feb-1988	05:45:00
30-Jun-1989 24:00:00	13379	at interval beginning	29-Apr-1989	01:30:00
30-Jun-1990 24:00:00	13846	at interval beginning	8-Mar-1990	07:30:00
30-Jun-1991 24:00:00	11339	at interval beginning	14-Jan-1991	21:30:00
30-Jun-1992 24:00:00	18186	at interval beginning	4-Feb-1992	18:30:00
30-Jun-1993 24:00:00	16059	at interval beginning	18-Feb-1993	12:15:00
30-Jun-1994 24:00:00	12811	at interval beginning	16-Feb-1994	03:45:00
30-Jun-1995 24:00:00	16461	at interval beginning	26-Jan-1995	22:45:00
30-Jun-1996 24:00:00	16389	at interval beginning	13-Dec-1995	21:00:00
30-Jun-1997 24:00:00	14778	at interval beginning	1-Mar-1997	02:45:00
30-Jun-1998 24:00:00	13389	at interval beginning	18-Feb-1998	00:45:00
30-Jun-1999 24:00:00	18682	at interval beginning	5-Mar-1999	18:15:00
30-Jun-2000 24:00:00	9141	at interval beginning	21-Mar-2000	04:15:00
30-Jun-2001 24:00:00	12591	at interval beginning	26-Mar-2001	15:15:00
30-Jun-2002 24:00:00	15272	at interval beginning	22-Apr-2002	18:45:00
30-Jun-2003 24:00:00	10681	at interval beginning	26-Mar-2003	18:15:00
30-Jun-2004 24:00:00	15336	at interval beginning	27-Apr-2004	05:45:00

Mean annual Minimum = 13859

(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
 Monthly totals 1979 to 2004 site 32702 Rangitikei at Mangaweka
 Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1980	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.0	0.0	1.4
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.8	0.0	0.0	0.0	0.0	18.8
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.6	21.0	1.1	0.0	0.0	24.7
1984	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.7	2.9	0.0	0.0	0.0	10.6
1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.5	0.0	0.0	5.5
1987	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.2	0.0	0.0	0.0	0.0	0.0	4.2
1988	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.7	3.8	0.0	0.0	0.0	0.0	12.5
1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3	0.0	0.0	3.3
1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.6
1991	0.0	0.0	0.0	0.0	0.0	0.0	0.4	17.3	2.3	0.0	1.5	0.0	0.0	21.5
1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1994	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	5.2	3.2	5.1	0.0	0.0	14.5
1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.6	0.0	0.0	0.0	0.0	1.7
1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7	10.0	23.2	5.0	0.0	0.0	39.8
2001	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.6	0.0	0.0	0.0	9.6
2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.7	15.4	15.5	7.1	0.0	50.7
2004	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	0.0	0.0	0.0	0.0	0.0	0.4	17.3	18.8	23.2	15.5	7.1	0.0		
Mean	0.0	0.0	0.0	0.0	0.0	0.0	1.3	2.6	3.0	1.5	0.3	0.0		

4.22. Rangitikei at Mangaweka (simnat) (327020), July 1963 to July 2003 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 327020 Simulated Natural at Mangaweka
 From 1-Jul-1963 00:00:01 to 1-Jul-2003 00:00:01
 flow l/s

	0	1	2	3	4	5	6	7	8	9
0	1225000	318468	253821	219940	198250	181392	168466	157694	149293	142194
10	136031	130587	125474	120864	116685	113043	109716	106567	103620	100928
20	98200	95621	93269	91021	88938	86948	85064	83201	81356	79664
30	78083	76397	74831	73404	71954	70542	69105	67743	66378	65062
40	63809	62534	61307	60109	58872	57746	56579	55513	54450	53420
50	52345	51329	50277	49335	48349	47366	46451	45629	44729	43882
60	43061	42288	41474	40692	39901	39098	38310	37519	36711	35959

70	35173	34408	33637	32840	32105	31337	30601	29839	29100	28343
80	27659	26953	26273	25583	24921	24257	23649	23044	22407	21762
90	21108	20445	19780	19059	18326	17558	16692	15901	14682	13263
100	10518									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 327020 Simulated Natural at Mangaweka
 From 1-Jul-1963 00:00:01 to 1-Jul-2003 00:00:01
 flow l/s

	0	1	2	3	4	5	6	7	8	9
0	1101000	248736	182834	151322	131632	118452	109400	102187	95494	89806
10	85633	81843	78457	75506	72964	70525	68117	66080	64131	62179
20	60481	58838	57407	55982	54670	53438	52213	51076	49926	48911
30	47868	46891	46075	45257	44406	43604	42826	42126	41420	40767
40	40072	39382	38673	38003	37355	36717	36154	35579	34995	34419
50	33912	33343	32846	32339	31826	31336	30828	30384	29900	29448
60	28983	28530	28085	27676	27253	26833	26431	26039	25641	25238
70	24839	24455	24098	23735	23390	23045	22693	22335	21979	21643
80	21297	20917	20554	20197	19837	19508	19101	18745	18355	17963
90	17568	17119	16702	16301	15902	15394	14696	13947	13252	12153
100	10518									

Annual maximum series and mean annual flood (MAF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 327020 Simulated Natural at Mangaweka
 From 1-Jul-1963 00:00:00 to 30-Jun-2003 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1963	381.21	16-Jul-1963 03:00
1964	756.74	11-Mar-1964 21:00
1965	1061.8	18-Mar-1965 06:00
1966	498.90	31-Jul-1966 21:00
1967	1101.3	3-Feb-1967 15:00
1968	981.31	7-Dec-1968 21:00
1969	324.68	26-Sep-1969 24:00
1970	658.84	6-Aug-1970 06:00
1971	832.92	4-May-1971 24:00
1972	730.72	10-Mar-1972 24:00
1973	547.46	15-Jun-1973 03:00
1974	838.12	3-Jul-1974 18:00
1975	652.62	16-Jun-1975 12:00
1976	637.15	9-Sep-1976 15:00
1977	477.87	29-Jun-1977 06:00
1978	507.86	12-Jul-1978 15:00
1979	620.59	4-Sep-1979 12:00
1980	1004.3	28-Dec-1980 12:00
1981	532.79	22-May-1981 03:00
1982	467.87	25-Feb-1982 03:00
1983	386.06	28-Jun-1983 09:00
1984	320.64	16-Aug-1984 18:00
1985	715.89	28-Jul-1985 12:00
1986	766.85	26-Jul-1986 09:00
1987	485.23	22-Mar-1987 09:00
1988	949.51	2-Sep-1988 15:00
1989	563.31	9-Sep-1989 03:00
1990	557.60	11-Mar-1990 03:00
1991	714.61	9-Aug-1991 21:00

1992	1225.2	22-Jul-1992	24:00
1993	603.95	17-May-1993	06:00
1994	758.87	26-Jul-1994	09:00
1995	889.51	7-Sep-1995	12:00
1996	511.31	21-Apr-1996	12:00
1997	623.72	2-Jul-1997	09:00
1998	719.53	2-Jul-1998	12:00
1999	999.80	29-Nov-1999	18:00
2000	708.86	3-Oct-2000	03:00
2001	804.32	25-May-2001	18:00
2002	466.46	16-Jun-2002	03:00
*2003	486.92	22-May-2003	18:00

Average Annual Maximum 692.44 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 327020 Simulated Natural at Mangaweka
From 1-Jul-1963 00:00:00 to 30-Jun-2003 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (flow l/s)
30-Jun-1964 24:00:00	12057 at interval beginning 25-Apr-1964 24:00:00
30-Jun-1965 24:00:00	24243 at interval beginning 6-Dec-1964 24:00:00
30-Jun-1966 24:00:00	19543 at interval beginning 25-Apr-1966 06:00:00
30-Jun-1967 24:00:00	13923 at interval beginning 20-Apr-1967 24:00:00
30-Jun-1968 24:00:00	11257 at interval beginning 27-Mar-1968 24:00:00
30-Jun-1969 24:00:00	18015 at interval beginning 29-Mar-1969 18:00:00
30-Jun-1970 24:00:00	12236 at interval beginning 7-Mar-1970 21:00:00
30-Jun-1971 24:00:00	15617 at interval beginning 8-Apr-1971 18:00:00
30-Jun-1972 24:00:00	15996 at interval beginning 3-Mar-1972 21:00:00
30-Jun-1973 24:00:00	11694 at interval beginning 26-Feb-1973 15:00:00
30-Jun-1974 24:00:00	10651 at interval beginning 16-Mar-1974 03:00:00
30-Jun-1975 24:00:00	15525 at interval beginning 22-Apr-1975 06:00:00
30-Jun-1976 24:00:00	14846 at interval beginning 26-Mar-1976 24:00:00
30-Jun-1977 24:00:00	12809 at interval beginning 21-Mar-1977 15:00:00
30-Jun-1978 24:00:00	10570 at interval beginning 23-Mar-1978 09:00:00
30-Jun-1979 24:00:00	13790 at interval beginning 11-Feb-1979 18:00:00
30-Jun-1980 24:00:00	22057 at interval beginning 25-Dec-1979 06:00:00
30-Jun-1981 24:00:00	17096 at interval beginning 9-Apr-1981 15:00:00
30-Jun-1982 24:00:00	13266 at interval beginning 17-Feb-1982 03:00:00
30-Jun-1983 24:00:00	12239 at interval beginning 22-Mar-1983 21:00:00
30-Jun-1984 24:00:00	18022 at interval beginning 25-Apr-1984 18:00:00
30-Jun-1985 24:00:00	15399 at interval beginning 28-Feb-1985 15:00:00
30-Jun-1986 24:00:00	15784 at interval beginning 26-Apr-1986 18:00:00
30-Jun-1987 24:00:00	15594 at interval beginning 18-Jan-1987 06:00:00
30-Jun-1988 24:00:00	13995 at interval beginning 3-Feb-1988 09:00:00
30-Jun-1989 24:00:00	16240 at interval beginning 29-Apr-1989 03:00:00
30-Jun-1990 24:00:00	16302 at interval beginning 8-Mar-1990 09:00:00
30-Jun-1991 24:00:00	13618 at interval beginning 14-Jan-1991 24:00:00
30-Jun-1992 24:00:00	21682 at interval beginning 6-Mar-1992 15:00:00
30-Jun-1993 24:00:00	18307 at interval beginning 18-Feb-1993 12:00:00
30-Jun-1994 24:00:00	15005 at interval beginning 16-Feb-1994 03:00:00
30-Jun-1995 24:00:00	19165 at interval beginning 26-Jan-1995 21:00:00
30-Jun-1996 24:00:00	20542 at interval beginning 13-Dec-1995 21:00:00
30-Jun-1997 24:00:00	17893 at interval beginning 1-Mar-1997 06:00:00
30-Jun-1998 24:00:00	16348 at interval beginning 18-Feb-1998 03:00:00
30-Jun-1999 24:00:00	21356 at interval beginning 25-Feb-1999 12:00:00
30-Jun-2000 24:00:00	11221 at interval beginning 21-Mar-2000 03:00:00
30-Jun-2001 24:00:00	14709 at interval beginning 26-Mar-2001 24:00:00
30-Jun-2002 24:00:00	17895 at interval beginning 22-Apr-2002 18:00:00

30-Jun-2003 24:00:00

13642 at interval beginning 26-Mar-2003 18:00:00

Mean annual Minimum = 15754
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD

Monthly totals 1963 to 2003 site 327020 Rangitikei at Mangaweka (simnat)

Days < MALF

Season
ending
in

Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1964	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.4	0.0	10.0	0.0	0.0	28.4
1965	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1966	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1967	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.1	3.4	0.0	0.0	6.5
1968	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.6	2.3	0.0	0.0	14.9
1969	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1970	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.3	12.5	0.0	0.0	0.0	21.8
1971	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1972	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1973	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.6	8.5	0.0	0.0	0.0	29.1
1974	0.0	0.0	0.0	0.0	0.0	0.0	6.1	18.9	9.4	4.8	0.0	0.0	39.1
1975	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1976	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.5	0.0	0.0	0.0	6.5
1978	0.0	0.0	0.0	0.0	0.0	0.0	0.5	16.4	28.5	11.8	0.0	0.0	57.1
1979	0.0	0.0	0.0	0.0	0.0	0.0	8.5	7.9	0.0	0.0	0.0	NaN	16.4
1980	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.4	0.0	0.0	0.0	0.0	18.4
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.3	23.5	2.1	0.0	0.0	29.9
1984	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.4	0.8	0.0	0.0	0.0	5.1
1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.8	0.0	0.0	5.8
1987	0.0	0.0	0.0	0.0	0.0	0.0	4.8	0.0	0.0	0.0	0.0	0.0	4.8
1988	0.0	0.0	0.0	0.0	0.0	0.0	8.3	4.0	0.0	0.0	0.0	0.0	12.3
1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1	0.0	0.0	2.1
1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3	0.0	0.0	0.0	2.3
1991	0.0	0.0	0.0	0.0	0.0	0.0	16.5	1.1	0.0	2.6	0.0	0.0	20.3
1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1994	0.0	0.0	0.0	0.0	0.0	0.0	0.3	6.5	2.9	4.9	0.0	0.0	14.5
1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1998	0.0	0.0	0.0	0.0	0.0	0.0	0.6	1.0	0.0	0.0	0.0	0.0	1.6
1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0	23.5	4.8	0.0	0.0	36.3
2001	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.3	0.0	0.0	0.0	10.3
2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.0	14.0	11.1	5.6	0.0	41.8
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max	0.0	0.0	0.0	0.0	0.0	0.0	16.5	20.6	28.5	11.8	5.6	0.0	0.0
Mean	0.0	0.0	0.0	0.0	0.0	0.0	1.1	3.8	4.0	1.6	0.1	0.0	0.0

4.23. Rangitikei at Mangaweka (simnat) (327020), July 1963 to July 1978 (pre-diversion)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 327020 Simulated Natural at Mangaweka
From 1-Jul-1963 00:00:01 to 1-Jul-1978 00:00:01
flow l/s

	0	1	2	3	4	5	6	7	8	9
0	1101000	333121	263151	230210	207444	190236	176082	165318	155699	147736
10	140475	134189	128768	123516	118737	114855	111223	107953	105098	102316
20	99649	97054	94653	92380	90222	88336	86452	84755	82928	81153
30	79607	78114	76574	75061	73700	72334	71035	69722	68314	67019
40	65764	64524	63242	61894	60721	59483	58333	57184	56007	55020
50	53873	52799	51709	50714	49715	48677	47596	46514	45609	44606
60	43662	42728	41877	41023	40177	39236	38259	37321	36401	35426
70	34441	33631	32790	31935	31044	30197	29404	28413	27581	26854
80	26076	25339	24586	23905	23251	22642	21947	21308	20640	20012
90	19392	18661	17977	17248	16503	15901	15021	13906	13054	11917
100	10518									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 327020 Simulated Natural at Mangaweka
From 1-Jul-1963 00:00:01 to 1-Jul-1978 00:00:01
flow l/s

	0	1	2	3	4	5	6	7	8	9
0	1101000	246398	179672	147802	126583	112854	104962	97583	91441	86275
10	82044	78391	75591	73230	70756	68180	66137	64143	62052	60450
20	58796	57133	55676	54162	52857	51704	50587	49523	48453	47319
30	46287	45490	44515	43631	42710	41989	41209	40473	39666	38847
40	38069	37387	36712	36095	35412	34685	34158	33551	32951	32541
50	31921	31324	30775	30302	29741	29254	28700	28146	27697	27203
60	26840	26405	25984	25574	25143	24689	24294	23904	23517	23191
70	22879	22528	22106	21793	21422	21047	20690	20322	19986	19677
80	19355	18991	18621	18279	17944	17645	17202	16812	16473	16158
90	15886	15488	14971	14310	13872	13475	13059	12534	11902	11478
100	10518									

Annual maximum series and mean annual flood (MAF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 327020 Simulated Natural at Mangaweka
From 1-Jul-1963 00:00:00 to 30-Jun-1978 24:00:00
Interval = 0
flow m3/s

Year	Maximum	Date & Time
*1963	381.21	16-Jul-1963 03:00
1964	756.74	11-Mar-1964 21:00
1965	1061.8	18-Mar-1965 06:00
1966	498.90	31-Jul-1966 21:00
1967	1101.3	3-Feb-1967 15:00
1968	981.31	7-Dec-1968 21:00
1969	324.68	26-Sep-1969 24:00
1970	658.84	6-Aug-1970 06:00

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1971      832.92      4-May-1971 24:00
1972      730.72     10-Mar-1972 24:00
1973      547.46     15-Jun-1973 03:00
1974      838.12      3-Jul-1974 18:00
1975      652.62     16-Jun-1975 12:00
1976      637.15      9-Sep-1976 15:00
1977      477.87     29-Jun-1977 06:00
*1978      343.09     20-Apr-1978 09:00

```

Average Annual Maximum 721.46 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 327020 Simulated Natural at Mangaweka
From 1-Jul-1963 00:00:00 to 30-Jun-1978 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (flow l/s)
30-Jun-1964 24:00:00	12057 at interval beginning 25-Apr-1964 24:00:00
30-Jun-1965 24:00:00	24243 at interval beginning 6-Dec-1964 24:00:00
30-Jun-1966 24:00:00	19543 at interval beginning 25-Apr-1966 06:00:00
30-Jun-1967 24:00:00	13923 at interval beginning 20-Apr-1967 24:00:00
30-Jun-1968 24:00:00	11257 at interval beginning 27-Mar-1968 24:00:00
30-Jun-1969 24:00:00	18015 at interval beginning 29-Mar-1969 18:00:00
30-Jun-1970 24:00:00	12236 at interval beginning 7-Mar-1970 21:00:00
30-Jun-1971 24:00:00	15617 at interval beginning 8-Apr-1971 18:00:00
30-Jun-1972 24:00:00	15996 at interval beginning 3-Mar-1972 21:00:00
30-Jun-1973 24:00:00	11694 at interval beginning 26-Feb-1973 15:00:00
30-Jun-1974 24:00:00	10651 at interval beginning 16-Mar-1974 03:00:00
30-Jun-1975 24:00:00	15525 at interval beginning 22-Apr-1975 06:00:00
30-Jun-1976 24:00:00	14846 at interval beginning 26-Mar-1976 24:00:00
30-Jun-1977 24:00:00	12809 at interval beginning 21-Mar-1977 15:00:00
30-Jun-1978 24:00:00	10570 at interval beginning 23-Mar-1978 09:00:00

Mean annual Minimum = 14599
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1963 to 1978 site 327020 Rangitikei at Mangaweka (simnat)
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1964	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.4	0.0	10.0	0.0	0.0	28.4
1965	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1966	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1967	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.1	3.4	0.0	0.0	6.5
1968	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.6	2.3	0.0	0.0	14.9
1969	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1970	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.3	12.5	0.0	0.0	0.0	21.8
1971	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1972	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1973	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.6	8.5	0.0	0.0	0.0	29.1
1974	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.1	18.9	9.4	4.8	0.0	0.0	39.1
1975	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

1976	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.5	0.0	0.0	0.0	6.5
1978	0.0	0.0	0.0	0.0	0.0	0.0	0.5	16.4	28.5	11.8	0.0	0.0	57.1
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max	0.0	0.0	0.0	0.0	0.0	0.0	6.1	20.6	28.5	11.8	0.0	0.0	0.0
Mean	0.0	0.0	0.0	0.0	0.0	0.0	0.4	5.6	5.4	2.1	0.0	0.0	0.0

4.24. Rangitikei at Mangaweka (simnat) (327020), July 1979 to July 2003 (post-diversion)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 327020 Simulated Natural at Mangaweka
From 1-Jul-1979 00:00:01 to 1-Jul-2003 00:00:01
flow l/s

	0	1	2	3	4	5	6	7	8	9
0	1225000	311961	247327	213004	192843	177240	164165	154089	146334	139820
10	134202	128922	124266	119881	116002	112480	109198	106115	103186	100472
20	97740	95228	92867	90663	88525	86585	84638	82765	80918	79145
30	77496	75790	74203	72690	71262	69750	68311	66877	65528	64209
40	62935	61693	60439	59171	57999	56830	55763	54646	53623	52617
50	51556	50536	49551	48626	47642	46813	46006	45173	44323	43529
60	42788	42016	41254	40506	39717	38998	38286	37562	36779	36098
70	35395	34725	34007	33235	32514	31833	31138	30453	29756	29095
80	28423	27805	27158	26482	25860	25220	24610	24024	23432	22796
90	22180	21563	20914	20256	19565	18843	18052	17152	16245	14880
100	11123									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 327020 Simulated Natural at Mangaweka
From 1-Jul-1979 00:00:01 to 1-Jul-2003 00:00:01
flow l/s

	0	1	2	3	4	5	6	7	8	9
0	1004000	248866	183710	152536	133894	120842	111716	103942	97685	91995
10	87396	83714	80302	77275	74205	71767	69355	67180	65150	63294
20	61515	59861	58310	56882	55645	54412	53263	52010	50815	49689
30	48706	47699	46839	46089	45275	44448	43714	43001	42335	41647
40	41027	40408	39721	39098	38459	37847	37208	36625	36071	35534
50	35037	34511	34000	33466	32943	32452	31985	31550	31085	30648
60	30208	29761	29311	28922	28505	28092	27712	27337	26887	26493
70	26120	25741	25346	24974	24608	24242	23916	23564	23210	22832
80	22495	22148	21813	21488	21132	20762	20423	20049	19693	19319
90	18933	18549	18108	17647	17192	16759	16293	15731	14911	13843
100	11123									

Annual maximum series and mean annual flood (MAF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 327020 Simulated Natural at Mangaweka
From 1-Jul-1979 00:00:00 to 30-Jun-2003 24:00:00
Interval = 0
flow m3/s

Year	Maximum	Date & Time
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*1979      620.59      4-Sep-1979 12:00
1980      1004.3     28-Dec-1980 12:00
1981      532.79     22-May-1981 03:00
1982      467.87     25-Feb-1982 03:00
1983      386.06     28-Jun-1983 09:00
1984      320.64     16-Aug-1984 18:00
1985      715.89     28-Jul-1985 12:00
1986      766.85     26-Jul-1986 09:00
1987      485.23     22-Mar-1987 09:00
1988      949.51       2-Sep-1988 15:00
1989      563.31       9-Sep-1989 03:00
1990      557.60     11-Mar-1990 03:00
1991      714.61       9-Aug-1991 21:00
1992     1225.2     22-Jul-1992 24:00
1993      603.95     17-May-1993 06:00
1994      758.87     26-Jul-1994 09:00
1995      889.51       7-Sep-1995 12:00
1996      511.31     21-Apr-1996 12:00
1997      623.72       2-Jul-1997 09:00
1998      719.53       2-Jul-1998 12:00
1999      999.80     29-Nov-1999 18:00
2000      708.86       3-Oct-2000 03:00
2001      804.32     25-May-2001 18:00
2002      466.46     16-Jun-2002 03:00
*2003      486.92     22-May-2003 18:00

```

Average Annual Maximum 685.92 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 327020 Simulated Natural at Mangaweka
 From 1-Jul-1979 00:00:00 to 30-Jun-2003 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (flow l/s)
30-Jun-1980 24:00:00	22057 at interval beginning 25-Dec-1979 06:00:00
30-Jun-1981 24:00:00	17096 at interval beginning 9-Apr-1981 15:00:00
30-Jun-1982 24:00:00	13266 at interval beginning 17-Feb-1982 03:00:00
30-Jun-1983 24:00:00	12239 at interval beginning 22-Mar-1983 21:00:00
30-Jun-1984 24:00:00	18022 at interval beginning 25-Apr-1984 18:00:00
30-Jun-1985 24:00:00	15399 at interval beginning 28-Feb-1985 15:00:00
30-Jun-1986 24:00:00	15784 at interval beginning 26-Apr-1986 18:00:00
30-Jun-1987 24:00:00	15594 at interval beginning 18-Jan-1987 06:00:00
30-Jun-1988 24:00:00	13995 at interval beginning 3-Feb-1988 09:00:00
30-Jun-1989 24:00:00	16240 at interval beginning 29-Apr-1989 03:00:00
30-Jun-1990 24:00:00	16302 at interval beginning 8-Mar-1990 09:00:00
30-Jun-1991 24:00:00	13618 at interval beginning 14-Jan-1991 24:00:00
30-Jun-1992 24:00:00	21682 at interval beginning 6-Mar-1992 15:00:00
30-Jun-1993 24:00:00	18307 at interval beginning 18-Feb-1993 12:00:00
30-Jun-1994 24:00:00	15005 at interval beginning 16-Feb-1994 03:00:00
30-Jun-1995 24:00:00	19165 at interval beginning 26-Jan-1995 21:00:00
30-Jun-1996 24:00:00	20542 at interval beginning 13-Dec-1995 21:00:00
30-Jun-1997 24:00:00	17893 at interval beginning 1-Mar-1997 06:00:00
30-Jun-1998 24:00:00	16348 at interval beginning 18-Feb-1998 03:00:00
30-Jun-1999 24:00:00	21356 at interval beginning 25-Feb-1999 12:00:00
30-Jun-2000 24:00:00	11221 at interval beginning 21-Mar-2000 03:00:00
30-Jun-2001 24:00:00	14709 at interval beginning 26-Mar-2001 24:00:00
30-Jun-2002 24:00:00	17895 at interval beginning 22-Apr-2002 18:00:00
30-Jun-2003 24:00:00	13642 at interval beginning 26-Mar-2003 18:00:00

Mean annual Minimum = 16557
 (For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
 Monthly totals 1979 to 2003 site 327020 Rangitikei at Mangaweka (simnat)
 Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1980	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.4	0.0	0.0	0.0	0.0	18.4
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.3	23.5	2.1	0.0	0.0	29.9
1984	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.4	0.8	0.0	0.0	0.0	5.1
1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.8	0.0	0.0	5.8
1987	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.8	0.0	0.0	0.0	0.0	0.0	4.8
1988	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.3	4.0	0.0	0.0	0.0	0.0	12.3
1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1	0.0	0.0	2.1
1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3	0.0	0.0	0.0	2.3
1991	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.5	1.1	0.0	2.6	0.0	0.0	20.3
1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1994	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	6.5	2.9	4.9	0.0	0.0	14.5
1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	1.0	0.0	0.0	0.0	0.0	1.6
1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0	23.5	4.8	0.0	0.0	36.3
2001	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.3	0.0	0.0	0.0	10.3
2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.0	14.0	11.1	5.6	0.0	41.8
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.5	18.4	23.5	11.1	5.6	0.0	
Mean	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	2.4	3.2	1.4	0.2	0.0	

4.25. Rangitikei at Onepuhi (32703), July 2002 to July 2005 (post-diversion)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 32703 Rangitikei at Onepuhi
 From 1-Jul-2002 00:00:01 to 1-Jul-2005 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	1496000	424573	318295	273822	245067	219558	201022	187647	176244	166905
10	158281	149973	143265	136803	131205	126275	121869	118136	114126	110422
20	106860	103666	100873	98057	95680	93667	91847	89603	87373	85061
30	82846	80720	78693	76780	74689	72997	71378	69749	68332	66972
40	65607	64323	63045	61871	60609	59452	58123	56932	55718	54496
50	53274	52028	50710	49643	48549	47238	46093	44787	43419	42264
60	40998	39801	38876	37728	36691	35586	34520	33449	32536	31665

70	30731	29847	29013	28257	27624	27039	26494	25911	25299	24766
80	24260	23754	23154	22535	21931	21319	20669	20166	19712	19129
90	18651	18059	17410	16902	16420	16080	15709	15343	14855	14305
100	12986									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 32703 Rangitikei at Onepuhi
 From 1-Jul-2002 00:00:01 to 1-Jul-2005 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	1496000	351062	272309	225671	188275	166068	146853	131921	121803	113473
10	106687	101082	95871	91362	86696	83358	79680	76876	74089	71615
20	69118	67192	65383	63612	61867	59883	58169	56856	55576	54389
30	53120	51815	50655	49554	48532	47419	46437	45499	44441	43418
40	42506	41518	40357	39378	38440	37506	36769	35778	34785	33744
50	32638	31722	30640	29728	28903	28321	27852	27476	27099	26619
60	26175	25793	25422	25080	24756	24445	24131	23817	23467	23039
70	22657	22287	21921	21518	21115	20755	20450	20199	19982	19683
80	19283	18948	18601	18234	17820	17483	17193	16926	16654	16389
90	16171	15976	15784	15601	15399	15172	14924	14643	14302	13852
100	12986									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 32703 Rangitikei at Onepuhi
 From 1-Jul-2002 00:00:00 to 30-Jun-2005 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*2002	509.67	30-Sep-2002 13:30
2003	695.68	4-Oct-2003 15:45
2004	1496.0	16-Feb-2004 13:00
*2005	409.01	2-Jan-2005 07:45

Average Annual Maximum 1095.8 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 32703 Rangitikei at Onepuhi
 From 1-Jul-2002 00:00:00 to 30-Jun-2005 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-2003 24:00:00	13069 at interval beginning 27-Mar-2003 11:15:00
30-Jun-2004 24:00:00	18629 at interval beginning 11-Aug-2003 11:30:00
30-Jun-2005 24:00:00	14426 at interval beginning 14-Mar-2005 20:00:00

Mean annual Minimum = 15375
 (For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD

Monthly totals 2002 to 2005 site 32703 Rangitikei at Onepuhi
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
	2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.9	12.2	3.8	1.8	0.0	28.7
	2004	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	2005	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.1	0.0	0.0	0.0	5.1
Min		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max		0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.9	12.2	3.8	1.8	0.0	
Mean		0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.6	5.8	1.3	0.6	0.0	

4.26. Rangitikei at Otara (32705), July 1963 to July 1969 (pre-diversion)

Flow duration curve tabulation (FDC), all data Exceedance percentiles

Source is HORIZONS.MTD Site 32705 Rangitikei at Otara
From 1-Jul-1963 00:00:01 to 1-Jul-1969 00:00:01
Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	1135500	345098	279242	246626	225401	209131	195165	183477	172073	163414
10	155467	148396	142294	137048	132530	127949	124014	119904	116672	113573
20	110907	108012	105584	102917	100497	98145	95918	93688	91428	89605
30	87821	86064	84570	82911	81338	79958	78621	77162	75706	74517
40	73320	72053	70880	69368	68032	66745	65587	64244	62767	61469
50	60239	58953	57775	56580	55650	54602	53658	52525	51498	50453
60	49718	48602	47628	46625	45936	45013	44121	43214	42521	41580
70	40781	39728	38738	37786	37050	36301	35285	34545	33766	33063
80	32182	31127	30311	29551	28441	27243	26374	25600	24549	23899
90	23087	22346	21685	20831	20041	18977	17673	15993	14424	13330
100	11263									

Flow duration curve tabulation (FDC), summer season Exceedance percentiles

Source is HORIZONS.MTD Site 32705 Rangitikei at Otara
From 1-Jul-1963 00:00:01 to 1-Jul-1969 00:00:01
Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	1135500	309526	223892	185744	163838	147155	132994	122002	115231	109429
10	104977	99688	95455	90948	87503	84272	81509	79026	77064	75302
20	73599	71753	69948	68341	66936	65679	64181	62573	61331	60127
30	58774	57528	56343	55321	54212	53222	52290	51399	50452	49722
40	48755	47854	46918	46290	45590	44825	44059	43233	42805	42037
50	41386	40817	40083	39396	38628	37932	37454	37014	36514	36005
60	35295	34668	34395	33669	33140	32872	32062	31307	30704	30195
70	29753	28770	27935	27191	26773	26164	25788	25229	24665	24306
80	23715	23264	22863	22351	22032	21580	21104	20584	20135	19583
90	18987	18174	17624	16680	15960	15262	14387	14023	13305	12858
100	11263									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 32705 Rangitikei at Otara
 From 1-Jul-1963 00:00:00 to 30-Jun-1969 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1963	403.16	15-Jul-1963 24:00
1964	836.76	11-Mar-1964 21:00
1965	1119.6	18-Mar-1965 04:00
1966	516.14	31-Jul-1966 20:00
1967	1135.5	3-Feb-1967 14:00
1968	1038.1	7-Dec-1968 20:00
*1969	301.78	30-Jun-1969 21:00

Average Annual Maximum 929.23 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 32705 Rangitikei at Otara
 From 1-Jul-1963 00:00:00 to 30-Jun-1969 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1964 24:00:00	12179 at interval beginning 25-Apr-1964 24:00:00
30-Jun-1965 24:00:00	24488 at interval beginning 6-Dec-1964 24:00:00
30-Jun-1966 24:00:00	19784 at interval beginning 24-Apr-1966 24:00:00
30-Jun-1967 24:00:00	14064 at interval beginning 20-Apr-1967 24:00:00
30-Jun-1968 24:00:00	11371 at interval beginning 27-Mar-1968 24:00:00
30-Jun-1969 24:00:00	18216 at interval beginning 29-Mar-1969 24:00:00

Mean annual Minimum = 16684
 (For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
 Monthly totals 1963 to 1969 site 32705 Rangitikei at Otara
 Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
	1964	0.0	0.0	0.0	0.0	0.0	0.0	0.0	22.3	0.0	13.0	0.0	0.0	35.3
	1965	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1966	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1967	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.5	4.4	0.0	0.0	9.9
	1968	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	21.7	3.2	0.0	0.0	29.8
	1969	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max		0.0	0.0	0.0	0.0	0.0	0.0	0.0	22.3	21.7	13.0	0.0	0.0	
Mean		0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.5	4.5	3.4	0.0	0.0	

4.27. Rangitikei at Pukeokahu (32763), July 1999 to July 2005 (post-diversion)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 32763 Rangitikei at Pukeokahu
From 1-Jul-1999 00:00:01 to 1-Jul-2005 00:00:01
Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	1463200	156186	107396	87303	75104	67854	62028	57641	54004	51119
10	48498	46121	44013	42382	40838	39460	38158	36937	35850	34833
20	33812	32905	31943	31088	30258	29431	28634	27899	27206	26547
30	25951	25396	24816	24289	23803	23294	22770	22271	21823	21392
40	20952	20537	20157	19790	19457	19079	18716	18374	18045	17697
50	17378	17050	16741	16462	16199	15910	15605	15287	14985	14667
60	14405	14116	13807	13524	13224	12933	12671	12430	12185	11930
70	11673	11394	11142	10852	10551	10256	10008	9730	9423	9169
80	8908	8680	8461	8224	8019	7820	7620	7421	7198	6968
90	6756	6543	6336	6152	5963	5783	5593	5379	5180	4925
100	4535									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 32763 Rangitikei at Pukeokahu
From 1-Jul-1999 00:00:01 to 1-Jul-2005 00:00:01
Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	1463200	135547	85604	68132	57785	50361	44496	40758	37615	35041
10	33229	31660	30203	28864	27723	26746	25736	24836	24020	23297
20	22564	21871	21272	20646	20086	19541	18976	18523	18122	17673
30	17274	16894	16568	16282	16002	15714	15457	15165	14837	14560
40	14312	14049	13772	13508	13259	13011	12777	12574	12396	12179
50	11967	11775	11581	11377	11165	10934	10684	10411	10217	10027
60	9819	9566	9363	9182	9023	8851	8706	8563	8407	8248
70	8110	7979	7850	7719	7599	7484	7387	7251	7102	6948
80	6836	6727	6626	6500	6378	6280	6182	6081	5990	5898
90	5810	5727	5618	5525	5397	5280	5205	5083	4922	4797
100	4535									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 32763 Rangitikei at Pukeokahu
From 1-Jul-1999 00:00:00 to 30-Jun-2005 24:00:00
Interval = 0
flow m³/s

Year	Maximum	Date & Time
*1999	545.52	11-Nov-1999 07:30
2000	590.92	2-Oct-2000 23:45
2001	428.72	7-Dec-2001 13:30
2002	298.30	8-Dec-2002 00:45
2003	856.48	4-Oct-2003 05:15
2004	1463.2	29-Feb-2004 10:30
*2005	109.83	29-May-2005 23:00

Average Annual Maximum 727.52 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 32763 Rangitikei at Pukeokahu

From 1-Jul-1999 00:00:00 to 30-Jun-2005 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-2000 24:00:00	4661 at interval beginning 21-Mar-2000 04:00:00
30-Jun-2001 24:00:00	4833 at interval beginning 26-Mar-2001 16:30:00
30-Jun-2002 24:00:00	5748 at interval beginning 24-Apr-2002 14:45:00
30-Jun-2003 24:00:00	4590 at interval beginning 26-Mar-2003 15:45:00
30-Jun-2004 24:00:00	6569 at interval beginning 18-Jan-2004 16:00:00
30-Jun-2005 24:00:00	5100 at interval beginning 13-Mar-2005 22:00:00

Mean annual Minimum = 5250
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD

Monthly totals 1999 to 2005 site 32763 Rangitikei at Pukeokahu

Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
	2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.2	4.9	0.0	0.0	23.1
	2001	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.4	0.0	0.0	0.0	8.4
	2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	10.8	2.2	2.1	0.0	18.2
	2004	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	2005	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	0.0	0.0	0.0	2.5
Min		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max		0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	18.2	4.9	2.1	0.0	
Mean		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	6.7	1.2	0.4	0.0	

4.28. Rangitikei at Springvale (32708), July 1964 to July 1973 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 32708 Rangitikei at Springvale

From 1-Jul-1964 00:00:01 to 1-Jul-1973 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	437309	115624	87081	74037	65097	58228	53457	49662	46606	43996
10	41669	39706	38028	36218	34545	33040	31602	30206	29027	28016
20	27079	26302	25539	24784	24085	23407	22799	22242	21685	21122
30	20628	20127	19710	19291	18891	18477	18064	17722	17341	17046
40	16688	16366	16096	15835	15564	15251	14966	14728	14452	14192
50	13962	13736	13553	13385	13104	12885	12622	12390	12156	11929
60	11741	11541	11350	11195	11007	10839	10739	10607	10403	10225

70	10100	9846	9654	9436	9196	8975	8773	8582	8386	8200
80	8011	7814	7629	7409	7179	7055	6813	6552	6290	6041
90	5797	5645	5463	5239	5039	4844	4676	4518	4137	3521
100	1783									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 32708 Rangitikei at Springvale
 From 1-Jul-1964 00:00:01 to 1-Jul-1973 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	382206	92549	64227	51094	43578	39031	36222	33473	30967	28590
10	26750	25324	23948	22816	21788	20805	20000	19393	18773	18146
20	17582	17019	16459	16016	15617	15215	14868	14545	14235	13918
30	13613	13406	13077	12831	12559	12369	12116	11918	11774	11625
40	11481	11327	11241	11086	10943	10801	10738	10648	10469	10290
50	10237	10117	9873	9681	9469	9273	9119	8957	8815	8682
60	8536	8409	8292	8192	8062	7944	7822	7702	7591	7439
70	7291	7190	7095	7029	6870	6702	6516	6353	6234	6103
80	5951	5828	5703	5599	5494	5379	5244	5139	5037	4945
90	4844	4752	4675	4610	4520	4340	4129	3878	3515	3115
100	1783									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 32708 Rangitikei at Springvale
 From 1-Jul-1964 00:00:00 to 30-Jun-1973 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1964	236.21	15-Sep-1964 18:00
1965	301.00	7-Nov-1965 20:00
1966	382.21	26-Apr-1966 22:00
1967	437.31	12-Aug-1967 08:00
1968	249.28	29-Jun-1968 18:00
1969	203.15	18-Dec-1969 00:02
1970	301.07	17-Sep-1970 15:00
1971	284.66	1-Jun-1971 09:52
1972	340.58	5-Mar-1972 09:29
*1973	197.33	11-Jan-1973 18:35

Average Annual Maximum 312.41 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 32708 Rangitikei at Springvale
 From 1-Jul-1964 00:00:00 to 30-Jun-1973 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1965 24:00:00	7350 at interval beginning 7-Dec-1964 06:00:00
30-Jun-1966 24:00:00	7607 at interval beginning 29-Mar-1966 08:00:00
30-Jun-1967 24:00:00	4633 at interval beginning 21-Apr-1967 24:00:00
30-Jun-1968 24:00:00	4587 at interval beginning 6-Apr-1968 24:00:00

30-Jun-1969 24:00:00 4332 at interval beginning 15-Apr-1969 24:00:00
 30-Jun-1970 24:00:00 3392 at interval beginning 8-Mar-1970 15:30:00
 30-Jun-1971 24:00:00 4963 at interval beginning 14-Feb-1971 12:00:00
 30-Jun-1972 24:00:00 4101 at interval beginning 20-Feb-1972 01:41:10
 30-Jun-1973 24:00:00 2286 at interval beginning 9-Mar-1973 12:15:00

Mean annual Minimum = 4806
 (For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
 Monthly totals 1964 to 1973 site 32708 Rangitikei at Springvale
 Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1965	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1966	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1967	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.2	0.0	0.0	5.2
1968	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.8	8.5	0.0	0.0	19.3
1969	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.4	6.6	0.0	0.0	11.0
1970	0.0	0.0	0.0	0.0	1.3	0.0	0.8	18.0	11.3	0.0	0.0	0.0	0.0	31.3
1971	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1972	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.2	1.8	0.1	0.0	0.0	12.0
1973	0.0	0.0	0.0	0.0	0.0	4.3	11.1	28.0	17.5	16.3	1.2	0.0	0.0	78.5
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	0.0	0.0	0.0	0.0	1.3	4.3	11.1	28.0	17.5	16.3	1.2	0.0	0.0	
Mean	0.0	0.0	0.0	0.0	0.1	0.5	1.3	6.2	5.1	4.1	0.1	0.0	0.0	

4.29. Tutaenui at Hammond St (32739), July 1968 to July 1987 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 32739 Tutaenui at Hammond St
 From 1-Jul-1968 00:00:01 to 1-Jul-1987 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	42308	4759	3107	2349	1911	1624	1418	1245	1113	1007
10	911	830	761	697	640	590	541	500	457	424
20	392	367	343	321	300	277	260	247	233	219
30	203	190	176	164	153	143	135	125	115	105
40	96	87	79	73	68	63	60	56	53	51
50	48	46	44	41	39	38	36	34	32	30
60	28	26	24	22	21	19	18	17	15	14
70	13	12	11	10	10	9	8	8	7	6
80	5	5	4	3	3	3	3	2	2	2
90	2	2	1	1	1	1	1	1	0	0
100	0									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 32739 Tutaenui at Hammond St
 From 1-Jul-1968 00:00:01 to 1-Jul-1987 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	13047	1122	600	396	286	240	200	161	137	120
10	107	96	86	78	72	66	62	59	56	53
20	51	50	48	46	44	42	41	39	38	37
30	36	35	33	32	31	29	27	26	25	24
40	22	21	20	19	18	17	16	16	15	14
50	14	13	12	12	11	11	10	10	9	9
60	9	8	8	7	7	6	6	5	5	4
70	4	4	3	3	3	2	2	2	2	1
80	1	1	1	1	1	1	1	1	1	1
90	1	0	0	0	0	0	0	0	0	0
100	0									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 32739 Tutaenui at Hammond St
 From 1-Jul-1968 00:00:00 to 30-Jun-1987 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1968	14.535	31-Aug-1968 08:00
1969	8.9940	27-Jun-1969 14:00
1970	23.083	1-Jul-1970 01:00
1971	29.436	22-Oct-1971 02:00
1972	19.195	17-Jul-1972 21:00
1973	12.668	17-Sep-1973 03:00
1974	20.374	4-Jul-1974 02:00
1975	16.154	28-Aug-1975 18:00
1976	42.308	29-Jun-1976 09:00
1977	12.668	24-Jul-1977 04:00
1978	19.675	20-Jul-1978 23:45
1979	28.768	25-Aug-1979 16:00
1980	33.410	19-Oct-1980 03:00
1981	18.819	4-Jul-1981 15:00
1982	10.605	21-Jul-1982 06:00
*1983	14.890	20-May-1983 15:00
*1984	9.4450	15-Jul-1984 08:58
1985	2.7920	27-Jul-1985 16:28
1986	18.538	24-Aug-1986 22:03
*1987	20.973	30-Jun-1987 20:04

Average Annual Maximum 19.843 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 32739 Tutaenui at Hammond St
 From 1-Jul-1968 00:00:00 to 30-Jun-1987 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1969 24:00:00	0 at interval beginning 10-Nov-1968 12:00:00
30-Jun-1970 24:00:00	0 at interval beginning 19-Sep-1969 18:00:00
30-Jun-1971 24:00:00	0 at interval beginning 23-Nov-1970 24:00:00
30-Jun-1972 24:00:00	7 at interval beginning 5-Feb-1972 24:00:00

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30-Jun-1973 24:00:00      0 at interval beginning  4-Feb-1973 09:00:00
30-Jun-1974 24:00:00      0 at interval beginning 19-Jan-1974 24:00:00
30-Jun-1975 24:00:00      0 at interval beginning 26-Dec-1974 24:00:00
30-Jun-1976 24:00:00      0 at interval beginning 13-Dec-1975 23:00:00
30-Jun-1977 24:00:00      5 at interval beginning 20-Mar-1977 10:00:00
30-Jun-1978 24:00:00      0 at interval beginning 12-Mar-1978 11:00:00
30-Jun-1979 24:00:00     31 at interval beginning 10-Feb-1979 03:00:00
30-Jun-1980 24:00:00     32 at interval beginning 24-Dec-1979 19:00:00
30-Jun-1981 24:00:00      6 at interval beginning 30-Dec-1980 24:00:00
30-Jun-1982 24:00:00      1 at interval beginning 24-Jan-1982 24:00:00
30-Jun-1983 24:00:00      1 at interval beginning 28-Mar-1983 09:00:00
Gap from 13-Oct-1983 15:05:00 to 16-Apr-1984 12:05:00 of 185.88 Days
30-Jun-1984 24:00:00(PARTIAL) 0 at interval beginning 16-Apr-1984 12:05:00
Gap from 21-Dec-1984 21:45:00 to 27-Dec-1984 06:55:00 of 5.38 Days
30-Jun-1985 24:00:00(PARTIAL) 0 at interval beginning 16-Sep-1984 14:22:48
30-Jun-1986 24:00:00      0 at interval beginning  3-Oct-1985 02:08:58
30-Jun-1987 24:00:00      0 at interval beginning 20-Nov-1986 04:32:34

Mean annual Minimum =      5 becomes 4
(For complete years only)

```

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
 Monthly totals 1968 to 1987 site 32739 Tutaenui at Hammond St
 Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1969	0.0	4.0	0.0	0.3	23.8	22.8	31.0	28.0	31.0	30.0	31.0	18.6	220.4	
1970	0.5	0.0	19.8	31.0	30.0	30.9	31.0	27.2	30.7	27.8	18.5	0.0	247.4	
1971	0.0	0.0	0.0	0.0	11.0	29.5	16.6	23.7	29.1	29.7	2.4	0.0	142.1	
1972	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.3	
1973	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.3	0.8	0.0	0.0	0.0	7.1	
1974	0.0	0.0	0.0	0.0	0.0	0.0	8.0	3.3	3.8	0.7	0.0	0.0	15.9	
1975	0.0	0.0	0.0	0.0	0.0	6.0	2.8	3.5	3.3	0.5	0.0	0.0	16.1	
1976	0.0	0.0	0.0	0.0	0.0	23.5	22.1	5.8	8.1	2.3	0.0	0.0	61.8	
1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1978	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1	2.4	0.0	0.0	0.0	4.5	
1979	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1980	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1982	0.0	0.0	0.0	0.0	4.4	8.1	28.1	21.8	14.0	18.9	3.8	0.0	99.0	
1983	0.0	0.0	0.0	4.0	11.5	1.5	4.0	15.7	28.1	23.8	5.7	0.0	94.3	
1984	0.0	0.0	0.0	NaN	NaN	NaN	NaN	NaN	NaN	NaN	15.1	0.0	15.1	
1985	0.0	0.0	11.4	2.8	4.4	NaN	21.5	27.6	25.9	27.6	29.1	16.8	167.1	
1986	0.2	0.4	0.6	22.5	9.3	5.1	4.1	9.5	0.0	13.3	5.9	0.0	70.8	
1987	0.0	0.0	0.0	0.0	5.0	13.8	25.3	20.5	18.1	3.9	0.0	0.0	86.6	
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	0.5	4.0	19.8	31.0	30.0	30.9	31.0	28.0	31.0	30.0	31.0	18.6		
Mean	0.0	0.2	1.7	3.4	5.5	8.3	10.8	10.8	10.9	9.9	5.9	1.9		

5. Turakina and Whangaehu Catchments

5.1. Turakina at Otairi (33004), July 1991 to July 2004 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 33004 Turakina at Otairi

From 1-Jul-1991 00:00:01 to 1-Jul-2004 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	395130	59258	43428	35058	29762	25824	22716	20347	18259	16603
10	15138	13822	12752	11890	11130	10468	9856	9325	8808	8376
20	7950	7517	7097	6729	6376	6051	5765	5499	5254	5004
30	4796	4582	4362	4162	3976	3820	3670	3531	3401	3278
40	3148	3020	2901	2794	2688	2585	2493	2400	2303	2213
50	2135	2062	1982	1910	1844	1778	1720	1661	1611	1557
60	1500	1441	1392	1342	1297	1249	1202	1158	1116	1077
70	1039	1004	970	933	900	869	839	811	783	758
80	731	702	677	652	623	595	567	543	520	498
90	477	458	440	423	407	391	375	359	342	305
100	125									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 33004 Turakina at Otairi

From 1-Jul-1991 00:00:01 to 1-Jul-2004 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	395130	36316	22964	16505	12800	10591	8899	7762	6883	6189
10	5645	5165	4762	4380	4058	3771	3523	3332	3142	2968
20	2800	2650	2522	2403	2291	2187	2106	2025	1944	1870
30	1799	1735	1679	1632	1584	1538	1488	1438	1394	1355
40	1315	1278	1243	1209	1176	1145	1112	1084	1056	1030
50	1007	984	963	940	915	893	872	852	830	809
60	789	771	753	738	724	706	687	666	649	631
70	614	597	582	566	551	538	526	514	503	491
80	481	471	462	452	442	431	421	413	405	396
90	390	383	377	371	365	354	343	329	306	249
100	125									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 33004 Turakina at Otairi

From 1-Jul-1991 00:00:00 to 30-Jun-2004 24:00:00

Interval = 0

flow m3/s

Year	Maximum	Date & Time
*1991	145.11	9-Aug-1991 20:00
1992	253.32	22-Jul-1992 21:30
1993	118.24	22-Nov-1993 00:30
1994	158.20	8-Nov-1994 18:45
1995	174.73	15-Jul-1995 09:45
1996	129.91	21-Apr-1996 10:45

1997	151.93	15-Oct-1997 07:45
1998	333.82	15-Jul-1998 09:15
1999	189.61	29-Nov-1999 19:15
2000	164.02	12-Oct-2000 22:00
2001	395.13	16-Dec-2001 23:30
2002	159.02	16-Jun-2002 01:45
2003	278.57	28-Sep-2003 14:45
*2004	800.08	16-Feb-2004 12:00

Average Annual Maximum 208.87 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 33004 Turakina at Otairi
From 1-Jul-1991 00:00:00 to 30-Jun-2004 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1992 24:00:00	722 at interval beginning 4-Feb-1992 17:30:00
30-Jun-1993 24:00:00	442 at interval beginning 11-Mar-1993 11:30:00
30-Jun-1994 24:00:00	240 at interval beginning 1-Mar-1994 06:45:00
30-Jun-1995 24:00:00	435 at interval beginning 10-Mar-1995 13:00:00
30-Jun-1996 24:00:00	305 at interval beginning 2-Mar-1996 02:00:00
30-Jun-1997 24:00:00	382 at interval beginning 19-Mar-1997 08:15:00
30-Jun-1998 24:00:00	325 at interval beginning 8-Feb-1998 10:30:00
30-Jun-1999 24:00:00	374 at interval beginning 5-Mar-1999 06:15:00
30-Jun-2000 24:00:00	298 at interval beginning 28-Mar-2000 22:00:00
30-Jun-2001 24:00:00	138 at interval beginning 24-Mar-2001 21:30:00
30-Jun-2002 24:00:00	406 at interval beginning 2-Oct-2001 01:45:00
30-Jun-2003 24:00:00	331 at interval beginning 30-Mar-2003 05:00:00
Gap from 12-Jan-2004 12:45:00 to 23-Feb-2004 16:00:00 of 42.14 Days	
30-Jun-2004 24:00:00(PARTIAL)	563 at interval beginning 11-Jan-2004 12:30:00

Mean annual Minimum = 382
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1991 to 2004 site 33004 Turakina at Otairi
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1994	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	17.5	11.9	0.0	0.0	0.0	29.6
1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1996	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0	5.7	3.0	0.0	0.0	0.0	9.5
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0	0.0	1.2
1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.8	18.9	8.4	0.0	0.0	0.0	35.0
1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.8	2.3	2.8	0.0	0.0	0.0	13.8
2000	0.0	0.0	0.0	0.0	0.0	0.0	2.7	5.6	9.9	17.4	7.5	0.0	0.0	43.2
2001	0.0	0.0	0.0	0.0	0.0	0.0	0.3	4.1	21.0	10.8	0.0	0.0	0.0	36.3
2002	0.0	0.0	0.4	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	7.9	19.7	4.0	0.8	0.0	33.0
2004	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NaN	NaN	0.0	0.0	0.0	0.0	0.0

Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max	0.0	0.0	0.4	1.9	0.0	2.7	8.8	18.9	21.0	10.8	0.8	0.0
Mean	0.0	0.0	0.0	0.1	0.0	0.3	1.9	5.5	6.6	1.7	0.1	0.0

5.2. Turakina at SH3 Br (33003), July 1977 to July 1992 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 33003 Turakina at SH3 Br
 From 1-Jul-1977 00:00:01 to 1-Jul-1992 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	372704	69359	46288	35862	29523	25173	22087	19766	18009	16494
10	15182	14083	13171	12296	11565	10889	10265	9717	9184	8718
20	8287	7908	7554	7234	6938	6651	6401	6174	5927	5679
30	5446	5233	5054	4879	4699	4552	4409	4290	4161	4024
40	3896	3767	3649	3548	3451	3364	3279	3191	3102	3019
50	2934	2859	2785	2718	2657	2598	2536	2474	2412	2354
60	2302	2247	2193	2135	2078	2020	1969	1921	1874	1828
70	1784	1738	1694	1661	1638	1615	1583	1550	1513	1479
80	1449	1425	1405	1384	1354	1322	1290	1258	1224	1192
90	1160	1128	1097	1069	1043	1015	985	949	897	797
100	512									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 33003 Turakina at SH3 Br
 From 1-Jul-1977 00:00:01 to 1-Jul-1992 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	294896	33314	19482	14679	11552	9445	8250	7330	6623	6079
10	5554	5115	4810	4561	4322	4115	3927	3745	3603	3480
20	3368	3262	3144	3036	2944	2859	2780	2704	2632	2571
30	2513	2455	2400	2352	2302	2246	2193	2144	2098	2055
40	2012	1973	1937	1902	1870	1839	1808	1778	1747	1716
50	1687	1659	1640	1630	1619	1601	1581	1561	1536	1516
60	1498	1480	1463	1445	1427	1410	1398	1389	1381	1369
70	1352	1333	1315	1298	1282	1267	1249	1232	1215	1198
80	1181	1164	1148	1132	1114	1096	1080	1067	1055	1041
90	1025	1009	993	977	960	942	918	875	795	698
100	512									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 33003 Turakina at SH3 Br
 From 1-Jul-1977 00:00:00 to 30-Jun-1992 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1977	107.64	4-Nov-1977 09:00
1978	205.10	21-Oct-1978 18:45
1979	184.82	26-Aug-1979 00:15

1980	225.75	10-Jul-1980	01:00
1981	96.859	29-Jun-1981	16:30
1982	112.77	21-Jul-1982	10:00
1983	342.81	21-May-1983	07:00
1984	104.94	15-Jul-1984	22:15
1985	328.68	28-Jul-1985	23:15
1986	302.71	27-Jul-1986	05:30
1987	225.88	11-Apr-1987	19:21
1988	372.70	3-Sep-1988	02:45
1989	231.05	26-May-1989	13:15
1990	294.90	11-Mar-1990	00:45
1991	239.73	10-Aug-1991	10:30
*1992	147.42	10-May-1992	23:30

Average Annual Maximum 233.48 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 33003 Turakina at SH3 Br
From 1-Jul-1977 00:00:00 to 30-Jun-1992 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1978 24:00:00	1054 at interval beginning 14-Jan-1978 24:00:00
30-Jun-1979 24:00:00	1096 at interval beginning 26-Jan-1979 24:00:00
30-Jun-1980 24:00:00	1102 at interval beginning 7-Feb-1980 08:15:00
30-Jun-1981 24:00:00	1187 at interval beginning 14-Mar-1981 19:00:00
30-Jun-1982 24:00:00	914 at interval beginning 16-Feb-1982 13:45:00
30-Jun-1983 24:00:00	843 at interval beginning 31-Mar-1983 16:30:00
30-Jun-1984 24:00:00	961 at interval beginning 31-Jan-1984 23:45:00
30-Jun-1985 24:00:00	826 at interval beginning 3-May-1985 21:45:00
30-Jun-1986 24:00:00	771 at interval beginning 14-Feb-1986 21:30:00
30-Jun-1987 24:00:00	518 at interval beginning 14-Feb-1987 06:18:13
30-Jun-1988 24:00:00	642 at interval beginning 28-Jan-1988 07:55:10
30-Jun-1989 24:00:00	938 at interval beginning 20-Jan-1989 15:00:00
30-Jun-1990 24:00:00	876 at interval beginning 26-Jan-1990 23:45:00
30-Jun-1991 24:00:00	835 at interval beginning 28-Mar-1991 05:00:00
30-Jun-1992 24:00:00	1317 at interval beginning 3-Feb-1992 13:45:00

Data ends at 24-Jun-1992 13:15:00
Mean annual Minimum = 925
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1977 to 1992 site 33003 Turakina at SH3 Br
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1978	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1979	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1980	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	2.2	0.0	0.0	0.0	0.0	2.7
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.6	8.1	1.4	0.0	0.0	12.1

1984	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1
1985	0.0	0.0	0.0	0.0	0.0	0.0	0.9	8.7	0.0	3.3	14.1	0.0	26.9
1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.4	0.3	0.0	0.0	0.0	5.7
1987	0.0	0.0	0.0	0.0	0.0	0.0	14.0	15.0	2.1	0.0	0.0	0.0	31.1
1988	0.0	0.0	0.0	0.0	0.0	1.2	28.5	5.5	0.0	0.0	0.0	0.0	35.3
1989	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.0	0.0	1.2	0.0	0.0	1.7
1990	0.0	0.0	0.0	0.0	0.0	0.2	2.2	0.0	0.0	0.0	0.0	0.0	2.4
1991	0.0	0.0	0.0	0.0	0.0	0.0	2.1	2.3	5.6	1.9	0.0	0.0	11.9
1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NaN	0.0
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	0.0	0.0	0.0	0.0	0.0	1.2	28.5	15.0	8.1	3.3	14.1	0.0	
Mean	0.0	0.0	0.0	0.0	0.0	0.1	3.2	2.8	1.1	0.5	0.9	0.0	

5.3. Makotuku at SH 49A Br (33117), July 1968 to July 2005 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 33117 Makotuku at SH 49A Br
From 1-Jul-1968 00:00:01 to 1-Jul-2005 00:00:01
Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	83825	7584	5199	4111	3442	2999	2668	2413	2203	2021
10	1881	1762	1654	1560	1477	1403	1338	1275	1220	1167
20	1118	1072	1034	996	960	926	892	864	834	809
30	782	758	736	716	694	672	654	633	615	597
40	579	566	548	533	519	505	492	480	468	458
50	446	434	426	413	403	396	381	373	366	356
60	350	341	330	323	317	303	297	291	282	276
70	269	257	252	249	241	233	229	224	213	210
80	206	196	190	186	178	170	167	162	157	153
90	149	142	138	132	126	123	117	112	107	101
100	67									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 33117 Makotuku at SH 49A Br
From 1-Jul-1968 00:00:01 to 1-Jul-2005 00:00:01
Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	83825	5694	3700	2806	2299	1955	1722	1531	1389	1271
10	1173	1086	1014	951	891	844	799	759	724	690
20	658	631	607	581	562	540	520	503	487	472
30	457	446	432	422	405	399	387	377	371	356
40	351	346	333	327	322	314	305	301	296	285
50	279	275	271	261	255	252	248	244	238	231
60	229	227	223	215	210	209	207	201	195	190
70	188	186	181	175	171	169	167	163	158	155
80	153	152	148	143	140	138	136	133	127	125
90	123	121	118	115	113	111	108	105	101	98
100	67									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 33117 Makotuku at SH 49A Br

From 1-Jul-1968 00:00:00 to 30-Jun-2005 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1968	21.217	7-Dec-1968 17:33
1969	20.504	7-May-1969 13:17
1970	27.500	11-Sep-1970 21:30
1971	21.236	4-May-1971 06:30
1972	18.015	5-Mar-1972 05:15
1973	12.358	16-Sep-1973 09:15
1974	35.761	3-Jul-1974 20:00
1975	46.857	29-Aug-1975 07:15
1976	43.719	29-Jun-1976 09:45
1977	38.593	20-Jan-1977 20:30
1978	30.032	4-Jul-1978 24:00
1979	40.593	14-Oct-1979 15:00
1980	32.053	30-Nov-1980 21:15
1981	29.190	24-Sep-1981 23:15
1982	14.535	11-Dec-1982 22:30
1983	17.494	8-Nov-1983 15:00
1984	24.196	16-Dec-1984 18:30
1985	29.190	4-Sep-1985 02:00
1986	29.190	26-Jul-1986 00:15
1987	20.563	4-Mar-1987 18:45
1988	18.812	10-Apr-1988 04:15
1989	23.493	5-Feb-1989 14:30
1990	25.874	10-Mar-1990 14:30
1991	38.198	7-Aug-1991 02:30
1992	19.124	22-Jul-1992 11:30
1993	36.617	16-May-1993 20:15
1994	39.001	16-Nov-1994 14:15
1995	44.839	7-Sep-1995 01:45
1996	26.396	21-Apr-1996 06:30
1997	83.825	9-Apr-1997 02:15
1998	51.985	16-Sep-1998 23:00
1999	56.432	16-May-1999 20:00
2000	56.729	2-Oct-2000 16:45
2001	37.932	25-May-2001 12:30
2002	40.604	7-Dec-2002 21:30
2003	40.828	3-Oct-2003 22:00
2004	75.553	15-Feb-2004 21:30
*2005	10.271	27-Mar-2005 05:15

Average Annual Maximum 34.662 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 33117 Makotuku at SH 49A Br
 From 1-Jul-1968 00:00:00 to 30-Jun-2005 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1969 24:00:00	95 at interval beginning 23-Mar-1969 03:00:25
30-Jun-1970 24:00:00	68 at interval beginning 7-Mar-1970 12:00:00
30-Jun-1971 24:00:00	97 at interval beginning 26-Apr-1971 04:45:00
30-Jun-1972 24:00:00	112 at interval beginning 16-Apr-1972 17:15:00
30-Jun-1973 24:00:00	90 at interval beginning 20-Apr-1973 10:00:00
30-Jun-1974 24:00:00	89 at interval beginning 14-Mar-1974 08:30:00
30-Jun-1975 24:00:00	139 at interval beginning 21-Apr-1975 14:45:00

30-Jun-1976 24:00:00	112 at interval beginning	8-Apr-1976 04:15:00
30-Jun-1977 24:00:00	124 at interval beginning	16-Mar-1977 12:15:00
30-Jun-1978 24:00:00	99 at interval beginning	28-Mar-1978 04:30:00
30-Jun-1979 24:00:00	124 at interval beginning	17-Jan-1979 14:00:00
30-Jun-1980 24:00:00	154 at interval beginning	14-May-1980 12:45:00
30-Jun-1981 24:00:00	129 at interval beginning	7-Apr-1981 14:45:00
30-Jun-1982 24:00:00	111 at interval beginning	22-Mar-1982 07:30:00
30-Jun-1983 24:00:00	118 at interval beginning	23-Mar-1983 09:15:00
30-Jun-1984 24:00:00	124 at interval beginning	21-Apr-1984 14:45:00
30-Jun-1985 24:00:00	111 at interval beginning	9-Apr-1985 14:00:00
30-Jun-1986 24:00:00	124 at interval beginning	25-Apr-1986 09:45:00
30-Jun-1987 24:00:00	154 at interval beginning	6-Jan-1987 16:15:00
30-Jun-1988 24:00:00	111 at interval beginning	30-Apr-1988 12:00:00
30-Jun-1989 24:00:00	100 at interval beginning	28-Apr-1989 09:15:00
30-Jun-1990 24:00:00	123 at interval beginning	5-Mar-1990 14:15:00
30-Jun-1991 24:00:00	111 at interval beginning	14-Jan-1991 15:00:00
30-Jun-1992 24:00:00	152 at interval beginning	6-Mar-1992 07:15:00
30-Jun-1993 24:00:00	111 at interval beginning	17-Mar-1993 13:45:00
30-Jun-1994 24:00:00	111 at interval beginning	14-Feb-1994 13:30:00
30-Jun-1995 24:00:00	125 at interval beginning	10-Mar-1995 01:00:00
30-Jun-1996 24:00:00	138 at interval beginning	14-Mar-1996 10:30:00
30-Jun-1997 24:00:00	107 at interval beginning	3-Apr-1997 11:45:00
30-Jun-1998 24:00:00	123 at interval beginning	28-Mar-1998 03:45:00
30-Jun-1999 24:00:00	88 at interval beginning	4-Mar-1999 04:15:00
30-Jun-2000 24:00:00	93 at interval beginning	26-Mar-2000 22:15:00
30-Jun-2001 24:00:00	103 at interval beginning	20-Mar-2001 11:45:00
30-Jun-2002 24:00:00	133 at interval beginning	4-Oct-2001 11:15:00
30-Jun-2003 24:00:00	110 at interval beginning	23-Mar-2003 14:30:00
30-Jun-2004 24:00:00	145 at interval beginning	12-Aug-2003 20:45:00
30-Jun-2005 24:00:00	129 at interval beginning	16-Mar-2005 08:00:00

Mean annual Minimum = 116
 (For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
 Monthly totals 1968 to 2005 site 33117 Makotuku at SH 49A Br
 Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1969	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.7	21.6	4.3	0.0	0.0	29.5
1970	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	21.1	13.1	3.7	7.0	0.0	45.2
1971	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	11.6	26.0	2.6	0.0	42.4
1972	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.3	0.0	0.0	11.3
1973	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.8	22.5	21.3	0.0	0.0	65.5
1974	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3	25.0	16.6	19.7	0.0	0.0	63.6
1975	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1976	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.7	0.0	0.0	5.7
1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1978	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.4	28.2	15.0	2.8	7.8	75.2
1979	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1980	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	9.9	0.0	0.0	0.0	10.3
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.4
1984	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.7	3.5	0.0	14.2
1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1987	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

1988	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	4.2	0.0	4.7
1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.3	1.9	0.0	18.3
1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1991	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.0	0.0	1.0	0.0	0.0	2.8
1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	3.9	0.0	0.0	0.0	4.1
1994	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.6	0.0	0.0	0.0	0.0	4.6
1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.7	8.7	6.3	0.0	0.0	18.7
1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19.3	11.5	8.1	0.0	0.0	38.9
2000	0.0	0.0	0.0	0.0	0.0	0.0	0.6	6.4	30.3	9.0	1.0	0.0	47.3
2001	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.2	4.8	2.0	0.0	25.0
2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.9	4.6	1.5	0.0	17.0
2004	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2005	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	0.0	0.0	0.0	0.0	0.0	0.0	2.3	25.0	30.3	26.0	7.0	7.8	
Mean	0.0	0.0	0.0	0.0	0.0	0.0	0.1	3.5	5.6	4.5	0.7	0.2	

5.4. Mangaetoroa at School (33115), July 1969 to July 2004 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 33115 Mangaetoroa at School

From 1-Jul-1969 00:00:01 to 1-Jul-2004 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	48165	6317	4648	3829	3309	2934	2655	2430	2239	2080
10	1946	1829	1725	1633	1548	1471	1400	1338	1283	1234
20	1188	1146	1107	1072	1038	1007	977	949	921	896
30	871	848	824	802	780	760	741	723	706	688
40	672	656	640	626	611	598	585	572	560	548
50	537	525	514	503	493	481	473	463	453	444
60	435	425	417	409	399	391	383	375	367	359
70	352	344	335	329	323	316	310	303	296	290
80	282	276	270	262	256	250	243	237	231	225
90	218	211	205	199	192	185	178	171	161	144
100	117									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 33115 Mangaetoroa at School

From 1-Jul-1969 00:00:01 to 1-Jul-2004 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	48165	4837	3286	2582	2140	1852	1639	1476	1343	1239
10	1149	1075	1013	959	907	862	820	783	749	718
20	688	662	638	617	597	579	562	547	532	519
30	506	494	483	472	463	453	445	436	428	420
40	412	405	398	390	384	377	370	364	358	351
50	346	341	335	331	327	322	318	313	309	305

60	300	296	292	287	283	279	275	272	267	263
70	259	255	252	247	244	240	237	234	231	226
80	223	220	216	212	209	206	203	200	196	192
90	187	184	180	177	172	168	162	153	144	134
100	117									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 33115 Mangaetoroa at School
 From 1-Jul-1969 00:00:00 to 30-Jun-2004 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1969	6.5610	8-Aug-1969 00:30
1970	18.390	25-Sep-1970 23:30
1971	20.054	19-Oct-1971 03:15
1972	13.228	12-Jul-1972 10:00
1973	14.257	16-Sep-1973 09:15
1974	23.151	4-Jul-1974 02:15
1975	28.626	29-Aug-1975 09:30
1976	30.975	30-Apr-1976 10:00
1977	13.228	27-Jun-1977 20:00
1978	17.229	12-Nov-1978 18:45
1979	27.837	8-May-1979 11:45
1980	24.797	23-Jan-1980 03:15
1981	21.076	24-Sep-1981 23:00
1982	12.062	29-Nov-1982 00:30
1983	10.177	8-Nov-1983 16:30
1984	10.514	10-Jun-1984 18:45
1985	15.441	22-Jun-1985 18:30
1986	17.969	25-Jul-1986 23:15
1987	13.740	24-Jan-1987 14:30
1988	14.595	18-Aug-1988 20:00
1989	13.228	5-Feb-1989 03:45
1990	35.918	10-Mar-1990 14:00
1991	25.830	7-Aug-1991 05:30
1992	13.050	6-Sep-1992 05:45
1993	13.318	16-May-1993 21:15
1994	20.778	16-Nov-1994 12:00
1995	29.115	7-Sep-1995 02:30
1996	16.624	21-Apr-1996 06:30
1997	12.291	3-Dec-1997 17:15
1998	41.680	21-Oct-1998 03:15
1999	32.991	16-May-1999 21:00
2000	26.293	25-Jan-2000 15:30
2001	20.803	25-May-2001 14:00
2002	20.852	11-Feb-2002 20:45
2003	29.070	27-Nov-2003 03:30
*2004	48.165	16-Feb-2004 06:30

Average Annual Maximum 20.564 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 33115 Mangaetoroa at School
 From 1-Jul-1969 00:00:00 to 30-Jun-2004 24:00:00

Minimum moving averages over 1.000day interval

Year Ending Minimum Value (Flow l/s)

30-Jun-1970 24:00:00	124 at interval beginning	27-Feb-1970 23:00:00
30-Jun-1971 24:00:00	147 at interval beginning	14-Apr-1971 11:30:00
30-Jun-1972 24:00:00	204 at interval beginning	15-Apr-1972 02:30:00
30-Jun-1973 24:00:00	138 at interval beginning	4-Mar-1973 07:00:00
30-Jun-1974 24:00:00	126 at interval beginning	9-Apr-1974 13:30:00
30-Jun-1975 24:00:00	159 at interval beginning	21-Apr-1975 13:00:00
30-Jun-1976 24:00:00	176 at interval beginning	21-Mar-1976 08:45:00
30-Jun-1977 24:00:00	153 at interval beginning	21-Mar-1977 01:30:00
30-Jun-1978 24:00:00	117 at interval beginning	18-Mar-1978 13:30:00
30-Jun-1979 24:00:00	150 at interval beginning	11-Feb-1979 07:45:00
30-Jun-1980 24:00:00	268 at interval beginning	20-Feb-1980 11:45:00
30-Jun-1981 24:00:00	201 at interval beginning	5-Feb-1981 10:15:00
30-Jun-1982 24:00:00	168 at interval beginning	29-Mar-1982 09:30:00
30-Jun-1983 24:00:00	190 at interval beginning	22-Mar-1983 04:15:00
30-Jun-1984 24:00:00	185 at interval beginning	3-Mar-1984 02:00:00
30-Jun-1985 24:00:00	150 at interval beginning	16-Apr-1985 01:00:00
30-Jun-1986 24:00:00	220 at interval beginning	14-Feb-1986 16:30:00
30-Jun-1987 24:00:00	188 at interval beginning	6-Jan-1987 16:30:00
30-Jun-1988 24:00:00	191 at interval beginning	2-May-1988 06:45:00
30-Jun-1989 24:00:00	223 at interval beginning	28-Apr-1989 12:45:00
30-Jun-1990 24:00:00	190 at interval beginning	6-Mar-1990 15:00:00
30-Jun-1991 24:00:00	191 at interval beginning	2-Apr-1991 11:45:00
30-Jun-1992 24:00:00	222 at interval beginning	4-Feb-1992 01:45:00
30-Jun-1993 24:00:00	188 at interval beginning	18-Feb-1993 04:45:00
30-Jun-1994 24:00:00	169 at interval beginning	15-Feb-1994 10:15:00
30-Jun-1995 24:00:00	260 at interval beginning	19-Feb-1995 24:00:00
30-Jun-1996 24:00:00	250 at interval beginning	1-Feb-1996 23:30:00
30-Jun-1997 24:00:00	202 at interval beginning	19-Mar-1997 18:30:00
30-Jun-1998 24:00:00	203 at interval beginning	9-Mar-1998 18:00:00
30-Jun-1999 24:00:00	174 at interval beginning	22-Mar-1999 14:30:00
30-Jun-2000 24:00:00	153 at interval beginning	28-Mar-2000 10:45:00
30-Jun-2001 24:00:00	156 at interval beginning	24-Mar-2001 03:15:00
30-Jun-2002 24:00:00	220 at interval beginning	4-Oct-2001 18:15:00
30-Jun-2003 24:00:00	164 at interval beginning	26-Mar-2003 03:00:00
30-Jun-2004 24:00:00	216 at interval beginning	14-Aug-2003 04:15:00

Mean annual Minimum = 184
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1969 to 2004 site 33115 Mangaetoroa at School
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1970	0.0	0.0	0.0	0.0	1.0	0.0	11.7	27.3	21.5	12.6	5.8	0.0	79.9	
1971	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.7	6.0	25.8	2.7	0.0	42.1	
1972	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1973	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24.5	15.3	15.7	0.0	55.4	
1974	0.0	0.0	0.0	0.0	0.0	0.0	15.5	21.9	22.5	16.6	0.0	0.0	76.5	
1975	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	13.4	10.9	0.0	0.0	27.3	
1976	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.0	2.6	0.0	0.0	13.5	
1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.2	19.1	5.0	0.0	0.0	34.3	
1978	0.0	0.0	0.0	0.0	0.0	0.0	12.9	25.6	27.8	16.4	8.7	6.0	97.3	
1979	0.0	0.0	0.0	0.0	0.0	0.0	7.9	9.8	0.0	0.0	0.0	0.0	17.7	
1980	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.8	10.1	2.3	0.0	0.0	19.2	
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

1984	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.4
1985	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.0	12.6	0.0	29.5
1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1987	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.4
1988	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1991	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1994	0.0	0.0	0.0	0.0	0.0	0.0	1.9	8.1	2.1	0.0	0.0	0.0	12.2
1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.2	7.5	1.5	0.0	0.0	15.3
2000	0.0	0.0	0.0	0.0	0.0	0.0	4.2	6.2	26.0	8.4	0.0	0.0	44.8
2001	0.0	0.0	0.0	0.0	0.0	0.3	0.6	4.7	20.8	7.6	1.8	0.0	35.8
2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.3	10.8	4.8	0.0	30.0
2004	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max	0.0	0.0	0.0	0.0	1.0	0.3	15.5	27.3	27.8	25.8	12.6	6.0	
Mean	0.0	0.0	0.0	0.0	0.0	0.0	1.6	4.6	6.2	4.4	1.0	0.2	

5.5. Mangawhero at Ohakune All (600), July 1975 to July 2005 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 600 Mangawhero at Ohakune All

From 1-Jul-1975 00:00:01 to 1-Jul-2005 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	122416	18800	13600	11036	9449	8358	7546	6895	6367	5914
10	5534	5218	4949	4714	4502	4301	4133	3993	3849	3719
20	3600	3478	3365	3272	3177	3091	3008	2932	2866	2798
30	2736	2678	2621	2574	2520	2471	2424	2376	2332	2284
40	2241	2202	2158	2119	2080	2040	2001	1969	1932	1894
50	1859	1824	1791	1755	1724	1693	1662	1632	1603	1571
60	1542	1510	1481	1449	1421	1394	1365	1340	1315	1293
70	1270	1247	1225	1202	1183	1164	1144	1122	1101	1080
80	1058	1037	1018	997	980	961	944	927	908	890
90	873	858	838	821	799	786	769	751	734	714
100	580									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 600 Mangawhero at Ohakune All

From 1-Jul-1975 00:00:01 to 1-Jul-2005 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	87670	14928	10128	7887	6678	5843	5168	4619	4225	3923
10	3661	3420	3236	3073	2939	2823	2722	2617	2526	2444
20	2373	2308	2244	2182	2127	2078	2028	1982	1934	1895

30	1857	1820	1781	1746	1716	1686	1657	1631	1607	1583
40	1557	1533	1510	1489	1465	1441	1421	1402	1382	1361
50	1343	1324	1310	1292	1277	1263	1245	1228	1210	1194
60	1177	1160	1146	1131	1114	1098	1081	1065	1049	1034
70	1022	1007	995	985	973	961	948	939	928	916
80	902	891	880	869	861	852	840	829	820	809
90	801	795	783	772	763	753	743	732	721	705
100	580									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 600 Mangawhero at Ohakune All
 From 1-Jul-1975 00:00:00 to 30-Jun-2005 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1975	122.42	29-Aug-1975 07:30
1976	105.61	29-Jun-1976 11:00
1977	57.154	20-Jan-1977 23:00
1978	61.140	12-Nov-1978 19:00
1979	93.064	14-Oct-1979 16:00
1980	87.670	30-Nov-1980 22:30
1981	57.000	24-Sep-1981 24:00
*1982	6.3830	1-Jan-1982 18:54
1983		
1984		
1985		
1986		
1987		
1988		
1989		
1990		
1991		
1992		
1993		
1994		
1995		
1996		
1997		
1998		
*1999	51.221	16-May-1999 20:45
2000	57.474	2-Oct-2000 17:45
2001	39.594	25-May-2001 13:45
2002	41.166	29-Sep-2002 20:15
2003	46.131	3-Oct-2003 22:30
*2004	65.154	15-Feb-2004 21:45
*2005	23.867	27-Mar-2005 05:15

Average Annual Maximum 64.601 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 600 Mangawhero at Ohakune All
 From 1-Jul-1975 00:00:00 to 30-Jun-2005 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1976 24:00:00	700 at interval beginning 5-Apr-1976 24:00:00
30-Jun-1977 24:00:00	769 at interval beginning 6-Apr-1977 12:00:00

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30-Jun-1978 24:00:00          665 at interval beginning 15-Jun-1978 12:00:00
30-Jun-1979 24:00:00          670 at interval beginning 23-Jan-1979 15:00:00
30-Jun-1980 24:00:00          879 at interval beginning 16-Jul-1979 12:18:07
30-Jun-1981 24:00:00          683 at interval beginning  7-Apr-1981 21:00:00
  Gap from 6-Jan-1982 09:10:00 to 8-Apr-1999 14:30:00 of 17.26 Years
30-Jun-1982 24:00:00(PARTIAL)  756 at interval beginning 23-Nov-1981 06:00:00
30-Jun-1983 24:00:00          No valid values for this year
30-Jun-1984 24:00:00          No valid values for this year
30-Jun-1985 24:00:00          No valid values for this year
30-Jun-1986 24:00:00          No valid values for this year
30-Jun-1987 24:00:00          No valid values for this year
30-Jun-1988 24:00:00          No valid values for this year
30-Jun-1989 24:00:00          No valid values for this year
30-Jun-1990 24:00:00          No valid values for this year
30-Jun-1991 24:00:00          No valid values for this year
30-Jun-1992 24:00:00          No valid values for this year
30-Jun-1993 24:00:00          No valid values for this year
30-Jun-1994 24:00:00          No valid values for this year
30-Jun-1995 24:00:00          No valid values for this year
30-Jun-1996 24:00:00          No valid values for this year
30-Jun-1997 24:00:00          No valid values for this year
30-Jun-1998 24:00:00          No valid values for this year
30-Jun-1999 24:00:00(PARTIAL)  766 at interval beginning 14-Apr-1999 08:30:00
30-Jun-2000 24:00:00          692 at interval beginning  6-Apr-2000 13:15:00
30-Jun-2001 24:00:00          732 at interval beginning  1-May-2001 08:15:00
30-Jun-2002 24:00:00          845 at interval beginning 28-Mar-2002 18:30:00
30-Jun-2003 24:00:00          706 at interval beginning 17-May-2003 21:15:00
  Gap from 20-Jan-2004 08:45:00 to 22-Jan-2004 11:15:00 of  2.10 Days
  Gap from 29-Jan-2004 17:00:00 to 30-Jan-2004 11:30:00 of 18.50 Hours
30-Jun-2004 24:00:00(PARTIAL)  859 at interval beginning 13-Aug-2003 21:30:00
30-Jun-2005 24:00:00          892 at interval beginning 14-Mar-2005 21:15:00

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Mean annual Minimum = 748
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1975 to 2005 site 600 Mangawhero at Ohakune All
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1976	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	12.3	0.0	0.0	13.0
1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1978	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.3	2.1	0.0	2.0	8.7	9.6	38.8
1979	1.5	0.0	0.0	0.0	0.0	0.0	0.0	3.3	7.5	0.0	0.0	0.0	0.0	12.3
1980	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.4	0.0	0.0	6.4
1982	0.0	0.0	0.0	0.0	0.4	0.0	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.4
1983	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1984	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1985	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1986	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1987	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1988	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1989	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1990	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1991	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1992	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1993	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0

1994	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1995	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1996	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1997	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1998	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1999	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.1	8.2	0.6	0.0	24.9	0.0
2001	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1	1.5	0.0	3.6	0.0
2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.9	13.3	8.7	0.0	33.9	0.0
2004	0.0	0.0	0.0	0.0	0.0	0.0	NaN	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2005	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max	1.5	0.0	0.0	0.0	0.4	0.8	16.3	7.5	16.1	13.3	8.7	9.6		
Mean	0.1	0.0	0.0	0.0	0.0	0.1	1.8	0.8	2.3	3.7	1.5	0.7		

5.6. Mangawhero at Ore Ore (33111), July 1962 to July 2004 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 33111 Mangawhero at Ore Ore

From 1-Jul-1962 00:00:01 to 1-Jul-2004 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	701195	88494	66975	55634	48516	43443	39464	36331	33675	31403
10	29357	27634	26118	24802	23610	22547	21553	20681	19879	19142
20	18475	17848	17265	16716	16197	15715	15267	14845	14436	14051
30	13686	13316	12961	12614	12288	11974	11675	11385	11108	10844
40	10587	10338	10099	9865	9636	9414	9201	8993	8794	8600
50	8411	8225	8047	7877	7708	7538	7370	7200	7040	6883
60	6727	6579	6434	6290	6155	6025	5901	5774	5654	5541
70	5426	5313	5198	5087	4978	4877	4771	4664	4556	4456
80	4362	4265	4171	4070	3973	3877	3774	3669	3566	3463
90	3353	3252	3149	3037	2933	2817	2701	2585	2444	2163
100	1337									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 33111 Mangawhero at Ore Ore

From 1-Jul-1962 00:00:01 to 1-Jul-2004 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	701195	63332	44832	35349	29724	25969	23197	21092	19527	18194
10	17022	16006	15132	14352	13662	13030	12436	11921	11431	11006
20	10631	10277	9945	9642	9354	9072	8812	8563	8331	8113
30	7911	7718	7532	7359	7191	7038	6890	6748	6611	6477
40	6354	6238	6130	6027	5923	5820	5721	5633	5551	5460
50	5373	5283	5197	5118	5039	4961	4894	4823	4749	4677
60	4609	4541	4477	4413	4349	4286	4226	4166	4105	4045
70	3984	3935	3878	3822	3763	3704	3646	3587	3534	3479
80	3425	3370	3314	3261	3206	3150	3089	3036	2982	2926
90	2867	2804	2744	2686	2624	2556	2477	2375	2204	1906
100	1337									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 33111 Mangawhero at Ore Ore
 From 1-Jul-1962 00:00:00 to 30-Jun-2004 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1962	276.88	8-Oct-1962 24:00
1963	154.15	10-Jan-1963 03:00
1964	207.32	15-Sep-1964 09:00
1965	255.06	2-Nov-1965 06:00
1966	204.61	26-Apr-1966 21:00
1967	294.59	3-Feb-1967 09:39
1968	361.71	7-Dec-1968 15:15
1969	117.06	7-May-1969 18:30
1970	292.18	26-Sep-1970 04:00
1971	207.71	19-Oct-1971 02:45
1972	155.22	12-Jul-1972 10:45
1973	173.74	16-Sep-1973 22:15
1974	362.07	4-Jul-1974 01:00
1975	344.88	29-Aug-1975 11:30
1976	292.82	29-Jun-1976 13:15
1977	156.29	15-Sep-1977 08:30
1978	180.85	12-Nov-1978 24:00
1979	196.72	14-Oct-1979 19:30
1980	170.73	9-Jul-1980 14:45
1981	216.14	25-Sep-1981 01:45
1982	107.50	21-Jul-1982 00:30
1983	127.64	20-May-1983 20:15
1984	102.19	26-May-1984 12:45
1985	159.21	22-Jun-1985 20:45
1986	229.18	26-Jul-1986 05:00
1987	159.21	11-Apr-1987 06:30
1988	138.93	24-Aug-1988 13:45
1989	171.73	18-Oct-1989 16:15
1990	217.61	10-Mar-1990 19:15
1991	293.78	7-Aug-1991 07:15
1992	225.46	22-Jul-1992 16:00
1993	194.85	17-May-1993 01:00
1994	317.64	8-Nov-1994 16:45
1995	315.12	7-Sep-1995 05:30
1996	206.80	21-Apr-1996 10:45
1997	196.10	9-Apr-1997 08:00
1998	450.25	15-Jul-1998 09:00
1999	306.48	17-May-1999 00:45
2000	358.81	2-Oct-2000 21:30
2001	311.12	25-May-2001 13:15
2002	230.98	12-Jan-2002 16:30
2003	335.43	28-Sep-2003 11:15
*2004	701.20	16-Feb-2004 06:45

Average Annual Maximum 231.70 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 33111 Mangawhero at Ore Ore
 From 1-Jul-1962 00:00:00 to 30-Jun-2004 24:00:00

Minimum moving averages over 1.000day interval

Year Ending Minimum Value (Flow l/s)

30-Jun-1963 24:00:00	2672 at interval beginning	8-Apr-1963 24:00:00
30-Jun-1964 24:00:00	2576 at interval beginning	22-Feb-1964 24:00:00
30-Jun-1965 24:00:00	3950 at interval beginning	10-Feb-1965 12:00:00
30-Jun-1966 24:00:00	3326 at interval beginning	29-Mar-1966 13:34:00
30-Jun-1967 24:00:00	3788 at interval beginning	23-Mar-1967 14:40:00
30-Jun-1968 24:00:00	2334 at interval beginning	8-Apr-1968 20:30:00
30-Jun-1969 24:00:00	2555 at interval beginning	2-Apr-1969 12:15:00
30-Jun-1970 24:00:00	1640 at interval beginning	6-Mar-1970 05:15:00
30-Jun-1971 24:00:00	2393 at interval beginning	2-May-1971 09:30:00
30-Jun-1972 24:00:00	3109 at interval beginning	3-Mar-1972 12:15:00
30-Jun-1973 24:00:00	2175 at interval beginning	27-Feb-1973 17:00:00
30-Jun-1974 24:00:00	2077 at interval beginning	12-Apr-1974 16:45:00
30-Jun-1975 24:00:00	2962 at interval beginning	21-Apr-1975 10:45:00
30-Jun-1976 24:00:00	2181 at interval beginning	25-Mar-1976 05:15:00
30-Jun-1977 24:00:00	2131 at interval beginning	22-Mar-1977 13:15:00
30-Jun-1978 24:00:00	1354 at interval beginning	27-Mar-1978 22:15:00
30-Jun-1979 24:00:00	2736 at interval beginning	11-Feb-1979 03:45:00
30-Jun-1980 24:00:00	4124 at interval beginning	10-Mar-1980 06:45:00
30-Jun-1981 24:00:00	3273 at interval beginning	9-Apr-1981 06:00:00
30-Jun-1982 24:00:00	2590 at interval beginning	27-Mar-1982 22:30:00
30-Jun-1983 24:00:00	2851 at interval beginning	22-Mar-1983 16:45:00
30-Jun-1984 24:00:00	2672 at interval beginning	24-Apr-1984 22:00:00
30-Jun-1985 24:00:00	2451 at interval beginning	17-Apr-1985 06:30:00
30-Jun-1986 24:00:00	2766 at interval beginning	26-Apr-1986 20:00:00
30-Jun-1987 24:00:00	2872 at interval beginning	8-Jan-1987 16:15:00
30-Jun-1988 24:00:00	2826 at interval beginning	3-Feb-1988 11:30:00
30-Jun-1989 24:00:00	2965 at interval beginning	28-Apr-1989 11:30:00
30-Jun-1990 24:00:00	3106 at interval beginning	8-Mar-1990 09:00:00
30-Jun-1991 24:00:00	2692 at interval beginning	2-Apr-1991 12:45:00
30-Jun-1992 24:00:00	3386 at interval beginning	4-Feb-1992 15:30:00
30-Jun-1993 24:00:00	2895 at interval beginning	17-Mar-1993 04:15:00
30-Jun-1994 24:00:00	2545 at interval beginning	14-Feb-1994 15:00:00
30-Jun-1995 24:00:00	3476 at interval beginning	19-Feb-1995 24:00:00
30-Jun-1996 24:00:00	3713 at interval beginning	14-Mar-1996 07:45:00
30-Jun-1997 24:00:00	2888 at interval beginning	5-Apr-1997 13:45:00
30-Jun-1998 24:00:00	2861 at interval beginning	28-Mar-1998 11:00:00
30-Jun-1999 24:00:00	2253 at interval beginning	23-Mar-1999 06:15:00
30-Jun-2000 24:00:00	2403 at interval beginning	19-Mar-2000 09:45:00
30-Jun-2001 24:00:00	2444 at interval beginning	26-Mar-2001 13:45:00
30-Jun-2002 24:00:00	3642 at interval beginning	24-Apr-2002 15:00:00
30-Jun-2003 24:00:00	2451 at interval beginning	25-Mar-2003 23:15:00
30-Jun-2004 24:00:00	3637 at interval beginning	14-Aug-2003 14:45:00

Mean annual Minimum = 2803
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1962 to 2004 site 33111 Mangawhero at Ore Ore
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1963	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.7	0.0	0.0	3.7
1964	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.8	0.0	0.0	0.0	0.0	14.8
1965	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1966	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1967	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1968	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.5	7.8	0.0	0.0	28.3
1969	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.3	4.2	0.0	0.0	19.4

1970	0.0	0.0	0.0	0.0	2.2	1.8	18.4	27.5	18.9	21.4	10.6	0.0	100.8
1971	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.8	9.8	25.3	2.6	0.0	44.5
1972	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1973	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24.3	16.0	16.4	0.0	56.7
1974	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.8	20.1	17.0	16.8	0.0	60.7
1975	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1976	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.7	17.7	0.0	0.0	38.4
1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.1	19.2	7.5	0.0	0.0	33.8
1978	0.0	0.0	0.0	0.0	0.0	0.0	22.0	27.6	28.9	20.1	16.5	12.5	127.7
1979	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0
1980	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.7	13.4	0.0	0.0	0.0	17.1
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	0.0	0.0	0.0	0.0	0.0	0.0	0.6	2.1	3.8	7.4	0.0	0.0	13.9
1985	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.8	20.2	13.2	0.0	38.1
1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	1.6	0.0	0.0	2.3
1987	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1988	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.2
1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1991	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9	0.0	0.0	1.9
1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1994	0.0	0.0	0.0	0.0	0.0	0.0	0.3	7.8	4.0	0.0	0.0	0.0	12.1
1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19.8	15.0	7.4	0.0	0.0	42.3
2000	0.0	0.0	0.0	0.0	0.0	0.0	1.8	2.8	25.4	6.8	0.0	0.0	36.8
2001	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.2	4.8	0.0	0.0	19.0
2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.0	12.0	4.7	0.0	36.7
2004	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	0.0	0.0	0.0	0.0	2.2	1.8	22.0	27.6	28.9	25.3	16.5	12.5	
Mean	0.0	0.0	0.0	0.0	0.1	0.0	1.2	4.0	6.4	4.8	1.1	0.3	

5.7. Tokiahuru at Whangaehu Junction (33112), July 1980 to July 1993 (post- diversion)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 33112 Tokiahuru at Whangaehu Junction
 From 1-Jul-1980 00:00:01 to 1-Jul-1993 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	61922	19687	16389	14892	13917	13191	12580	12098	11661	11318
10	10999	10730	10512	10313	10111	9914	9733	9587	9446	9325
20	9205	9075	8941	8818	8689	8568	8455	8341	8241	8143
30	8043	7948	7855	7775	7700	7631	7565	7501	7435	7380
40	7322	7259	7196	7136	7080	7016	6952	6897	6841	6791
50	6740	6691	6645	6597	6550	6500	6448	6404	6363	6316
60	6275	6238	6204	6167	6127	6087	6049	6013	5978	5938
70	5900	5867	5829	5792	5754	5722	5683	5648	5609	5577
80	5541	5507	5472	5434	5389	5345	5305	5265	5214	5167
90	5119	5074	5022	4971	4919	4861	4799	4725	4648	4475

100 4108

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 33112 Tokiahuru at Whangaehu Junction

From 1-Jul-1980 00:00:01 to 1-Jul-1993 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	41866	16360	13639	12289	11454	10779	10305	9935	9656	9432
10	9250	9067	8898	8756	8623	8500	8366	8255	8135	8008
20	7898	7795	7710	7629	7549	7478	7409	7339	7273	7200
30	7133	7065	6995	6937	6877	6824	6772	6722	6672	6627
40	6588	6547	6501	6453	6410	6371	6331	6295	6258	6223
50	6191	6158	6124	6086	6054	6022	5985	5946	5916	5884
60	5853	5823	5791	5766	5738	5701	5678	5648	5620	5597
70	5565	5540	5514	5490	5467	5440	5409	5371	5339	5307
80	5276	5243	5208	5177	5150	5118	5092	5060	5027	4994
90	4965	4935	4900	4868	4829	4776	4711	4650	4556	4429
100	4261									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 33112 Tokiahuru at Whangaehu Junction

From 1-Jul-1980 00:00:00 to 30-Jun-1993 24:00:00

Interval = 0

flow m3/s

Year	Maximum	Date & Time
*1980	41.866	1-Dec-1980 00:44
1981	41.063	25-Sep-1981 04:00
1982	25.495	26-Dec-1982 16:00
1983	46.242	10-Jul-1983 18:33
1984	26.185	17-Dec-1984 00:37
1985	45.806	4-Sep-1985 04:54
1986	61.922	26-Jul-1986 06:01
1987	38.106	10-Oct-1987 01:30
1988	32.051	24-Jul-1988 20:45
1989	33.852	5-Feb-1989 20:00
1990	44.503	7-Aug-1990 10:00
1991	60.709	9-Aug-1991 18:30
1992	42.693	10-Aug-1992 19:00
*1993	45.203	17-May-1993 00:45

Average Annual Maximum 41.552 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 33112 Tokiahuru at Whangaehu Junction

From 1-Jul-1980 00:00:00 to 30-Jun-1993 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1981 24:00:00	5198 at interval beginning 3-Apr-1981 08:45:12
30-Jun-1982 24:00:00	4726 at interval beginning 7-May-1982 04:18:35
30-Jun-1983 24:00:00	4607 at interval beginning 4-May-1983 11:25:00

30-Jun-1984 24:00:00	4336 at interval beginning	19-Apr-1984 23:22:03
30-Jun-1985 24:00:00	4181 at interval beginning	9-May-1985 21:42:04
30-Jun-1986 24:00:00	4677 at interval beginning	16-May-1986 05:44:03
30-Jun-1987 24:00:00	5164 at interval beginning	25-Feb-1987 12:00:00
30-Jun-1988 24:00:00	4744 at interval beginning	2-May-1988 11:15:00
30-Jun-1989 24:00:00	4929 at interval beginning	28-Apr-1989 02:00:00
30-Jun-1990 24:00:00	4858 at interval beginning	15-Apr-1990 14:15:00
30-Jun-1991 24:00:00	4598 at interval beginning	2-Apr-1991 12:30:00
30-Jun-1992 24:00:00	5418 at interval beginning	5-Jun-1992 07:15:00
30-Jun-1993 24:00:00	5238 at interval beginning	14-May-1993 20:00:00

Mean annual Minimum = 4821
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1980 to 1993 site 33112 Tokiahuru at Whangaehu Junction
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	2.3	0.0	2.5
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	6.5	1.6	0.0	10.0
1984	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	3.5	13.7	21.0	9.8	13.0	63.0
1985	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	13.6	16.5	26.1	18.2	9.8	85.0
1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	8.3	6.6	0.0	16.5
1987	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1988	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	5.5	0.1	8.3
1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1991	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.1	4.1	0.0	0.0	18.2
1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	13.6	16.5	26.1	18.2	13.0	
Mean	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.3	3.7	5.3	3.4	1.8	

5.8. Wahianoa at Karioi (33116), July 1968 to July 1972 (pre-diversion)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 33116 Wahianoa at Karioi
From 1-Jul-1968 00:00:01 to 1-Jul-1972 00:00:01
Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	26414	3749	2772	2312	2042	1843	1675	1519	1393	1292
10	1211	1142	1086	1040	998	960	926	896	869	842
20	820	798	779	762	746	729	713	699	685	670
30	656	643	631	621	610	598	586	574	562	551
40	539	529	519	510	501	492	483	476	468	460
50	452	444	435	427	418	410	402	394	387	381
60	374	366	357	348	341	334	326	319	312	303

70	296	290	284	278	272	265	259	252	247	241
80	235	229	223	218	212	206	199	193	186	180
90	175	167	158	151	145	139	132	123	115	106
100	58									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 33116 Wahianoa at Karioi
 From 1-Jul-1968 00:00:01 to 1-Jul-1972 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	26414	3830	2884	2448	2145	1978	1808	1668	1546	1431
10	1333	1258	1197	1145	1101	1066	1032	1004	979	953
20	932	911	894	876	856	840	826	812	798	785
30	777	765	756	745	734	723	714	704	695	686
40	677	667	659	651	643	636	629	623	615	608
50	600	592	583	574	566	557	549	541	533	526
60	518	511	504	498	492	485	478	471	464	457
70	451	445	438	431	423	416	409	402	394	388
80	383	376	367	357	346	336	324	312	299	290
90	279	262	246	233	217	198	181	160	146	129
100	86									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 33116 Wahianoa at Karioi
 From 1-Jul-1968 00:00:00 to 30-Jun-1972 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1968	16.012	7-Dec-1968 02:00
1969	9.8100	7-Jan-1969 02:00
1970	13.306	3-Jun-1970 14:00
1971	26.414	25-Feb-1971 09:49
*1972	14.087	10-Mar-1972 16:55

Average Annual Maximum 16.510 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 33116 Wahianoa at Karioi
 From 1-Jul-1968 00:00:00 to 30-Jun-1972 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1969 24:00:00	104 at interval beginning 13-Jun-1969 24:00:00
30-Jun-1970 24:00:00	94 at interval beginning 26-Oct-1969 06:00:00
30-Jun-1971 24:00:00	78 at interval beginning 1-May-1971 23:19:27
30-Jun-1972 24:00:00	97 at interval beginning 24-Jul-1971 22:10:18

Mean annual Minimum = 93
 (For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
 Monthly totals 1968 to 1972 site 33116 Wahianoa at Karioi
 Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
	1969	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1970	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7
	1971	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	2.4	0.0	3.1
	1972	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	1.3
Min		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max		0.5	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.7	2.4	0.8	
Mean		0.1	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.2	0.6	0.2	

5.9. Waitangi at Tangiwai (33114), July 1968 to July 1991 (all data)
Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 33114 Waitangi at Tangiwai
 From 1-Jul-1968 00:00:01 to 1-Jul-1991 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	5767	2724	2418	2235	2104	2007	1921	1848	1777	1721
10	1669	1621	1571	1533	1499	1467	1434	1401	1371	1341
20	1313	1288	1264	1243	1221	1201	1183	1166	1152	1132
30	1116	1100	1084	1068	1052	1040	1024	1010	996	985
40	973	961	950	940	929	919	909	896	885	874
50	862	852	843	833	823	814	806	796	787	778
60	771	763	754	746	740	731	724	716	709	702
70	694	688	681	675	668	663	656	652	645	640
80	634	624	620	611	605	600	594	587	581	574
90	566	557	549	542	532	527	518	500	470	441
100	330									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 33114 Waitangi at Tangiwai
 From 1-Jul-1968 00:00:01 to 1-Jul-1991 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	5767	1819	1577	1439	1333	1276	1226	1188	1152	1119
10	1090	1066	1047	1028	1008	992	976	964	953	941
20	929	918	907	894	884	875	865	856	848	841
30	831	823	814	809	801	795	786	781	774	766
40	763	754	752	744	740	733	728	722	715	712
50	706	702	696	692	687	683	679	674	670	667
60	663	658	654	652	646	644	640	634	633	624
70	623	618	613	609	604	601	597	594	590	586
80	582	576	574	566	564	556	552	545	541	536

90 531 528 521 519 510 500 483 464 445 426
 100 330

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 33114 Waitangi at Tangiwai
 From 1-Jul-1968 00:00:00 to 30-Jun-1991 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1968	5.7670	7-Dec-1968 23:30
1969	3.5920	7-Feb-1969 07:45
1970	3.7770	30-Sep-1970 18:30
1971	4.4440	4-Dec-1971 10:45
1972	4.9910	15-Jun-1972 06:30
1973	3.4510	6-Jan-1973 20:00
1974	3.7530	16-Jun-1974 20:30
1975	3.8550	16-Jun-1975 16:30
1976	4.0710	12-Jan-1976 03:45
1977	3.9600	21-Jan-1977 03:30
1978	2.2910	25-Jul-1978 15:00
1979	3.0420	31-Dec-1979 02:00
1980	3.1830	23-Sep-1980 08:45
1981	2.7370	25-Sep-1981 03:45
1982	1.6200	2-Jan-1982 10:15
1983	3.4010	28-Jun-1983 08:30
1984	2.1020	7-Aug-1984 00:30
1985	4.1910	28-Jul-1985 24:00
1986	3.8140	17-Dec-1986 03:45
1987	3.0910	22-Mar-1987 12:30
1988	4.4710	2-Sep-1988 20:30
1989	3.0330	18-Oct-1989 22:15
1990	2.6230	26-Aug-1990 16:15
*1991	2.3940	11-Apr-1991 04:30

Average Annual Maximum 3.4315 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 33114 Waitangi at Tangiwai
 From 1-Jul-1968 00:00:00 to 30-Jun-1991 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1969 24:00:00	618 at interval beginning 9-Jun-1969 13:30:00
30-Jun-1970 24:00:00	385 at interval beginning 4-May-1970 13:45:00
30-Jun-1971 24:00:00	481 at interval beginning 2-Jan-1971 17:30:00
30-Jun-1972 24:00:00	555 at interval beginning 24-Jul-1971 24:00:00
30-Jun-1973 24:00:00	478 at interval beginning 19-Apr-1973 17:30:00
30-Jun-1974 24:00:00	357 at interval beginning 16-Apr-1974 18:15:00
30-Jun-1975 24:00:00	563 at interval beginning 17-May-1975 06:30:00
30-Jun-1976 24:00:00	626 at interval beginning 17-Apr-1976 13:30:00
30-Jun-1977 24:00:00	555 at interval beginning 6-Apr-1977 16:00:00
30-Jun-1978 24:00:00	504 at interval beginning 4-Jun-1978 19:30:00
30-Jun-1979 24:00:00	491 at interval beginning 7-Mar-1979 12:45:00
30-Jun-1980 24:00:00	602 at interval beginning 22-Jul-1979 03:45:00
30-Jun-1981 24:00:00	462 at interval beginning 19-May-1981 01:45:00
30-Jun-1982 24:00:00	550 at interval beginning 18-Mar-1982 03:00:00
30-Jun-1983 24:00:00	509 at interval beginning 22-Mar-1983 06:30:00

```

30-Jun-1984 24:00:00      488 at interval beginning 13-Apr-1984 17:15:00
30-Jun-1985 24:00:00      439 at interval beginning  8-Feb-1985 14:45:00
30-Jun-1986 24:00:00      554 at interval beginning 15-May-1986 13:15:00
30-Jun-1987 24:00:00      604 at interval beginning  6-Jan-1987 16:30:00
30-Jun-1988 24:00:00      584 at interval beginning 27-Apr-1988 19:00:00
30-Jun-1989 24:00:00      549 at interval beginning 27-Apr-1989 13:15:00
30-Jun-1990 24:00:00      621 at interval beginning  8-Mar-1990 08:00:00
30-Jun-1991 24:00:00      514 at interval beginning  2-Apr-1991 13:00:00

```

Mean annual Minimum = 526
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1968 to 1991 site 33114 Waitangi at Tangiwai
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1969	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1970	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.0	25.6	22.6	26.2	18.3	0.2	101.9
1971	0.0	0.0	0.0	0.0	0.0	0.0	0.3	3.0	0.0	5.0	5.6	0.0	0.0	14.0
1972	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1973	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	7.4	0.0	0.0	9.0
1974	0.0	0.0	0.0	0.0	0.0	0.0	12.3	27.5	25.9	24.3	20.1	0.0	0.0	110.1
1975	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1976	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1978	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	2.8	1.2	0.2	3.2	8.0
1979	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	4.8	0.0	0.1	0.0	5.2
1980	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	14.6	19.4	0.5	34.9
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	4.2	9.8	4.0	1.9	0.0	19.9
1984	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	4.6	7.0	11.9	0.0	0.0	24.8
1985	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	20.0	17.8	27.0	16.0	0.0	81.7
1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1987	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1988	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1991	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max	0.0	0.0	0.0	0.0	0.0	0.0	12.3	27.5	25.9	24.3	27.0	19.4	3.2	
Mean	0.0	0.0	0.0	0.0	0.0	0.0	0.6	1.8	3.5	4.2	5.3	2.4	0.2	

5.10. Whangaehu at Karioi (33107), July 1963 to July 2003 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 33107 Whangaehu at Karioi
From 1-Jul-1963 00:00:01 to 1-Jul-2003 00:00:01
Flow l/s

0 1 2 3 4 5 6 7 8 9

0	238250	36462	30140	27361	25647	24357	23358	22552	21891	21330
10	20811	20351	19924	19553	19211	18892	18611	18351	18106	17869
20	17634	17421	17203	16996	16775	16565	16377	16187	15987	15798
30	15614	15440	15274	15111	14948	14790	14642	14502	14373	14246
40	14115	13987	13860	13738	13624	13507	13395	13282	13167	13061
50	12959	12857	12753	12649	12549	12450	12353	12255	12161	12065
60	11967	11870	11767	11663	11565	11464	11364	11265	11163	11058
70	10949	10842	10734	10634	10530	10429	10343	10260	10155	10058
80	9953	9852	9754	9656	9554	9452	9350	9230	9116	8988
90	8855	8716	8575	8426	8267	8101	7927	7701	7082	394
100	58									

Flow duration curve tabulation (FDC), summer season
Exceedance percentiles

Source is HORIZONS.MTD Site 33107 Whangaehu at Karioi
From 1-Jul-1963 00:00:01 to 1-Jul-2003 00:00:01
Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	132021	34447	27785	24835	23115	21906	21002	20236	19660	19200
10	18783	18433	18115	17809	17517	17246	16967	16685	16441	16212
20	15984	15777	15568	15376	15208	15036	14868	14706	14552	14411
30	14273	14139	14010	13896	13784	13673	13568	13463	13362	13259
40	13158	13061	12962	12871	12776	12684	12593	12503	12413	12328
50	12240	12156	12069	11978	11887	11798	11705	11616	11532	11438
60	11347	11255	11159	11067	10969	10871	10771	10677	10593	10505
70	10413	10333	10252	10154	10070	9972	9880	9787	9699	9611
80	9527	9444	9365	9272	9182	9096	9005	8905	8812	8707
90	8603	8492	8389	8276	8161	8044	7921	7694	7199	554
100	174									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 33107 Whangaehu at Karioi
From 1-Jul-1963 00:00:00 to 30-Jun-2003 24:00:00
Interval = 0
flow m3/s

Year	Maximum	Date & Time
*1963	50.312	8-Nov-1963 24:00
1964	117.77	11-Mar-1964 09:36
1965	110.35	7-Nov-1965 22:00
1966	96.327	26-Apr-1966 24:00
1967	118.63	12-Aug-1967 08:09
1968	86.970	7-Dec-1968 21:40
1969	65.047	18-Dec-1969 21:45
1970	82.352	26-Sep-1970 04:15
1971	92.308	19-Oct-1971 02:30
*1972	32.195	3-Jan-1972 02:45
1973		
1974		
*1975	34.800	19-Dec-1975 11:15
1976	100.22	30-Apr-1976 13:15
1977	98.078	28-Jun-1977 18:15
1978	102.96	12-Nov-1978 20:45
1979	101.11	14-Oct-1979 19:30
1980	77.427	1-Dec-1980 00:15
1981	60.101	25-Sep-1981 03:15
1982	60.649	12-Dec-1982 02:45
1983	71.922	10-Jul-1983 13:30

1984	73.113	16-Dec-1984	22:30
1985	68.996	4-Sep-1985	05:15
1986	107.60	26-Jul-1986	04:00
1987	63.673	26-Dec-1987	01:30
1988	64.474	24-Jul-1988	18:30
1989	63.924	12-Jun-1989	14:30
1990	99.037	10-Mar-1990	17:15
1991	103.41	7-Aug-1991	07:15
*1992	56.770	10-Aug-1992	18:45
1993	67.426	16-May-1993	23:00
1994	132.02	8-Nov-1994	16:30
1995	238.25	25-Sep-1995	10:30
1996	69.998	21-Apr-1996	08:00
1997	97.786	9-Apr-1997	06:00
1998	117.78	9-Jul-1998	22:00
1999	92.351	16-May-1999	22:45
2000	133.16	2-Oct-2000	20:00
2001	96.207	25-May-2001	16:00
2002	74.316	29-Sep-2002	24:00
*2003	61.903	21-May-2003	21:30

Average Annual Maximum 94.286 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 33107 Whangaehu at Karioi
From 1-Jul-1963 00:00:00 to 30-Jun-2003 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)		
30-Jun-1964 24:00:00	10154	at interval beginning	1-Jun-1964 12:00:00
30-Jun-1965 24:00:00	11021	at interval beginning	4-Jul-1964 24:00:00
30-Jun-1966 24:00:00	11833	at interval beginning	22-Apr-1966 24:00:00
30-Jun-1967 24:00:00	11681	at interval beginning	17-Jun-1967 01:08:00
30-Jun-1968 24:00:00	10995	at interval beginning	4-Apr-1968 20:00:00
30-Jun-1969 24:00:00	11895	at interval beginning	14-Jun-1969 03:45:00
30-Jun-1970 24:00:00	9595	at interval beginning	18-May-1970 21:00:00
30-Jun-1971 24:00:00	9883	at interval beginning	12-Apr-1971 16:45:00
30-Jun-1972 24:00:00	108	at interval beginning	29-Jun-1972 18:20:04
Gap from 13-Sep-1972 12:30:00 to 2-Dec-1975 11:00:00 of 3.22 Years			
30-Jun-1973 24:00:00(PARTIAL)	96	at interval beginning	10-Aug-1972 12:47:41
30-Jun-1974 24:00:00	No valid values for this year		
30-Jun-1975 24:00:00	No valid values for this year		
30-Jun-1976 24:00:00(PARTIAL)	11057	at interval beginning	27-Apr-1976 19:30:00
30-Jun-1977 24:00:00	9880	at interval beginning	11-May-1977 23:15:00
30-Jun-1978 24:00:00	7783	at interval beginning	28-May-1978 16:15:00
30-Jun-1979 24:00:00	10346	at interval beginning	7-Mar-1979 20:45:00
30-Jun-1980 24:00:00	9728	at interval beginning	23-Jul-1979 18:45:00
30-Jun-1981 24:00:00	8574	at interval beginning	7-May-1981 04:00:00
30-Jun-1982 24:00:00	7706	at interval beginning	28-Apr-1982 24:00:00
30-Jun-1983 24:00:00	7152	at interval beginning	12-Apr-1983 16:45:00
30-Jun-1984 24:00:00	7113	at interval beginning	19-Apr-1984 13:00:00
30-Jun-1985 24:00:00	6786	at interval beginning	4-May-1985 21:30:00
30-Jun-1986 24:00:00	7661	at interval beginning	16-May-1986 03:45:00
30-Jun-1987 24:00:00	8831	at interval beginning	20-Mar-1987 02:30:00
30-Jun-1988 24:00:00	7764	at interval beginning	2-May-1988 17:15:00
30-Jun-1989 24:00:00	8374	at interval beginning	22-May-1989 09:00:00
30-Jun-1990 24:00:00	8672	at interval beginning	5-Apr-1990 15:18:13
30-Jun-1991 24:00:00	8224	at interval beginning	1-Apr-1991 20:30:00
30-Jun-1992 24:00:00	9062	at interval beginning	4-Mar-1992 02:00:00
Gap from 30-Jul-1992 17:00:00 to 6-Aug-1992 13:00:00 of 6.83 Days			
Gap from 24-Aug-1992 14:45:00 to 2-Sep-1992 15:30:00 of 9.03 Days			

30-Jun-1993 24:00:00 (PARTIAL)	8748	at interval beginning	3-May-1993 15:15:00
30-Jun-1994 24:00:00	7962	at interval beginning	11-Apr-1994 16:15:00
30-Jun-1995 24:00:00	9231	at interval beginning	27-May-1995 05:30:00
30-Jun-1996 24:00:00	10281	at interval beginning	8-Mar-1996 07:45:00
30-Jun-1997 24:00:00	9362	at interval beginning	16-Jun-1997 11:00:00
30-Jun-1998 24:00:00	8169	at interval beginning	22-Apr-1998 16:00:00
30-Jun-1999 24:00:00	8292	at interval beginning	19-Feb-1999 23:15:00
30-Jun-2000 24:00:00	7418	at interval beginning	3-Nov-1999 20:00:00
30-Jun-2001 24:00:00	7439	at interval beginning	18-Jul-2000 21:00:00
30-Jun-2002 24:00:00	7728	at interval beginning	18-May-2002 15:30:00
30-Jun-2003 24:00:00	7578	at interval beginning	17-May-2003 22:15:00

Mean annual Minimum = 8694 becomes 8975
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1963 to 2003 site 33107 Whangaehu at Karioi
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1964	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.2	10.9	10.5	2.1	28.8
1965	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1966	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1967	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1968	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1
1969	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1970	0.0	0.0	0.0	0.0	0.0	0.0	1.8	8.7	4.5	1.8	13.5	15.3	0.0	45.5
1971	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.8	24.8	2.3	0.0	48.9
1972	0.0	0.0	0.0	0.0	0.0	0.0	0.0	26.5	29.0	30.9	30.0	31.0	30.0	177.4
1973	31.0	31.0	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	62.0
1974	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1975	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1976	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	4.0	0.0	4.4
1978	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.0	13.8	43.8
1979	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NaN	0.0
1980	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.8	12.7	5.6	0.0	29.1
1983	5.9	0.0	0.0	0.0	0.0	0.0	0.3	4.6	14.0	21.3	18.6	4.8	0.0	69.5
1984	0.0	0.0	0.0	0.0	0.0	0.0	1.4	11.0	8.4	13.3	22.8	13.4	20.4	90.6
1985	0.0	0.0	0.0	0.0	0.0	0.0	0.5	9.0	19.4	20.1	25.4	20.0	15.4	109.7
1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	10.9	11.8	0.0	23.0
1987	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1988	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.3	6.6	5.8	24.7
1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1991	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	1.3	0.0	0.0	2.0
1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993	NaN	NaN	NaN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1994	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.7	9.6	0.5	0.0	19.8
1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	4.2	5.2	3.3	2.2	15.2
1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	0.2	0.0	0.0	0.0	3.0
2000	0.0	0.0	0.0	11.4	7.0	0.0	0.2	0.6	19.8	8.1	19.7	0.0	0.0	66.9
2001	13.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.1	2.1	0.0	23.4

2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.9	10.3	0.0	22.2
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.0	15.9	1.0	30.0
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max	31.0	31.0	0.0	11.4	7.0	1.8	26.5	29.0	30.9	30.0	31.0	30.0	
Mean	1.4	0.9	0.0	0.3	0.2	0.1	1.6	2.1	4.3	6.5	5.6	2.5	

5.11. Whangaehu at Karioi (33107), July 1963 to July 1978 (pre-diversion)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 33107 Whangaehu at Karioi

From 1-Jul-1963 00:00:01 to 1-Jul-1978 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	118631	39395	32442	29542	27781	26546	25630	24862	24178	23610
10	23127	22694	22307	21937	21610	21327	21033	20761	20491	20225
20	19972	19749	19542	19333	19145	18959	18786	18626	18479	18335
30	18197	18059	17924	17781	17648	17522	17401	17266	17131	17000
40	16850	16689	16549	16419	16295	16161	16012	15877	15727	15586
50	15454	15323	15192	15055	14919	14788	14663	14550	14456	14350
60	14251	14146	14029	13914	13817	13713	13621	13525	13435	13333
70	13227	13132	13042	12945	12846	12743	12641	12553	12457	12367
80	12269	12170	12074	11966	11849	11698	11550	11385	11240	11058
90	10808	10575	10345	9993	7991	820	511	384	296	207
100	58									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 33107 Whangaehu at Karioi

From 1-Jul-1963 00:00:01 to 1-Jul-1978 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	117766	37124	29739	26674	25158	24047	23150	22397	21773	21307
10	20888	20469	20085	19781	19547	19318	19102	18884	18713	18551
20	18394	18247	18111	17977	17827	17672	17532	17402	17251	17100
30	16937	16776	16619	16485	16355	16233	16100	15966	15854	15721
40	15588	15465	15346	15240	15128	15010	14895	14782	14677	14570
50	14481	14380	14271	14173	14074	13971	13892	13818	13732	13652
60	13578	13493	13419	13336	13246	13167	13095	13015	12930	12850
70	12763	12679	12598	12516	12432	12357	12276	12182	12089	11994
80	11901	11814	11724	11634	11552	11450	11353	11252	11132	10998
90	10825	10683	10517	10359	10087	1729	755	537	417	332
100	174									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 33107 Whangaehu at Karioi

From 1-Jul-1963 00:00:00 to 30-Jun-1978 24:00:00

Interval = 0

flow m³/s

Year	Maximum	Date & Time
*1963	50.312	8-Nov-1963 24:00

1964	117.77	11-Mar-1964	09:36
1965	110.35	7-Nov-1965	22:00
1966	96.327	26-Apr-1966	24:00
1967	118.63	12-Aug-1967	08:09
1968	86.970	7-Dec-1968	21:40
1969	65.047	18-Dec-1969	21:45
1970	82.352	26-Sep-1970	04:15
1971	92.308	19-Oct-1971	02:30
*1972	32.195	3-Jan-1972	02:45
1973			
1974			
*1975	34.800	19-Dec-1975	11:15
1976	100.22	30-Apr-1976	13:15
1977	98.078	28-Jun-1977	18:15
*1978	62.114	20-Apr-1978	04:15

Average Annual Maximum 96.805 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 33107 Whangaehu at Karioi
From 1-Jul-1963 00:00:00 to 30-Jun-1978 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1964 24:00:00	10154 at interval beginning 1-Jun-1964 12:00:00
30-Jun-1965 24:00:00	11021 at interval beginning 4-Jul-1964 24:00:00
30-Jun-1966 24:00:00	11833 at interval beginning 22-Apr-1966 24:00:00
30-Jun-1967 24:00:00	11681 at interval beginning 17-Jun-1967 01:08:00
30-Jun-1968 24:00:00	10995 at interval beginning 4-Apr-1968 20:00:00
30-Jun-1969 24:00:00	11895 at interval beginning 14-Jun-1969 03:45:00
30-Jun-1970 24:00:00	9595 at interval beginning 18-May-1970 21:00:00
30-Jun-1971 24:00:00	9883 at interval beginning 12-Apr-1971 16:45:00
30-Jun-1972 24:00:00	108 at interval beginning 29-Jun-1972 18:20:04
Gap from 13-Sep-1972 12:30:00 to 2-Dec-1975 11:00:00 of 3.22 Years	
30-Jun-1973 24:00:00(PARTIAL)	96 at interval beginning 10-Aug-1972 12:47:41
30-Jun-1974 24:00:00	No valid values for this year
30-Jun-1975 24:00:00	No valid values for this year
30-Jun-1976 24:00:00(PARTIAL)	11057 at interval beginning 27-Apr-1976 19:30:00
30-Jun-1977 24:00:00	9880 at interval beginning 11-May-1977 23:15:00
30-Jun-1978 24:00:00	7783 at interval beginning 28-May-1978 16:15:00

Mean annual Minimum = 9530 becomes 10771

(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1963 to 1978 site 33107 Whangaehu at Karioi
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1964	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.2	10.9	10.5	2.1	28.8
1965	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1966	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1967	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

1968	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1
1969	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1970	0.0	0.0	0.0	0.0	0.0	1.8	8.7	4.5	1.8	13.5	15.3	0.0	45.5
1971	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.8	24.8	2.3	0.0	48.9
1972	0.0	0.0	0.0	0.0	0.0	0.0	0.0	26.5	29.0	30.9	30.0	31.0	177.4
1973	31.0	31.0	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	62.0
1974	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1975	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1976	NaN	NaN	NaN	NaN	NaN	NaN	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	4.0	0.0	4.4
1978	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.0	13.8	43.8
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max	31.0	31.0	0.0	0.0	0.0	1.8	26.5	29.0	30.9	30.0	31.0	30.0	
Mean	2.6	2.6	0.0	0.0	0.0	0.2	2.9	2.8	5.0	6.6	7.8	3.8	

5.12. Whangaehu at Karioi (33107), July 1979 to July 2003 (post-diversion)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 33107 Whangaehu at Karioi

From 1-Jul-1979 00:00:01 to 1-Jul-2003 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	238250	34500	28493	25726	23822	22432	21459	20616	19964	19399
10	18901	18471	18080	17717	17385	17084	16803	16540	16288	16044
20	15809	15595	15391	15200	15010	14829	14659	14483	14323	14173
30	14021	13881	13737	13599	13467	13340	13214	13093	12973	12866
40	12755	12644	12534	12429	12321	12221	12126	12030	11935	11841
50	11746	11654	11568	11478	11396	11315	11232	11144	11058	10971
60	10888	10806	10726	10647	10570	10495	10420	10351	10282	10215
70	10145	10075	10006	9934	9863	9793	9732	9664	9602	9529
80	9463	9395	9328	9250	9172	9097	9011	8922	8840	8745
90	8658	8559	8460	8357	8247	8136	8022	7899	7758	7508
100	6676									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 33107 Whangaehu at Karioi

From 1-Jul-1979 00:00:01 to 1-Jul-2003 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	132021	32762	26288	23010	21219	19911	18974	18176	17551	17076
10	16637	16243	15897	15598	15335	15092	14868	14650	14445	14275
20	14107	13951	13802	13656	13523	13388	13269	13148	13029	12919
30	12812	12710	12613	12516	12418	12322	12232	12151	12061	11969
40	11875	11784	11687	11599	11508	11416	11332	11248	11161	11080
50	11000	10917	10830	10745	10670	10599	10534	10463	10392	10331
60	10267	10203	10137	10073	10005	9941	9874	9811	9751	9694
70	9636	9582	9524	9473	9419	9368	9312	9249	9189	9131
80	9077	9014	8953	8887	8830	8760	8695	8626	8554	8484
90	8418	8347	8272	8193	8117	8046	7966	7870	7708	7419
100	6876									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 33107 Whangaehu at Karioi
 From 1-Jul-1979 00:00:00 to 30-Jun-2003 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1979	101.11	14-Oct-1979 19:30
1980	77.427	1-Dec-1980 00:15
1981	60.101	25-Sep-1981 03:15
1982	60.649	12-Dec-1982 02:45
1983	71.922	10-Jul-1983 13:30
1984	73.113	16-Dec-1984 22:30
1985	68.996	4-Sep-1985 05:15
1986	107.60	26-Jul-1986 04:00
1987	63.673	26-Dec-1987 01:30
1988	64.474	24-Jul-1988 18:30
1989	63.924	12-Jun-1989 14:30
1990	99.037	10-Mar-1990 17:15
1991	103.41	7-Aug-1991 07:15
*1992	56.770	10-Aug-1992 18:45
1993	67.426	16-May-1993 23:00
1994	132.02	8-Nov-1994 16:30
1995	238.25	25-Sep-1995 10:30
1996	69.998	21-Apr-1996 08:00
1997	97.786	9-Apr-1997 06:00
1998	117.78	9-Jul-1998 22:00
1999	92.351	16-May-1999 22:45
2000	133.16	2-Oct-2000 20:00
2001	96.207	25-May-2001 16:00
2002	74.316	29-Sep-2002 24:00
*2003	61.903	21-May-2003 21:30

Average Annual Maximum 92.437 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 33107 Whangaehu at Karioi
 From 1-Jul-1979 00:00:00 to 30-Jun-2003 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1980 24:00:00	9728 at interval beginning 23-Jul-1979 18:45:00
30-Jun-1981 24:00:00	8574 at interval beginning 7-May-1981 04:00:00
30-Jun-1982 24:00:00	7706 at interval beginning 28-Apr-1982 24:00:00
30-Jun-1983 24:00:00	7152 at interval beginning 12-Apr-1983 16:45:00
30-Jun-1984 24:00:00	7113 at interval beginning 19-Apr-1984 13:00:00
30-Jun-1985 24:00:00	6786 at interval beginning 4-May-1985 21:30:00
30-Jun-1986 24:00:00	7661 at interval beginning 16-May-1986 03:45:00
30-Jun-1987 24:00:00	8831 at interval beginning 20-Mar-1987 02:30:00
30-Jun-1988 24:00:00	7764 at interval beginning 2-May-1988 17:15:00
30-Jun-1989 24:00:00	8374 at interval beginning 22-May-1989 09:00:00
30-Jun-1990 24:00:00	8672 at interval beginning 5-Apr-1990 15:18:13
30-Jun-1991 24:00:00	8224 at interval beginning 1-Apr-1991 20:30:00
30-Jun-1992 24:00:00	9062 at interval beginning 4-Mar-1992 02:00:00
Gap from 30-Jul-1992 17:00:00 to 6-Aug-1992 13:00:00 of 6.83 Days	
Gap from 24-Aug-1992 14:45:00 to 2-Sep-1992 15:30:00 of 9.03 Days	
30-Jun-1993 24:00:00 (PARTIAL)	8748 at interval beginning 3-May-1993 15:15:00
30-Jun-1994 24:00:00	7962 at interval beginning 11-Apr-1994 16:15:00
30-Jun-1995 24:00:00	9231 at interval beginning 27-May-1995 05:30:00

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30-Jun-1996 24:00:00      10281 at interval beginning 8-Mar-1996 07:45:00
30-Jun-1997 24:00:00      9362 at interval beginning 16-Jun-1997 11:00:00
30-Jun-1998 24:00:00      8169 at interval beginning 22-Apr-1998 16:00:00
30-Jun-1999 24:00:00      8292 at interval beginning 19-Feb-1999 23:15:00
30-Jun-2000 24:00:00      7418 at interval beginning 3-Nov-1999 20:00:00
30-Jun-2001 24:00:00      7439 at interval beginning 18-Jul-2000 21:00:00
30-Jun-2002 24:00:00      7728 at interval beginning 18-May-2002 15:30:00
30-Jun-2003 24:00:00      7578 at interval beginning 17-May-2003 22:15:00

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Mean annual Minimum = 8222 becomes 8244
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1979 to 2003 site 33107 Whangaehu at Karioi
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1980	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.8	12.7	5.6	0.0	29.1
1983	5.9	0.0	0.0	0.0	0.0	0.0	0.3	4.6	14.0	21.3	18.6	4.8	0.0	69.5
1984	0.0	0.0	0.0	0.0	0.0	0.0	1.4	11.0	8.4	13.3	22.8	13.4	20.4	90.6
1985	0.0	0.0	0.0	0.0	0.0	0.0	0.5	9.0	19.4	20.1	25.4	20.0	15.4	109.7
1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	10.9	11.8	0.0	23.0
1987	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1988	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.3	6.6	5.8	24.7
1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1991	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	1.3	0.0	0.0	2.0
1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993	NaN	NaN	NaN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1994	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.7	9.6	0.5	0.0	19.8
1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	4.2	5.2	3.3	2.2	15.2
1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	0.2	0.0	0.0	0.0	3.0
2000	0.0	0.0	0.0	11.4	7.0	0.0	0.2	0.6	19.8	8.1	19.7	0.0	0.0	66.9
2001	13.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.1	2.1	0.0	23.4
2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.9	10.3	0.0	22.2
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.0	15.9	1.0	30.0
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	13.2	0.0	0.0	11.4	7.0	1.4	11.0	19.4	21.3	25.4	20.0	20.4		
Mean	0.8	0.0	0.0	0.5	0.3	0.1	1.0	1.9	4.2	6.7	4.7	1.9		

5.13. Whangaehu at Karioi (simnat) (331070), July 1963 to July 2003 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 331070 Simulated Natural at Karioi
From 1-Jul-1963 00:00:01 to 1-Jul-2003 00:00:01
flow l/s

	0	1	2	3	4	5	6	7	8	9
0	171357	39163	32446	29576	27660	26299	25317	24494	23805	23253
10	22739	22287	21913	21539	21196	20882	20584	20302	20033	19777
20	19553	19329	19121	18922	18732	18558	18389	18220	18061	17911
30	17768	17619	17486	17349	17206	17075	16938	16804	16663	16534
40	16413	16303	16187	16067	15948	15832	15715	15599	15487	15373
50	15259	15146	15032	14921	14814	14713	14609	14512	14422	14326
60	14231	14141	14048	13957	13870	13778	13694	13610	13524	13444
70	13362	13282	13196	13113	13031	12953	12869	12787	12707	12627
80	12542	12465	12390	12314	12229	12142	12050	11952	11855	11741
90	11633	11522	11396	11261	11120	10985	10835	10675	10471	10222
100	8852									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 331070 Simulated Natural at Karioi
 From 1-Jul-1963 00:00:01 to 1-Jul-2003 00:00:01
 flow l/s

	0	1	2	3	4	5	6	7	8	9
0	128475	37500	30308	27034	25242	23923	23004	22136	21504	20968
10	20501	20094	19742	19437	19173	18943	18725	18525	18338	18150
20	17987	17822	17666	17519	17382	17235	17092	16954	16826	16682
30	16551	16438	16327	16223	16115	16004	15901	15797	15688	15583
40	15476	15367	15259	15157	15050	14950	14847	14749	14650	14555
50	14466	14372	14271	14180	14093	14007	13930	13854	13773	13695
60	13621	13544	13469	13402	13323	13244	13168	13092	13017	12944
70	12871	12794	12723	12651	12573	12503	12434	12368	12300	12226
80	12150	12071	11991	11915	11834	11749	11674	11600	11522	11430
90	11340	11237	11136	11033	10937	10829	10716	10570	10381	10136
100	8852									

Annual maximum series and mean annual flood (MAF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 331070 Simulated Natural at Karioi
 From 1-Jul-1963 00:00:00 to 30-Jun-2003 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1963	49.485	9-Nov-1963 03:00
1964	112.51	11-Mar-1964 12:00
1965	107.52	7-Nov-1965 24:00
1966	80.858	27-Apr-1966 03:00
1967	109.67	12-Aug-1967 09:00
1968	84.471	7-Dec-1968 24:00
1969	59.013	11-Sep-1969 12:00
1970	80.242	26-Sep-1970 06:00
1971	88.899	19-Oct-1971 03:00
*1972	30.736	3-Jan-1972 06:00
1973		
1974		
*1975	34.212	19-Dec-1975 12:00
1976	95.029	30-Apr-1976 15:00
1977	96.830	28-Jun-1977 21:00
1978	100.65	12-Nov-1978 24:00
1979	103.53	14-Oct-1979 21:00
1980	77.331	1-Dec-1980 03:00
1981	63.103	25-Sep-1981 06:00
1982	61.343	12-Dec-1982 03:00

1983	75.710	10-Jul-1983	15:00
1984	66.369	16-Dec-1984	24:00
1985	66.921	4-Sep-1985	06:00
1986	110.43	26-Jul-1986	06:00
1987	65.851	26-Dec-1987	03:00
1988	67.642	24-Jul-1988	21:00
1989	65.829	5-Feb-1989	21:00
1990	96.444	10-Mar-1990	18:00
1991	105.93	7-Aug-1991	09:00
*1992	60.476	10-Aug-1992	21:00
1993	69.058	21-Nov-1993	21:00
1994	128.48	8-Nov-1994	18:00
1995	171.36	25-Sep-1995	12:00
1996	62.437	21-Apr-1996	09:00
1997	79.411	9-Apr-1997	06:00
1998	120.32	9-Jul-1998	24:00
1999	81.143	16-May-1999	24:00
2000	127.44	2-Oct-2000	21:00
2001	96.535	25-May-2001	18:00
2002	70.237	30-Sep-2002	03:00
*2003	60.487	21-May-2003	24:00

Average Annual Maximum 89.663 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 331070 Simulated Natural at Karioi
From 1-Jul-1963 00:00:00 to 30-Jun-2003 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (flow l/s)
30-Jun-1964 24:00:00	10154 at interval beginning 1-Jun-1964 12:00:00
30-Jun-1965 24:00:00	11021 at interval beginning 4-Jul-1964 24:00:00
30-Jun-1966 24:00:00	11828 at interval beginning 23-Apr-1966 03:00:00
30-Jun-1967 24:00:00	11682 at interval beginning 17-Jun-1967 03:00:00
30-Jun-1968 24:00:00	10997 at interval beginning 4-Apr-1968 18:00:00
30-Jun-1969 24:00:00	11896 at interval beginning 14-Jun-1969 03:00:00
30-Jun-1970 24:00:00	9595 at interval beginning 18-May-1970 21:00:00
30-Jun-1971 24:00:00	9878 at interval beginning 12-Apr-1971 18:00:00
Gap from 5-Jan-1972 09:00:00 to 2-Dec-1975 12:00:00 of 3.91 Years	
30-Jun-1972 24:00:00(PARTIAL)	12124 at interval beginning 23-Aug-1971 15:00:00
30-Jun-1973 24:00:00	No valid values for this year
30-Jun-1974 24:00:00	No valid values for this year
30-Jun-1975 24:00:00	No valid values for this year
30-Jun-1976 24:00:00(PARTIAL)	11063 at interval beginning 27-Apr-1976 18:00:00
30-Jun-1977 24:00:00	9884 at interval beginning 11-May-1977 24:00:00
30-Jun-1978 24:00:00	10254 at interval beginning 30-May-1978 03:00:00
30-Jun-1979 24:00:00	10348 at interval beginning 7-Mar-1979 21:00:00
30-Jun-1980 24:00:00	10500 at interval beginning 24-Jul-1979 03:00:00
30-Jun-1981 24:00:00	11806 at interval beginning 6-May-1981 18:00:00
30-Jun-1982 24:00:00	10697 at interval beginning 28-Apr-1982 24:00:00
30-Jun-1983 24:00:00	9677 at interval beginning 12-Apr-1983 18:00:00
30-Jun-1984 24:00:00	9853 at interval beginning 25-Apr-1984 15:00:00
30-Jun-1985 24:00:00	9534 at interval beginning 4-May-1985 21:00:00
30-Jun-1986 24:00:00	10537 at interval beginning 16-May-1986 09:00:00
30-Jun-1987 24:00:00	12096 at interval beginning 20-Mar-1987 03:00:00
30-Jun-1988 24:00:00	10546 at interval beginning 2-May-1988 18:00:00
30-Jun-1989 24:00:00	11521 at interval beginning 22-May-1989 09:00:00
30-Jun-1990 24:00:00	10002 at interval beginning 5-Mar-1990 21:00:00
30-Jun-1991 24:00:00	11412 at interval beginning 1-Apr-1991 24:00:00
30-Jun-1992 24:00:00	12207 at interval beginning 5-Jun-1992 12:00:00

Gap from 30-Jul-1992 15:00:00 to 6-Aug-1992 18:00:00 of 7.12 Days

Gap from 24-Aug-1992 12:00:00 to 2-Sep-1992 21:00:00 of 9.38 Days

30-Jun-1993 24:00:00 (PARTIAL)	11804	at interval beginning	3-May-1993 18:00:00
30-Jun-1994 24:00:00	10268	at interval beginning	10-Apr-1994 18:00:00
30-Jun-1995 24:00:00	12364	at interval beginning	27-May-1995 06:00:00
30-Jun-1996 24:00:00	13656	at interval beginning	8-Mar-1996 06:00:00
30-Jun-1997 24:00:00	12419	at interval beginning	21-May-1997 12:00:00
30-Jun-1998 24:00:00	10625	at interval beginning	6-May-1998 06:00:00
30-Jun-1999 24:00:00	10269	at interval beginning	11-Apr-1999 24:00:00
30-Jun-2000 24:00:00	10404	at interval beginning	3-Nov-1999 21:00:00
30-Jun-2001 24:00:00	10211	at interval beginning	18-Jul-2000 15:00:00
30-Jun-2002 24:00:00	10606	at interval beginning	18-May-2002 21:00:00
30-Jun-2003 24:00:00	10028	at interval beginning	17-May-2003 24:00:00

Mean annual Minimum = 10846 becomes 10879

(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD

Monthly totals 1963 to 2003 site 331070 Whangaehu at Karioi (simnat)

Days < MALF

Season
ending
in

Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1964	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	9.9	10.0	2.1	27.0
1965	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1966	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1967	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1968	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1969	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1970	0.0	0.0	0.0	0.0	0.0	1.8	8.3	3.8	1.8	13.4	15.1	0.0	44.0
1971	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.4	24.4	2.4	0.0	48.1
1972	0.0	0.0	0.0	0.0	0.0	0.0	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1973	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1974	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1975	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1976	NaN	NaN	NaN	NaN	NaN	NaN	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	3.9	0.0	4.3
1978	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.1	13.6	20.8
1979	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3	6.4	0.0	0.0	NaN	8.6
1980	6.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.8
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	7.5	3.0	0.0	13.3
1983	1.0	0.0	0.0	0.1	0.0	0.0	2.3	8.4	19.4	17.5	4.8	0.0	53.4
1984	0.0	0.0	0.0	0.0	0.0	0.0	2.6	3.5	9.5	21.6	11.0	16.1	64.4
1985	0.0	0.0	0.0	0.0	0.0	0.0	4.0	17.0	16.9	25.3	18.6	12.4	94.1
1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.6	7.1	0.0	10.8
1987	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1988	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.3	6.4	3.5	20.1
1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	7.8	0.0	0.0	0.0	11.8
1991	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993	NaN	NaN	NaN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1994	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.9	11.1	1.9	0.0	22.9
1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1
1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.1	7.9	4.5	0.0	20.5
1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	2.3	11.3	1.3	0.0	17.8

2000	0.0	0.0	0.0	8.8	2.6	0.0	0.0	0.3	12.1	7.4	14.6	0.0	45.8
2001	12.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9	2.0	0.0	15.9
2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.5	8.1	0.0	14.6
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.8	16.4	3.3	35.4
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	12.0	0.0	0.0	8.8	2.6	1.8	8.3	17.0	21.4	25.3	18.6	16.1	
Mean	0.6	0.0	0.0	0.2	0.1	0.0	0.5	1.2	3.4	5.4	3.8	1.5	

5.14. Whangaeahu at Karioi (simnat) (331070), July 1963 to July 1978 (pre-diversion)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 331070 Simulated Natural at Karioi
From 1-Jul-1963 00:00:01 to 1-Jul-1978 00:00:01
flow l/s

	0	1	2	3	4	5	6	7	8	9
0	112505	40235	32784	29966	28085	26858	25905	25208	24471	23891
10	23419	22995	22581	22227	21889	21577	21323	21044	20783	20529
20	20285	20032	19807	19623	19418	19237	19056	18885	18739	18587
30	18449	18313	18178	18053	17927	17796	17672	17551	17435	17316
40	17177	17064	16930	16773	16631	16507	16384	16279	16137	15996
50	15868	15729	15598	15472	15348	15224	15100	14977	14847	14723
60	14607	14513	14417	14324	14229	14130	14023	13918	13823	13731
70	13640	13549	13462	13374	13271	13177	13092	13008	12913	12825
80	12724	12636	12546	12465	12376	12293	12198	12118	12014	11916
90	11791	11652	11514	11370	11233	11067	10850	10635	10410	10237
100	9536									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 331070 Simulated Natural at Karioi
From 1-Jul-1963 00:00:01 to 1-Jul-1978 00:00:01
flow l/s

	0	1	2	3	4	5	6	7	8	9
0	112505	38231	30130	27030	25440	24293	23431	22667	22046	21514
10	21100	20725	20320	19987	19709	19500	19287	19077	18876	18709
20	18555	18410	18270	18144	18022	17870	17737	17599	17467	17339
30	17181	17044	16889	16730	16594	16473	16350	16236	16104	15972
40	15860	15742	15616	15498	15382	15288	15175	15066	14963	14853
50	14743	14641	14541	14467	14366	14261	14168	14075	13975	13902
60	13830	13757	13674	13607	13522	13453	13382	13305	13217	13146
70	13079	13004	12919	12846	12761	12682	12605	12524	12455	12372
80	12303	12212	12127	12030	11941	11857	11775	11691	11610	11529
90	11427	11340	11236	11119	11005	10825	10696	10544	10376	10202
100	9840									

Annual maximum series and mean annual flood (MAF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 331070 Simulated Natural at Karioi
From 1-Jul-1963 00:00:00 to 30-Jun-1978 24:00:00
Interval = 0
flow m3/s

Year	Maximum	Date & Time
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*1963      49.485      9-Nov-1963 03:00
1964      112.51     11-Mar-1964 12:00
1965      107.52      7-Nov-1965 24:00
1966      80.858     27-Apr-1966 03:00
1967      109.67     12-Aug-1967 09:00
1968      84.471      7-Dec-1968 24:00
1969      59.013     11-Sep-1969 12:00
1970      80.242     26-Sep-1970 06:00
1971      88.899     19-Oct-1971 03:00
*1972      30.736      3-Jan-1972 06:00
1973
1974
*1975      34.212     19-Dec-1975 12:00
1976      95.029     30-Apr-1976 15:00
1977      96.830     28-Jun-1977 21:00
*1978      58.999     20-Apr-1978 06:00

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Average Annual Maximum 91.504 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 331070 Simulated Natural at Karioi
From 1-Jul-1963 00:00:00 to 30-Jun-1978 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (flow l/s)
30-Jun-1964 24:00:00	10154 at interval beginning 1-Jun-1964 12:00:00
30-Jun-1965 24:00:00	11021 at interval beginning 4-Jul-1964 24:00:00
30-Jun-1966 24:00:00	11828 at interval beginning 23-Apr-1966 03:00:00
30-Jun-1967 24:00:00	11682 at interval beginning 17-Jun-1967 03:00:00
30-Jun-1968 24:00:00	10997 at interval beginning 4-Apr-1968 18:00:00
30-Jun-1969 24:00:00	11896 at interval beginning 14-Jun-1969 03:00:00
30-Jun-1970 24:00:00	9595 at interval beginning 18-May-1970 21:00:00
30-Jun-1971 24:00:00	9878 at interval beginning 12-Apr-1971 18:00:00
Gap from 5-Jan-1972 09:00:00 to 2-Dec-1975 12:00:00 of 3.91 Years	
30-Jun-1972 24:00:00(PARTIAL)	12124 at interval beginning 23-Aug-1971 15:00:00
30-Jun-1973 24:00:00	No valid values for this year
30-Jun-1974 24:00:00	No valid values for this year
30-Jun-1975 24:00:00	No valid values for this year
30-Jun-1976 24:00:00(PARTIAL)	11063 at interval beginning 27-Apr-1976 18:00:00
30-Jun-1977 24:00:00	9884 at interval beginning 11-May-1977 24:00:00
30-Jun-1978 24:00:00	10254 at interval beginning 30-May-1978 03:00:00

Mean annual Minimum = 10719 becomes 10750
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1963 to 1978 site 331070 Whangaehu at Karioi (simnat)
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
	1964	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	9.9	10.0	2.1	27.0
	1965	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

1966	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1967	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1968	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1969	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1970	0.0	0.0	0.0	0.0	0.0	1.8	8.3	3.8	1.8	13.4	15.1	0.0	44.0
1971	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.4	24.4	2.4	0.0	48.1
1972	0.0	0.0	0.0	0.0	0.0	0.0	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1973	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1974	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1975	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1976	NaN	NaN	NaN	NaN	NaN	NaN	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	3.9	0.0	4.3
1978	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.1	13.6	20.8
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	0.0	0.0	0.0	0.0	0.0	1.8	8.3	3.8	21.4	24.4	15.1	13.6	
Mean	0.0	0.0	0.0	0.0	0.0	0.2	0.8	0.3	2.6	4.4	3.5	1.4	

5.15. Whangaehu at Karioi (simnat) (331070), July 1979 to July 2003 (post-diversion)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 331070 Simulated Natural at Karioi
From 1-Jul-1979 00:00:01 to 1-Jul-2003 00:00:01
flow l/s

	0	1	2	3	4	5	6	7	8	9
0	171357	38566	32281	29432	27412	26053	25047	24215	23540	22987
10	22473	22032	21635	21254	20911	20596	20300	20027	19761	19523
20	19291	19068	18857	18656	18468	18294	18110	17947	17795	17640
30	17496	17350	17209	17070	16935	16810	16674	16545	16426	16317
40	16209	16096	15986	15876	15766	15661	15552	15446	15332	15224
50	15118	15006	14903	14802	14708	14608	14508	14415	14317	14220
60	14132	14043	13956	13872	13780	13699	13614	13529	13450	13369
70	13294	13212	13131	13047	12970	12889	12809	12731	12653	12567
80	12488	12414	12341	12262	12177	12082	11985	11885	11779	11674
90	11571	11457	11330	11197	11065	10948	10821	10679	10497	10202
100	8852									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 331070 Simulated Natural at Karioi
From 1-Jul-1979 00:00:01 to 1-Jul-2003 00:00:01
flow l/s

	0	1	2	3	4	5	6	7	8	9
0	128475	36951	30291	27043	25119	23731	22733	21917	21234	20693
10	20240	19835	19475	19171	18929	18692	18461	18256	18040	17870
20	17711	17556	17415	17276	17128	17003	16881	16754	16618	16497
30	16391	16293	16196	16094	15997	15900	15802	15704	15604	15505
40	15401	15289	15185	15089	14982	14879	14785	14689	14597	14500
50	14408	14309	14214	14128	14045	13964	13890	13796	13718	13641
60	13565	13485	13414	13336	13255	13178	13097	13018	12947	12871
70	12797	12729	12657	12580	12509	12441	12378	12312	12245	12171
80	12094	12018	11942	11867	11780	11700	11629	11556	11474	11384
90	11287	11187	11092	11002	10916	10827	10722	10580	10377	10104
100	8852									

Annual maximum series and mean annual flood (MAF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 331070 Simulated Natural at Karioi
 From 1-Jul-1979 00:00:00 to 30-Jun-2003 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1979	103.53	14-Oct-1979 21:00
1980	77.331	1-Dec-1980 03:00
1981	63.103	25-Sep-1981 06:00
1982	61.343	12-Dec-1982 03:00
1983	75.710	10-Jul-1983 15:00
1984	66.369	16-Dec-1984 24:00
1985	66.921	4-Sep-1985 06:00
1986	110.43	26-Jul-1986 06:00
1987	65.851	26-Dec-1987 03:00
1988	67.642	24-Jul-1988 21:00
1989	65.829	5-Feb-1989 21:00
1990	96.444	10-Mar-1990 18:00
1991	105.93	7-Aug-1991 09:00
*1992	60.476	10-Aug-1992 21:00
1993	69.058	21-Nov-1993 21:00
1994	128.48	8-Nov-1994 18:00
1995	171.36	25-Sep-1995 12:00
1996	62.437	21-Apr-1996 09:00
1997	79.411	9-Apr-1997 06:00
1998	120.32	9-Jul-1998 24:00
1999	81.143	16-May-1999 24:00
2000	127.44	2-Oct-2000 21:00
2001	96.535	25-May-2001 18:00
2002	70.237	30-Sep-2002 03:00
*2003	60.487	21-May-2003 24:00

Average Annual Maximum 87.696 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 331070 Simulated Natural at Karioi
 From 1-Jul-1979 00:00:00 to 30-Jun-2003 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (flow l/s)
30-Jun-1980 24:00:00	10500 at interval beginning 24-Jul-1979 03:00:00
30-Jun-1981 24:00:00	11806 at interval beginning 6-May-1981 18:00:00
30-Jun-1982 24:00:00	10697 at interval beginning 28-Apr-1982 24:00:00
30-Jun-1983 24:00:00	9677 at interval beginning 12-Apr-1983 18:00:00
30-Jun-1984 24:00:00	9853 at interval beginning 25-Apr-1984 15:00:00
30-Jun-1985 24:00:00	9534 at interval beginning 4-May-1985 21:00:00
30-Jun-1986 24:00:00	10537 at interval beginning 16-May-1986 09:00:00
30-Jun-1987 24:00:00	12096 at interval beginning 20-Mar-1987 03:00:00
30-Jun-1988 24:00:00	10546 at interval beginning 2-May-1988 18:00:00
30-Jun-1989 24:00:00	11521 at interval beginning 22-May-1989 09:00:00
30-Jun-1990 24:00:00	10002 at interval beginning 5-Mar-1990 21:00:00
30-Jun-1991 24:00:00	11412 at interval beginning 1-Apr-1991 24:00:00
30-Jun-1992 24:00:00	12207 at interval beginning 5-Jun-1992 12:00:00
Gap from 30-Jul-1992 15:00:00 to 6-Aug-1992 18:00:00	of 7.12 Days
Gap from 24-Aug-1992 12:00:00 to 2-Sep-1992 21:00:00	of 9.38 Days
30-Jun-1993 24:00:00 (PARTIAL)	11804 at interval beginning 3-May-1993 18:00:00

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30-Jun-1994 24:00:00      10268 at interval beginning 10-Apr-1994 18:00:00
30-Jun-1995 24:00:00      12364 at interval beginning 27-May-1995 06:00:00
30-Jun-1996 24:00:00      13656 at interval beginning  8-Mar-1996 06:00:00
30-Jun-1997 24:00:00      12419 at interval beginning 21-May-1997 12:00:00
30-Jun-1998 24:00:00      10625 at interval beginning  6-May-1998 06:00:00
30-Jun-1999 24:00:00      10269 at interval beginning 11-Apr-1999 24:00:00
30-Jun-2000 24:00:00      10404 at interval beginning  3-Nov-1999 21:00:00
30-Jun-2001 24:00:00      10211 at interval beginning 18-Jul-2000 15:00:00
30-Jun-2002 24:00:00      10606 at interval beginning 18-May-2002 21:00:00
30-Jun-2003 24:00:00      10028 at interval beginning 17-May-2003 24:00:00

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Mean annual Minimum = 10923 becomes 10960
(For complete years only)

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Days per month below MALF

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Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1979 to 2003 site 331070 Whangaehu at Karioi (simnat)
Days < MALF

```

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1980	6.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.8
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	7.5	3.0	0.0	13.3
1983	1.0	0.0	0.0	0.1	0.0	0.0	0.0	2.3	8.4	19.4	17.5	4.8	0.0	53.4
1984	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.6	3.5	9.5	21.6	11.0	16.1	64.4
1985	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	17.0	16.9	25.3	18.6	12.4	94.1
1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.6	7.1	0.0	10.8
1987	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1988	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.3	6.4	3.5	20.1
1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	7.8	0.0	0.0	0.0	11.8
1991	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993	NaN	NaN	NaN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1994	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.9	11.1	1.9	0.0	22.9
1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1
1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.1	7.9	4.5	0.0	20.5
1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	2.3	11.3	1.3	0.0	17.8
2000	0.0	0.0	0.0	8.8	2.6	0.0	0.0	0.3	12.1	7.4	14.6	0.0	0.0	45.8
2001	12.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9	2.0	0.0	15.9
2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.5	8.1	0.0	14.6
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.8	16.4	3.3	35.4
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	12.0	0.0	0.0	8.8	2.6	0.0	4.0	17.0	19.4	25.3	18.6	16.1		
Mean	0.9	0.0	0.0	0.4	0.1	0.0	0.4	1.5	3.7	6.1	4.2	1.5		

5.16. Whangaehu at Kauangaroa (33101), July 1971 to July 2004 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

```

Source is HORIZONS.MTD Site 33101 Whangaehu at Kauangaroa
From 1-Jul-1971 00:00:01 to 1-Jul-2004 00:00:01

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Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	1195900	203803	158902	133843	117691	106240	97621	90536	84610	79510
10	75382	71630	68419	65516	62823	60380	58153	56124	54264	52526
20	50933	49506	48106	46770	45500	44397	43319	42265	41274	40355
30	39427	38535	37669	36861	36098	35334	34650	33977	33390	32836
40	32216	31590	30987	30447	29920	29424	28935	28469	28023	27579
50	27160	26717	26283	25877	25507	25138	24765	24381	24000	23649
60	23301	22955	22604	22291	21978	21681	21389	21089	20815	20547
70	20285	20011	19748	19504	19261	19015	18779	18543	18319	18073
80	17832	17595	17374	17140	16900	16660	16409	16132	15853	15576
90	15300	15004	14692	14369	14055	13777	13474	13090	12642	11914
100	10184									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 33101 Whangaehu at Kauangaroa

From 1-Jul-1971 00:00:01 to 1-Jul-2004 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	1195900	147565	106439	87061	74612	66421	60188	55548	51702	48840
10	46205	43724	41794	40145	38624	37233	36068	35007	34015	33168
20	32388	31608	30920	30306	29755	29215	28704	28226	27763	27335
30	26905	26465	26022	25644	25288	24953	24614	24283	23954	23639
40	23334	23029	22736	22453	22210	21964	21730	21483	21244	21031
50	20826	20635	20444	20242	20035	19841	19671	19500	19327	19146
60	18983	18827	18660	18505	18357	18202	18034	17865	17703	17540
70	17389	17231	17074	16916	16762	16619	16470	16302	16129	15968
80	15790	15617	15461	15288	15110	14914	14730	14546	14333	14138
90	13986	13831	13671	13485	13295	13075	12859	12525	12113	11564
100	10184									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 33101 Whangaehu at Kauangaroa

From 1-Jul-1971 00:00:00 to 30-Jun-2004 24:00:00

Interval = 0

flow m³/s

Year	Maximum	Date & Time
*1971	481.80	4-Dec-1971 06:00
1972	319.86	12-Jul-1972 21:00
1973	441.57	17-Sep-1973 06:00
1974	639.85	4-Jul-1974 11:00
1975	632.82	16-Jun-1975 15:00
1976	559.10	29-Jun-1976 21:00
1977	306.82	6-Jun-1977 15:00
1978	350.36	21-Oct-1978 18:00
1979	347.61	9-May-1979 01:30
1980	277.09	27-Aug-1980 24:00
1981	334.36	25-Sep-1981 15:00
1982	307.72	21-Jul-1982 13:15
1983	445.38	21-May-1983 04:30
1984	209.66	15-Jul-1984 20:00
1985	535.10	28-Jul-1985 19:45
1986	544.46	27-Jul-1986 00:30
1987	470.74	11-Apr-1987 21:15
1988	370.41	25-Jul-1988 12:30

1989	421.41	19-Oct-1989	02:45
1990	471.80	11-Mar-1990	02:15
1991	524.89	10-Aug-1991	06:45
1992	634.33	23-Jul-1992	11:45
1993	401.66	22-Nov-1993	09:45
1994	771.06	9-Nov-1994	02:00
1995	526.65	7-Sep-1995	18:31
1996	297.57	11-Jan-1996	19:01
1997	255.63	15-Oct-1997	15:00
1998	774.58	21-Oct-1998	15:30
1999	445.28	29-Nov-1999	10:15
2000	549.89	3-Oct-2000	08:15
2001	555.93	26-May-2001	03:19
2002	374.35	30-Sep-2002	14:45
2003	617.00	28-Sep-2003	22:45
*2004	1195.9	16-Feb-2004	20:00

Average Annual Maximum 459.84 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 33101 Whangaehu at Kauangaroa
From 1-Jul-1971 00:00:00 to 30-Jun-2004 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1972 24:00:00	15543 at interval beginning 25-Jul-1971 24:00:00
30-Jun-1973 24:00:00	12767 at interval beginning 20-Apr-1973 24:00:00
30-Jun-1974 24:00:00	11779 at interval beginning 16-Apr-1974 18:00:00
30-Jun-1975 24:00:00	13792 at interval beginning 22-Apr-1975 03:00:00
30-Jun-1976 24:00:00	16483 at interval beginning 18-Apr-1976 12:00:00
30-Jun-1977 24:00:00	17513 at interval beginning 9-Apr-1977 24:00:00
30-Jun-1978 24:00:00	11340 at interval beginning 28-May-1978 10:00:00
30-Jun-1979 24:00:00	14130 at interval beginning 8-Mar-1979 24:00:00
30-Jun-1980 24:00:00	16589 at interval beginning 15-Feb-1980 24:00:00
30-Jun-1981 24:00:00	12571 at interval beginning 10-Apr-1981 12:00:00
30-Jun-1982 24:00:00	11127 at interval beginning 29-Apr-1982 18:00:00
30-Jun-1983 24:00:00	10205 at interval beginning 23-Mar-1983 06:00:00
30-Jun-1984 24:00:00	11264 at interval beginning 23-Apr-1984 21:30:00
30-Jun-1985 24:00:00	10263 at interval beginning 13-May-1985 05:30:00
30-Jun-1986 24:00:00	13262 at interval beginning 27-Apr-1986 09:15:00
30-Jun-1987 24:00:00	14218 at interval beginning 8-Jan-1987 12:30:00
30-Jun-1988 24:00:00	12243 at interval beginning 3-May-1988 15:00:00
30-Jun-1989 24:00:00	11620 at interval beginning 29-Apr-1989 01:45:00
30-Jun-1990 24:00:00	12731 at interval beginning 6-Mar-1990 21:45:00
30-Jun-1991 24:00:00	13184 at interval beginning 2-Apr-1991 15:30:00
30-Jun-1992 24:00:00	15473 at interval beginning 6-Mar-1992 17:30:00
30-Jun-1993 24:00:00	14635 at interval beginning 17-Mar-1993 21:00:00
30-Jun-1994 24:00:00	12885 at interval beginning 14-Mar-1994 02:45:00
30-Jun-1995 24:00:00	17468 at interval beginning 10-Mar-1995 14:15:00
30-Jun-1996 24:00:00	18987 at interval beginning 14-Mar-1996 14:00:00
30-Jun-1997 24:00:00	15406 at interval beginning 3-Apr-1997 10:00:00
30-Jun-1998 24:00:00	11469 at interval beginning 24-Mar-1998 15:00:00
30-Jun-1999 24:00:00	12833 at interval beginning 5-Mar-1999 11:15:00
30-Jun-2000 24:00:00	13054 at interval beginning 11-Mar-2000 20:45:00
30-Jun-2001 24:00:00	13875 at interval beginning 1-May-2001 01:00:00
30-Jun-2002 24:00:00	15945 at interval beginning 24-Apr-2002 18:45:00
30-Jun-2003 24:00:00	12217 at interval beginning 1-May-2003 10:30:00
Gap from 21-Feb-2004 18:15:00 to 21-Feb-2004 19:45:00 of 1.50 Hours	
30-Jun-2004 24:00:00 (PARTIAL)	13468 at interval beginning 14-Aug-2003 20:15:00

Data ends at 15-Jun-2004 11:15:00
 Mean annual Minimum = 13647 remains 13647
 (For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
 Monthly totals 1971 to 2004 site 33101 Whangaehu at Kauangaroa
 Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
	1972	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1973	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.3	12.3	17.2	0.0	0.0	42.8
	1974	0.0	0.0	0.0	0.0	0.0	0.0	7.6	11.0	17.3	17.5	0.0	0.0	53.4
	1975	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.7	0.0	0.0	8.7
	1976	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1978	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	16.8	0.0	17.0
	1979	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NaN	0.0
	1980	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.8	8.1	1.4	0.0	10.3
	1982	0.0	0.0	0.0	0.0	0.0	0.0	4.0	16.2	23.0	15.3	4.8	0.0	63.2
	1983	0.0	0.0	0.0	0.0	0.0	0.0	0.5	13.2	24.2	17.9	1.3	0.0	57.0
	1984	0.0	0.0	0.0	0.0	0.0	0.0	1.1	6.3	8.8	19.3	0.0	0.0	35.4
	1985	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.3	23.8	24.6	17.0	5.8	84.5
	1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.5	4.6	0.0	0.0	9.0
	1987	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1988	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.3	0.0	7.2	6.4	0.0	14.3
	1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	26.6	7.2	0.0	36.3
	1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.4	0.0	0.0	0.0	5.4
	1991	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	2.1	2.2	0.0	0.0	4.3
	1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1993	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1994	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	4.1	4.6	0.0	0.0	9.7
	1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1998	0.0	0.0	0.0	0.0	0.0	0.0	0.3	1.2	19.5	2.8	0.0	0.0	23.8
	1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.7	4.6	0.0	0.0	0.0	19.3
	2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	15.7	0.1	0.0	0.0	16.2
	2001	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.1	13.8	10.4	0.2	37.5
	2004	0.0	0.8	0.0	0.0	0.0	0.0	0.0	NaN	0.0	0.0	0.3	NaN	1.1
Min		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max		0.0	0.8	0.0	0.0	0.0	0.0	7.6	16.2	24.2	26.6	17.0	5.8	
Mean		0.0	0.0	0.0	0.0	0.0	0.0	0.4	2.8	5.5	5.8	2.0	0.2	

5.17. Whangaehu at Kauangaroa (33101), July 1971 to July 1978 (pre-diversion)

Flow duration curve tabulation (FDC), all data
 Exceedance percentiles

Source is HORIZONS.MTD Site 33101 Whangaehu at Kauangaroa
 From 1-Jul-1971 00:00:01 to 1-Jul-1978 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	639850	216472	168931	143415	125644	112820	103077	95747	88884	83201
10	78547	74583	70979	67840	65174	62637	60326	58126	56011	54307
20	52592	51145	49649	48195	46899	45778	44905	43980	42981	42029
30	41086	40175	39275	38451	37672	36926	36287	35612	34984	34409
40	33906	33394	32790	32178	31485	30905	30417	29947	29480	28992
50	28601	28211	27815	27472	27050	26528	26021	25593	25180	24754
60	24355	23949	23558	23187	22758	22413	22119	21804	21500	21168
70	20872	20554	20253	19998	19791	19577	19392	19177	18960	18722
80	18483	18276	18070	17824	17581	17382	17166	16959	16766	16511
90	16121	15775	15496	15212	14738	14294	13968	13722	13255	12276
100	11328									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 33101 Whangaehu at Kauangaroa
 From 1-Jul-1971 00:00:01 to 1-Jul-1978 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	481802	109743	80530	66519	60072	54651	50005	46966	44325	42233
10	40165	38334	36806	35714	34661	33743	32945	32188	31454	30868
20	30363	29915	29540	29115	28749	28373	27983	27608	27272	26883
30	26425	25990	25659	25346	25038	24754	24492	24230	23935	23667
40	23399	23120	22814	22562	22366	22180	21991	21794	21607	21367
50	21149	20976	20782	20564	20355	20192	20048	19898	19803	19698
60	19561	19462	19360	19206	19066	18933	18795	18643	18495	18382
70	18244	18106	17976	17793	17626	17499	17359	17207	17095	16963
80	16826	16704	16579	16415	16160	15914	15723	15525	15423	15204
90	14811	14409	14122	13998	13867	13764	13559	13256	12953	12210
100	11730									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 33101 Whangaehu at Kauangaroa
 From 1-Jul-1971 00:00:00 to 30-Jun-1978 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1971	481.80	4-Dec-1971 06:00
1972	319.86	12-Jul-1972 21:00
1973	441.57	17-Sep-1973 06:00
1974	639.85	4-Jul-1974 11:00
1975	632.82	16-Jun-1975 15:00
1976	559.10	29-Jun-1976 21:00
1977	306.82	6-Jun-1977 15:00
*1978	123.12	20-Apr-1978 15:00

Average Annual Maximum 483.34 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 33101 Whangaehu at Kauangaroa
 From 1-Jul-1971 00:00:00 to 30-Jun-1978 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1972 24:00:00	15543 at interval beginning 25-Jul-1971 24:00:00
30-Jun-1973 24:00:00	12767 at interval beginning 20-Apr-1973 24:00:00
30-Jun-1974 24:00:00	11779 at interval beginning 16-Apr-1974 18:00:00
30-Jun-1975 24:00:00	13792 at interval beginning 22-Apr-1975 03:00:00
30-Jun-1976 24:00:00	16483 at interval beginning 18-Apr-1976 12:00:00
30-Jun-1977 24:00:00	17513 at interval beginning 9-Apr-1977 24:00:00
30-Jun-1978 24:00:00	11340 at interval beginning 28-May-1978 10:00:00

Mean annual Minimum = 14174
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1971 to 1978 site 33101 Whangaehu at Kauangaroa
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1972	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1973	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.3	12.3	17.2	0.0	0.0	42.8
1974	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.6	11.0	17.3	17.5	0.0	0.0	53.4
1975	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.7	0.0	0.0	8.7
1976	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1978	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	16.8	0.0	17.0
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.6	13.3	17.3	17.5	16.8	0.0	
Mean	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	3.5	4.2	6.2	2.4	0.0	

5.18. Whangaehu at Kauangaroa (33101), July 1979 to July 2004 (post-diversion)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 33101 Whangaehu at Kauangaroa
From 1-Jul-1979 00:00:01 to 1-Jul-2004 00:00:01
Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	1195900	200858	156251	131351	115432	104551	95850	89097	83346	78378
10	74425	70814	67706	64805	62125	59715	57554	55586	53732	52009
20	50410	49020	47627	46293	45008	43852	42753	41710	40777	39859
30	38952	38057	37201	36383	35594	34866	34148	33500	32959	32360
40	31734	31130	30563	30013	29506	29015	28516	28050	27596	27161
50	26722	26301	25908	25541	25178	24811	24432	24054	23703	23359
60	23017	22675	22345	22026	21718	21423	21131	20864	20612	20362
70	20088	19800	19545	19283	19027	18791	18550	18315	18063	17822
80	17587	17352	17113	16858	16613	16380	16114	15840	15558	15282
90	15014	14734	14435	14132	13866	13576	13268	12916	12476	11718
100	10184									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 33101 Whangaehu at Kauangaroa
 From 1-Jul-1979 00:00:01 to 1-Jul-2004 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	1195900	156763	112692	92045	79039	70102	63487	58044	54007	50688
10	48118	45521	43178	41397	39851	38430	37120	35949	34873	33892
20	33066	32279	31497	30806	30162	29569	28999	28438	27967	27474
30	27025	26575	26124	25721	25352	25004	24652	24299	23958	23636
40	23323	23015	22718	22416	22157	21886	21628	21380	21146	20932
50	20737	20551	20356	20129	19902	19692	19493	19284	19092	18926
60	18756	18586	18417	18258	18073	17898	17733	17571	17411	17245
70	17069	16898	16731	16593	16444	16287	16124	15963	15790	15615
80	15456	15282	15119	14951	14794	14641	14459	14264	14097	13943
90	13779	13629	13458	13288	13080	12896	12677	12310	11870	11381
100	10184									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 33101 Whangaehu at Kauangaroa
 From 1-Jul-1979 00:00:00 to 30-Jun-2004 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1979	325.29	15-Oct-1979 09:00
1980	277.09	27-Aug-1980 24:00
1981	334.36	25-Sep-1981 15:00
1982	307.72	21-Jul-1982 13:15
1983	445.38	21-May-1983 04:30
1984	209.66	15-Jul-1984 20:00
1985	535.10	28-Jul-1985 19:45
1986	544.46	27-Jul-1986 00:30
1987	470.74	11-Apr-1987 21:15
1988	370.41	25-Jul-1988 12:30
1989	421.41	19-Oct-1989 02:45
1990	471.80	11-Mar-1990 02:15
1991	524.89	10-Aug-1991 06:45
1992	634.33	23-Jul-1992 11:45
1993	401.66	22-Nov-1993 09:45
1994	771.06	9-Nov-1994 02:00
1995	526.65	7-Sep-1995 18:31
1996	297.57	11-Jan-1996 19:01
1997	255.63	15-Oct-1997 15:00
1998	774.58	21-Oct-1998 15:30
1999	445.28	29-Nov-1999 10:15
2000	549.89	3-Oct-2000 08:15
2001	555.93	26-May-2001 03:19
2002	374.35	30-Sep-2002 14:45
2003	617.00	28-Sep-2003 22:45
*2004	1195.9	16-Feb-2004 20:00

Average Annual Maximum 463.21 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 33101 Whangaehu at Kauangaroa
 From 1-Jul-1979 00:00:00 to 30-Jun-2004 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1980 24:00:00	16589 at interval beginning 15-Feb-1980 24:00:00
30-Jun-1981 24:00:00	12571 at interval beginning 10-Apr-1981 12:00:00
30-Jun-1982 24:00:00	11127 at interval beginning 29-Apr-1982 18:00:00
30-Jun-1983 24:00:00	10205 at interval beginning 23-Mar-1983 06:00:00
30-Jun-1984 24:00:00	11264 at interval beginning 23-Apr-1984 21:30:00
30-Jun-1985 24:00:00	10263 at interval beginning 13-May-1985 05:30:00
30-Jun-1986 24:00:00	13262 at interval beginning 27-Apr-1986 09:15:00
30-Jun-1987 24:00:00	14218 at interval beginning 8-Jan-1987 12:30:00
30-Jun-1988 24:00:00	12243 at interval beginning 3-May-1988 15:00:00
30-Jun-1989 24:00:00	11620 at interval beginning 29-Apr-1989 01:45:00
30-Jun-1990 24:00:00	12731 at interval beginning 6-Mar-1990 21:45:00
30-Jun-1991 24:00:00	13184 at interval beginning 2-Apr-1991 15:30:00
30-Jun-1992 24:00:00	15473 at interval beginning 6-Mar-1992 17:30:00
30-Jun-1993 24:00:00	14635 at interval beginning 17-Mar-1993 21:00:00
30-Jun-1994 24:00:00	12885 at interval beginning 14-Mar-1994 02:45:00
30-Jun-1995 24:00:00	17468 at interval beginning 10-Mar-1995 14:15:00
30-Jun-1996 24:00:00	18987 at interval beginning 14-Mar-1996 14:00:00
30-Jun-1997 24:00:00	15406 at interval beginning 3-Apr-1997 10:00:00
30-Jun-1998 24:00:00	11469 at interval beginning 24-Mar-1998 15:00:00
30-Jun-1999 24:00:00	12833 at interval beginning 5-Mar-1999 11:15:00
30-Jun-2000 24:00:00	13054 at interval beginning 11-Mar-2000 20:45:00
30-Jun-2001 24:00:00	13875 at interval beginning 1-May-2001 01:00:00
30-Jun-2002 24:00:00	15945 at interval beginning 24-Apr-2002 18:45:00
30-Jun-2003 24:00:00	12217 at interval beginning 1-May-2003 10:30:00
Gap from 21-Feb-2004 18:15:00 to 21-Feb-2004 19:45:00 of 1.50 Hours	
30-Jun-2004 24:00:00(PARTIAL)	13468 at interval beginning 14-Aug-2003 20:15:00

Data ends at 15-Jun-2004 11:15:00

Mean annual Minimum = 13480 remains 13480

(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD

Monthly totals 1979 to 2004 site 33101 Whangaehu at Kauangaroa

Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1980	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.8	8.1	1.4	0.0	10.3
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	16.2	23.0	15.3	4.8	0.0	63.2
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	13.2	24.2	17.9	1.3	0.0	57.0
1984	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	6.3	8.8	19.3	0.0	0.0	35.4
1985	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.3	23.8	24.6	17.0	5.8	84.5
1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.5	4.6	0.0	0.0	9.0
1987	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1988	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.3	0.0	7.2	6.4	0.0	14.3
1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	26.6	7.2	0.0	36.3
1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.4	0.0	0.0	0.0	5.4
1991	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	2.1	2.2	0.0	0.0	4.3
1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1994	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	4.1	4.6	0.0	0.0	9.7
1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1998	0.0	0.0	0.0	0.0	0.0	0.0	0.3	1.2	19.5	2.8	0.0	0.0	23.8
1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.7	4.6	0.0	0.0	0.0	19.3
2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	15.7	0.1	0.0	0.0	16.2
2001	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.1	13.8	10.4	0.2	37.5
2004	0.0	0.8	0.0	0.0	0.0	0.0	0.0	NaN	0.0	0.0	0.3	NaN	1.1
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max	0.0	0.8	0.0	0.0	0.0	0.0	4.0	16.2	24.2	26.6	17.0	5.8	
Mean	0.0	0.0	0.0	0.0	0.0	0.0	0.3	2.8	6.1	5.9	2.0	0.3	

5.19. Whangaehu at Kauangaroa (simnat) (331010), July 1971 to July 1994 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 331010 Simulated Natural at
Kauangaroa
From 1-Jul-1971 00:00:01 to 1-Jul-1994 00:00:01
flow l/s

	0	1	2	3	4	5	6	7	8	9
0	635112	200806	155406	130503	116404	105790	97511	90858	85077	80386
10	76302	72432	69336	66525	63930	61747	59683	57727	55787	54176
20	52679	51180	49847	48364	47076	45955	44893	43978	43006	42041
30	41119	40253	39381	38613	37873	37188	36518	35882	35260	34657
40	34104	33534	32980	32473	31994	31503	31035	30550	30056	29621
50	29203	28781	28381	28011	27653	27289	26896	26519	26133	25778
60	25436	25118	24786	24464	24131	23778	23424	23115	22812	22534
70	22248	21985	21729	21497	21276	21050	20835	20595	20353	20127
80	19895	19670	19414	19162	18916	18664	18387	18133	17876	17593
90	17309	16922	16567	16240	15848	15451	15027	14634	14098	13435
100	10272									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 331010 Simulated Natural at
Kauangaroa
From 1-Jul-1971 00:00:01 to 1-Jul-1994 00:00:01
flow l/s

	0	1	2	3	4	5	6	7	8	9
0	479585	122495	93698	78026	68130	61554	56709	53123	49978	47111
10	44877	43136	41429	40061	38717	37523	36537	35573	34656	33868
20	33184	32512	31911	31345	30882	30394	29911	29473	29083	28674
30	28290	27926	27581	27229	26847	26504	26167	25840	25534	25248
40	24969	24688	24403	24136	23872	23618	23357	23136	22903	22704
50	22501	22294	22111	21923	21737	21560	21399	21254	21100	20956
60	20805	20646	20473	20296	20150	19986	19843	19706	19551	19392
70	19234	19084	18942	18804	18631	18466	18300	18148	18004	17852
80	17686	17509	17345	17129	16894	16695	16507	16300	16080	15870
90	15652	15432	15187	14972	14730	14504	14235	13923	13597	12980
100	10272									

Annual maximum series and mean annual flood (MAF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 331010 Simulated Natural at
 Kauangaroa
 From 1-Jul-1971 00:00:00 to 30-Jun-1994 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1971	479.59	4-Dec-1971 09:00
1972	308.30	12-Jul-1972 24:00
1973	437.99	17-Sep-1973 06:00
1974	634.15	4-Jul-1974 12:00
1975	628.70	16-Jun-1975 18:00
1976	552.28	29-Jun-1976 21:00
1977	296.68	6-Jun-1977 15:00
1978	355.07	21-Oct-1978 21:00
*1979	352.16	9-May-1979 03:00
1980	281.66	28-Aug-1980 03:00
1981	335.47	25-Sep-1981 18:00
1982	308.69	21-Jul-1982 15:00
1983	440.39	21-May-1983 06:00
1984	206.55	15-Jul-1984 21:00
1985	533.82	28-Jul-1985 21:00
1986	542.91	27-Jul-1986 03:00
1987	467.58	11-Apr-1987 21:00
1988	365.98	25-Jul-1988 12:00
1989	417.64	19-Oct-1989 06:00
1990	467.87	11-Mar-1990 03:00
1991	523.86	10-Aug-1991 09:00
1992	635.11	23-Jul-1992 12:00
1993	401.96	22-Nov-1993 12:00
*1994	374.06	26-Jun-1994 24:00

Average Annual Maximum 435.37 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 331010 Simulated Natural at
 Kauangaroa
 From 1-Jul-1971 00:00:00 to 30-Jun-1994 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (flow l/s)
30-Jun-1972 24:00:00	17025 at interval beginning 16-Apr-1972 03:00:00
30-Jun-1973 24:00:00	13440 at interval beginning 20-Apr-1973 21:00:00
30-Jun-1974 24:00:00	10931 at interval beginning 16-Apr-1974 18:00:00
30-Jun-1975 24:00:00	13323 at interval beginning 22-Apr-1975 03:00:00
30-Jun-1976 24:00:00	15739 at interval beginning 18-Apr-1976 15:00:00
30-Jun-1977 24:00:00	16852 at interval beginning 9-Apr-1977 18:00:00
30-Jun-1978 24:00:00	13420 at interval beginning 15-Apr-1978 12:00:00
30-Jun-1979 24:00:00	14944 at interval beginning 9-Mar-1979 12:00:00
Gap from 11-Jul-1979 00:00:00 to 12-Jul-1979 12:00:00 of 1.50 Days	
30-Jun-1980 24:00:00(PARTIAL)	19729 at interval beginning 9-Jul-1979 24:00:00
30-Jun-1981 24:00:00	14849 at interval beginning 10-Apr-1981 09:00:00
30-Jun-1982 24:00:00	13685 at interval beginning 29-Apr-1982 21:00:00
30-Jun-1983 24:00:00	13163 at interval beginning 14-Apr-1983 21:00:00
30-Jun-1984 24:00:00	13540 at interval beginning 23-Apr-1984 21:00:00
30-Jun-1985 24:00:00	12394 at interval beginning 16-Apr-1985 15:00:00
30-Jun-1986 24:00:00	15354 at interval beginning 27-Apr-1986 06:00:00
30-Jun-1987 24:00:00	16528 at interval beginning 8-Jan-1987 12:00:00

30-Jun-1988 24:00:00	13353 at interval beginning	3-May-1988 15:00:00
30-Jun-1989 24:00:00	15122 at interval beginning	28-Apr-1989 24:00:00
30-Jun-1990 24:00:00	14544 at interval beginning	6-Mar-1990 24:00:00
30-Jun-1991 24:00:00	16354 at interval beginning	12-Jan-1991 24:00:00
30-Jun-1992 24:00:00	18137 at interval beginning	6-Mar-1992 18:00:00
30-Jun-1993 24:00:00	17017 at interval beginning	27-Mar-1993 21:00:00
30-Jun-1994 24:00:00	13925 at interval beginning	14-Mar-1994 03:00:00

Mean annual Minimum = 14711
 (For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
 Monthly totals 1971 to 1994 site 331010 Whangaehu at Kauangaroa (simnat)
 Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1972	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1973	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.6	0.0	0.0	14.6
1974	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.0	13.8	19.1	17.6	0.0	0.0	61.5
1975	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.0	0.0	0.0	10.0
1976	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1978	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1	3.8	0.0	0.0	5.9
1979	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NaN	0.0
1980	NaN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.8
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	12.5	10.1	0.3	0.0	23.4
1983	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	15.5	10.4	0.0	0.0	29.0
1984	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	13.8	0.0	0.0	15.4
1985	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.8	18.9	22.8	15.0	4.0	69.4
1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1987	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1988	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.4	5.4	0.0	11.8
1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	0.0	0.0	0.0	2.8
1991	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1994	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	4.4	6.3	0.0	0.0	11.0
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	0.1	0.0	0.0	0.0	0.0	0.0	0.0	11.0	13.8	19.1	22.8	15.0	4.0	
Mean	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	1.1	3.3	5.1	0.9	0.2	

5.20. Whangaehu at Kauangaroa (simnat) (331010), July 1971 to July 1978 (pre-diversion)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 331010 Simulated Natural at Kauangaroa
 From 1-Jul-1971 00:00:01 to 1-Jul-1978 00:00:01
 flow l/s

	0	1	2	3	4	5	6	7	8	9
0	634147	217323	166164	140137	123676	112603	102541	95995	90175	85441
10	81081	77398	73787	70548	67720	65235	62961	60986	58961	57126
20	55440	53952	52614	51258	49979	48634	47426	46471	45643	44711
30	43779	42870	41945	41075	40204	39368	38531	37795	37122	36476
40	35726	35046	34481	34002	33453	32889	32407	31886	31323	30784
50	30281	29773	29339	28877	28406	27982	27590	27144	26652	26103
60	25614	25187	24780	24328	23921	23477	23042	22620	22207	21885
70	21588	21307	21060	20780	20498	20251	19985	19747	19507	19272
80	19062	18877	18631	18429	18234	18061	17866	17629	17367	16984
90	16650	16370	15918	15538	15115	14794	14538	13970	13417	12565
100	10879									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 331010 Simulated Natural at
 Kauangaroa
 From 1-Jul-1971 00:00:01 to 1-Jul-1978 00:00:01
 flow l/s

	0	1	2	3	4	5	6	7	8	9
0	479585	109660	83680	70249	62628	57671	53004	50052	47162	45178
10	43069	41133	39699	38013	36653	35484	34473	33603	32779	31993
20	31281	30731	30187	29760	29361	28920	28516	28134	27775	27408
30	27030	26660	26265	25873	25563	25258	24963	24671	24320	24018
40	23734	23423	23150	22856	22631	22336	22111	21921	21746	21559
50	21378	21224	21069	20889	20695	20515	20356	20210	20023	19856
60	19724	19593	19436	19294	19188	19053	18937	18823	18696	18558
70	18439	18316	18212	18108	18010	17871	17730	17571	17423	17231
80	16987	16798	16611	16470	16196	15938	15703	15431	15099	14952
90	14780	14684	14531	14324	13950	13651	13414	13107	12577	11456
100	10879									

Annual maximum series and mean annual flood (MAF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 331010 Simulated Natural at
 Kauangaroa
 From 1-Jul-1971 00:00:00 to 30-Jun-1978 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1971	479.59	4-Dec-1971 09:00
1972	308.30	12-Jul-1972 24:00
1973	437.99	17-Sep-1973 06:00
1974	634.15	4-Jul-1974 12:00
1975	628.70	16-Jun-1975 18:00
1976	552.28	29-Jun-1976 21:00
1977	296.68	6-Jun-1977 15:00
*1978	119.62	20-Apr-1978 15:00

Average Annual Maximum 476.35 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 331010 Simulated Natural at
 Kauangaroa

From 1-Jul-1971 00:00:00 to 30-Jun-1978 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (flow l/s)
30-Jun-1972 24:00:00	17025 at interval beginning 16-Apr-1972 03:00:00
30-Jun-1973 24:00:00	13440 at interval beginning 20-Apr-1973 21:00:00
30-Jun-1974 24:00:00	10931 at interval beginning 16-Apr-1974 18:00:00
30-Jun-1975 24:00:00	13323 at interval beginning 22-Apr-1975 03:00:00
30-Jun-1976 24:00:00	15739 at interval beginning 18-Apr-1976 15:00:00
30-Jun-1977 24:00:00	16852 at interval beginning 9-Apr-1977 18:00:00
30-Jun-1978 24:00:00	13420 at interval beginning 15-Apr-1978 12:00:00

Mean annual Minimum = 14390
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1971 to 1978 site 331010 Whangaehu at Kauangaroa (simnat)
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
	1972	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1973	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.6	0.0	0.0	14.6
	1974	0.0	0.0	0.0	0.0	0.0	0.0	11.0	13.8	19.1	17.6	0.0	0.0	61.5
	1975	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.0	0.0	0.0	10.0
	1976	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1978	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1	3.8	0.0	0.0	5.9
Min		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max		0.0	0.0	0.0	0.0	0.0	0.0	11.0	13.8	19.1	17.6	0.0	0.0	
Mean		0.0	0.0	0.0	0.0	0.0	0.0	1.6	2.0	3.0	6.6	0.0	0.0	

5.21. Whangaehu at Kauangaroa (simnat) (331010), July 1979 to July 1994 (post-diversion)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 331010 Simulated Natural at Kauangaroa
From 1-Jul-1979 00:00:01 to 1-Jul-1994 00:00:01
flow l/s

	0	1	2	3	4	5	6	7	8	9
0	635112	194811	150824	126233	112824	103193	94968	88132	82220	77810
10	73686	70205	67182	64466	62111	59895	57826	55803	54144	52517
20	50933	49588	48046	46718	45557	44527	43529	42544	41601	40678
30	39772	38929	38208	37447	36799	36160	35569	34948	34386	33813
40	33241	32716	32228	31756	31279	30844	30374	29904	29467	29064
50	28663	28303	27962	27623	27293	26927	26592	26263	25931	25623
60	25310	25029	24717	24410	24115	23791	23470	23190	22918	22671
70	22406	22169	21917	21681	21470	21264	21038	20832	20615	20385

80 20171 19953 19750 19491 19215 18958 18672 18373 18071 17746
 90 17433 17102 16725 16382 16046 15655 15272 14863 14305 13797
 100 10272

Flow duration curve tabulation (FDC), summer season
 Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 331010 Simulated Natural at
 Kauangaroa
 From 1-Jul-1979 00:00:01 to 1-Jul-1994 00:00:01
 flow l/s

	0	1	2	3	4	5	6	7	8	9
0	467868	124640	96751	81020	70561	62540	57491	53911	50486	47441
10	45139	43361	41666	40348	38970	37893	36866	36035	35116	34291
20	33590	32971	32349	31847	31319	30867	30392	29934	29480	29093
30	28694	28329	27998	27658	27313	26955	26602	26280	25965	25673
40	25370	25110	24836	24554	24296	24050	23805	23555	23323	23118
50	22904	22722	22538	22351	22179	21996	21803	21626	21461	21321
60	21168	21013	20869	20729	20572	20388	20225	20078	19930	19799
70	19655	19486	19319	19139	18981	18822	18629	18444	18254	18074
80	17898	17702	17524	17349	17133	16894	16691	16481	16297	16114
90	15901	15693	15502	15302	15070	14835	14499	14237	13968	13658
100	10272									

Annual maximum series and mean annual flood (MAF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 331010 Simulated Natural at
 Kauangaroa
 From 1-Jul-1979 00:00:00 to 30-Jun-1994 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1979	327.25	15-Oct-1979 12:00
1980	281.66	28-Aug-1980 03:00
1981	335.47	25-Sep-1981 18:00
1982	308.69	21-Jul-1982 15:00
1983	440.39	21-May-1983 06:00
1984	206.55	15-Jul-1984 21:00
1985	533.82	28-Jul-1985 21:00
1986	542.91	27-Jul-1986 03:00
1987	467.58	11-Apr-1987 21:00
1988	365.98	25-Jul-1988 12:00
1989	417.64	19-Oct-1989 06:00
1990	467.87	11-Mar-1990 03:00
1991	523.86	10-Aug-1991 09:00
1992	635.11	23-Jul-1992 12:00
1993	401.96	22-Nov-1993 12:00
*1994	374.06	26-Jun-1994 24:00

Average Annual Maximum 423.54 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 331010 Simulated Natural at
 Kauangaroa
 From 1-Jul-1979 00:00:00 to 30-Jun-1994 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (flow l/s)
Gap from 11-Jul-1979 00:00:00 to 12-Jul-1979 12:00:00 of 1.50 Days	
30-Jun-1980 24:00:00(PARTIAL)	19729 at interval beginning 9-Jul-1979 24:00:00
30-Jun-1981 24:00:00	14849 at interval beginning 10-Apr-1981 09:00:00
30-Jun-1982 24:00:00	13685 at interval beginning 29-Apr-1982 21:00:00
30-Jun-1983 24:00:00	13163 at interval beginning 14-Apr-1983 21:00:00
30-Jun-1984 24:00:00	13540 at interval beginning 23-Apr-1984 21:00:00
30-Jun-1985 24:00:00	12394 at interval beginning 16-Apr-1985 15:00:00
30-Jun-1986 24:00:00	15354 at interval beginning 27-Apr-1986 06:00:00
30-Jun-1987 24:00:00	16528 at interval beginning 8-Jan-1987 12:00:00
30-Jun-1988 24:00:00	13353 at interval beginning 3-May-1988 15:00:00
30-Jun-1989 24:00:00	15122 at interval beginning 28-Apr-1989 24:00:00
30-Jun-1990 24:00:00	14544 at interval beginning 6-Mar-1990 24:00:00
30-Jun-1991 24:00:00	16354 at interval beginning 12-Jan-1991 24:00:00
30-Jun-1992 24:00:00	18137 at interval beginning 6-Mar-1992 18:00:00
30-Jun-1993 24:00:00	17017 at interval beginning 27-Mar-1993 21:00:00
30-Jun-1994 24:00:00	13925 at interval beginning 14-Mar-1994 03:00:00

Mean annual Minimum = 14855
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1979 to 1994 site 331010 Whangaehu at Kauangaroa (simnat)
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1980	NaN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.8
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	12.5	10.1	0.3	0.0	23.4
1983	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	15.5	10.4	0.0	0.0	29.0
1984	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	13.8	0.0	0.0	15.4
1985	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.8	18.9	22.8	15.0	4.0	69.4
1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1987	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1988	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.4	5.4	0.0	11.8
1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	0.0	0.0	0.0	2.8
1991	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1994	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	4.4	6.3	0.0	0.0	11.0
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.8	18.9	22.8	15.0	4.0	
Mean	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	3.7	4.7	1.4	0.3	

6. Whanganui Catchments and Kai Iwi

6.1. Manganui-o-te-ao at Ashworth (33309), July 1962 to July 1980 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 33309 Manganui-o-te-ao at Ashworth
 From 1-Jul-1962 00:00:01 to 1-Jul-1980 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	478856	117938	86963	71000	60974	53333	47945	43939	40568	37852
10	35557	33556	31756	30138	28795	27635	26594	25575	24687	23891
20	23132	22416	21745	21125	20580	20014	19456	18944	18468	18011
30	17585	17182	16789	16426	16060	15716	15373	15042	14717	14401
40	14099	13823	13547	13273	13001	12728	12474	12224	11971	11731
50	11515	11301	11099	10892	10688	10502	10314	10127	9944	9764
60	9590	9427	9270	9112	8950	8782	8610	8443	8294	8137
70	7990	7852	7715	7568	7418	7270	7133	7004	6879	6750
80	6625	6508	6381	6246	6089	5926	5775	5635	5497	5364
90	5239	5093	4943	4767	4582	4425	4284	4156	3998	3749
100	3096									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 33309 Manganui-o-te-ao at Ashworth
 From 1-Jul-1962 00:00:01 to 1-Jul-1980 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	478856	96401	64170	51139	43837	38680	34861	31866	29480	27551
10	25956	24535	23317	22145	21105	20191	19307	18534	17820	17149
20	16531	15968	15424	14932	14433	13998	13620	13223	12853	12512
30	12196	11894	11631	11392	11147	10930	10713	10507	10299	10108
40	9919	9744	9556	9396	9244	9081	8930	8778	8624	8484
50	8367	8228	8091	7965	7841	7728	7611	7491	7371	7263
60	7162	7066	6972	6879	6780	6688	6601	6521	6428	6328
70	6238	6135	6029	5924	5828	5736	5654	5577	5496	5416
80	5347	5275	5197	5117	5036	4957	4864	4769	4663	4572
90	4481	4404	4333	4258	4194	4118	4032	3904	3756	3492
100	3096									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 33309 Manganui-o-te-ao at Ashworth
 From 1-Jul-1962 00:00:00 to 30-Jun-1980 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1962	328.61	8-Oct-1962 06:00
1963	169.48	14-Sep-1963 12:00
1964	478.86	11-Mar-1964 09:00
1965	429.04	7-Nov-1965 18:00
1966	316.37	26-Apr-1966 20:45
1967	413.90	2-Feb-1967 19:24

1968	398.70	7-Dec-1968 07:00
1969	208.04	7-May-1969 14:00
1970	292.48	26-Sep-1970 00:30
1971	331.46	25-Feb-1971 12:45
1972	279.72	5-Mar-1972 05:45
1973	253.61	16-Sep-1973 19:45
1974	380.48	3-Jul-1974 22:00
1975	411.35	29-Aug-1975 08:00
1976	347.33	29-Jun-1976 10:15
1977	243.96	20-Jan-1977 22:15
1978	373.82	12-Nov-1978 18:00
1979	387.19	14-Oct-1979 15:30
*1980	228.14	20-Jan-1980 15:00

Average Annual Maximum 336.22 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 33309 Manganui-o-te-ao at Ashworth
From 1-Jul-1962 00:00:00 to 30-Jun-1980 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1963 24:00:00	5882 at interval beginning 7-Feb-1963 24:00:00
30-Jun-1964 24:00:00	5090 at interval beginning 24-Feb-1964 24:00:00
30-Jun-1965 24:00:00	6472 at interval beginning 22-Apr-1965 18:00:00
30-Jun-1966 24:00:00	4754 at interval beginning 29-Mar-1966 03:45:00
30-Jun-1967 24:00:00	4807 at interval beginning 22-Apr-1967 15:00:00
30-Jun-1968 24:00:00	3744 at interval beginning 5-Apr-1968 24:00:00
30-Jun-1969 24:00:00	3973 at interval beginning 27-Mar-1969 03:15:00
30-Jun-1970 24:00:00	3383 at interval beginning 27-Feb-1970 03:15:00
30-Jun-1971 24:00:00	3945 at interval beginning 12-Apr-1971 18:00:00
30-Jun-1972 24:00:00	4544 at interval beginning 17-Feb-1972 23:00:00
30-Jun-1973 24:00:00	4185 at interval beginning 26-Feb-1973 06:30:00
30-Jun-1974 24:00:00	3712 at interval beginning 12-Apr-1974 19:15:00
30-Jun-1975 24:00:00	4581 at interval beginning 4-Mar-1975 21:45:00
30-Jun-1976 24:00:00	3525 at interval beginning 26-Mar-1976 21:15:00
30-Jun-1977 24:00:00	4001 at interval beginning 22-Mar-1977 11:15:00
30-Jun-1978 24:00:00	3144 at interval beginning 27-Mar-1978 09:00:00
30-Jun-1979 24:00:00	4132 at interval beginning 11-Feb-1979 05:45:00
30-Jun-1980 24:00:00	5135 at interval beginning 8-Jul-1979 14:45:00

Mean annual Minimum = 4389
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1962 to 1980 site 33309 Manganui-o-te-ao at Ashworth
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1963	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1964	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1965	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1966	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

1967	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1968	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	18.9	8.3	0.0	0.0	29.4
1969	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.3	2.5	0.0	0.0	11.7
1970	0.0	0.0	0.0	0.0	1.1	0.0	0.0	22.0	22.2	11.7	6.8	0.0	63.7
1971	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	2.2	15.9	2.6	0.0	22.8
1972	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1973	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.4	4.5	7.3	0.0	0.0	22.2
1974	0.0	0.0	0.0	0.0	0.0	0.0	6.3	15.3	12.1	14.5	0.0	0.0	48.2
1975	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1976	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	22.1	12.9	0.0	0.0	35.0
1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.9	0.0	0.0	0.0	4.9
1978	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.1	27.4	11.5	9.4	6.2	69.6
1979	0.0	0.0	0.0	0.0	0.0	0.0	1.6	3.1	0.0	0.0	0.0	0.0	4.7
1980	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	0.0	0.0	0.0	0.0	1.1	0.0	6.3	22.0	27.4	15.9	9.4	6.2	
Mean	0.0	0.0	0.0	0.0	0.1	0.0	0.4	3.9	6.9	4.7	1.0	0.3	

6.2. Mangaroa at Ohura Town Br (33341), July 1965 to July 1970 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 33341 Mangaroa at Ohura Town Br
From 1-Jul-1965 00:00:01 to 1-Jul-1970 00:00:01
Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	165026	72093	53397	42584	35551	30585	26881	24062	21777	20005
10	18389	17019	15871	14849	13893	13072	12246	11580	10930	10320
20	9793	9286	8840	8391	7999	7632	7283	6945	6663	6350
30	6066	5811	5592	5395	5214	5040	4892	4739	4592	4435
40	4288	4141	4002	3870	3743	3630	3516	3418	3323	3231
50	3138	3045	2957	2877	2808	2731	2660	2598	2530	2465
60	2398	2336	2277	2220	2165	2115	2068	2016	1958	1897
70	1838	1786	1739	1691	1635	1578	1526	1469	1410	1349
80	1298	1246	1194	1141	1091	1050	1004	953	894	847
90	800	754	696	642	586	520	442	357	247	199
100	159									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 33341 Mangaroa at Ohura Town Br
From 1-Jul-1965 00:00:01 to 1-Jul-1970 00:00:01
Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	165026	71677	47347	34015	27637	23076	19920	17484	15651	14095
10	12755	11692	10718	9891	9117	8325	7755	7194	6744	6278
20	5871	5539	5264	5021	4814	4593	4375	4173	3988	3792
30	3629	3464	3325	3218	3086	2956	2844	2738	2630	2531
40	2439	2362	2292	2229	2172	2116	2062	2003	1947	1895
50	1835	1784	1736	1690	1638	1592	1554	1516	1475	1435
60	1388	1347	1313	1282	1248	1216	1188	1156	1124	1098
70	1074	1054	1033	1007	975	945	915	885	858	833
80	808	783	756	727	698	669	644	620	587	553
90	518	476	439	402	355	300	250	224	200	179

100 159

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 33341 Mangaroa at Ohura Town Br
 From 1-Jul-1965 00:00:00 to 30-Jun-1970 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1965	165.03	7-Nov-1965 18:00
1966	145.87	6-Dec-1966 20:00
1967	100.98	2-Feb-1967 18:42
1968	154.38	7-Dec-1968 17:00
1969	103.75	7-May-1969 11:45
*1970	105.65	17-Jun-1970 23:15

Average Annual Maximum 126.24 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 33341 Mangaroa at Ohura Town Br
 From 1-Jul-1965 00:00:00 to 30-Jun-1970 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1966 24:00:00	798 at interval beginning 23-Apr-1966 12:00:00
30-Jun-1967 24:00:00	705 at interval beginning 9-Mar-1967 09:32:25
30-Jun-1968 24:00:00	274 at interval beginning 28-Mar-1968 13:45:00
30-Jun-1969 24:00:00	562 at interval beginning 4-Feb-1969 22:00:00
30-Jun-1970 24:00:00	164 at interval beginning 6-Mar-1970 04:45:00

Mean annual Minimum = 501
 (For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
 Monthly totals 1965 to 1970 site 33341 Mangaroa at Ohura Town Br
 Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1966	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1967	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1968	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	18.1	5.4	0.0	0.0	24.1
1969	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1970	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.1	25.1	23.2	7.2	0.0	0.0	62.5
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.1	25.1	23.2	7.2	0.0	0.0	0.0
Mean	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	5.1	8.3	2.5	0.0	0.0	0.0

6.3. Ohura at Tokorima (33313), July 1962 to July 2005 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 33313 Ohura at Tokorima
From 1-Jul-1962 00:00:01 to 1-Jul-2005 00:00:01
Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	413834	168446	134606	114208	101414	90931	82399	75551	69512	64724
10	60285	56355	52857	49609	46587	43932	41477	39436	37542	35835
20	34301	32824	31460	30289	29114	27992	27003	26047	25091	24210
30	23304	22468	21683	20925	20212	19540	18884	18272	17661	17060
40	16505	15984	15484	14979	14504	14043	13596	13152	12714	12301
50	11900	11481	11062	10682	10349	10010	9653	9308	8989	8675
60	8359	8056	7724	7417	7100	6818	6537	6265	6004	5743
70	5486	5232	4993	4757	4535	4338	4144	3951	3739	3524
80	3337	3165	2980	2802	2644	2500	2358	2199	2046	1896
90	1739	1570	1390	1226	1105	987	856	725	557	424
100	176									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 33313 Ohura at Tokorima
From 1-Jul-1962 00:00:01 to 1-Jul-2005 00:00:01
Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	413834	138355	96803	78431	65825	56158	48335	42914	38551	34926
10	32222	29889	27626	25635	23837	22311	20960	19766	18667	17645
20	16683	15901	15180	14514	13875	13214	12606	12050	11525	11036
30	10623	10220	9836	9449	9081	8757	8440	8128	7804	7506
40	7221	6964	6716	6491	6281	6072	5864	5650	5459	5275
50	5110	4946	4783	4622	4474	4339	4205	4069	3952	3829
60	3701	3579	3458	3351	3249	3149	3040	2937	2836	2742
70	2656	2567	2488	2411	2329	2238	2146	2061	1978	1893
80	1807	1717	1630	1538	1438	1341	1247	1172	1106	1045
90	985	920	845	785	719	641	547	490	424	339
100	176									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 33313 Ohura at Tokorima
From 1-Jul-1962 00:00:00 to 30-Jun-2005 24:00:00
Interval = 0
flow m³/s

Year	Maximum	Date & Time
*1962	192.87	4-Dec-1962 24:00
1963	208.76	22-Jun-1963 12:00
1964	402.25	12-Mar-1964 12:00
1965	405.13	8-Nov-1965 18:10
1966	245.86	7-Dec-1966 16:00
1967	218.82	12-Aug-1967 21:45
1968	265.95	8-Dec-1968 07:30
1969	185.73	18-Feb-1969 14:37
1970	239.92	1-Oct-1970 17:30
1971	239.70	20-Oct-1971 01:30

1972	252.59	18-May-1972 19:30
1973	410.54	17-Sep-1973 22:00
1974	251.72	4-Jul-1974 09:30
1975	329.17	30-Aug-1975 01:15
1976	211.49	1-May-1976 13:30
1977	222.53	27-May-1977 00:30
*1978	150.82	25-Jul-1978 21:30
1979		
1980		
1981		
1982		
1983		
1984		
1985		
1986		
1987		
1988		
1989		
*1990	305.27	10-Mar-1990 12:00
1991		
1992		
1993		
1994		
1995		
1996		
1997		
*1998	527.79	28-Oct-1998 12:00
1999		
2000		
*2001	275.14	9-Dec-2001 20:15
2002	194.53	8-Jul-2002 02:30
2003	316.44	4-Oct-2003 17:15
2004	413.83	29-Feb-2004 22:45
*2005	209.21	7-Jan-2005 01:45

Average Annual Maximum 278.61 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 33313 Ohura at Tokorima
From 1-Jul-1962 00:00:00 to 30-Jun-2005 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1963 24:00:00	1084 at interval beginning 15-Feb-1963 24:00:00
30-Jun-1964 24:00:00	761 at interval beginning 26-Feb-1964 12:00:00
30-Jun-1965 24:00:00	2941 at interval beginning 22-Apr-1965 24:00:00
30-Jun-1966 24:00:00	2128 at interval beginning 16-Feb-1966 12:00:00
30-Jun-1967 24:00:00	1029 at interval beginning 22-Apr-1967 12:00:00
30-Jun-1968 24:00:00	707 at interval beginning 28-Mar-1968 12:00:00
30-Jun-1969 24:00:00	1344 at interval beginning 3-Apr-1969 06:00:00
30-Jun-1970 24:00:00	305 at interval beginning 6-Mar-1970 24:00:00
30-Jun-1971 24:00:00	703 at interval beginning 9-Apr-1971 06:00:00
30-Jun-1972 24:00:00	790 at interval beginning 21-Feb-1972 00:15:00
30-Jun-1973 24:00:00	487 at interval beginning 4-Mar-1973 14:45:00
30-Jun-1974 24:00:00	417 at interval beginning 14-Mar-1974 07:15:00
30-Jun-1975 24:00:00	1619 at interval beginning 11-Mar-1975 13:15:00
30-Jun-1976 24:00:00	1080 at interval beginning 27-Mar-1976 18:00:00
30-Jun-1977 24:00:00	975 at interval beginning 22-Mar-1977 15:00:00
30-Jun-1978 24:00:00	183 at interval beginning 15-Apr-1978 07:45:00
Gap from 7-Sep-1978 12:30:00 to 20-Jun-2001 12:45:00 of 22.80 Years	

```

30-Jun-1979 24:00:00(PARTIAL)      7524 at interval beginning 3-Jul-1978 21:15:00
30-Jun-1980 24:00:00              No valid values for this year
30-Jun-1981 24:00:00              No valid values for this year
30-Jun-1982 24:00:00              No valid values for this year
30-Jun-1983 24:00:00              No valid values for this year
30-Jun-1984 24:00:00              No valid values for this year
30-Jun-1985 24:00:00              No valid values for this year
30-Jun-1986 24:00:00              No valid values for this year
30-Jun-1987 24:00:00              No valid values for this year
30-Jun-1988 24:00:00              No valid values for this year
30-Jun-1989 24:00:00              No valid values for this year
30-Jun-1990 24:00:00              No valid values for this year
30-Jun-1991 24:00:00              No valid values for this year
30-Jun-1992 24:00:00              No valid values for this year
30-Jun-1993 24:00:00              No valid values for this year
30-Jun-1994 24:00:00              No valid values for this year
30-Jun-1995 24:00:00              No valid values for this year
30-Jun-1996 24:00:00              No valid values for this year
30-Jun-1997 24:00:00              No valid values for this year
30-Jun-1998 24:00:00              No valid values for this year
30-Jun-1999 24:00:00              No valid values for this year
30-Jun-2000 24:00:00              No valid values for this year
30-Jun-2001 24:00:00(PARTIAL)     9601 at interval beginning 30-Jun-2001 24:00:00
30-Jun-2002 24:00:00              862 at interval beginning 29-Mar-2002 15:45:00
30-Jun-2003 24:00:00              458 at interval beginning 25-Mar-2003 21:30:00
30-Jun-2004 24:00:00              1490 at interval beginning 27-Jan-2004 17:15:00
30-Jun-2005 24:00:00              1907 at interval beginning 6-Mar-2005 03:45:00

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Mean annual Minimum = 1064
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
 Monthly totals 1962 to 2005 site 33313 Ohura at Tokorima
 Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1963	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1964	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.0	4.4	0.0	0.0	0.0	0.0	6.2
1965	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1966	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1967	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.0	1.5
1968	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.5	17.5	2.6	0.0	0.0	23.7
1969	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1970	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.3	25.6	22.9	12.1	0.5	0.0	65.5
1971	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.4	3.1	14.6	0.0	0.0	24.2
1972	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.3	6.7	2.5	0.0	0.0	0.0	14.4
1973	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.5	11.0	10.8	0.0	0.0	35.3
1974	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.0	22.8	24.0	13.7	4.9	0.0	80.4
1975	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1976	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.1	0.0	0.0	0.0	6.1
1978	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.3	25.1	29.9	16.0	0.0	0.0	83.3
1979	0.0	0.0	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1980	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1981	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1982	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1983	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0
1984	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0

1985	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0	
1986	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0	
1987	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0	
1988	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0	
1989	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0	
1990	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0	
1991	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0	
1992	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0	
1993	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0	
1994	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0	
1995	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0	
1996	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0	
1997	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0	
1998	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0	
1999	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0	
2000	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0	
2001	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	0.0	
2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.5	4.5	0.0	0.0	14.9	
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.5	24.3	13.3	2.2	0.0	61.2
2004	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2005	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max	0.0	0.0	0.0	0.0	0.0	1.8	15.0	25.6	29.9	16.0	4.9	0.0	0.0	0.0
Mean	0.0	0.0	0.0	0.0	0.0	0.1	1.8	6.5	7.6	4.5	0.4	0.0	0.0	0.0

6.4. Ongarue at Taringamotu (33316), July 1963 to July 2004 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 33316 Ongarue at Taringamotu

From 1-Jul-1963 00:00:01 to 1-Jul-2004 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	554134	176816	139690	119156	105449	95861	88925	83064	78146	73975
10	70341	67233	64341	61657	59345	57194	55229	53326	51669	50057
20	48508	47103	45740	44469	43254	42157	41125	40143	39167	38217
30	37302	36467	35628	34838	34078	33363	32651	31969	31285	30619
40	29973	29376	28783	28226	27658	27129	26586	26072	25552	25036
50	24540	24064	23630	23199	22740	22285	21874	21487	21072	20665
60	20253	19882	19488	19115	18766	18418	18089	17746	17425	17119
70	16803	16459	16117	15798	15460	15118	14781	14426	14067	13743
80	13413	13085	12747	12403	12054	11696	11343	10983	10636	10290
90	9953	9576	9260	8913	8490	8079	7573	7067	6433	5762
100	4416									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 33316 Ongarue at Taringamotu

From 1-Jul-1963 00:00:01 to 1-Jul-2004 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	449049	122665	92777	76960	68056	61225	56220	52035	48559	45662
10	43153	41108	39265	37573	36140	34833	33651	32513	31559	30651
20	29766	28950	28229	27567	26957	26374	25814	25239	24710	24200

30	23730	23273	22822	22366	21955	21566	21175	20791	20407	20059
40	19738	19412	19113	18830	18549	18270	17994	17718	17461	17228
50	17005	16758	16487	16226	15978	15741	15480	15230	15002	14746
60	14499	14242	14009	13798	13583	13369	13164	12954	12742	12539
70	12322	12100	11892	11683	11485	11281	11084	10902	10709	10499
80	10308	10133	9945	9741	9549	9380	9198	9010	8788	8562
90	8354	8132	7875	7572	7279	7003	6629	6241	5806	5367
100	4416									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 33316 Ongarue at Taringamotu
 From 1-Jul-1963 00:00:00 to 30-Jun-2004 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1963	234.75	16-Jul-1963 24:00
1964	274.50	21-Jul-1964 18:00
1965	313.82	8-Nov-1965 12:00
1966	230.35	9-Jul-1966 08:00
1967	254.75	3-Feb-1967 17:30
1968	226.77	8-Dec-1968 07:45
1969	164.65	17-Feb-1969 14:45
1970	241.03	1-Oct-1970 06:15
1971	199.28	19-Oct-1971 10:00
1972	287.42	18-May-1972 23:15
1973	273.67	17-Sep-1973 15:30
1974	209.36	16-Jun-1974 15:30
1975	330.66	29-Aug-1975 16:00
1976	240.88	8-Feb-1976 04:00
1977	280.08	29-Jun-1977 18:15
1978	418.26	13-Nov-1978 08:30
1979	385.87	15-Oct-1979 05:00
1980	238.39	23-Jan-1980 16:00
1981	165.27	9-Jul-1981 11:45
1982	219.75	26-Oct-1982 15:00
1983	132.80	8-Nov-1983 21:45
1984	160.83	1-Aug-1984 22:45
1985	173.14	23-Jun-1985 01:30
1986	416.46	26-Jul-1986 09:00
1987	176.98	22-Jan-1987 22:45
1988	452.41	8-Jun-1988 17:15
1989	342.20	16-Oct-1989 00:45
1990	268.72	7-Aug-1990 19:30
1991	432.61	10-Aug-1991 00:45
1992	263.71	15-Aug-1992 03:30
1993	305.30	21-Nov-1993 21:30
1994	339.25	8-Nov-1994 14:00
1995	359.33	7-Sep-1995 11:00
1996	354.44	21-Apr-1996 18:30
1997	248.97	13-Nov-1997 16:30
1998	413.25	29-Oct-1998 00:15
1999	299.65	17-May-1999 05:45
2000	554.13	3-Oct-2000 02:45
2001	359.59	9-Dec-2001 17:15
2002	345.24	8-Jul-2002 08:45
2003	352.50	4-Oct-2003 07:15
*2004	449.05	29-Feb-2004 18:00

Average Annual Maximum 292.66 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 33316 Ongarue at Taringamotu
From 1-Jul-1963 00:00:00 to 30-Jun-2004 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1964 24:00:00	7835 at interval beginning 26-Feb-1964 18:00:00
30-Jun-1965 24:00:00	13594 at interval beginning 22-Apr-1965 24:00:00
30-Jun-1966 24:00:00	12840 at interval beginning 16-Dec-1965 12:00:00
30-Jun-1967 24:00:00	9174 at interval beginning 19-Apr-1967 12:45:00
30-Jun-1968 24:00:00	6092 at interval beginning 8-Apr-1968 18:15:00
30-Jun-1969 24:00:00	7850 at interval beginning 2-Apr-1969 11:30:00
30-Jun-1970 24:00:00	4432 at interval beginning 23-Mar-1970 10:03:00
30-Jun-1971 24:00:00	5513 at interval beginning 12-Apr-1971 05:30:00
30-Jun-1972 24:00:00	7468 at interval beginning 2-Mar-1972 18:45:00
30-Jun-1973 24:00:00	6047 at interval beginning 8-Apr-1973 11:45:00
30-Jun-1974 24:00:00	4994 at interval beginning 13-Apr-1974 05:15:00
30-Jun-1975 24:00:00	8365 at interval beginning 21-Apr-1975 18:15:00
30-Jun-1976 24:00:00	8315 at interval beginning 26-Mar-1976 23:30:00
30-Jun-1977 24:00:00	6420 at interval beginning 22-Mar-1977 05:30:00
30-Jun-1978 24:00:00	5556 at interval beginning 13-Apr-1978 17:15:00
30-Jun-1979 24:00:00	7844 at interval beginning 11-Feb-1979 13:30:00
30-Jun-1980 24:00:00	15057 at interval beginning 1-Jul-1979 10:15:00
30-Jun-1981 24:00:00	9913 at interval beginning 24-Mar-1981 08:30:00
30-Jun-1982 24:00:00	8038 at interval beginning 17-Feb-1982 06:00:00
30-Jun-1983 24:00:00	7400 at interval beginning 22-Mar-1983 16:30:00
30-Jun-1984 24:00:00	8698 at interval beginning 10-Jan-1984 18:30:00
30-Jun-1985 24:00:00	6824 at interval beginning 16-Apr-1985 09:45:00
30-Jun-1986 24:00:00	8683 at interval beginning 21-Apr-1986 04:00:00
30-Jun-1987 24:00:00	8055 at interval beginning 8-Jan-1987 16:15:00
30-Jun-1988 24:00:00	6879 at interval beginning 3-Feb-1988 11:00:00
30-Jun-1989 24:00:00	8285 at interval beginning 28-Apr-1989 18:45:00
30-Jun-1990 24:00:00	8408 at interval beginning 6-Mar-1990 11:30:00
30-Jun-1991 24:00:00	8167 at interval beginning 23-Jan-1991 11:00:00
30-Jun-1992 24:00:00	10512 at interval beginning 6-Mar-1992 15:00:00
30-Jun-1993 24:00:00	9100 at interval beginning 27-Mar-1993 20:15:00
30-Jun-1994 24:00:00	6495 at interval beginning 11-Apr-1994 06:00:00
30-Jun-1995 24:00:00	8336 at interval beginning 9-Mar-1995 24:00:00
30-Jun-1996 24:00:00	11316 at interval beginning 6-Feb-1996 04:45:00
30-Jun-1997 24:00:00	9024 at interval beginning 20-Mar-1997 07:15:00
30-Jun-1998 24:00:00	10243 at interval beginning 28-Mar-1998 08:45:00
30-Jun-1999 24:00:00	6783 at interval beginning 5-Mar-1999 04:15:00
30-Jun-2000 24:00:00	6269 at interval beginning 28-Mar-2000 18:00:00
30-Jun-2001 24:00:00	10500 at interval beginning 1-May-2001 14:15:00
30-Jun-2002 24:00:00	7630 at interval beginning 24-Apr-2002 13:15:00
30-Jun-2003 24:00:00	5246 at interval beginning 30-Apr-2003 23:45:00
30-Jun-2004 24:00:00	10102 at interval beginning 24-Apr-2004 12:45:00

Mean annual Minimum = 8251
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1963 to 2004 site 33316 Ongarue at Taringamotu
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total

1964	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.3	0.0	0.0	0.0	0.0	4.3
1965	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1966	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1967	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1968	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0	22.3	9.2	0.0	39.4
1969	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	2.8	0.0	0.0	6.8
1970	0.0	0.0	0.0	0.0	1.4	0.0	11.0	28.0	29.8	25.0	13.6	0.0	108.8
1971	0.0	0.0	0.0	0.0	0.0	0.0	2.4	13.2	22.1	26.1	3.0	0.0	66.8
1972	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0	3.7	0.0	0.0	0.0	11.7
1973	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.1	23.5	21.5	0.0	0.0	60.1
1974	0.0	0.0	0.0	0.0	0.0	0.0	6.6	25.2	29.4	23.6	22.5	0.0	107.3
1975	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1976	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.9	25.4	5.1	0.0	0.0	34.5
1978	0.0	0.0	0.0	0.0	0.0	0.0	4.4	25.5	30.5	18.7	17.5	7.5	104.1
1979	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.9	0.0	0.0	0.0	0.0	2.9
1980	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.7	0.0	0.0	0.0	0.0	4.7
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.6	0.0	0.0	0.0	8.6
1984	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19.1	6.8	0.0	25.9
1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1987	0.0	0.0	0.0	0.0	0.0	0.0	2.5	0.0	0.0	0.0	0.0	0.0	2.5
1988	0.0	0.0	0.0	0.0	0.0	0.0	7.0	8.5	0.8	0.0	5.2	0.0	21.5
1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1991	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.0	1.8
1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1994	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.9	15.3	10.8	0.0	0.0	31.0
1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.8	15.3	5.7	0.0	0.0	34.8
2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.7	6.8	0.0	0.0	27.4
2001	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.2	8.0	0.0	0.0	14.2
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.1	26.1	26.5	16.2	0.0	87.0
2004	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max	0.0	0.0	0.0	0.0	1.4	0.0	11.0	28.0	30.5	26.5	22.5	7.5	
Mean	0.0	0.0	0.0	0.0	0.0	0.0	0.9	4.5	6.9	5.1	2.1	0.2	

6.5. Tangarakau at Tangarakau (33311), July 1962 to July 1968 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 33311 Tangarakau at Tangarakau

From 1-Jul-1962 00:00:01 to 1-Jul-1968 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	367108	96647	73137	62144	54066	47365	42332	38312	34984	32138
10	29830	27682	26147	24720	23280	21885	20585	19410	18297	17262
20	16331	15466	14656	13974	13332	12686	12096	11573	11069	10579
30	10138	9792	9458	9112	8798	8467	8179	7910	7658	7406
40	7180	6933	6704	6507	6323	6137	5950	5754	5554	5382

50	5227	5079	4933	4787	4647	4510	4379	4264	4151	4036
60	3925	3808	3697	3586	3481	3387	3303	3208	3114	3022
70	2924	2824	2736	2641	2543	2447	2370	2285	2195	2102
80	2008	1909	1821	1737	1653	1578	1512	1434	1363	1277
90	1174	1096	989	908	840	753	687	626	520	429
100	274									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 33311 Tangarakau at Tangarakau
 From 1-Jul-1962 00:00:01 to 1-Jul-1968 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	367108	94893	65818	51475	42960	36745	32354	29287	26883	25135
10	23461	21425	19656	18177	16769	15559	14416	13574	12689	11858
20	11164	10454	9905	9392	8830	8302	7887	7494	7144	6833
30	6561	6322	6102	5857	5601	5379	5194	5006	4836	4675
40	4500	4348	4210	4071	3938	3801	3667	3545	3434	3350
50	3251	3150	3057	2955	2860	2770	2683	2600	2523	2446
60	2377	2317	2252	2192	2133	2074	2014	1953	1883	1833
70	1778	1720	1664	1609	1563	1518	1472	1424	1374	1321
80	1270	1215	1166	1127	1077	1019	964	928	889	841
90	791	742	693	660	628	580	527	474	435	370
100	274									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 33311 Tangarakau at Tangarakau
 From 1-Jul-1962 00:00:00 to 30-Jun-1968 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1962	202.57	7-Oct-1962 24:00
1963	165.90	31-Dec-1963 12:00
1964	307.17	11-Mar-1964 06:00
1965	367.11	7-Nov-1965 16:00
1966	221.72	6-Dec-1966 24:00
1967	213.14	12-Aug-1967 05:22
*1968	129.79	29-Jun-1968 15:45

Average Annual Maximum 255.01 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 33311 Tangarakau at Tangarakau
 From 1-Jul-1962 00:00:00 to 30-Jun-1968 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1963 24:00:00	427 at interval beginning 6-Feb-1963 24:00:00
30-Jun-1964 24:00:00	310 at interval beginning 26-Feb-1964 12:00:00
30-Jun-1965 24:00:00	886 at interval beginning 20-Jan-1965 06:00:00
30-Jun-1966 24:00:00	605 at interval beginning 28-Mar-1966 24:00:00
30-Jun-1967 24:00:00	646 at interval beginning 20-Apr-1967 04:00:00

30-Jun-1968 24:00:00

287 at interval beginning 28-Mar-1968 09:00:00

Mean annual Minimum = 527
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1962 to 1968 site 33311 Tangarakau at Tangarakau
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
	1963	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.5	0.0	0.0	0.0	0.0	8.5
	1964	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.3	0.0	0.0	0.0	0.0	13.3
	1965	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1966	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1967	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1968	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.5	16.9	4.1	0.0	0.0	24.5
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.3	16.9	4.1	0.0	0.0	
Mean	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.2	2.8	0.7	0.0	0.0	

6.6. Whakapapa at Footbridge (33320), July 1960 to July 2000 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 33320 Whakapapa at Footbridge
From 1-Jul-1960 00:00:01 to 1-Jul-2000 00:00:01
Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	477643	61769	41146	32145	27247	23715	21276	19502	18110	17057
10	16265	15574	14977	14389	13930	13574	13215	12895	12635	12344
20	12022	11727	11483	11220	10979	10727	10529	10364	10127	9965
30	9771	9587	9399	9217	9085	8922	8718	8474	8260	7953
40	7527	6887	6250	5307	4517	4110	3945	3835	3743	3672
50	3590	3526	3474	3418	3355	3273	3211	3110	3022	2930
60	2698	2296	1974	1678	1454	1194	1088	1029	994	966
70	941	924	907	891	876	860	846	835	823	812
80	800	788	775	763	750	736	721	708	695	683
90	671	658	640	622	598	571	549	527	499	450
100	5									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 33320 Whakapapa at Footbridge
From 1-Jul-1960 00:00:01 to 1-Jul-2000 00:00:01
Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	427494	59405	35800	27450	22995	20221	18311	17025	16108	15403

10	14750	14168	13725	13355	13048	12770	12485	12163	11829	11574
20	11335	11103	10864	10658	10500	10319	10138	9987	9822	9681
30	9556	9407	9267	9156	9059	8937	8777	8628	8470	8337
40	8204	8031	7807	7547	7227	6772	6397	5816	5257	4713
50	4300	4050	3921	3838	3752	3672	3584	3504	3440	3361
60	3262	3184	3051	2916	2729	2430	2175	1994	1785	1607
70	1483	1244	1107	1019	975	953	932	913	895	877
80	861	844	828	812	796	780	763	745	727	711
90	695	680	665	645	625	594	555	523	494	467
100	5									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 33320 Whakapapa at Footbridge
 From 1-Jul-1960 00:00:00 to 30-Jun-2000 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1960	181.35	5-Sep-1960 24:00
1961	320.44	17-Apr-1961 12:00
1962	238.36	4-May-1962 12:00
1963	288.84	31-Dec-1963 12:00
1964	350.41	11-Mar-1964 06:00
1965	412.35	12-Feb-1965 16:00
1966	325.31	26-Apr-1966 18:53
1967	384.35	2-Feb-1967 17:30
1968	300.22	7-Dec-1968 03:15
1969	232.64	18-Dec-1969 18:15
1970	182.21	14-Dec-1970 19:00
1971	390.59	25-Feb-1971 10:30
1972	318.58	5-Mar-1972 06:00
1973	196.42	11-Jan-1973 15:30
1974	150.67	3-Jul-1974 04:30
1975	172.05	26-Oct-1975 09:15
1976	267.48	30-Apr-1976 10:00
1977	139.82	28-Jun-1977 15:30
1978	402.93	12-Nov-1978 18:15
1979	225.76	14-Oct-1979 14:30
1980	351.64	22-Jan-1980 20:00
1981	231.35	24-Sep-1981 21:45
1982	329.35	24-Feb-1982 21:45
1983	187.42	3-Apr-1983 10:30
1984	427.49	16-Dec-1984 18:15
1985	220.52	2-Dec-1985 09:15
1986	265.67	25-Jul-1986 22:45
1987	158.30	25-Dec-1987 21:15
1988	210.92	24-Aug-1988 08:00
1989	245.01	4-Feb-1989 12:00
1990	378.25	28-Apr-1990 09:00
1991	192.06	7-Aug-1991 03:15
1992	184.34	30-Dec-1992 03:15
1993	308.69	21-Nov-1993 12:00
1994	256.62	7-Nov-1994 10:30
1995	218.84	7-Sep-1995 00:45
1996	420.12	1-Dec-1996 06:15
1997	392.01	9-Apr-1997 02:00
1998	477.64	28-Oct-1998 14:15
1999	278.56	16-May-1999 19:20
*2000	217.06	25-Jan-2000 15:45

Average Annual Maximum 282.93 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 33320 Whakapapa at Footbridge
 From 1-Jul-1960 00:00:00 to 30-Jun-2000 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1961 24:00:00	7552 at interval beginning 9-Jan-1961 24:00:00
30-Jun-1962 24:00:00	8168 at interval beginning 29-Aug-1961 12:00:00
30-Jun-1963 24:00:00	9883 at interval beginning 14-Mar-1963 06:00:00
30-Jun-1964 24:00:00	8091 at interval beginning 21-Apr-1964 24:00:00
30-Jun-1965 24:00:00	8820 at interval beginning 4-Jul-1964 16:48:00
30-Jun-1966 24:00:00	8732 at interval beginning 1-Jun-1966 18:02:00
30-Jun-1967 24:00:00	7727 at interval beginning 17-Jun-1967 03:30:00
30-Jun-1968 24:00:00	7218 at interval beginning 7-Apr-1968 23:15:00
30-Jun-1969 24:00:00	8792 at interval beginning 13-Jun-1969 23:15:00
30-Jun-1970 24:00:00	6227 at interval beginning 4-May-1970 13:00:00
30-Jun-1971 24:00:00	7086 at interval beginning 2-May-1971 04:30:00
30-Jun-1972 24:00:00	8436 at interval beginning 25-Jul-1971 13:00:00
30-Jun-1973 24:00:00	5 at interval beginning 28-Nov-1972 15:30:00
30-Jun-1974 24:00:00	143 at interval beginning 27-Oct-1973 17:30:00
30-Jun-1975 24:00:00	374 at interval beginning 12-Dec-1974 09:00:00
30-Jun-1976 24:00:00	684 at interval beginning 12-Jul-1975 16:00:00
30-Jun-1977 24:00:00	725 at interval beginning 6-Jul-1976 03:00:00
30-Jun-1978 24:00:00	684 at interval beginning 12-Oct-1977 20:30:00
30-Jun-1979 24:00:00	538 at interval beginning 30-Dec-1978 21:30:00
30-Jun-1980 24:00:00	190 at interval beginning 25-May-1980 12:30:00
30-Jun-1981 24:00:00	103 at interval beginning 2-Jun-1981 06:30:00
30-Jun-1982 24:00:00	390 at interval beginning 9-Nov-1981 23:30:00
30-Jun-1983 24:00:00	270 at interval beginning 11-Sep-1982 19:30:00
30-Jun-1984 24:00:00	645 at interval beginning 12-Dec-1983 08:15:00
30-Jun-1985 24:00:00	144 at interval beginning 27-Sep-1984 14:00:00
30-Jun-1986 24:00:00	127 at interval beginning 19-May-1986 12:45:00
30-Jun-1987 24:00:00	28 at interval beginning 9-Sep-1986 18:00:00
30-Jun-1988 24:00:00	312 at interval beginning 23-Nov-1987 19:45:00
30-Jun-1989 24:00:00	98 at interval beginning 4-Oct-1988 15:15:00
30-Jun-1990 24:00:00	356 at interval beginning 7-Apr-1990 15:00:00
30-Jun-1991 24:00:00	456 at interval beginning 20-May-1991 12:00:00
30-Jun-1992 24:00:00	538 at interval beginning 5-Dec-1991 09:00:00
30-Jun-1993 24:00:00	612 at interval beginning 27-Aug-1992 23:45:00
30-Jun-1994 24:00:00	2828 at interval beginning 7-Sep-1993 08:15:00
30-Jun-1995 24:00:00	2807 at interval beginning 12-Jul-1994 03:45:00
30-Jun-1996 24:00:00	2852 at interval beginning 12-Sep-1995 04:45:00
30-Jun-1997 24:00:00	3309 at interval beginning 11-Aug-1996 16:45:00
30-Jun-1998 24:00:00	3262 at interval beginning 11-Nov-1997 10:10:00
30-Jun-1999 24:00:00	3200 at interval beginning 20-Sep-1998 08:40:00
30-Jun-2000 24:00:00	2903 at interval beginning 29-Oct-1999 20:25:00

Mean annual Minimum = 3133
 (For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
 Monthly totals 1960 to 2000 site 33320 Whakapapa at Footbridge
 Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total

1961	0.0	0.0	0.0	0.0	0.0	0.9	5.7	0.0	1.4	0.0	0.0	0.0	8.0
1962	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1963	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1964	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1
1965	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1966	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1967	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.4	3.4
1968	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	19.2	8.8	0.0	0.0	28.9
1969	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1970	0.0	0.0	0.0	0.0	0.0	0.0	2.5	26.7	29.0	24.4	15.7	0.0	98.3
1971	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.5	26.8	3.5	0.0	37.8
1972	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1973	0.0	0.0	0.0	0.0	2.0	16.8	0.0	15.8	24.8	8.8	18.4	NaN	86.5
1974	0.0	0.0	0.0	7.7	2.3	1.0	0.0	0.0	0.0	0.0	0.0	0.0	11.0
1975	0.0	0.0	0.0	0.0	0.0	2.6	0.0	0.0	0.0	0.0	0.0	0.0	2.6
1976	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1978	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1979	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1980	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.7	0.0	4.3	0.0	5.0
1981	2.0	4.9	1.6	0.0	0.6	0.0	0.0	0.0	0.0	0.9	0.0	1.8	11.8
1982	0.0	0.0	0.6	1.0	0.9	0.5	0.5	0.0	0.0	0.0	0.0	0.0	3.5
1983	0.3	0.1	1.3	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	1.8
1984	29.8	30.2	25.8	28.5	19.5	30.4	8.2	20.1	25.3	26.6	30.4	NaN	274.7
1985	0.2	0.0	1.0	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8
1986	0.0	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.5	1.1	6.2
1987	0.3	0.0	1.6	3.4	0.0	0.0	0.0	0.8	0.0	0.0	0.6	0.0	6.8
1988	0.5	0.0	0.0	0.8	0.6	0.8	0.0	0.0	0.0	0.0	0.0	0.0	2.7
1989	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.2
1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1991	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993	26.4	25.7	28.5	29.0	22.4	27.5	18.2	0.8	1.9	5.5	10.9	NaN	196.7
1994	24.3	26.8	8.2	0.0	0.0	7.5	4.2	0.0	0.3	3.1	7.4	12.0	93.7
1995	20.6	2.9	1.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.2	0.1	25.1
1996	0.0	0.3	9.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2	0.0	0.0	9.5
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2000	0.0	0.3	1.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.6
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max	29.8	30.2	28.5	29.0	22.4	30.4	18.2	26.7	29.0	26.8	30.4	12.0	
Mean	2.6	2.3	2.0	1.9	1.2	2.2	1.0	1.6	2.8	2.6	2.4	0.5	

6.7. Whakapapa at Footbridge (33320), July 1960 to July 1972 (pre-diversion)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 33320 Whakapapa at Footbridge

From 1-Jul-1960 00:00:01 to 1-Jul-1972 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	412345	74620	53898	43918	37955	33776	30826	28644	26783	25175
10	23775	22685	21718	20902	20139	19495	18925	18366	17843	17421
20	17075	16756	16465	16181	15914	15669	15477	15223	15000	14784
30	14560	14349	14164	13987	13859	13731	13607	13479	13342	13219
40	13092	12968	12870	12782	12691	12587	12480	12366	12264	12134

50	12016	11898	11787	11692	11596	11518	11421	11328	11234	11160
60	11077	10981	10882	10782	10698	10625	10555	10505	10456	10386
70	10298	10205	10123	10085	10013	9935	9853	9775	9695	9621
80	9547	9468	9381	9303	9229	9165	9121	9065	8999	8925
90	8839	8747	8637	8507	8376	8268	8052	7639	7261	6792
100	6202									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 33320 Whakapapa at Footbridge
 From 1-Jul-1960 00:00:01 to 1-Jul-1972 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	412345	73922	49263	38436	32598	29014	26365	24426	22934	21706
10	20593	19675	18869	18144	17534	17095	16711	16350	16019	15717
20	15469	15197	14954	14715	14455	14245	14033	13869	13722	13590
30	13448	13312	13200	13083	12959	12858	12771	12674	12564	12453
40	12335	12215	12064	11936	11813	11704	11602	11537	11441	11329
50	11223	11148	11050	10953	10856	10760	10682	10608	10542	10484
60	10426	10350	10266	10185	10127	10082	10003	9922	9843	9779
70	9708	9643	9583	9509	9432	9355	9295	9236	9182	9149
80	9103	9057	9005	8939	8857	8782	8701	8625	8526	8436
90	8361	8305	8193	8048	7828	7595	7396	7218	6991	6630
100	6332									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 33320 Whakapapa at Footbridge
 From 1-Jul-1960 00:00:00 to 30-Jun-1972 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1960	181.35	5-Sep-1960 24:00
1961	320.44	17-Apr-1961 12:00
1962	238.36	4-May-1962 12:00
1963	288.84	31-Dec-1963 12:00
1964	350.41	11-Mar-1964 06:00
1965	412.35	12-Feb-1965 16:00
1966	325.31	26-Apr-1966 18:53
1967	384.35	2-Feb-1967 17:30
1968	300.22	7-Dec-1968 03:15
1969	232.64	18-Dec-1969 18:15
1970	182.21	14-Dec-1970 19:00
1971	390.59	25-Feb-1971 10:30
*1972	318.58	5-Mar-1972 06:00

Average Annual Maximum 311.43 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 33320 Whakapapa at Footbridge
 From 1-Jul-1960 00:00:00 to 30-Jun-1972 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1961 24:00:00	7552 at interval beginning 9-Jan-1961 24:00:00
30-Jun-1962 24:00:00	8168 at interval beginning 29-Aug-1961 12:00:00
30-Jun-1963 24:00:00	9883 at interval beginning 14-Mar-1963 06:00:00
30-Jun-1964 24:00:00	8091 at interval beginning 21-Apr-1964 24:00:00
30-Jun-1965 24:00:00	8820 at interval beginning 4-Jul-1964 16:48:00
30-Jun-1966 24:00:00	8732 at interval beginning 1-Jun-1966 18:02:00
30-Jun-1967 24:00:00	7727 at interval beginning 17-Jun-1967 03:30:00
30-Jun-1968 24:00:00	7218 at interval beginning 7-Apr-1968 23:15:00
30-Jun-1969 24:00:00	8792 at interval beginning 13-Jun-1969 23:15:00
30-Jun-1970 24:00:00	6227 at interval beginning 4-May-1970 13:00:00
30-Jun-1971 24:00:00	7086 at interval beginning 2-May-1971 04:30:00
30-Jun-1972 24:00:00	8436 at interval beginning 25-Jul-1971 13:00:00

Mean annual Minimum = 8061
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1960 to 1972 site 33320 Whakapapa at Footbridge
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1961	0.0	0.0	0.0	0.0	0.0	0.0	0.9	5.7	0.0	1.4	0.0	0.0	0.0	8.0
1962	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1963	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1964	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1
1965	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1966	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1967	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.4	3.4
1968	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	19.2	8.8	0.0	0.0	28.9
1969	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1970	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	26.7	29.0	24.4	15.7	0.0	98.3
1971	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.5	26.8	3.5	0.0	37.8
1972	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	0.0	0.0	0.0	0.0	0.0	0.0	0.9	5.7	26.7	29.0	26.8	15.7	3.4	
Mean	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.7	2.3	4.8	5.0	1.6	0.3	

6.8. Whakapapa at Footbridge (33320), July 1973 to July 1983 (1972 rules)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 33320 Whakapapa at Footbridge
From 1-Jul-1973 00:00:01 to 1-Jul-1983 00:00:01
Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	402933	43428	25785	17363	13410	11282	9592	7929	5203	4322
10	3946	3749	3590	3423	3267	3206	3001	2802	2566	2400
20	2269	2087	1967	1854	1720	1611	1522	1403	1276	1194
30	1147	1113	1084	1056	1037	1020	1007	995	984	974
40	966	957	949	941	936	930	924	918	913	907

50	902	897	892	887	882	877	872	867	863	859
60	855	850	846	842	838	834	829	825	821	817
70	813	809	805	801	797	792	787	782	777	772
80	767	762	756	748	741	734	727	719	709	700
90	691	678	658	634	606	576	549	511	465	400
100	94									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 33320 Whakapapa at Footbridge
 From 1-Jul-1973 00:00:01 to 1-Jul-1983 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	402933	38806	21803	16641	14037	12459	11290	10345	9394	8593
10	7026	4923	4383	4095	3889	3782	3730	3630	3520	3436
20	3305	3260	3217	3103	2973	2847	2743	2592	2486	2385
30	2295	2173	2078	2003	1930	1833	1745	1658	1607	1555
40	1496	1423	1302	1221	1154	1120	1085	1048	1021	1006
50	992	979	970	961	952	943	938	933	928	923
60	918	913	908	903	897	891	886	880	875	869
70	863	857	851	844	838	832	827	821	816	810
80	805	799	792	784	776	768	760	748	736	725
90	711	698	684	666	648	615	569	529	491	462
100	94									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 33320 Whakapapa at Footbridge
 From 1-Jul-1973 00:00:00 to 30-Jun-1983 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1973	108.78	1-Dec-1973 05:45
1974	150.67	3-Jul-1974 04:30
1975	172.05	26-Oct-1975 09:15
1976	267.48	30-Apr-1976 10:00
1977	139.82	28-Jun-1977 15:30
1978	402.93	12-Nov-1978 18:15
1979	225.76	14-Oct-1979 14:30
1980	351.64	22-Jan-1980 20:00
1981	231.35	24-Sep-1981 21:45
1982	329.35	24-Feb-1982 21:45
*1983	187.42	3-Apr-1983 10:30

Average Annual Maximum 252.34 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 33320 Whakapapa at Footbridge
 From 1-Jul-1973 00:00:00 to 30-Jun-1983 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1974 24:00:00	143 at interval beginning 27-Oct-1973 17:30:00


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30-Jun-1975 24:00:00      374 at interval beginning 12-Dec-1974 09:00:00
30-Jun-1976 24:00:00      684 at interval beginning 12-Jul-1975 16:00:00
30-Jun-1977 24:00:00      725 at interval beginning  6-Jul-1976 03:00:00
30-Jun-1978 24:00:00      684 at interval beginning 12-Oct-1977 20:30:00
30-Jun-1979 24:00:00      538 at interval beginning 30-Dec-1978 21:30:00
30-Jun-1980 24:00:00      190 at interval beginning 25-May-1980 12:30:00
30-Jun-1981 24:00:00      103 at interval beginning  2-Jun-1981 06:30:00
30-Jun-1982 24:00:00      390 at interval beginning  9-Nov-1981 23:30:00
30-Jun-1983 24:00:00      270 at interval beginning 11-Sep-1982 19:30:00

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Mean annual Minimum = 410
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1973 to 1983 site 33320 Whakapapa at Footbridge
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1974	0.0	0.0	0.0	7.7	2.3	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.0
1975	0.0	0.0	0.0	0.0	0.0	2.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.6
1976	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1978	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1979	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1980	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.7	0.0	4.3	0.0	0.0	5.0
1981	2.0	4.9	1.6	0.0	0.6	0.0	0.0	0.0	0.0	0.9	0.0	1.8	11.8	
1982	0.0	0.0	0.6	1.0	0.9	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	3.5
1983	0.3	0.1	1.3	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	1.8
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	2.0	4.9	1.6	7.7	2.3	2.6	0.5	0.0	0.7	0.9	4.3	1.8		
Mean	0.2	0.5	0.4	0.9	0.4	0.4	0.1	0.0	0.1	0.1	0.4	0.2		

6.9. Whakapapa at Footbridge (33320), July 1984 to July 1992 (1983 rules)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 33320 Whakapapa at Footbridge
From 1-Jul-1984 00:00:01 to 1-Jul-1992 00:00:01
Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	427494	53175	31831	23715	18138	15227	13597	12224	11061	10010
10	9067	7690	6452	5673	4733	4139	3646	3204	2928	2677
20	2449	2220	2043	1864	1678	1545	1422	1276	1147	1047
30	1003	971	938	910	886	870	855	840	830	820
40	810	800	791	783	775	766	758	751	745	739
50	733	727	721	715	708	704	701	697	693	689
60	685	681	677	673	669	666	661	657	652	648
70	643	639	634	630	625	621	613	605	597	589
80	581	573	568	562	556	550	544	538	532	527
90	522	517	512	507	502	496	491	477	447	362
100	25									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 33320 Whakapapa at Footbridge
 From 1-Jul-1984 00:00:01 to 1-Jul-1992 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	427494	60894	34391	23362	18064	15747	14500	13524	12537	11692
10	10843	9990	9527	8921	8088	6935	6397	5776	5370	4782
20	4311	3950	3677	3399	3036	2832	2626	2441	2298	2133
30	2037	1912	1777	1664	1564	1478	1361	1250	1165	1064
40	997	950	916	888	865	846	837	827	818	809
50	800	791	783	774	766	758	750	742	735	730
60	724	718	713	707	702	696	691	685	679	674
70	668	663	657	652	646	641	635	630	622	614
80	606	598	590	582	574	566	558	551	543	535
90	528	520	512	504	495	487	479	471	449	386
100	25									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 33320 Whakapapa at Footbridge
 From 1-Jul-1984 00:00:00 to 30-Jun-1992 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1984	427.49	16-Dec-1984 18:15
1985	220.52	2-Dec-1985 09:15
1986	265.67	25-Jul-1986 22:45
1987	158.30	25-Dec-1987 21:15
1988	210.92	24-Aug-1988 08:00
1989	245.01	4-Feb-1989 12:00
1990	378.25	28-Apr-1990 09:00
1991	192.06	7-Aug-1991 03:15
*1992	153.41	17-Jan-1992 22:00

Average Annual Maximum 238.68 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 33320 Whakapapa at Footbridge
 From 1-Jul-1984 00:00:00 to 30-Jun-1992 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1985 24:00:00	144 at interval beginning 27-Sep-1984 14:00:00
30-Jun-1986 24:00:00	127 at interval beginning 19-May-1986 12:45:00
30-Jun-1987 24:00:00	28 at interval beginning 9-Sep-1986 18:00:00
30-Jun-1988 24:00:00	312 at interval beginning 23-Nov-1987 19:45:00
30-Jun-1989 24:00:00	98 at interval beginning 4-Oct-1988 15:15:00
30-Jun-1990 24:00:00	356 at interval beginning 7-Apr-1990 15:00:00
30-Jun-1991 24:00:00	456 at interval beginning 20-May-1991 12:00:00
30-Jun-1992 24:00:00	538 at interval beginning 5-Dec-1991 09:00:00

Mean annual Minimum = 257
 (For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
 Monthly totals 1984 to 1992 site 33320 Whakapapa at Footbridge
 Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1985	0.2	0.0	1.0	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8
1986	0.0	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.5	1.1	6.2
1987	0.3	0.0	1.6	3.4	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.6	0.0	6.8
1988	0.5	0.0	0.0	0.8	0.6	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7
1989	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.2
1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1991	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	0.5	1.6	1.6	3.4	0.6	0.8	0.0	0.8	0.0	0.0	0.0	3.5	1.1	
Mean	0.1	0.2	0.3	0.8	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.5	0.2	

6.10. Whakapapa at Footbridge (33320), July 1993 to July 2000 (Planning Tribunal 1990)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 33320 Whakapapa at Footbridge
 From 1-Jul-1993 00:00:01 to 1-Jul-2000 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	477643	66388	34917	24219	18928	15932	13570	11882	10892	10376
10	10002	9759	9567	9384	9196	9045	8876	8724	8565	8471
20	8370	8259	8148	8037	7941	7759	7607	7289	6853	6521
30	6188	5771	5460	5121	4787	4577	4381	4241	4166	4106
40	4059	4013	3966	3941	3916	3892	3868	3847	3828	3809
50	3788	3767	3746	3726	3707	3689	3674	3660	3645	3630
60	3614	3599	3583	3571	3558	3546	3534	3522	3511	3500
70	3489	3477	3466	3455	3444	3433	3422	3411	3401	3391
80	3381	3371	3359	3341	3323	3304	3285	3265	3247	3231
90	3216	3200	3156	3116	3076	3031	3001	2972	2947	2922
100	119									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 33320 Whakapapa at Footbridge
 From 1-Jul-1993 00:00:01 to 1-Jul-2000 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
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0	420122	62865	28228	19344	15420	13077	11802	11227	10750	10470
10	10289	10080	9900	9805	9682	9591	9493	9382	9276	9184
20	9089	8995	8896	8794	8737	8654	8556	8482	8438	8388
30	8322	8262	8210	8147	8077	8005	7933	7878	7781	7683
40	7573	7314	7029	6706	6526	6353	5996	5792	5597	5337
50	5165	5003	4766	4648	4485	4325	4229	4156	4081	4038
60	3990	3953	3934	3915	3895	3872	3850	3828	3807	3786
70	3760	3729	3703	3682	3660	3640	3620	3600	3581	3562
80	3544	3526	3512	3499	3485	3471	3458	3444	3431	3417
90	3403	3378	3353	3315	3273	3249	3225	3194	3159	3019
100	119									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 33320 Whakapapa at Footbridge
 From 1-Jul-1993 00:00:00 to 30-Jun-2000 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1993	308.69	21-Nov-1993 12:00
1994	256.62	7-Nov-1994 10:30
1995	218.84	7-Sep-1995 00:45
1996	420.12	1-Dec-1996 06:15
1997	392.01	9-Apr-1997 02:00
1998	477.64	28-Oct-1998 14:15
1999	278.56	16-May-1999 19:20
*2000	217.06	25-Jan-2000 15:45

Average Annual Maximum 340.63 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 33320 Whakapapa at Footbridge
 From 1-Jul-1993 00:00:00 to 30-Jun-2000 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1994 24:00:00	2828 at interval beginning 7-Sep-1993 08:15:00
30-Jun-1995 24:00:00	2807 at interval beginning 12-Jul-1994 03:45:00
30-Jun-1996 24:00:00	2852 at interval beginning 12-Sep-1995 04:45:00
30-Jun-1997 24:00:00	3309 at interval beginning 11-Aug-1996 16:45:00
30-Jun-1998 24:00:00	3262 at interval beginning 11-Nov-1997 10:10:00
30-Jun-1999 24:00:00	3200 at interval beginning 20-Sep-1998 08:40:00
30-Jun-2000 24:00:00	2903 at interval beginning 29-Oct-1999 20:25:00

Mean annual Minimum = 3023
 (For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
 Monthly totals 1993 to 2000 site 33320 Whakapapa at Footbridge
 Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total

1994	24.3	26.8	8.2	0.0	0.0	7.5	4.2	0.0	0.3	3.1	7.4	12.0	93.7
1995	20.6	2.9	1.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.2	0.1	25.1
1996	0.0	0.3	9.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2	0.0	0.0	9.5
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2000	0.0	0.3	1.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.6
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	24.3	26.8	9.0	1.3	0.0	7.5	4.2	0.1	0.3	3.1	7.4	12.0	
Mean	6.4	4.3	2.8	0.2	0.0	1.1	0.6	0.0	0.0	0.5	1.1	1.7	

6.11. Whakapapa at Footbridge (simnat) (333001), July 1960 to July 2003 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 333001 Whakapapa natural at Footbridge
From 1-Jul-1960 00:00:01 to 1-Jul-2003 00:00:01
Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	407486	73638	51753	41079	33088	29170	27056	25383	23729	22468
10	21370	20517	19794	19235	18702	18225	17836	17472	17155	16876
20	16610	16355	16119	15912	15711	15528	15351	15182	15023	14866
30	14721	14579	14454	14326	14201	14080	13959	13838	13724	13608
40	13490	13376	13266	13159	13055	12956	12864	12779	12693	12607
50	12515	12425	12334	12242	12147	12045	11952	11856	11755	11655
60	11557	11471	11371	11280	11191	11108	11015	10923	10830	10740
70	10655	10578	10505	10432	10346	10250	10160	10090	10023	9947
80	9866	9771	9677	9579	9486	9396	9303	9212	9126	9040
90	8943	8826	8678	8516	8312	8092	7801	7497	7195	6818
100	1001									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 333001 Whakapapa natural at Footbridge
From 1-Jul-1960 00:00:01 to 1-Jul-2003 00:00:01
Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	380927	69308	43695	32328	27317	24778	22783	21182	19970	19098
10	18377	17754	17242	16829	16457	16119	15822	15553	15316	15122
20	14933	14762	14590	14444	14303	14170	14038	13902	13778	13662
30	13539	13424	13320	13211	13109	13001	12898	12813	12729	12647
40	12561	12479	12390	12302	12211	12122	12018	11928	11835	11740
50	11634	11536	11449	11346	11249	11164	11080	10994	10913	10827
60	10746	10673	10603	10534	10470	10399	10314	10226	10143	10080
70	10017	9955	9891	9812	9728	9642	9564	9486	9411	9336
80	9264	9194	9126	9061	8993	8914	8828	8733	8623	8511
90	8387	8263	8133	7958	7796	7614	7416	7216	6955	6690
100	1001									

Annual maximum series and mean annual flood (MAF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 333001 Whakapapa natural at Footbridge
 From 1-Jul-1960 00:00:00 to 30-Jun-2003 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1960	159.10	6-Sep-1960 03:00
1961	253.70	17-Apr-1961 15:00
1962	202.17	4-May-1962 12:00
1963	233.55	31-Dec-1963 15:00
1964	316.57	11-Mar-1964 09:00
1965	333.05	12-Feb-1965 18:00
1966	259.24	26-Apr-1966 21:00
1967	340.87	2-Feb-1967 18:00
1968	190.25	7-Dec-1968 06:00
1969	118.24	23-Apr-1969 21:00
1970	149.58	14-Dec-1970 21:00
1971	286.76	25-Feb-1971 12:00
1972	192.08	10-Mar-1972 24:00
1973	148.06	11-Jan-1973 18:00
1974	176.37	3-Jul-1974 06:00
1975	187.49	7-Jun-1975 03:00
1976	222.66	30-Apr-1976 12:00
1977	137.74	28-Jun-1977 18:00
1978	340.62	12-Nov-1978 21:00
1979	205.38	14-Oct-1979 15:00
1980	303.27	22-Jan-1980 21:00
1981	220.88	24-Sep-1981 24:00
1982	218.54	24-Feb-1982 24:00
1983	181.26	3-Apr-1983 12:00
1984	276.40	16-Dec-1984 21:00
1985	178.54	2-Dec-1985 09:00
1986	264.24	25-Jul-1986 24:00
1987	141.27	22-Jan-1987 15:00
1988	206.68	24-Aug-1988 09:00
1989	208.79	22-Jan-1989 09:00
1990	279.36	10-Mar-1990 12:00
1991	202.48	7-Aug-1991 03:00
1992	158.39	21-Mar-1992 18:00
1993	265.13	21-Nov-1993 12:00
1994	240.22	7-Nov-1994 12:00
1995	227.86	7-Sep-1995 03:00
1996	380.93	1-Dec-1996 09:00
1997	333.72	9-Apr-1997 03:00
1998	407.49	28-Oct-1998 15:00
1999	230.59	16-May-1999 21:00
2000	274.94	2-Oct-2000 18:00
2001	258.18	25-May-2001 12:00
2002	240.17	26-Dec-2002 06:00
*2003	267.99	22-May-2003 06:00

Average Annual Maximum 237.95 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 333001 Whakapapa natural at Footbridge
 From 1-Jul-1960 00:00:00 to 30-Jun-2003 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1961 24:00:00	7552 at interval beginning 9-Jan-1961 24:00:00
30-Jun-1962 24:00:00	8160 at interval beginning 29-Aug-1961 18:00:00
30-Jun-1963 24:00:00	9883 at interval beginning 14-Mar-1963 06:00:00
30-Jun-1964 24:00:00	8082 at interval beginning 21-Apr-1964 18:00:00
30-Jun-1965 24:00:00	8821 at interval beginning 4-Jul-1964 18:00:00
30-Jun-1966 24:00:00	8731 at interval beginning 1-Jun-1966 21:00:00
30-Jun-1967 24:00:00	7718 at interval beginning 16-Jun-1967 21:00:00
30-Jun-1968 24:00:00	7218 at interval beginning 7-Apr-1968 24:00:00
30-Jun-1969 24:00:00	8791 at interval beginning 13-Jun-1969 24:00:00
30-Jun-1970 24:00:00	6227 at interval beginning 4-May-1970 12:00:00
30-Jun-1971 24:00:00	7060 at interval beginning 1-May-1971 15:00:00
30-Jun-1972 24:00:00	8437 at interval beginning 25-Jul-1971 12:00:00
30-Jun-1973 24:00:00	6447 at interval beginning 18-Apr-1973 21:00:00
30-Jun-1974 24:00:00	5957 at interval beginning 7-Apr-1974 24:00:00
30-Jun-1975 24:00:00	5879 at interval beginning 3-Feb-1975 21:00:00
30-Jun-1976 24:00:00	8916 at interval beginning 20-Apr-1976 09:00:00
30-Jun-1977 24:00:00	8797 at interval beginning 18-Mar-1977 24:00:00
30-Jun-1978 24:00:00	6676 at interval beginning 31-May-1978 21:00:00
30-Jun-1979 24:00:00	7204 at interval beginning 1-Jul-1978 12:00:00
30-Jun-1980 24:00:00	9382 at interval beginning 17-Jul-1979 24:00:00
30-Jun-1981 24:00:00	9069 at interval beginning 3-Apr-1981 24:00:00
30-Jun-1982 24:00:00	8412 at interval beginning 28-Apr-1982 21:00:00
30-Jun-1983 24:00:00	9297 at interval beginning 10-Jul-1982 03:00:00
30-Jun-1984 24:00:00	9092 at interval beginning 17-Jan-1984 06:00:00
30-Jun-1985 24:00:00	7014 at interval beginning 30-May-1985 24:00:00
30-Jun-1986 24:00:00	8713 at interval beginning 17-Oct-1985 24:00:00
30-Jun-1987 24:00:00	8869 at interval beginning 19-Mar-1987 15:00:00
30-Jun-1988 24:00:00	8491 at interval beginning 26-Apr-1988 21:00:00
30-Jun-1989 24:00:00	9068 at interval beginning 14-May-1989 15:00:00
30-Jun-1990 24:00:00	8292 at interval beginning 8-Mar-1990 09:00:00
30-Jun-1991 24:00:00	7684 at interval beginning 16-May-1991 06:00:00
30-Jun-1992 24:00:00	8373 at interval beginning 16-Jul-1991 09:00:00
30-Jun-1993 24:00:00	8029 at interval beginning 26-Apr-1993 09:00:00
30-Jun-1994 24:00:00	7558 at interval beginning 11-Apr-1994 06:00:00
30-Jun-1995 24:00:00	12048 at interval beginning 8-Feb-1995 24:00:00
30-Jun-1996 24:00:00	11108 at interval beginning 13-Mar-1996 21:00:00
30-Jun-1997 24:00:00	8118 at interval beginning 4-Mar-1997 03:00:00
30-Jun-1998 24:00:00	8802 at interval beginning 28-Mar-1998 09:00:00
30-Jun-1999 24:00:00	7546 at interval beginning 5-Mar-1999 03:00:00
30-Jun-2000 24:00:00	7387 at interval beginning 17-Apr-2000 12:00:00
30-Jun-2001 24:00:00	8465 at interval beginning 26-Mar-2001 12:00:00
30-Jun-2002 24:00:00	8535 at interval beginning 20-Apr-2002 12:00:00
30-Jun-2003 24:00:00	6700 at interval beginning 19-Apr-2003 24:00:00

Mean annual Minimum = 8200
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1960 to 2003 site 333001 Whakapapa at Footbridge (simnat)
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1961	0.0	0.0	0.0	0.0	0.0	0.0	0.9	5.5	0.0	1.4	0.0	0.0	0.0	7.8
1962	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1963	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

1964	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	
1965	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1966	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1967	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.5	3.5	
1968	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	19.1	8.5	0.0	28.5	
1969	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1970	0.0	0.0	0.0	0.0	0.0	0.0	2.3	26.8	28.6	24.4	15.9	0.0	97.9	
1971	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.4	26.8	3.5	0.0	37.6	
1972	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1973	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	28.0	29.1	24.6	3.6	NaN	87.0
1974	0.0	0.0	0.0	0.0	0.0	0.0	0.8	27.6	30.4	26.1	24.0	1.1	110.0	
1975	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.5	
1976	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1978	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.0	28.9	26.0	26.3	24.4	115.5
1979	3.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.9
1980	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NaN	0.0
1985	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.4	25.8	30.3	12.8	84.1	
1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1987	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1988	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.0	1.3
1991	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.0	0.0	12.0
1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	1.1	2.4	0.9	NaN	4.6
1994	0.0	0.0	0.0	0.0	0.0	0.0	3.3	17.6	21.9	11.0	0.0	0.0	0.0	53.8
1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.5	25.3	3.6	0.0	0.0	36.4
1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0	23.9	26.5	8.0	0.0	0.0	0.0	58.4
2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.1	30.8	25.4	7.8	0.0	0.0	68.0
2001	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.0	3.6	0.0	0.0	0.0	10.6
2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.6	0.0	0.0	9.6
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.0	30.3	28.0	17.0	0.0	0.0	87.3
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max	3.9	0.0	0.0	0.0	0.0	0.9	5.5	28.0	30.8	28.0	30.3	24.4		
Mean	0.1	0.0	0.0	0.0	0.0	0.0	0.3	3.7	7.1	5.9	3.3	1.0		

6.12. Whakapapa at Footbridge (simnat) (333001), July 1960 to July 1972 (pre-diversion)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 333001 Whakapapa natural at Footbridge

From 1-Jul-1960 00:00:01 to 1-Jul-1972 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	340867	73913	53917	43805	38169	33960	30947	28753	26908	25263
10	23890	22816	21806	20933	20202	19534	18966	18377	17887	17468
20	17110	16800	16500	16204	15941	15697	15489	15249	15013	14808
30	14588	14369	14181	14006	13868	13747	13618	13486	13353	13231

40	13099	12981	12882	12799	12705	12594	12490	12373	12271	12144
50	12022	11910	11799	11698	11600	11529	11427	11334	11241	11165
60	11078	10984	10887	10783	10700	10626	10556	10510	10460	10390
70	10298	10207	10125	10082	10019	9939	9854	9777	9701	9624
80	9549	9469	9385	9306	9231	9170	9128	9065	8998	8927
90	8839	8750	8637	8510	8376	8271	8059	7643	7267	6805
100	6208									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 333001 Whakapapa natural at Footbridge
 From 1-Jul-1960 00:00:01 to 1-Jul-1972 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	340867	73816	49671	38506	32607	29064	26626	24544	22980	21814
10	20670	19727	18908	18182	17593	17129	16733	16376	16041	15734
20	15478	15196	14936	14718	14475	14250	14026	13867	13716	13583
30	13439	13318	13204	13082	12966	12867	12779	12676	12566	12459
40	12337	12224	12068	11937	11811	11703	11597	11525	11440	11324
50	11224	11151	11044	10947	10852	10753	10671	10598	10544	10491
60	10429	10355	10267	10192	10122	10079	10005	9924	9848	9781
70	9714	9648	9581	9515	9436	9361	9298	9240	9184	9148
80	9104	9057	9006	8937	8857	8781	8704	8621	8530	8440
90	8358	8288	8192	8059	7825	7592	7400	7220	6989	6627
100	6332									

Annual maximum series and mean annual flood (MAF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 333001 Whakapapa natural at Footbridge
 From 1-Jul-1960 00:00:00 to 30-Jun-1972 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1960	159.10	6-Sep-1960 03:00
1961	253.70	17-Apr-1961 15:00
1962	202.17	4-May-1962 12:00
1963	233.55	31-Dec-1963 15:00
1964	316.57	11-Mar-1964 09:00
1965	333.05	12-Feb-1965 18:00
1966	259.24	26-Apr-1966 21:00
1967	340.87	2-Feb-1967 18:00
1968	190.25	7-Dec-1968 06:00
1969	118.24	23-Apr-1969 21:00
1970	149.58	14-Dec-1970 21:00
1971	286.76	25-Feb-1971 12:00
*1972	192.08	10-Mar-1972 24:00

Average Annual Maximum 244.00 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 333001 Whakapapa natural at Footbridge
 From 1-Jul-1960 00:00:00 to 30-Jun-1972 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1961 24:00:00	7552 at interval beginning 9-Jan-1961 24:00:00
30-Jun-1962 24:00:00	8160 at interval beginning 29-Aug-1961 18:00:00
30-Jun-1963 24:00:00	9883 at interval beginning 14-Mar-1963 06:00:00
30-Jun-1964 24:00:00	8082 at interval beginning 21-Apr-1964 18:00:00
30-Jun-1965 24:00:00	8821 at interval beginning 4-Jul-1964 18:00:00
30-Jun-1966 24:00:00	8731 at interval beginning 1-Jun-1966 21:00:00
30-Jun-1967 24:00:00	7718 at interval beginning 16-Jun-1967 21:00:00
30-Jun-1968 24:00:00	7218 at interval beginning 7-Apr-1968 24:00:00
30-Jun-1969 24:00:00	8791 at interval beginning 13-Jun-1969 24:00:00
30-Jun-1970 24:00:00	6227 at interval beginning 4-May-1970 12:00:00
30-Jun-1971 24:00:00	7060 at interval beginning 1-May-1971 15:00:00
30-Jun-1972 24:00:00	8437 at interval beginning 25-Jul-1971 12:00:00

Mean annual Minimum = 8057
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1960 to 1972 site 333001 Whakapapa at Footbridge (simnat)
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1961	0.0	0.0	0.0	0.0	0.0	0.0	0.9	5.5	0.0	1.4	0.0	0.0	0.0	7.8
1962	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1963	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1964	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1
1965	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1966	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1967	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.5	3.5
1968	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	19.1	8.5	0.0	0.0	28.5
1969	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1970	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3	26.8	28.6	24.4	15.9	0.0	97.9
1971	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.4	26.8	3.5	0.0	37.6
1972	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	0.0	0.0	0.0	0.0	0.0	0.0	0.9	5.5	26.8	28.6	26.8	15.9	3.5	
Mean	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.6	2.3	4.7	5.0	1.6	0.3	

6.13. Whakapapa at Footbridge (simnat) (333001), July 1973 to July 1983 (1972 rules)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 333001 Whakapapa natural at Footbridge
From 1-Jul-1973 00:00:01 to 1-Jul-1983 00:00:01
Flow l/s

0	1	2	3	4	5	6	7	8	9
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0	340615	66110	45729	32385	27736	25414	23410	21927	20584	19566
10	18801	18184	17738	17353	17015	16748	16492	16248	16060	15876
20	15720	15571	15427	15301	15187	15081	14967	14855	14753	14652
30	14560	14483	14395	14313	14238	14150	14070	13993	13902	13815
40	13730	13646	13551	13463	13374	13279	13189	13105	13014	12913
50	12836	12764	12695	12622	12538	12461	12391	12316	12236	12162
60	12069	11985	11902	11822	11715	11615	11524	11437	11336	11233
70	11129	11025	10925	10822	10708	10602	10489	10387	10285	10166
80	10083	10020	9949	9865	9695	9536	9417	9292	9180	9060
90	8960	8824	8589	8267	7855	7373	7080	6911	6786	6581
100	1001									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 333001 Whakapapa natural at Footbridge
 From 1-Jul-1973 00:00:01 to 1-Jul-1983 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	340615	54787	33701	26353	23683	20723	18983	17800	17105	16587
10	16209	15887	15610	15397	15240	15114	14967	14821	14691	14580
20	14480	14368	14289	14200	14100	14005	13896	13807	13719	13634
30	13539	13439	13350	13255	13164	13079	12961	12867	12791	12724
40	12658	12571	12493	12417	12349	12262	12186	12117	12015	11936
50	11858	11776	11681	11586	11497	11407	11302	11205	11118	11035
60	10954	10870	10777	10691	10617	10538	10461	10389	10318	10235
70	10147	10088	10049	10006	9954	9904	9819	9678	9562	9474
80	9394	9303	9234	9171	9101	9044	8988	8929	8842	8650
90	8454	8188	7894	7645	7276	7052	6959	6848	6634	6186
100	1001									

Annual maximum series and mean annual flood (MAF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 333001 Whakapapa natural at Footbridge
 From 1-Jul-1973 00:00:00 to 30-Jun-1983 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1973	111.82	16-Sep-1973 21:00
1974	176.37	3-Jul-1974 06:00
1975	187.49	7-Jun-1975 03:00
1976	222.66	30-Apr-1976 12:00
1977	137.74	28-Jun-1977 18:00
1978	340.62	12-Nov-1978 21:00
1979	205.38	14-Oct-1979 15:00
1980	303.27	22-Jan-1980 21:00
1981	220.88	24-Sep-1981 24:00
1982	218.54	24-Feb-1982 24:00
*1983	181.26	3-Apr-1983 12:00

Average Annual Maximum 223.66 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 333001 Whakapapa natural at Footbridge
 From 1-Jul-1973 00:00:00 to 30-Jun-1983 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1974 24:00:00	5957 at interval beginning 7-Apr-1974 24:00:00
30-Jun-1975 24:00:00	5879 at interval beginning 3-Feb-1975 21:00:00
30-Jun-1976 24:00:00	8916 at interval beginning 20-Apr-1976 09:00:00
30-Jun-1977 24:00:00	8797 at interval beginning 18-Mar-1977 24:00:00
30-Jun-1978 24:00:00	6676 at interval beginning 31-May-1978 21:00:00
30-Jun-1979 24:00:00	7204 at interval beginning 1-Jul-1978 12:00:00
30-Jun-1980 24:00:00	9382 at interval beginning 17-Jul-1979 24:00:00
30-Jun-1981 24:00:00	9069 at interval beginning 3-Apr-1981 24:00:00
30-Jun-1982 24:00:00	8412 at interval beginning 28-Apr-1982 21:00:00
30-Jun-1983 24:00:00	9297 at interval beginning 10-Jul-1982 03:00:00

Mean annual Minimum = 7959
 (For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
 Monthly totals 1973 to 1983 site 333001 Whakapapa at Footbridge (simnat)
 Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1974	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	27.6	30.4	26.1	24.0	1.1	110.0
1975	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.5
1976	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1978	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.0	28.9	26.0	26.3	24.4	115.5
1979	3.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.9
1980	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	3.9	0.0	0.0	0.0	0.0	0.0	0.0	0.8	27.6	30.4	26.1	26.3	24.4	
Mean	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.1	3.8	5.9	5.2	5.0	2.6	

6.14. Whakapapa at Footbridge (simnat) (333001), July 1984 to July 1992 (1983 rules)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 333001 Whakapapa natural at Footbridge
 From 1-Jul-1984 00:00:01 to 1-Jul-1992 00:00:01
 Flow l/s

0	1	2	3	4	5	6	7	8	9
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0	279361	74710	50634	39791	30310	28310	26320	24484	22899	21621
10	20662	19955	19378	18815	18285	17843	17361	17044	16727	16426
20	16125	15855	15597	15366	15146	14941	14755	14575	14437	14305
30	14184	14076	13954	13828	13712	13600	13487	13391	13289	13192
40	13107	13021	12943	12867	12790	12713	12633	12558	12480	12396
50	12318	12235	12161	12084	12005	11932	11850	11769	11695	11605
60	11518	11427	11340	11253	11172	11103	11026	10952	10878	10809
70	10749	10685	10631	10584	10535	10473	10413	10333	10253	10186
80	10130	10069	10001	9924	9841	9763	9677	9594	9517	9438
90	9361	9274	9192	9065	8879	8765	8521	8008	7632	7408
100	7009									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 333001 Whakapapa natural at Footbridge
 From 1-Jul-1984 00:00:01 to 1-Jul-1992 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	279361	80685	50475	36567	28511	25840	23286	21253	20009	19148
10	18434	17762	17110	16623	16056	15579	15218	14934	14710	14518
20	14364	14241	14122	14003	13868	13737	13625	13513	13419	13336
30	13237	13146	13060	12982	12879	12802	12729	12661	12594	12531
40	12467	12390	12318	12244	12179	12107	12043	11977	11912	11844
50	11789	11732	11659	11579	11506	11429	11359	11285	11221	11159
60	11099	11043	10983	10919	10866	10816	10769	10724	10675	10623
70	10583	10541	10487	10422	10337	10240	10161	10079	10000	9935
80	9867	9800	9738	9670	9609	9560	9506	9456	9402	9337
90	9261	9192	9095	8974	8848	8770	8595	8352	7835	7490
100	7327									

Annual maximum series and mean annual flood (MAF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 333001 Whakapapa natural at Footbridge
 From 1-Jul-1984 00:00:00 to 30-Jun-1992 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1984	276.40	16-Dec-1984 21:00
1985	178.54	2-Dec-1985 09:00
1986	264.24	25-Jul-1986 24:00
1987	141.27	22-Jan-1987 15:00
1988	206.68	24-Aug-1988 09:00
1989	208.79	22-Jan-1989 09:00
1990	279.36	10-Mar-1990 12:00
1991	202.48	7-Aug-1991 03:00
*1992	158.39	21-Mar-1992 18:00

Average Annual Maximum 211.62 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 333001 Whakapapa natural at Footbridge
 From 1-Jul-1984 00:00:00 to 30-Jun-1992 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1985 24:00:00	7014 at interval beginning 30-May-1985 24:00:00
30-Jun-1986 24:00:00	8713 at interval beginning 17-Oct-1985 24:00:00
30-Jun-1987 24:00:00	8869 at interval beginning 19-Mar-1987 15:00:00
30-Jun-1988 24:00:00	8491 at interval beginning 26-Apr-1988 21:00:00
30-Jun-1989 24:00:00	9068 at interval beginning 14-May-1989 15:00:00
30-Jun-1990 24:00:00	8292 at interval beginning 8-Mar-1990 09:00:00
30-Jun-1991 24:00:00	7684 at interval beginning 16-May-1991 06:00:00
30-Jun-1992 24:00:00	8373 at interval beginning 16-Jul-1991 09:00:00

Mean annual Minimum = 8313
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1984 to 1992 site 333001 Whakapapa at Footbridge (simnat)
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
	1985	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.4	25.8	30.3	12.8	84.1
	1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1987	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1988	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.0	1.3
	1991	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.0	0.0	12.0
	1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.4	25.8	30.3	12.8	
Mean		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1	3.2	5.3	1.6	

6.15. Whakapapa at Footbridge (simnat) (333001), July 1993 to July 2003 (Planning Tribunal 1990)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 333001 Whakapapa natural at Footbridge
From 1-Jul-1993 00:00:01 to 1-Jul-2003 00:00:01
Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	407486	85539	55238	43347	32013	28231	26887	25426	23724	22442
10	21454	20744	20068	19576	19180	18792	18430	18136	17849	17585
20	17350	17118	16910	16693	16499	16308	16112	15962	15800	15653
30	15506	15355	15214	15071	14942	14810	14687	14574	14458	14336
40	14209	14075	13922	13784	13635	13487	13357	13237	13120	13005
50	12902	12791	12688	12574	12473	12380	12279	12176	12075	11955
60	11854	11730	11609	11508	11392	11301	11199	11101	10990	10887

70	10773	10668	10562	10455	10362	10259	10160	10060	9964	9877
80	9787	9698	9585	9487	9388	9277	9156	9072	8987	8869
90	8756	8636	8518	8338	8187	8061	7894	7772	7602	7375
100	6684									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 333001 Whakapapa natural at Footbridge
 From 1-Jul-1993 00:00:01 to 1-Jul-2003 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	380927	78322	45370	29979	26206	23970	22337	21179	20107	19390
10	18805	18322	17911	17532	17238	16959	16684	16447	16217	16014
20	15826	15648	15459	15290	15135	15009	14867	14742	14604	14479
30	14348	14224	14093	13941	13796	13656	13518	13398	13285	13185
40	13080	12972	12889	12788	12692	12598	12501	12425	12336	12245
50	12155	12061	11953	11855	11714	11568	11443	11326	11225	11119
60	11018	10914	10811	10712	10618	10515	10422	10324	10207	10088
70	9981	9887	9797	9668	9525	9370	9240	9117	9019	8930
80	8852	8785	8716	8657	8592	8527	8457	8358	8272	8198
90	8141	8076	7972	7897	7831	7742	7642	7529	7401	6995
100	6684									

Annual maximum series and mean annual flood (MAF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 333001 Whakapapa natural at Footbridge
 From 1-Jul-1993 00:00:00 to 30-Jun-2003 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1993	265.13	21-Nov-1993 12:00
1994	240.22	7-Nov-1994 12:00
1995	227.86	7-Sep-1995 03:00
1996	380.93	1-Dec-1996 09:00
1997	333.72	9-Apr-1997 03:00
1998	407.49	28-Oct-1998 15:00
1999	230.59	16-May-1999 21:00
2000	274.94	2-Oct-2000 18:00
2001	258.18	25-May-2001 12:00
2002	240.17	26-Dec-2002 06:00
*2003	267.99	22-May-2003 06:00

Average Annual Maximum 288.23 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 333001 Whakapapa natural at Footbridge
 From 1-Jul-1993 00:00:00 to 30-Jun-2003 24:00:00

Minimum moving averages over 1.000day interval

Year Ending Minimum Value (Flow l/s)

30-Jun-1994 24:00:00	7558 at interval beginning	11-Apr-1994 06:00:00
30-Jun-1995 24:00:00	12048 at interval beginning	8-Feb-1995 24:00:00
30-Jun-1996 24:00:00	11108 at interval beginning	13-Mar-1996 21:00:00
30-Jun-1997 24:00:00	8118 at interval beginning	4-Mar-1997 03:00:00
30-Jun-1998 24:00:00	8802 at interval beginning	28-Mar-1998 09:00:00
30-Jun-1999 24:00:00	7546 at interval beginning	5-Mar-1999 03:00:00
30-Jun-2000 24:00:00	7387 at interval beginning	17-Apr-2000 12:00:00
30-Jun-2001 24:00:00	8465 at interval beginning	26-Mar-2001 12:00:00
30-Jun-2002 24:00:00	8535 at interval beginning	20-Apr-2002 12:00:00
30-Jun-2003 24:00:00	6700 at interval beginning	19-Apr-2003 24:00:00

Mean annual Minimum = 8627
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1993 to 2003 site 333001 Whakapapa at Footbridge (simnat)
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1994	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3	17.6	21.9	11.0	0.0	0.0	53.8
1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.5	25.3	3.6	0.0	0.0	36.4
1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	23.9	26.5	8.0	0.0	0.0	58.4
2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.1	30.8	25.4	7.8	0.0	68.0
2001	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.0	3.6	0.0	0.0	10.6
2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.6	0.0	0.0	9.6
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.0	30.3	28.0	17.0	0.0	87.3
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3	23.9	30.8	28.0	17.0	0.0	0.0
Mean	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	6.5	14.2	8.9	2.5	0.0	0.0

6.16. Whakapapa at Footbridge (sim consent) (8005), July 1962 to July 2003 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
From 1-Jul-1962 00:00:01 to 1-Jul-2003 00:00:01
Whakapapa l/s

	0	1	2	3	4	5	6	7	8	9
0	377486	42995	21347	12107	9777	9186	8824	8515	8212	7991
10	7817	7656	7511	7368	7207	7028	6868	6717	6496	6226
20	5830	5315	4655	3918	3212	3035	3034	3034	3033	3033
30	3032	3032	3031	3031	3030	3030	3030	3029	3029	3028
40	3028	3027	3027	3026	3026	3025	3025	3024	3024	3024
50	3023	3023	3022	3022	3021	3021	3020	3020	3019	3019
60	3018	3018	3018	3017	3017	3016	3016	3015	3015	3014
70	3014	3013	3013	3012	3012	3012	3011	3011	3010	3010
80	3009	3009	3008	3008	3007	3007	3006	3006	3006	3005
90	3005	3004	3004	3003	3003	3002	3002	3001	3001	3000

100 3000

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
 From 1-Jul-1962 00:00:01 to 1-Jul-2003 00:00:01
 Whakapapa l/s

	0	1	2	3	4	5	6	7	8	9
0	350927	39079	14802	10537	9794	9400	9169	8966	8797	8626
10	8452	8297	8166	8053	7945	7854	7769	7676	7597	7517
20	7433	7346	7253	7165	7063	6970	6876	6786	6678	6534
30	6402	6224	6026	5761	5462	5098	4687	4247	3809	3380
40	3041	3040	3039	3039	3038	3037	3037	3036	3035	3035
50	3034	3033	3033	3032	3031	3031	3030	3029	3029	3028
60	3027	3027	3026	3025	3025	3024	3023	3022	3022	3021
70	3020	3020	3019	3018	3018	3017	3016	3016	3015	3014
80	3014	3013	3012	3012	3011	3010	3010	3009	3008	3007
90	3007	3006	3005	3005	3004	3003	3003	3002	3001	3001
100	3000									

Annual maximum series and mean annual flood (MAF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
 From 1-Jul-1962 00:00:00 to 30-Jun-2003 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1962	129.48	8-Oct-1962 03:00
1963	233.55	31-Dec-1963 15:00
1964	286.57	11-Mar-1964 09:00
1965	303.05	12-Feb-1965 18:00
1966	229.24	26-Apr-1966 21:00
1967	310.87	2-Feb-1967 18:00
1968	160.25	7-Dec-1968 06:00
1969	88.237	23-Apr-1969 21:00
1970	119.58	14-Dec-1970 21:00
1971	256.76	25-Feb-1971 12:00
1972	162.08	10-Mar-1972 24:00
1973	118.06	11-Jan-1973 18:00
1974	146.37	3-Jul-1974 06:00
1975	157.49	7-Jun-1975 03:00
1976	192.66	30-Apr-1976 12:00
1977	107.74	28-Jun-1977 18:00
1978	310.62	12-Nov-1978 21:00
1979	175.38	14-Oct-1979 15:00
1980	273.27	22-Jan-1980 21:00
1981	190.88	24-Sep-1981 24:00
1982	188.54	24-Feb-1982 24:00
1983	151.26	3-Apr-1983 12:00
1984	246.40	16-Dec-1984 21:00
1985	148.54	2-Dec-1985 09:00
1986	234.24	25-Jul-1986 24:00
1987	111.27	22-Jan-1987 15:00
1988	176.68	24-Aug-1988 09:00
1989	178.79	22-Jan-1989 09:00
1990	249.36	10-Mar-1990 12:00
1991	172.48	7-Aug-1991 03:00
1992	128.39	21-Mar-1992 18:00
1993	235.13	21-Nov-1993 12:00

1994	210.22	7-Nov-1994	12:00
1995	197.86	7-Sep-1995	03:00
1996	350.93	1-Dec-1996	09:00
1997	303.72	9-Apr-1997	03:00
1998	377.49	28-Oct-1998	15:00
1999	200.59	16-May-1999	21:00
2000	244.94	2-Oct-2000	18:00
2001	228.18	25-May-2001	12:00
2002	210.17	26-Dec-2002	06:00
*2003	237.99	22-May-2003	06:00

Average Annual Maximum 209.20 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
From 1-Jul-1962 00:00:00 to 30-Jun-2003 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Whakapapa l/s)
30-Jun-1963 24:00:00	3000 at interval beginning 30-Jun-1962 24:00:00
30-Jun-1964 24:00:00	3000 at interval beginning 1-Jul-1963 03:00:00
30-Jun-1965 24:00:00	3000 at interval beginning 1-Jul-1964 03:00:00
30-Jun-1966 24:00:00	3000 at interval beginning 1-Jul-1965 03:00:00
30-Jun-1967 24:00:00	3000 at interval beginning 1-Jul-1966 03:00:00
30-Jun-1968 24:00:00	3000 at interval beginning 1-Jul-1967 03:00:00
30-Jun-1969 24:00:00	3000 at interval beginning 1-Jul-1968 18:00:00
30-Jun-1970 24:00:00	3000 at interval beginning 1-Jul-1969 15:00:00
30-Jun-1971 24:00:00	3000 at interval beginning 1-Jul-1970 03:00:00
30-Jun-1972 24:00:00	3000 at interval beginning 1-Jul-1971 03:00:00
30-Jun-1973 24:00:00	3000 at interval beginning 1-Jul-1972 21:00:00
30-Jun-1974 24:00:00	3000 at interval beginning 1-Jul-1973 03:00:00
30-Jun-1975 24:00:00	3000 at interval beginning 1-Jul-1974 03:00:00
30-Jun-1976 24:00:00	3000 at interval beginning 1-Jul-1975 03:00:00
30-Jun-1977 24:00:00	3000 at interval beginning 1-Jul-1976 03:00:00
30-Jun-1978 24:00:00	3000 at interval beginning 1-Jul-1977 03:00:00
30-Jun-1979 24:00:00	3000 at interval beginning 1-Jul-1978 03:00:00
30-Jun-1980 24:00:00	3000 at interval beginning 1-Jul-1979 03:00:00
30-Jun-1981 24:00:00	3000 at interval beginning 1-Jul-1980 03:00:00
30-Jun-1982 24:00:00	3000 at interval beginning 1-Jul-1981 03:00:00
30-Jun-1983 24:00:00	3000 at interval beginning 1-Jul-1982 03:00:00
30-Jun-1984 24:00:00	3000 at interval beginning 1-Jul-1983 03:00:00
30-Jun-1985 24:00:00	3000 at interval beginning 1-Jul-1984 15:00:00
30-Jun-1986 24:00:00	3000 at interval beginning 1-Jul-1985 03:00:00
30-Jun-1987 24:00:00	3000 at interval beginning 1-Jul-1986 03:00:00
30-Jun-1988 24:00:00	3000 at interval beginning 1-Jul-1987 03:00:00
30-Jun-1989 24:00:00	3000 at interval beginning 1-Jul-1988 03:00:00
30-Jun-1990 24:00:00	3000 at interval beginning 1-Jul-1989 03:00:00
30-Jun-1991 24:00:00	3000 at interval beginning 1-Jul-1990 03:00:00
30-Jun-1992 24:00:00	3000 at interval beginning 1-Jul-1991 03:00:00
30-Jun-1993 24:00:00	3000 at interval beginning 1-Jul-1992 03:00:00
30-Jun-1994 24:00:00	3000 at interval beginning 1-Jul-1993 03:00:00
30-Jun-1995 24:00:00	3000 at interval beginning 1-Jul-1994 03:00:00
30-Jun-1996 24:00:00	3000 at interval beginning 1-Jul-1995 03:00:00
30-Jun-1997 24:00:00	3000 at interval beginning 1-Jul-1996 06:00:00
30-Jun-1998 24:00:00	3000 at interval beginning 1-Jul-1997 24:00:00
30-Jun-1999 24:00:00	3000 at interval beginning 3-Jul-1998 09:00:00
30-Jun-2000 24:00:00	3000 at interval beginning 1-Jul-1999 03:00:00
30-Jun-2001 24:00:00	3000 at interval beginning 1-Jul-2000 03:00:00
30-Jun-2002 24:00:00	3000 at interval beginning 1-Jul-2001 03:00:00
30-Jun-2003 24:00:00	3000 at interval beginning 1-Jul-2002 03:00:00

Mean annual Minimum = 3000
 (For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
 Monthly totals 1962 to 2003 site 80051 Whakapapa at Footbridge (sim consent)
 Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1963	28.9	27.8	27.3	25.0	23.9	26.3	14.3	5.5	0.0	5.1	17.3	26.4	227.5	
1964	29.8	29.1	28.4	31.0	27.9	8.0	28.0	1.4	24.9	4.5	24.0	28.9	265.8	
1965	22.8	26.0	23.3	28.4	29.4	28.6	30.1	25.3	30.9	24.9	31.0	28.1	328.6	
1966	30.0	28.4	29.9	30.6	26.0	28.4	29.8	26.6	30.3	27.4	29.9	27.6	344.8	
1967	28.5	31.0	29.5	31.0	28.5	28.5	30.8	26.8	16.0	7.3	19.9	29.3	306.9	
1968	29.9	25.9	29.3	29.9	27.0	29.6	27.9	9.6	3.4	17.6	27.4	26.8	284.1	
1969	29.1	29.9	29.6	28.8	29.0	29.4	13.8	21.8	7.3	12.3	29.9	28.8	289.4	
1970	30.6	30.3	29.1	30.6	30.0	21.0	5.4	0.0	0.0	2.3	13.8	27.6	220.6	
1971	30.3	29.6	24.1	28.1	29.6	11.4	13.8	7.4	0.0	0.3	16.6	28.5	219.6	
1972	30.4	28.8	27.0	26.0	28.6	29.9	15.9	1.0	21.0	7.6	23.5	28.9	268.5	
1973	26.8	29.1	28.3	29.5	29.9	18.3	16.8	0.0	1.6	1.4	23.1	NaN	204.6	
1974	31.0	30.6	25.6	30.8	27.5	25.1	9.0	0.0	0.0	3.1	6.3	30.0	219.0	
1975	25.9	31.0	30.0	29.8	30.0	28.6	30.9	9.9	4.6	9.8	27.8	27.6	285.8	
1976	30.0	27.6	28.4	27.8	29.9	18.6	24.9	26.6	2.6	1.8	29.8	28.1	276.0	
1977	24.5	29.9	28.9	31.0	29.9	28.5	23.8	2.9	3.0	6.1	23.6	25.9	257.9	
1978	30.3	31.0	29.1	31.0	28.8	24.8	1.3	0.0	0.0	3.0	3.3	30.0	212.4	
1979	28.0	31.0	29.3	29.4	27.8	31.0	6.8	14.8	26.0	28.3	28.9	30.0	311.0	
1980	30.6	30.3	30.0	29.1	29.6	29.5	27.1	26.9	30.4	28.9	30.6	29.6	352.6	
1981	30.4	29.5	29.0	30.9	29.0	30.3	30.6	15.9	7.6	22.3	29.8	28.0	313.1	
1982	29.8	31.0	28.3	30.8	30.0	29.5	20.3	5.5	15.5	10.0	23.6	29.9	284.0	
1983	30.3	30.9	29.6	31.0	29.9	28.5	29.6	9.0	1.1	18.8	28.9	29.6	297.1	
1984	30.4	30.5	27.8	30.1	27.8	19.6	7.1	16.3	24.4	17.0	30.5	NaN	261.4	
1985	30.5	30.6	29.5	30.5	29.8	26.3	24.8	8.9	4.8	5.0	2.4	29.1	252.0	
1986	30.5	30.4	29.1	30.8	30.0	29.5	26.0	17.5	8.5	2.9	19.9	29.4	284.4	
1987	29.3	31.0	29.0	29.9	30.0	12.9	14.3	9.6	18.6	28.3	30.8	29.3	292.8	
1988	31.0	30.6	29.8	29.1	29.4	29.3	8.1	10.8	14.1	6.1	21.5	28.1	267.9	
1989	28.4	28.3	28.3	26.3	27.8	25.9	28.0	16.4	10.6	0.8	20.5	27.0	268.0	
1990	30.6	31.0	30.0	27.9	29.8	15.5	25.3	7.1	17.5	23.0	29.0	30.0	296.6	
1991	31.0	26.9	29.9	30.8	29.9	14.4	7.3	26.0	17.3	10.0	24.6	30.0	277.9	
1992	27.0	22.9	29.1	30.4	29.8	14.0	27.0	21.0	17.8	18.9	27.5	29.6	294.9	
1993	27.6	26.6	29.6	31.0	30.0	29.9	24.5	3.6	5.0	17.5	17.6	NaN	243.0	
1994	31.0	31.0	29.6	30.5	28.5	30.6	19.4	1.6	2.0	13.6	20.6	27.1	265.6	
1995	30.0	29.0	27.1	31.0	23.6	28.1	9.4	12.3	21.1	29.4	26.3	28.8	296.0	
1996	29.0	29.9	27.8	30.0	29.3	29.3	27.8	23.1	24.8	28.5	30.4	29.4	339.0	
1997	29.6	29.9	27.9	29.6	28.6	27.8	22.1	4.1	5.6	21.5	14.0	30.0	270.8	
1998	30.1	30.4	29.4	30.6	28.5	29.1	16.0	18.5	14.1	22.1	30.4	29.0	308.3	
1999	25.9	30.4	27.5	20.0	30.0	21.1	6.8	0.9	4.0	9.0	12.8	28.4	216.6	
2000	30.0	29.9	29.8	31.0	27.5	30.3	16.4	11.8	0.0	10.5	19.3	28.9	265.1	
2001	29.3	31.0	28.9	21.0	29.9	25.3	26.3	17.3	16.9	8.6	25.5	29.1	288.9	
2002	30.6	29.9	30.0	30.6	26.8	27.1	31.0	10.6	3.8	5.0	15.0	26.1	266.5	
2003	27.3	30.5	27.8	31.0	29.6	28.8	15.5	0.0	0.0	0.4	11.0	29.3	231.0	
Min	22.8	22.9	23.3	20.0	23.6	8.0	1.3	0.0	0.0	0.3	2.4	25.9		
Max	31.0	31.0	30.0	31.0	30.0	31.0	31.0	26.9	30.9	29.4	31.0	30.0		
Mean	29.2	29.5	28.6	29.3	28.7	25.1	19.8	11.6	11.1	12.7	22.4	28.6		

6.17. Whakapapa at Footbridge (sim consent) (8005), July 1962 to July 1972 (pre-division)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
 From 1-Jul-1962 00:00:01 to 1-Jul-1972 00:00:01
 Whakapapa l/s

	0	1	2	3	4	5	6	7	8	9
0	310867	42479	23352	13793	10775	9794	9160	8785	8398	8121
10	7875	7678	7488	7349	7211	7056	6856	6634	6452	6285
20	5921	5394	4732	4040	3394	3031	3030	3030	3030	3029
30	3029	3028	3028	3028	3027	3027	3026	3026	3025	3025
40	3025	3024	3024	3023	3023	3023	3022	3022	3021	3021
50	3021	3020	3020	3019	3019	3018	3018	3018	3017	3017
60	3016	3016	3016	3015	3015	3014	3014	3014	3013	3013
70	3012	3012	3012	3011	3011	3010	3010	3009	3009	3009
80	3008	3008	3007	3007	3007	3006	3006	3005	3005	3005
90	3004	3004	3003	3003	3002	3002	3002	3001	3001	3000
100	3000									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
 From 1-Jul-1962 00:00:01 to 1-Jul-1972 00:00:01
 Whakapapa l/s

	0	1	2	3	4	5	6	7	8	9
0	310867	43257	19712	11985	10624	10151	9638	9268	9022	8828
10	8634	8419	8260	8129	7981	7864	7756	7650	7553	7464
20	7392	7323	7252	7177	7094	6994	6871	6742	6606	6488
30	6387	6288	6086	5798	5410	4998	4520	4062	3631	3220
40	3041	3040	3039	3039	3038	3037	3037	3036	3035	3034
50	3034	3033	3032	3032	3031	3030	3030	3029	3028	3028
60	3027	3026	3026	3025	3024	3024	3023	3022	3022	3021
70	3020	3020	3019	3018	3018	3017	3016	3016	3015	3014
80	3014	3013	3012	3011	3011	3010	3009	3009	3008	3007
90	3007	3006	3005	3005	3004	3003	3003	3002	3001	3001
100	3000									

Annual maximum series and mean annual flood (MAF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
 From 1-Jul-1962 00:00:00 to 30-Jun-1972 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1962	129.48	8-Oct-1962 03:00
1963	233.55	31-Dec-1963 15:00
1964	286.57	11-Mar-1964 09:00
1965	303.05	12-Feb-1965 18:00
1966	229.24	26-Apr-1966 21:00
1967	310.87	2-Feb-1967 18:00
1968	160.25	7-Dec-1968 06:00
1969	88.237	23-Apr-1969 21:00

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1970      119.58      14-Dec-1970 21:00
1971      256.76      25-Feb-1971 12:00
*1972      162.08      10-Mar-1972 24:00

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Average Annual Maximum 220.90 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
From 1-Jul-1962 00:00:00 to 30-Jun-1972 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Whakapapa l/s)
30-Jun-1963 24:00:00	3000 at interval beginning 30-Jun-1962 24:00:00
30-Jun-1964 24:00:00	3000 at interval beginning 1-Jul-1963 03:00:00
30-Jun-1965 24:00:00	3000 at interval beginning 1-Jul-1964 03:00:00
30-Jun-1966 24:00:00	3000 at interval beginning 1-Jul-1965 03:00:00
30-Jun-1967 24:00:00	3000 at interval beginning 1-Jul-1966 03:00:00
30-Jun-1968 24:00:00	3000 at interval beginning 1-Jul-1967 03:00:00
30-Jun-1969 24:00:00	3000 at interval beginning 1-Jul-1968 18:00:00
30-Jun-1970 24:00:00	3000 at interval beginning 1-Jul-1969 15:00:00
30-Jun-1971 24:00:00	3000 at interval beginning 1-Jul-1970 03:00:00
30-Jun-1972 24:00:00	3000 at interval beginning 1-Jul-1971 03:00:00

Mean annual Minimum = 3000
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1962 to 1972 site 80051 Whakapapa at Footbridge (sim consent)
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
	1963	28.9	27.8	27.3	25.0	23.9	26.3	14.3	5.5	0.0	5.1	17.3	26.4	227.5
	1964	29.8	29.1	28.4	31.0	27.9	8.0	28.0	1.4	24.9	4.5	24.0	28.9	265.8
	1965	22.8	26.0	23.3	28.4	29.4	28.6	30.1	25.3	30.9	24.9	31.0	28.1	328.6
	1966	30.0	28.4	29.9	30.6	26.0	28.4	29.8	26.6	30.3	27.4	29.9	27.6	344.8
	1967	28.5	31.0	29.5	31.0	28.5	28.5	30.8	26.8	16.0	7.3	19.9	29.3	306.9
	1968	29.9	25.9	29.3	29.9	27.0	29.6	27.9	9.6	3.4	17.6	27.4	26.8	284.1
	1969	29.1	29.9	29.6	28.8	29.0	29.4	13.8	21.8	7.3	12.3	29.9	28.8	289.4
	1970	30.6	30.3	29.1	30.6	30.0	21.0	5.4	0.0	0.0	2.3	13.8	27.6	220.6
	1971	30.3	29.6	24.1	28.1	29.6	11.4	13.8	7.4	0.0	0.3	16.6	28.5	219.6
	1972	30.4	28.8	27.0	26.0	28.6	29.9	15.9	1.0	21.0	7.6	23.5	28.9	268.5
Min		22.8	25.9	23.3	25.0	23.9	8.0	5.4	0.0	0.0	0.3	13.8	26.4	
Max		30.6	31.0	29.9	31.0	30.0	29.9	30.8	26.8	30.9	27.4	31.0	29.3	
Mean		29.0	28.7	27.7	28.9	28.0	24.1	20.9	12.5	13.4	10.9	23.3	28.1	

6.18. Whakapapa at Footbridge (sim consent) (8005), July 1973 to July 1983 (1972 rules)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
 From 1-Jul-1973 00:00:01 to 1-Jul-1983 00:00:01
 Whakapapa l/s

	0	1	2	3	4	5	6	7	8	9
0	310615	35947	15885	9791	9161	8909	8659	8284	8056	7874
10	7693	7542	7350	7134	6998	6899	6810	6699	6475	6098
20	5639	4929	4014	3088	3030	3029	3029	3028	3028	3028
30	3027	3027	3027	3026	3026	3025	3025	3025	3024	3024
40	3023	3023	3023	3022	3022	3021	3021	3021	3020	3020
50	3019	3019	3019	3018	3018	3018	3017	3017	3016	3016
60	3016	3015	3015	3014	3014	3014	3013	3013	3012	3012
70	3012	3011	3011	3011	3010	3010	3009	3009	3009	3008
80	3008	3007	3007	3007	3006	3006	3005	3005	3005	3004
90	3004	3004	3003	3003	3002	3002	3002	3001	3001	3000
100	3000									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
 From 1-Jul-1973 00:00:01 to 1-Jul-1983 00:00:01
 Whakapapa l/s

	0	1	2	3	4	5	6	7	8	9
0	310615	24813	10039	9548	9246	9105	8980	8868	8760	8566
10	8362	8230	8116	8012	7910	7823	7738	7635	7563	7486
20	7386	7225	7125	7045	6983	6924	6863	6804	6708	6565
30	6339	6154	6017	5727	5375	4980	4522	4029	3570	3029
40	3029	3028	3028	3027	3027	3026	3026	3025	3025	3024
50	3024	3023	3023	3022	3022	3021	3021	3020	3020	3019
60	3019	3019	3018	3018	3017	3017	3016	3016	3015	3015
70	3014	3014	3013	3013	3012	3012	3011	3011	3010	3010
80	3010	3009	3009	3008	3008	3007	3007	3006	3006	3005
90	3005	3004	3004	3003	3003	3002	3002	3001	3001	3000
100	3000									

Annual maximum series and mean annual flood (MAF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
 From 1-Jul-1973 00:00:00 to 30-Jun-1983 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1973	81.822	16-Sep-1973 21:00
1974	146.37	3-Jul-1974 06:00
1975	157.49	7-Jun-1975 03:00
1976	192.66	30-Apr-1976 12:00
1977	107.74	28-Jun-1977 18:00
1978	310.62	12-Nov-1978 21:00
1979	175.38	14-Oct-1979 15:00
1980	273.27	22-Jan-1980 21:00

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1981      190.88      24-Sep-1981 24:00
1982      188.54      24-Feb-1982 24:00
*1983      151.26       3-Apr-1983 12:00

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Average Annual Maximum 193.66 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
From 1-Jul-1973 00:00:00 to 30-Jun-1983 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Whakapapa l/s)
30-Jun-1974 24:00:00	3000 at interval beginning 30-Jun-1973 24:00:00
30-Jun-1975 24:00:00	3000 at interval beginning 1-Jul-1974 03:00:00
30-Jun-1976 24:00:00	3000 at interval beginning 1-Jul-1975 03:00:00
30-Jun-1977 24:00:00	3000 at interval beginning 1-Jul-1976 03:00:00
30-Jun-1978 24:00:00	3000 at interval beginning 1-Jul-1977 03:00:00
30-Jun-1979 24:00:00	3000 at interval beginning 1-Jul-1978 03:00:00
30-Jun-1980 24:00:00	3000 at interval beginning 1-Jul-1979 03:00:00
30-Jun-1981 24:00:00	3000 at interval beginning 1-Jul-1980 03:00:00
30-Jun-1982 24:00:00	3000 at interval beginning 1-Jul-1981 03:00:00
30-Jun-1983 24:00:00	3000 at interval beginning 1-Jul-1982 03:00:00

Mean annual Minimum = 3000
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1973 to 1983 site 80051 Whakapapa at Footbridge (sim consent)
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
	1974	31.0	30.6	25.6	30.8	27.5	25.1	9.0	0.0	0.0	3.1	6.3	30.0	219.0
	1975	25.9	31.0	30.0	29.8	30.0	28.6	30.9	9.9	4.6	9.8	27.8	27.6	285.8
	1976	30.0	27.6	28.4	27.8	29.9	18.6	24.9	26.6	2.6	1.8	29.8	28.1	276.0
	1977	24.5	29.9	28.9	31.0	29.9	28.5	23.8	2.9	3.0	6.1	23.6	25.9	257.9
	1978	30.3	31.0	29.1	31.0	28.8	24.8	1.3	0.0	0.0	3.0	3.3	30.0	212.4
	1979	28.0	31.0	29.3	29.4	27.8	31.0	6.8	14.8	26.0	28.3	28.9	30.0	311.0
	1980	30.6	30.3	30.0	29.1	29.6	29.5	27.1	26.9	30.4	28.9	30.6	29.6	352.6
	1981	30.4	29.5	29.0	30.9	29.0	30.3	30.6	15.9	7.6	22.3	29.8	28.0	313.1
	1982	29.8	31.0	28.3	30.8	30.0	29.5	20.3	5.5	15.5	10.0	23.6	29.9	284.0
	1983	30.3	30.9	29.6	31.0	29.9	28.5	29.6	9.0	1.1	18.8	28.9	29.6	297.1
Min		24.5	27.6	25.6	27.8	27.5	18.6	1.3	0.0	0.0	1.8	3.3	25.9	
Max		31.0	31.0	30.0	31.0	30.0	31.0	30.9	26.9	30.4	28.9	30.6	30.0	
Mean		29.1	30.3	28.8	30.1	29.2	27.4	20.4	11.1	9.1	13.2	23.2	28.9	

6.19. Whakapapa at Footbridge (sim consent) (8005), July 1984 to July 1992 (1983 rules)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
 From 1-Jul-1984 00:00:01 to 1-Jul-1992 00:00:01
 Whakapapa l/s

	0	1	2	3	4	5	6	7	8	9
0	249361	44714	20664	10926	9537	9217	8805	8524	8242	7964
10	7787	7629	7488	7387	7225	6986	6755	6459	5952	5572
20	5130	4601	4008	3373	3036	3035	3035	3034	3034	3033
30	3033	3032	3032	3032	3031	3031	3030	3030	3029	3029
40	3028	3028	3027	3027	3026	3026	3025	3025	3024	3024
50	3024	3023	3023	3022	3022	3021	3021	3020	3020	3019
60	3019	3018	3018	3017	3017	3016	3016	3016	3015	3015
70	3014	3014	3013	3013	3012	3012	3011	3011	3010	3010
80	3009	3009	3008	3008	3008	3007	3007	3006	3006	3005
90	3005	3004	3004	3003	3003	3002	3002	3001	3001	3000
100	3000									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
 From 1-Jul-1984 00:00:01 to 1-Jul-1992 00:00:01
 Whakapapa l/s

	0	1	2	3	4	5	6	7	8	9
0	249361	50699	20459	10649	9737	9499	9314	9164	8888	8760
10	8580	8408	8289	8093	7978	7877	7792	7697	7619	7528
20	7445	7383	7282	7138	7001	6870	6757	6632	6450	6126
30	5847	5663	5409	5111	4797	4494	4124	3772	3383	3044
40	3043	3042	3042	3041	3040	3040	3039	3038	3037	3037
50	3036	3035	3035	3034	3033	3032	3032	3031	3030	3030
60	3029	3028	3027	3027	3026	3025	3024	3024	3023	3022
70	3022	3021	3020	3019	3019	3018	3017	3017	3016	3015
80	3014	3014	3013	3012	3012	3011	3010	3009	3009	3008
90	3007	3006	3006	3005	3004	3004	3003	3002	3001	3001
100	3000									

Annual maximum series and mean annual flood (MAF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
 From 1-Jul-1984 00:00:00 to 30-Jun-1992 24:00:00
 Interval = 0
 flow m³/s

Year	Maximum	Date & Time
*1984	246.40	16-Dec-1984 21:00
1985	148.54	2-Dec-1985 09:00
1986	234.24	25-Jul-1986 24:00
1987	111.27	22-Jan-1987 15:00
1988	176.68	24-Aug-1988 09:00
1989	178.79	22-Jan-1989 09:00
1990	249.36	10-Mar-1990 12:00
1991	172.48	7-Aug-1991 03:00

*1992 128.39 21-Mar-1992 18:00

Average Annual Maximum 181.62 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
From 1-Jul-1984 00:00:00 to 30-Jun-1992 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Whakapapa l/s)
30-Jun-1985 24:00:00	3000 at interval beginning 1-Jul-1984 15:00:00
30-Jun-1986 24:00:00	3000 at interval beginning 1-Jul-1985 03:00:00
30-Jun-1987 24:00:00	3000 at interval beginning 1-Jul-1986 03:00:00
30-Jun-1988 24:00:00	3000 at interval beginning 1-Jul-1987 03:00:00
30-Jun-1989 24:00:00	3000 at interval beginning 1-Jul-1988 03:00:00
30-Jun-1990 24:00:00	3000 at interval beginning 1-Jul-1989 03:00:00
30-Jun-1991 24:00:00	3000 at interval beginning 1-Jul-1990 03:00:00
30-Jun-1992 24:00:00	3000 at interval beginning 1-Jul-1991 03:00:00

Mean annual Minimum = 3000
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1984 to 1992 site 80051 Whakapapa at Footbridge (sim consent)
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
	1985	30.5	30.6	29.5	30.5	29.8	26.3	24.8	8.9	4.8	5.0	2.4	29.1	252.0
	1986	30.5	30.4	29.1	30.8	30.0	29.5	26.0	17.5	8.5	2.9	19.9	29.4	284.4
	1987	29.3	31.0	29.0	29.9	30.0	12.9	14.3	9.6	18.6	28.3	30.8	29.3	292.8
	1988	31.0	30.6	29.8	29.1	29.4	29.3	8.1	10.8	14.1	6.1	21.5	28.1	267.9
	1989	28.4	28.3	28.3	26.3	27.8	25.9	28.0	16.4	10.6	0.8	20.5	27.0	268.0
	1990	30.6	31.0	30.0	27.9	29.8	15.5	25.3	7.1	17.5	23.0	29.0	30.0	296.6
	1991	31.0	26.9	29.9	30.8	29.9	14.4	7.3	26.0	17.3	10.0	24.6	30.0	277.9
	1992	27.0	22.9	29.1	30.4	29.8	14.0	27.0	21.0	17.8	18.9	27.5	29.6	294.9
Min		27.0	22.9	28.3	26.3	27.8	12.9	7.3	7.1	4.8	0.8	2.4	27.0	
Max		31.0	31.0	30.0	30.8	30.0	29.5	28.0	26.0	18.6	28.3	30.8	30.0	
Mean		29.8	29.0	29.3	29.4	29.5	21.0	20.1	14.7	13.6	11.9	22.0	29.1	

6.20. Whakapapa at Footbridge (sim consent) (8005), July 1993 to July 2003 (Planning Tribunal 1990)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
From 1-Jul-1993 00:00:01 to 1-Jul-2003 00:00:01
Whakapapa l/s

	0	1	2	3	4	5	6	7	8	9
0	377486	55540	25240	14309	9447	8786	8540	8281	8121	7964
10	7853	7726	7612	7483	7357	7170	6952	6777	6591	6399
20	6100	5662	5031	4259	3483	3047	3046	3046	3045	3044
30	3044	3043	3042	3042	3041	3041	3040	3039	3039	3038
40	3037	3037	3036	3036	3035	3034	3034	3033	3032	3032
50	3031	3031	3030	3029	3029	3028	3027	3027	3026	3026
60	3025	3024	3024	3023	3022	3022	3021	3021	3020	3019
70	3019	3018	3017	3017	3016	3016	3015	3014	3014	3013
80	3012	3012	3011	3011	3010	3009	3009	3008	3007	3007
90	3006	3006	3005	3004	3004	3003	3002	3002	3001	3001
100	3000									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
 From 1-Jul-1993 00:00:01 to 1-Jul-2003 00:00:01
 Whakapapa l/s

	0	1	2	3	4	5	6	7	8	9
0	350927	48319	16395	10239	9228	8880	8707	8580	8488	8322
10	8227	8149	8080	7995	7922	7865	7799	7727	7658	7585
20	7513	7431	7349	7268	7131	7002	6880	6783	6682	6528
30	6436	6285	6122	5870	5592	5215	4773	4249	3717	3294
40	3047	3046	3045	3044	3044	3043	3042	3041	3041	3040
50	3039	3038	3037	3037	3036	3035	3034	3034	3033	3032
60	3031	3030	3030	3029	3028	3027	3026	3026	3025	3024
70	3023	3023	3022	3021	3020	3019	3019	3018	3017	3016
80	3016	3015	3014	3013	3012	3012	3011	3010	3009	3009
90	3008	3007	3006	3005	3005	3004	3003	3002	3002	3001
100	3000									

Annual maximum series and mean annual flood (MAF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
 From 1-Jul-1993 00:00:00 to 30-Jun-2003 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1993	235.13	21-Nov-1993 12:00
1994	210.22	7-Nov-1994 12:00
1995	197.86	7-Sep-1995 03:00
1996	350.93	1-Dec-1996 09:00
1997	303.72	9-Apr-1997 03:00
1998	377.49	28-Oct-1998 15:00
1999	200.59	16-May-1999 21:00
2000	244.94	2-Oct-2000 18:00
2001	228.18	25-May-2001 12:00
2002	210.17	26-Dec-2002 06:00
*2003	237.99	22-May-2003 06:00

Average Annual Maximum 258.23 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4

From 1-Jul-1993 00:00:00 to 30-Jun-2003 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Whakapapa l/s)
30-Jun-1994 24:00:00	3000 at interval beginning 30-Jun-1993 24:00:00
30-Jun-1995 24:00:00	3000 at interval beginning 1-Jul-1994 03:00:00
30-Jun-1996 24:00:00	3000 at interval beginning 1-Jul-1995 03:00:00
30-Jun-1997 24:00:00	3000 at interval beginning 1-Jul-1996 06:00:00
30-Jun-1998 24:00:00	3000 at interval beginning 1-Jul-1997 24:00:00
30-Jun-1999 24:00:00	3000 at interval beginning 3-Jul-1998 09:00:00
30-Jun-2000 24:00:00	3000 at interval beginning 1-Jul-1999 03:00:00
30-Jun-2001 24:00:00	3000 at interval beginning 1-Jul-2000 03:00:00
30-Jun-2002 24:00:00	3000 at interval beginning 1-Jul-2001 03:00:00
30-Jun-2003 24:00:00	3000 at interval beginning 1-Jul-2002 03:00:00

Mean annual Minimum = 3000
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1993 to 2003 site 80051 Whakapapa at Footbridge (sim consent)
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1994	31.0	31.0	29.6	30.5	28.5	30.6	19.4	1.6	2.0	13.6	20.6	27.1	265.6	
1995	30.0	29.0	27.1	31.0	23.6	28.1	9.4	12.3	21.1	29.4	26.3	28.8	296.0	
1996	29.0	29.9	27.8	30.0	29.3	29.3	27.8	23.1	24.8	28.5	30.4	29.4	339.0	
1997	29.6	29.9	27.9	29.6	28.6	27.8	22.1	4.1	5.6	21.5	14.0	30.0	270.8	
1998	30.1	30.4	29.4	30.6	28.5	29.1	16.0	18.5	14.1	22.1	30.4	29.0	308.3	
1999	25.9	30.4	27.5	20.0	30.0	21.1	6.8	0.9	4.0	9.0	12.8	28.4	216.6	
2000	30.0	29.9	29.8	31.0	27.5	30.3	16.4	11.8	0.0	10.5	19.3	28.9	265.1	
2001	29.3	31.0	28.9	21.0	29.9	25.3	26.3	17.3	16.9	8.6	25.5	29.1	288.9	
2002	30.6	29.9	30.0	30.6	26.8	27.1	31.0	10.6	3.8	5.0	15.0	26.1	266.5	
2003	27.3	30.5	27.8	31.0	29.6	28.8	15.5	0.0	0.0	0.4	11.0	29.3	231.0	
Min	25.9	29.0	27.1	20.0	23.6	21.1	6.8	0.0	0.0	0.4	11.0	26.1		
Max	31.0	31.0	30.0	31.0	30.0	30.6	31.0	23.1	24.8	29.4	30.4	30.0		
Mean	29.3	30.2	28.6	28.5	28.2	27.7	19.1	10.0	9.2	14.9	20.5	28.6		

6.21. Whanganui at Matapuna (33338), July 1964 to July 1972 (pre-diversion)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 33338 Whanganui at Matapuna
From 3-Jul-1964 13:30:00 to 1-Jul-1972 00:00:01
Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	687114	191264	145338	124314	110767	101310	94274	88779	83887	79967
10	76696	73868	71164	68720	66528	64595	62572	60787	59175	57725
20	56457	55145	54018	52924	51834	50882	49969	49088	48252	47481
30	46737	45965	45292	44649	44019	43394	42730	42090	41465	40835

40	40272	39717	39147	38609	38150	37627	37178	36746	36243	35780
50	35240	34752	34268	33720	33225	32709	32228	31737	31265	30871
60	30424	29996	29510	29054	28612	28209	27889	27549	27203	26879
70	26537	26214	25902	25590	25203	24820	24466	24163	23826	23493
80	23135	22801	22441	22106	21665	21231	20870	20534	20197	19822
90	19503	19109	18725	18139	17480	16821	16221	15268	14166	13317
100	10863									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 33338 Whanganui at Matapuna

From 3-Jul-1964 13:30:00 to 1-Jul-1972 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	687114	164503	112665	94634	84211	77288	72523	68604	65050	62194
10	59540	57497	55749	54074	52592	51144	49678	48281	47000	45882
20	44930	44023	43137	42337	41549	40683	39968	39217	38588	38084
30	37569	37127	36656	36092	35544	35048	34630	34124	33584	33038
40	32546	32063	31544	31178	30790	30397	29989	29545	29135	28736
50	28331	28039	27762	27465	27178	26899	26619	26346	26049	25845
60	25567	25238	24909	24590	24331	24086	23824	23541	23202	22961
70	22632	22364	22062	21750	21415	21141	20912	20690	20505	20311
80	20085	19826	19609	19416	19173	18952	18734	18429	18031	17645
90	17236	16846	16635	16242	15752	15210	14497	13893	13428	13032
100	10863									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 33338 Whanganui at Matapuna

From 1-Jul-1964 00:00:00 to 30-Jun-1972 24:00:00

Interval = 0

flow m3/s

Year	Maximum	Date & Time
*1964	326.98	25-Oct-1964 12:00
1965	687.11	12-Feb-1965 18:00
1966	543.61	26-Apr-1966 22:00
1967	609.35	2-Feb-1967 23:45
1968	451.93	7-Dec-1968 06:15
1969	291.68	23-Apr-1969 21:45
1970	382.55	17-Sep-1970 14:30
1971	551.34	1-Jun-1971 10:00
*1972	556.99	5-Mar-1972 08:45

Average Annual Maximum 502.51 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 33338 Whanganui at Matapuna

From 1-Jul-1964 00:00:00 to 30-Jun-1972 24:00:00

Data starts at 3-Jul-1964 13:30:00

Minimum moving averages over 1.000day interval

Year Ending Minimum Value (Flow l/s)

```

30-Jun-1965 24:00:00(PARTIAL)    25515 at interval beginning 9-Feb-1965 24:00:00
30-Jun-1966 24:00:00            22988 at interval beginning 28-Mar-1966 24:00:00
30-Jun-1967 24:00:00            17848 at interval beginning 17-Jun-1967 03:00:00
30-Jun-1968 24:00:00            15892 at interval beginning 6-Apr-1968 06:00:00
30-Jun-1969 24:00:00            18521 at interval beginning 2-Apr-1969 10:15:00
30-Jun-1970 24:00:00            12514 at interval beginning 4-May-1970 08:15:00
30-Jun-1971 24:00:00            14645 at interval beginning 1-May-1971 18:45:00
30-Jun-1972 24:00:00            15485 at interval beginning 3-Mar-1972 11:45:00

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Mean annual Minimum = 16842
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1964 to 1972 site 33338 Whanganui at Matapuna
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1965	NaN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1966	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1967	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1968	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.4	7.2	0.0	0.0	13.7
1969	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1970	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	28.0	29.0	24.0	13.6	0.0	96.1
1971	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7	25.3	2.9	0.0	30.8
1972	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	3.6	3.5	0.0	NaN	8.5
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max	0.1	0.0	0.0	0.0	0.0	0.0	0.0	1.4	28.0	29.0	25.3	13.6	0.0	0.0
Mean	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	3.7	5.2	7.5	2.1	0.0	0.0

6.22. Whanganui at Paetawa (33301), July 1957 to July 2004 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 33301 Whanganui at Paetawa
From 26-Jul-1957 00:00:00 to 1-Jul-2004 00:00:01
Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	4105800	1300700	1022300	866303	762724	689622	629611	579665	537198	502376
10	473562	447425	424065	403483	384303	366724	351120	337323	323900	311566
20	300199	289847	280042	270467	261617	253184	245354	237663	230442	223791
30	217133	210853	204846	198904	193310	188077	182895	178182	173509	169140
40	164806	160739	156715	152759	148886	145225	141698	138199	134873	131808
50	128692	125671	122759	119957	117282	114693	112115	109496	106930	104498
60	102078	99781	97467	95196	92937	90776	88652	86562	84559	82547
70	80618	78782	77043	75385	73662	71962	70302	68671	67013	65484
80	63976	62506	61074	59500	58035	56567	55150	53725	52308	50817
90	49250	47745	46055	44184	42240	40307	38167	35785	33229	30407
100	22212									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 33301 Whanganui at Paetawa
 From 26-Jul-1957 00:00:00 to 1-Jul-2004 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	4105800	1067600	780661	641566	538799	472482	424658	383859	351902	325962
10	303044	284530	267919	252909	239324	227147	216317	206688	197885	190049
20	182546	175813	169457	163529	158283	153252	148355	143783	139388	135351
30	131665	128099	124739	121597	118622	115862	113108	110422	107762	105270
40	103000	100725	98557	96363	94310	92397	90532	88770	87078	85294
50	83675	82056	80502	79020	77586	76330	75057	73823	72655	71461
60	70332	69235	68136	67003	65976	65007	63987	63014	62036	61109
70	60077	59037	58124	57221	56221	55308	54513	53548	52672	51854
80	50949	50028	49134	48321	47454	46494	45527	44482	43351	42348
90	41372	40265	39217	38031	36846	35349	33907	32408	30636	27604
100	22212									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 33301 Whanganui at Paetawa
 From 1-Jul-1957 00:00:00 to 30-Jun-2004 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1957	2359.1	15-Dec-1957 24:00
1958	3844.6	25-Feb-1958 12:00
1959	1470.1	30-May-1959 12:00
1960	1815.6	5-Jul-1960 21:00
1961	2258.6	23-Jan-1961 15:00
1962	2285.2	23-Jun-1962 09:00
1963	1162.6	14-Sep-1963 24:00
1964	2905.7	12-Mar-1964 00:10
1965	3272.4	8-Nov-1965 06:00
1966	2047.0	9-Jul-1966 15:00
1967	2586.0	3-Feb-1967 09:07
1968	2835.7	7-Dec-1968 18:00
1969	1063.0	7-May-1969 20:25
1970	1502.2	1-Oct-1970 21:57
1971	2345.9	19-Oct-1971 21:23
1972	1797.8	17-May-1972 19:27
1973	2611.5	17-Sep-1973 11:30
1974	2971.0	4-Jul-1974 10:15
1975	3133.9	29-Aug-1975 19:15
1976	1964.9	29-Jun-1976 20:00
1977	1821.4	29-Jun-1977 09:30
1978	3071.5	13-Nov-1978 10:30
1979	2545.6	15-Oct-1979 06:30
1980	1932.8	1-Dec-1980 13:15
1981	1589.8	25-Sep-1981 14:15
1982	1441.0	21-Jul-1982 06:15
1983	1648.3	9-Nov-1983 05:15
1984	1389.9	15-Dec-1984 16:30
1985	1804.8	23-Jun-1985 05:15
1986	2739.2	26-Jul-1986 20:45
1987	1430.4	10-Oct-1987 07:45
1988	1871.9	25-Aug-1988 01:15
1989	1936.7	5-Feb-1989 20:30
1990	4105.8	10-Mar-1990 21:00
1991	2589.2	7-Aug-1991 15:45

1992	1759.8	11-Aug-1992	04:30
1993	2151.5	17-May-1993	10:15
1994	2995.6	9-Nov-1994	01:00
1995	2745.4	7-Sep-1995	15:30
1996	2516.2	2-Dec-1996	04:30
1997	1466.0	13-Nov-1997	24:00
1998	3815.4	29-Oct-1998	10:30
1999	2683.2	17-May-1999	08:45
2000	3804.2	3-Oct-2000	02:45
2001	2483.0	9-Dec-2001	23:30
2002	1847.9	30-Sep-2002	14:15
2003	2482.1	4-Oct-2003	16:15
*2004	3292.9	16-Feb-2004	09:30

Average Annual Maximum 2316.1 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is Horizons.mtd Site 33301 Whanganui at Paetawa
 From 1-Jul-1957 00:00:00 to 30-Jun-2004 24:00:00
 Data starts at 25-Jul-1957 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1958 24:00:00 (PARTIAL)	48808 at interval beginning 16-Feb-1958 12:00:00
30-Jun-1959 24:00:00	58543 at interval beginning 8-Dec-1958 06:00:00
30-Jun-1960 24:00:00	46522 at interval beginning 24-Jan-1960 06:00:00
30-Jun-1961 24:00:00	39799 at interval beginning 15-Jan-1961 24:00:00
30-Jun-1962 24:00:00	46076 at interval beginning 31-Dec-1961 18:00:00
30-Jun-1963 24:00:00	47845 at interval beginning 26-Mar-1963 24:00:00
30-Jun-1964 24:00:00	39690 at interval beginning 26-Feb-1964 24:00:00
30-Jun-1965 24:00:00	65788 at interval beginning 23-Apr-1965 09:00:00
30-Jun-1966 24:00:00	53009 at interval beginning 29-Mar-1966 18:00:00
30-Jun-1967 24:00:00	46692 at interval beginning 22-Apr-1967 16:34:00
30-Jun-1968 24:00:00	35128 at interval beginning 7-Apr-1968 21:17:00
30-Jun-1969 24:00:00	47469 at interval beginning 3-Apr-1969 12:49:00
30-Jun-1970 24:00:00	27035 at interval beginning 28-Feb-1970 00:46:00
30-Jun-1971 24:00:00	35777 at interval beginning 15-Apr-1971 02:54:24
30-Jun-1972 24:00:00	42160 at interval beginning 3-Mar-1972 23:39:13
30-Jun-1973 24:00:00	31172 at interval beginning 2-Mar-1973 12:45:00
30-Jun-1974 24:00:00	22348 at interval beginning 14-Mar-1974 11:30:00
30-Jun-1975 24:00:00	32024 at interval beginning 21-Apr-1975 20:00:00
30-Jun-1976 24:00:00	31729 at interval beginning 22-Mar-1976 12:30:00
30-Jun-1977 24:00:00	30023 at interval beginning 22-Mar-1977 15:30:00
30-Jun-1978 24:00:00	23247 at interval beginning 14-Apr-1978 20:45:00
30-Jun-1979 24:00:00	29693 at interval beginning 12-Feb-1979 05:00:00
30-Jun-1980 24:00:00	50891 at interval beginning 1-Jul-1979 01:15:00
30-Jun-1981 24:00:00	43436 at interval beginning 17-Mar-1981 02:15:00
30-Jun-1982 24:00:00	30247 at interval beginning 17-Feb-1982 07:45:00
30-Jun-1983 24:00:00	28571 at interval beginning 23-Mar-1983 09:30:00
30-Jun-1984 24:00:00	37249 at interval beginning 4-Mar-1984 00:30:00
30-Jun-1985 24:00:00	26627 at interval beginning 17-Apr-1985 20:00:00
30-Jun-1986 24:00:00	31710 at interval beginning 22-Apr-1986 01:30:00
30-Jun-1987 24:00:00	33212 at interval beginning 27-Feb-1987 12:00:00
30-Jun-1988 24:00:00	29993 at interval beginning 3-May-1988 03:15:00
30-Jun-1989 24:00:00	36194 at interval beginning 15-Apr-1989 15:00:00
30-Jun-1990 24:00:00	29826 at interval beginning 8-Mar-1990 10:45:00
30-Jun-1991 24:00:00	38596 at interval beginning 7-Jan-1991 05:30:00
30-Jun-1992 24:00:00	45529 at interval beginning 21-Dec-1991 07:45:00
30-Jun-1993 24:00:00	42411 at interval beginning 18-Feb-1993 01:30:00

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30-Jun-1994 24:00:00      35698 at interval beginning 14-Mar-1994 02:45:00
30-Jun-1995 24:00:00      50472 at interval beginning 26-Jan-1995 24:00:00
30-Jun-1996 24:00:00      52099 at interval beginning 31-Jan-1996 18:30:00
30-Jun-1997 24:00:00      38998 at interval beginning  5-Apr-1997 19:15:00
30-Jun-1998 24:00:00      47588 at interval beginning 28-Mar-1998 15:00:00
30-Jun-1999 24:00:00      36705 at interval beginning 26-Feb-1999 08:00:00
30-Jun-2000 24:00:00      33741 at interval beginning 29-Mar-2000 07:15:00
30-Jun-2001 24:00:00      37572 at interval beginning 22-Mar-2001 21:15:00
30-Jun-2002 24:00:00      44694 at interval beginning 25-Apr-2002 13:45:00
30-Jun-2003 24:00:00      33401 at interval beginning 27-Mar-2003 12:15:00
30-Jun-2004 24:00:00      43179 at interval beginning 15-Aug-2003 05:00:00

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Mean annual Minimum = 38922 becomes 39132
 (For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
 Monthly totals 1957 to 2004 site 33301 Whanganui at Paetawa
 Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1958	NaN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1959	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1960	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1961	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.3	0.0	0.0	0.0	0.0	0.0	17.3
1962	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1963	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1964	0.0	0.0	0.0	0.0	0.0	0.0	3.2	0.0	15.6	0.0	0.0	0.0	0.0	18.8
1965	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1966	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1967	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1968	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	22.4	8.0	0.0	0.0	30.4
1969	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1970	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.5	28.0	26.3	21.7	10.9	0.0	91.3
1971	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	2.8	12.0	25.5	2.9	0.0	43.6
1972	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.8	3.5	0.0	0.0	0.0	7.3
1973	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.2	11.5	16.0	0.0	NaN	45.7
1974	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0	17.1	23.9	16.8	5.8	0.0	69.6
1975	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0
1976	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	0.0	0.0	0.0	2.4
1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.2	0.0	0.0	0.0	7.2
1978	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	24.6	26.4	14.6	2.3	4.0	74.5
1979	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	4.6	0.0	0.0	0.0	0.0	6.0
1980	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.7	0.0	0.0	0.0	0.0	5.7
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.2	0.0	0.0	0.0	14.2
1984	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	1.3	0.0	0.0	NaN	1.4
1985	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.2	19.6	13.2	2.2	42.2
1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.4	0.0	0.0	6.4
1987	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.0	0.0	1.3
1988	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	2.4	2.0	5.0	4.8	0.0	16.1
1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.5	0.0	0.0	0.0	8.5
1991	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NaN	0.0
1994	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.8	4.5	8.0	0.0	0.0	16.3
1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.6	0.0	0.0	2.6
1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.0	8.3	3.4	0.0	0.0	26.6
2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.0	4.9	0.0	0.0	22.9
2001	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	0.0	0.0	0.0	4.0
2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.1	18.3	14.1	5.3	0.0	44.9
2004	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max	0.0	0.0	0.0	0.0	0.0	3.2	17.3	28.0	26.4	25.5	13.2	4.0	0.0
Mean	0.0	0.0	0.0	0.0	0.0	0.1	0.7	3.2	4.7	3.6	1.0	0.1	0.0

6.23. Whanganui at Paetawa (33301), July 1957 to July 1972 (pre-diversion)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 33301 Whanganui at Paetawa
From 26-Jul-1957 00:00:00 to 1-Jul-1972 00:00:01
Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	3844600	1265100	994840	846519	747436	680583	623582	576035	531593	499346
10	470918	446496	424732	404771	386965	369199	353166	339426	326222	313827
20	302971	292769	283536	274623	266318	258355	250339	243197	236226	229522
30	223565	217487	211591	205944	200234	194860	189921	184989	180443	175968
40	171521	167481	163415	159671	156028	152343	148867	145493	142308	139215
50	136093	133267	130529	127674	125042	122543	120005	117635	115213	113017
60	110664	108298	105826	103738	101570	99743	97765	95875	93755	91837
70	89802	88070	86144	84419	82631	80770	79020	77462	76066	74287
80	72693	70920	69173	67593	66087	64583	62868	61370	59467	58132
90	56631	55173	53634	51812	49844	48125	45796	42693	38350	32921
100	26987									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 33301 Whanganui at Paetawa
From 26-Jul-1957 00:00:00 to 1-Jul-1972 00:00:01
Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	3844600	1201200	848252	697852	590469	519529	465439	425987	389343	355770
10	330767	309090	291012	275885	261557	247755	235934	225370	215391	206425
20	198274	191321	184430	178312	172263	166764	161635	157119	152311	147793
30	143666	139832	136034	132640	129310	126231	123269	120533	117939	115276
40	112633	110161	107631	105285	103427	101398	99658	97750	95892	93991
50	92400	90819	89187	87951	86204	84664	83303	81990	80587	79254
60	78013	76935	75912	74767	73676	72626	71421	70219	69171	68193
70	67130	66246	65360	64302	63207	62229	61403	60289	59260	58493
80	57796	56968	56000	55236	54574	53513	52544	51556	50491	49458
90	48604	47667	46487	45219	43445	41646	39233	36985	33859	30515
100	26987									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 33301 Whanganui at Paetawa

From 1-Jul-1957 00:00:00 to 30-Jun-1972 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1957	2359.1	15-Dec-1957 24:00
1958	3844.6	25-Feb-1958 12:00
1959	1470.1	30-May-1959 12:00
1960	1815.6	5-Jul-1960 21:00
1961	2258.6	23-Jan-1961 15:00
1962	2285.2	23-Jun-1962 09:00
1963	1162.6	14-Sep-1963 24:00
1964	2905.7	12-Mar-1964 00:10
1965	3272.4	8-Nov-1965 06:00
1966	2047.0	9-Jul-1966 15:00
1967	2586.0	3-Feb-1967 09:07
1968	2835.7	7-Dec-1968 18:00
1969	1063.0	7-May-1969 20:25
1970	1502.2	1-Oct-1970 21:57
1971	2345.9	19-Oct-1971 21:23
*1972	1797.8	17-May-1972 19:27

Average Annual Maximum 2242.5 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 33301 Whanganui at Paetawa
 From 1-Jul-1957 00:00:00 to 30-Jun-1972 24:00:00
 Data starts at 25-Jul-1957 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1958 24:00:00 (PARTIAL)	48808 at interval beginning 16-Feb-1958 12:00:00
30-Jun-1959 24:00:00	58543 at interval beginning 8-Dec-1958 06:00:00
30-Jun-1960 24:00:00	46522 at interval beginning 24-Jan-1960 06:00:00
30-Jun-1961 24:00:00	39799 at interval beginning 15-Jan-1961 24:00:00
30-Jun-1962 24:00:00	46076 at interval beginning 31-Dec-1961 18:00:00
30-Jun-1963 24:00:00	47845 at interval beginning 26-Mar-1963 24:00:00
30-Jun-1964 24:00:00	39690 at interval beginning 26-Feb-1964 24:00:00
30-Jun-1965 24:00:00	65788 at interval beginning 23-Apr-1965 09:00:00
30-Jun-1966 24:00:00	53009 at interval beginning 29-Mar-1966 18:00:00
30-Jun-1967 24:00:00	46692 at interval beginning 22-Apr-1967 16:34:00
30-Jun-1968 24:00:00	35128 at interval beginning 7-Apr-1968 21:17:00
30-Jun-1969 24:00:00	47469 at interval beginning 3-Apr-1969 12:49:00
30-Jun-1970 24:00:00	27035 at interval beginning 28-Feb-1970 00:46:00
30-Jun-1971 24:00:00	35777 at interval beginning 15-Apr-1971 02:54:24
30-Jun-1972 24:00:00	42160 at interval beginning 3-Mar-1972 23:39:13

Mean annual Minimum = 45110 becomes 45356
 (For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
 Monthly totals 1957 to 1972 site 33301 Whanganui at Paetawa
 Days < MALF

Season ending

in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1958	NaN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1959	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1960	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1961	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.3	0.0	0.0	0.0	0.0	0.0	17.3
1962	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1963	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1964	0.0	0.0	0.0	0.0	0.0	0.0	3.2	0.0	15.6	0.0	0.0	0.0	0.0	18.8
1965	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1966	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1967	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1968	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	22.4	8.0	0.0	0.0	30.4
1969	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1970	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.5	28.0	26.3	21.7	10.9	0.0	91.3
1971	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	2.8	12.0	25.5	2.9	0.0	43.6
1972	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.8	3.5	0.0	0.0	0.0	7.3
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	0.0	0.0	0.0	0.0	0.0	0.0	3.2	17.3	28.0	26.3	25.5	10.9	0.0	
Mean	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.5	3.3	4.3	3.7	0.9	0.0	

6.24. Whanganui at Paetawa (33301), July 1973 to July 1983 (1972 rules)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 33301 Whanganui at Paetawa

From 1-Jul-1973 00:00:01 to 1-Jul-1983 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	3133900	1214400	956991	815857	728446	661675	607720	557958	516424	481985
10	452341	425593	401464	379125	362145	347300	334307	321537	310090	299366
20	289437	279973	270523	261643	253619	246246	238887	231774	225031	218469
30	212127	206037	199937	194290	189184	184118	179415	174932	170782	166798
40	162687	158656	154501	150392	146477	142586	138856	135362	131883	128317
50	124929	121680	118396	115333	112441	109557	106623	103695	100882	98127
60	95543	93004	90502	88066	85830	83756	81591	79554	77373	75456
70	73596	71679	69931	68119	66332	64666	63117	61594	60185	58407
80	56536	54809	53011	51275	49663	47874	46282	44480	42505	40987
90	39023	37488	36115	34744	33481	32351	31135	29782	27846	25281
100	22212									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 33301 Whanganui at Paetawa

From 1-Jul-1973 00:00:01 to 1-Jul-1983 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	3071500	840798	625077	504320	433703	375227	341538	315948	294245	275400
10	257446	243554	229248	217227	205989	196385	188145	180432	173864	168191
20	162929	157857	152807	147667	142399	137790	133575	129238	125093	121302
30	118052	115091	112114	109172	106272	103276	100687	98128	95813	93641
40	91320	89299	87480	85709	84061	82347	80604	78824	77121	75622

50	74211	72929	71647	70428	69205	67931	66770	65649	64576	63547
60	62478	61457	60477	59294	57967	56605	55385	54155	52933	51766
70	50790	49770	48824	47770	46754	45941	44990	43850	42745	41896
80	41106	40003	38989	38155	37447	36734	35770	35008	34279	33505
90	32763	32087	31455	30641	29807	28889	27818	26719	25257	24037
100	22212									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 33301 Whanganui at Paetawa
 From 1-Jul-1973 00:00:00 to 30-Jun-1983 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1973	2611.5	17-Sep-1973 11:30
1974	2971.0	4-Jul-1974 10:15
1975	3133.9	29-Aug-1975 19:15
1976	1964.9	29-Jun-1976 20:00
1977	1821.4	29-Jun-1977 09:30
1978	3071.5	13-Nov-1978 10:30
1979	2545.6	15-Oct-1979 06:30
1980	1932.8	1-Dec-1980 13:15
1981	1589.8	25-Sep-1981 14:15
1982	1441.0	21-Jul-1982 06:15
*1983	814.27	28-Apr-1983 04:45

Average Annual Maximum 2274.6 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 33301 Whanganui at Paetawa
 From 1-Jul-1973 00:00:00 to 30-Jun-1983 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1974 24:00:00	22348 at interval beginning 14-Mar-1974 11:30:00
30-Jun-1975 24:00:00	32024 at interval beginning 21-Apr-1975 20:00:00
30-Jun-1976 24:00:00	31729 at interval beginning 22-Mar-1976 12:30:00
30-Jun-1977 24:00:00	30023 at interval beginning 22-Mar-1977 15:30:00
30-Jun-1978 24:00:00	23247 at interval beginning 14-Apr-1978 20:45:00
30-Jun-1979 24:00:00	29693 at interval beginning 12-Feb-1979 05:00:00
30-Jun-1980 24:00:00	50891 at interval beginning 1-Jul-1979 01:15:00
30-Jun-1981 24:00:00	43436 at interval beginning 17-Mar-1981 02:15:00
30-Jun-1982 24:00:00	30247 at interval beginning 17-Feb-1982 07:45:00
30-Jun-1983 24:00:00	28571 at interval beginning 23-Mar-1983 09:30:00

Mean annual Minimum = 32221
 (For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
 Monthly totals 1973 to 1983 site 33301 Whanganui at Paetawa
 Days < MALF

Season
 ending
 in

Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1974	0.0	0.0	0.0	0.0	0.0	0.0	6.0	17.1	23.9	16.8	5.8	0.0	69.6
1975	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0
1976	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	0.0	0.0	0.0	2.4
1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.2	0.0	0.0	0.0	7.2
1978	0.0	0.0	0.0	0.0	0.0	0.0	2.8	24.6	26.4	14.6	2.3	4.0	74.5
1979	0.0	0.0	0.0	0.0	0.0	0.0	1.4	4.6	0.0	0.0	0.0	0.0	6.0
1980	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.7	0.0	0.0	0.0	0.0	5.7
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.2	0.0	0.0	0.0	14.2
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	0.0	0.0	0.0	0.0	0.0	0.0	6.0	24.6	26.4	16.8	5.8	4.0	
Mean	0.0	0.0	0.0	0.0	0.0	0.0	1.0	5.2	7.4	3.2	0.8	0.4	

6.25. Whanganui at Paetawa (33301), July 1984 to July 1992 (1983 rules)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 33301 Whanganui at Paetawa

From 1-Jul-1984 00:00:01 to 1-Jul-1992 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	4105800	1222500	960475	805408	726109	663973	606866	561590	523626	492753
10	466528	439384	416534	396967	378032	360515	345352	331355	317285	304515
20	292678	281917	271184	261165	252390	244122	236095	228256	220669	213046
30	206386	199835	193227	187261	181935	176861	171493	166778	162164	157699
40	153472	149438	145468	141810	138110	134770	131732	128907	125798	122762
50	119915	117145	114492	111766	109208	106767	104489	102283	100070	97846
60	95411	93120	90958	88843	86652	84366	82156	80378	78482	76668
70	74872	73154	71603	70077	68608	67026	65423	63811	62262	60971
80	59472	58138	56750	55266	53821	52410	50806	49292	47913	46681
90	45438	44046	42468	41068	39834	38240	36330	34640	33143	31412
100	26592									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 33301 Whanganui at Paetawa

From 1-Jul-1984 00:00:01 to 1-Jul-1992 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	4105800	941490	738080	623286	523849	456729	407975	369028	340337	313188
10	287708	268075	251886	236810	224370	213210	204386	195511	187307	179620
20	172234	164279	158037	152370	147628	142990	138110	133798	130286	126993
30	123647	120726	117686	114781	111954	109450	106981	104856	102648	100659
40	98489	96248	94262	92270	90451	88477	86643	84639	82574	80867
50	79317	77757	76330	74925	73608	72377	71225	70117	69140	68058
60	66810	65586	64411	63351	62258	61328	60308	59280	58351	57357
70	56389	55417	54342	53525	52692	51826	50893	49948	49095	48373
80	47605	46921	46219	45457	44657	43919	42956	42047	41331	40689
90	40019	39318	38282	37138	36134	35152	34221	33255	32340	30519
100	26592									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 33301 Whanganui at Paetawa
 From 1-Jul-1984 00:00:00 to 30-Jun-1992 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1984	1389.9	15-Dec-1984 16:30
1985	1804.8	23-Jun-1985 05:15
1986	2739.2	26-Jul-1986 20:45
1987	1430.4	10-Oct-1987 07:45
1988	1871.9	25-Aug-1988 01:15
1989	1936.7	5-Feb-1989 20:30
1990	4105.8	10-Mar-1990 21:00
1991	2589.2	7-Aug-1991 15:45
*1992	1138.4	16-Feb-1992 09:00

Average Annual Maximum 2354.0 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 33301 Whanganui at Paetawa
 From 1-Jul-1984 00:00:00 to 30-Jun-1992 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1985 24:00:00	26627 at interval beginning 17-Apr-1985 20:00:00
30-Jun-1986 24:00:00	31710 at interval beginning 22-Apr-1986 01:30:00
30-Jun-1987 24:00:00	33212 at interval beginning 27-Feb-1987 12:00:00
30-Jun-1988 24:00:00	29993 at interval beginning 3-May-1988 03:15:00
30-Jun-1989 24:00:00	36194 at interval beginning 15-Apr-1989 15:00:00
30-Jun-1990 24:00:00	29826 at interval beginning 8-Mar-1990 10:45:00
30-Jun-1991 24:00:00	38596 at interval beginning 7-Jan-1991 05:30:00
30-Jun-1992 24:00:00	45529 at interval beginning 21-Dec-1991 07:45:00

Mean annual Minimum = 33961
 (For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
 Monthly totals 1984 to 1992 site 33301 Whanganui at Paetawa
 Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1985	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.2	19.6	13.2	2.2	42.2
1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.4	0.0	0.0	6.4
1987	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.0	0.0	1.3
1988	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	2.4	2.0	5.0	4.8	0.0	16.1
1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.5	0.0	0.0	0.0	8.5
1991	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

```

1992  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0
Min   0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0
Max   0.0  0.0  0.0  0.0  0.0  0.0  2.0  2.4  8.5 19.6 13.2  2.2
Mean  0.0  0.0  0.0  0.0  0.0  0.0  0.2  0.5  2.2  3.9  2.2  0.3

```

6.26. Whanganui at Paetawa (33301), July 1993 to July 2004 (Planning Tribunal 1990)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 33301 Whanganui at Paetawa

From 1-Jul-1993 00:00:01 to 1-Jul-2004 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	3815400	1498400	1158000	987609	849690	757560	676727	617757	571623	532669
10	501999	475277	449975	428309	409580	390931	374024	358446	344088	330210
20	317263	304828	293189	282516	272288	263123	254197	245551	236915	229268
30	222613	215837	209476	203615	198157	192643	187087	181923	177267	172824
40	168189	163889	160050	156022	152279	148508	144873	141326	137564	134321
50	131136	127878	124673	121775	119042	116466	113994	111293	108551	105992
60	103497	100822	98239	95695	93257	90911	88561	86386	84190	82015
70	80104	78314	76628	75116	73596	71976	70536	68938	67234	65606
80	64300	62979	61681	60284	58750	57344	56066	54898	53725	52700
90	51775	50651	49357	48125	46571	44939	42923	41385	39683	37766
100	33401									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 33301 Whanganui at Paetawa

From 1-Jul-1993 00:00:01 to 1-Jul-2004 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	3292900	1275800	933841	756859	633861	541505	483201	440713	406798	376772
10	351305	328375	308291	290647	274826	260981	249612	237203	226492	217217
20	208576	200692	193339	185861	179066	172837	166754	161615	156586	152013
30	147178	142967	138931	135229	131740	128227	124984	121742	118650	116036
40	113410	110751	107998	105319	102760	100033	97431	94932	92750	90635
50	88697	86866	85108	83312	81560	80150	78647	77210	75897	74695
60	73494	72278	71224	70087	68966	67630	66468	65412	64482	63571
70	62604	61653	60544	59390	58335	57471	56579	55753	55008	54246
80	53390	52713	52121	51549	50740	49917	49162	48401	47588	46635
90	45576	44426	43270	42305	41540	40705	39778	38960	37905	35989
100	33401									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 33301 Whanganui at Paetawa

From 1-Jul-1993 00:00:00 to 30-Jun-2004 24:00:00

Interval = 0

flow m3/s

Year	Maximum	Date & Time
*1993	1967.6	22-Nov-1993 07:45
1994	2995.6	9-Nov-1994 01:00

1995	2745.4	7-Sep-1995	15:30
1996	2516.2	2-Dec-1996	04:30
1997	1466.0	13-Nov-1997	24:00
1998	3815.4	29-Oct-1998	10:30
1999	2683.2	17-May-1999	08:45
2000	3804.2	3-Oct-2000	02:45
2001	2483.0	9-Dec-2001	23:30
2002	1847.9	30-Sep-2002	14:15
2003	2482.1	4-Oct-2003	16:15
*2004	3292.9	16-Feb-2004	09:30

Average Annual Maximum 2683.9 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 33301 Whanganui at Paetawa
From 1-Jul-1993 00:00:00 to 30-Jun-2004 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1994 24:00:00	35698 at interval beginning 14-Mar-1994 02:45:00
30-Jun-1995 24:00:00	50472 at interval beginning 26-Jan-1995 24:00:00
30-Jun-1996 24:00:00	52099 at interval beginning 31-Jan-1996 18:30:00
30-Jun-1997 24:00:00	38998 at interval beginning 5-Apr-1997 19:15:00
30-Jun-1998 24:00:00	47588 at interval beginning 28-Mar-1998 15:00:00
30-Jun-1999 24:00:00	36705 at interval beginning 26-Feb-1999 08:00:00
30-Jun-2000 24:00:00	33741 at interval beginning 29-Mar-2000 07:15:00
30-Jun-2001 24:00:00	37572 at interval beginning 22-Mar-2001 21:15:00
30-Jun-2002 24:00:00	44694 at interval beginning 25-Apr-2002 13:45:00
30-Jun-2003 24:00:00	33401 at interval beginning 27-Mar-2003 12:15:00
30-Jun-2004 24:00:00	43179 at interval beginning 15-Aug-2003 05:00:00

Mean annual Minimum = 41286
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1993 to 2004 site 33301 Whanganui at Paetawa
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1994	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.8	4.5	8.0	0.0	0.0	16.3
1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.6	0.0	0.0	2.6
1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.0	8.3	3.4	0.0	0.0	26.6
2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.0	4.9	0.0	0.0	22.9
2001	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	0.0	0.0	0.0	4.0
2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.1	18.3	14.1	5.3	0.0	44.9
2004	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.0	18.3	14.1	5.3	0.0	0.0

Mean 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 2.3 4.8 3.0 0.5 0.0

6.27. Whanganui at Paetawa(simnat) (333005), July 1951 to July 2003 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 333005 Wanganui natural at Paetawa

From 1-Jul-1951 00:00:01 to 1-Jul-2003 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	4084800	1301800	1015900	870005	768145	692568	636922	590107	552040	516222
10	489074	462512	443062	421836	404227	387722	371767	357095	344165	331431
20	319927	308692	298176	289550	280712	272130	263951	256642	249238	241975
30	234487	228618	222382	216513	210464	205514	200325	195097	190165	185413
40	181267	177627	173413	169092	164933	160923	157211	153680	150127	146845
50	143491	140553	137567	134380	131494	128830	125821	123302	120820	118176
60	115492	113033	110562	108051	105717	103265	101254	99188	96927	95107
70	93015	91151	88978	87342	85304	83415	81520	79543	77734	75958
80	74242	72377	70656	68758	67144	65373	63610	61877	60091	58275
90	56539	54804	52985	50964	48797	46804	44610	42235	39534	35563
100	26085									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 333005 Wanganui natural at Paetawa

From 1-Jul-1951 00:00:01 to 1-Jul-2003 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	4084800	1051000	780250	635930	537994	478048	431679	398913	369540	343324
10	321385	302176	288192	273387	260945	248404	236616	227131	216914	207472
20	199902	191944	185021	179256	174017	168896	163481	158394	153866	149462
30	146014	142411	139120	135597	132792	130032	126839	124336	121649	118810
40	116598	114153	111575	109288	106937	104915	103048	101256	99380	97556
50	95722	94242	92465	91004	89278	88066	86650	85058	83673	82247
60	80931	79527	78245	77012	75676	74524	73294	72057	70942	69637
70	68461	67497	66355	65299	64237	63048	62130	61136	60060	58995
80	58026	57026	55989	55002	54067	53112	52019	50928	49766	48658
90	47683	46617	45537	44259	43027	41505	39904	37961	35722	32420
100	26085									

Annual maximum series and mean annual flood (MAF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 333005 Wanganui natural at Paetawa

From 1-Jul-1951 00:00:00 to 30-Jun-2003 24:00:00

Interval = 0

flow m3/s

Year	Maximum	Date & Time
*1951	1716.0	25-Oct-1951 24:00
1952	2486.2	8-Nov-1952 24:00
1953	1325.2	3-Oct-1953 03:00
1954	2133.7	27-Aug-1954 03:00
1955	1814.5	5-May-1955 24:00
1956	2234.2	15-May-1956 24:00

1957	2326.2	16-Dec-1957	03:00
1958	3794.2	25-Feb-1958	12:00
1959	1462.0	30-May-1959	12:00
1960	1807.2	5-Jul-1960	24:00
1961	2240.0	23-Jan-1961	15:00
1962	2272.9	23-Jun-1962	12:00
1963	1156.9	13-Sep-1963	12:00
1964	2872.4	10-Mar-1964	12:00
1965	3246.2	6-Nov-1965	21:00
1966	2014.0	8-Jul-1966	03:00
1967	2585.9	1-Feb-1967	24:00
1968	2764.4	6-Dec-1968	09:00
1969	1043.8	6-May-1969	12:00
1970	1501.4	30-Sep-1970	12:00
1971	2332.0	18-Oct-1971	12:00
1972	1803.8	16-May-1972	09:00
1973	2632.9	15-Sep-1973	24:00
1974	2969.8	2-Jul-1974	24:00
1975	3152.0	28-Aug-1975	09:00
1976	1977.1	28-Jun-1976	09:00
1977	1863.7	27-Jun-1977	24:00
1978	3107.0	11-Nov-1978	24:00
1979	2557.8	13-Oct-1979	21:00
1980	1949.1	30-Nov-1980	03:00
1981	1610.4	24-Sep-1981	03:00
1982	1467.7	19-Jul-1982	21:00
1983	1672.5	7-Nov-1983	18:00
1984	1434.0	14-Dec-1984	06:00
1985	1844.8	21-Jun-1985	18:00
1986	2761.5	25-Jul-1986	09:00
1987	1437.2	8-Oct-1987	24:00
1988	1898.1	23-Aug-1988	15:00
1989	1963.3	15-Oct-1989	03:00
1990	4084.8	9-Mar-1990	12:00
1991	2599.4	6-Aug-1991	06:00
1992	1796.7	9-Aug-1992	18:00
1993	2158.4	15-May-1993	24:00
1994	3028.2	7-Nov-1994	15:00
1995	2765.3	6-Sep-1995	06:00
1996	2532.5	30-Nov-1996	18:00
1997	1467.1	12-Nov-1997	12:00
1998	3805.5	27-Oct-1998	24:00
1999	2697.8	15-May-1999	21:00
2000	3816.1	1-Oct-2000	18:00
2001	2495.1	8-Dec-2001	12:00
2002	1865.7	29-Sep-2002	03:00
*2003	1671.1	21-May-2003	03:00

Average Annual Maximum 2286.8 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 333005 Wanganui natural at Paetawa
From 1-Jul-1951 00:00:00 to 30-Jun-2003 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1952 24:00:00	54453 at interval beginning 10-Apr-1952 24:00:00
30-Jun-1953 24:00:00	62495 at interval beginning 20-Mar-1953 24:00:00
30-Jun-1954 24:00:00	50942 at interval beginning 10-Apr-1954 24:00:00
30-Jun-1955 24:00:00	43042 at interval beginning 7-Apr-1955 24:00:00

30-Jun-1956	24:00:00	42164	at interval beginning	4-Apr-1956	24:00:00
30-Jun-1957	24:00:00	35198	at interval beginning	20-Feb-1957	24:00:00
30-Jun-1958	24:00:00	48808	at interval beginning	16-Feb-1958	12:00:00
30-Jun-1959	24:00:00	58543	at interval beginning	8-Dec-1958	06:00:00
30-Jun-1960	24:00:00	46521	at interval beginning	24-Jan-1960	06:00:00
30-Jun-1961	24:00:00	39770	at interval beginning	16-Jan-1961	03:00:00
30-Jun-1962	24:00:00	46076	at interval beginning	31-Dec-1961	18:00:00
30-Jun-1963	24:00:00	47786	at interval beginning	25-Mar-1963	15:00:00
30-Jun-1964	24:00:00	39689	at interval beginning	25-Feb-1964	12:00:00
30-Jun-1965	24:00:00	65788	at interval beginning	21-Apr-1965	21:00:00
30-Jun-1966	24:00:00	52926	at interval beginning	28-Mar-1966	09:00:00
30-Jun-1967	24:00:00	46712	at interval beginning	21-Apr-1967	03:00:00
30-Jun-1968	24:00:00	35097	at interval beginning	6-Apr-1968	06:00:00
30-Jun-1969	24:00:00	47482	at interval beginning	1-Apr-1969	24:00:00
30-Jun-1970	24:00:00	27037	at interval beginning	26-Feb-1970	12:00:00
30-Jun-1971	24:00:00	35919	at interval beginning	18-Apr-1971	21:00:00
30-Jun-1972	24:00:00	42498	at interval beginning	18-Feb-1972	06:00:00
30-Jun-1973	24:00:00	33718	at interval beginning	5-Apr-1973	12:00:00
30-Jun-1974	24:00:00	26176	at interval beginning	31-Mar-1974	09:00:00
30-Jun-1975	24:00:00	44025	at interval beginning	20-Apr-1975	12:00:00
30-Jun-1976	24:00:00	44711	at interval beginning	25-Mar-1976	21:00:00
30-Jun-1977	24:00:00	40428	at interval beginning	21-Mar-1977	03:00:00
30-Jun-1978	24:00:00	27051	at interval beginning	6-Mar-1978	12:00:00
30-Jun-1979	24:00:00	38256	at interval beginning	11-Feb-1979	03:00:00
30-Jun-1980	24:00:00	62274	at interval beginning	16-Feb-1980	18:00:00
30-Jun-1981	24:00:00	54337	at interval beginning	15-Mar-1981	18:00:00
30-Jun-1982	24:00:00	40755	at interval beginning	15-Feb-1982	21:00:00
30-Jun-1983	24:00:00	41762	at interval beginning	21-Mar-1983	24:00:00
30-Jun-1984	24:00:00	41439	at interval beginning	16-Jan-1984	15:00:00
30-Jun-1985	24:00:00	34186	at interval beginning	14-Apr-1985	15:00:00
30-Jun-1986	24:00:00	43208	at interval beginning	20-Apr-1986	12:00:00
30-Jun-1987	24:00:00	35616	at interval beginning	6-Jan-1987	12:00:00
30-Jun-1988	24:00:00	36950	at interval beginning	1-Feb-1988	15:00:00
30-Jun-1989	24:00:00	44266	at interval beginning	27-Apr-1989	15:00:00
30-Jun-1990	24:00:00	39813	at interval beginning	6-Mar-1990	24:00:00
30-Jun-1991	24:00:00	45020	at interval beginning	13-Jan-1991	09:00:00
30-Jun-1992	24:00:00	57993	at interval beginning	20-Dec-1991	06:00:00
30-Jun-1993	24:00:00	42417	at interval beginning	16-Feb-1993	15:00:00
30-Jun-1994	24:00:00	34464	at interval beginning	12-Mar-1994	15:00:00
30-Jun-1995	24:00:00	56627	at interval beginning	25-Jan-1995	12:00:00
30-Jun-1996	24:00:00	62495	at interval beginning	1-Feb-1996	15:00:00
30-Jun-1997	24:00:00	40867	at interval beginning	4-Apr-1997	09:00:00
30-Jun-1998	24:00:00	45578	at interval beginning	26-Mar-1998	12:00:00
30-Jun-1999	24:00:00	38074	at interval beginning	24-Feb-1999	21:00:00
30-Jun-2000	24:00:00	34898	at interval beginning	27-Mar-2000	18:00:00
30-Jun-2001	24:00:00	42351	at interval beginning	21-Mar-2001	21:00:00
30-Jun-2002	24:00:00	47155	at interval beginning	24-Apr-2002	03:00:00
30-Jun-2003	24:00:00	34209	at interval beginning	25-Mar-2003	24:00:00

Mean annual Minimum = 43847
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC2\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1951 to 2003 site 333005 Whanganui at Paetawa(simnat)
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
	1952	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

1953	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1954	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1955	0.0	0.0	0.0	0.0	0.0	0.0	1.0	4.0	0.0	10.0	0.0	0.0	15.0
1956	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0
1957	0.0	0.0	0.0	0.0	0.0	0.0	3.0	11.0	6.0	0.0	0.0	0.0	20.0
1958	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1959	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1960	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1961	0.0	0.0	0.0	0.0	0.0	2.0	17.5	0.0	0.0	0.0	0.0	0.0	19.5
1962	0.0	0.0	0.0	0.0	0.0	0.1	0.8	0.5	0.0	0.0	0.0	0.0	1.4
1963	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1964	0.0	0.0	0.0	0.0	0.0	5.0	0.0	17.3	0.0	0.0	0.0	0.0	22.3
1965	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1966	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1967	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1968	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	22.8	6.6	0.0	0.0	31.9
1969	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1970	0.0	0.0	0.0	0.0	1.8	0.0	7.4	28.0	25.5	23.1	9.8	0.0	95.5
1971	0.0	0.0	0.0	0.0	0.0	0.0	0.8	4.1	14.1	25.4	1.4	0.0	45.8
1972	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.8	2.9	0.0	0.0	0.0	7.6
1973	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.1	15.0	15.5	0.0	NaN	50.6
1974	0.0	0.0	0.0	0.0	0.0	0.0	6.9	18.6	25.1	15.8	12.1	0.0	78.5
1975	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1976	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3	0.0	0.0	0.0	3.3
1978	0.0	0.0	0.0	0.0	0.0	0.0	2.5	25.4	27.8	15.5	7.8	5.5	84.4
1979	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	0.0	0.0	0.0	0.0	2.4
1980	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.6	0.0	0.0	0.0	0.0	3.6
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.8
1984	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	NaN	1.0
1985	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	18.1	12.5	3.6	38.3
1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1987	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.9
1988	0.0	0.0	0.0	0.0	0.0	0.0	7.0	2.5	0.0	0.0	2.9	0.0	12.4
1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.4
1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.1	0.0	0.0	0.0	5.1
1991	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.5	5.3	0.0	0.0	NaN	9.8
1994	0.0	0.0	0.0	0.0	0.0	0.0	2.9	11.0	11.6	7.8	0.0	0.0	33.3
1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3	0.0	0.0	2.3
1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.3	9.3	3.8	0.0	0.0	28.3
2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	24.4	5.8	0.0	0.0	30.4
2001	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.0	0.0	0.0	1.8
2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.6	21.8	17.8	4.5	0.0	57.6
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max	0.0	0.0	0.0	0.0	1.8	5.0	17.5	28.0	27.8	25.4	12.5	5.5	
Mean	0.0	0.0	0.0	0.0	0.0	0.1	1.0	3.6	4.4	3.3	1.0	0.2	

6.28. Whanganui at Paetawa(simnat) (333005), July 1951 to July 1972 (pre-diversion)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 333005 Wanganui natural at Paetawa

From 1-Jul-1951 00:00:01 to 1-Jul-1972 00:00:01
Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	3794200	1280300	974029	847413	742622	665426	616283	577568	536887	503517
10	480958	457158	441866	419820	404538	389606	371839	359260	346216	332916
20	321410	309870	299922	293578	283359	275240	268290	261548	253385	245797
30	238867	233003	227022	221039	214710	209815	204723	199634	194169	189044
40	184537	179762	177822	173497	169061	164778	160765	157320	153931	150372
50	146924	143665	141097	138022	134558	131931	129481	125843	123894	121595
60	118712	116631	114141	111740	109299	106693	104292	102515	100303	98819
70	96062	95009	92432	90431	88316	86628	84915	82749	80718	78478
80	76893	75056	73306	71535	69292	67822	66006	64503	62469	61203
90	59202	57404	55638	54038	52049	49750	47719	45098	41353	36157
100	26995									

Flow duration curve tabulation (FDC), summer season
Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 333005 Wanganui natural at Paetawa
From 1-Jul-1951 00:00:01 to 1-Jul-1972 00:00:01
Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	3794200	1153400	833275	673056	579155	504379	457453	420804	399501	372418
10	346723	328363	309389	295185	282430	271213	261810	250765	239432	231461
20	220106	210173	202080	194131	187239	180459	175939	169647	164656	159358
30	154728	149771	146603	142842	139470	135836	133604	129869	126864	125059
40	122091	119551	117675	114408	112450	110475	107654	105538	103307	102306
50	100150	98955	96436	95626	93597	91734	89738	88554	87172	85579
60	84106	82448	80872	79141	77883	76618	75281	74347	73068	71668
70	70486	69024	68187	67226	66116	65318	64057	62807	62104	61067
80	60078	59057	58163	57216	56328	55271	54411	53518	52466	51272
90	50057	48878	47863	46815	45378	43701	41885	39341	36587	31657
100	26995									

Annual maximum series and mean annual flood (MAF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 333005 Wanganui natural at Paetawa
From 1-Jul-1951 00:00:00 to 30-Jun-1972 24:00:00
Interval = 0
flow m3/s

Year	Maximum	Date & Time
*1951	1716.0	25-Oct-1951 24:00
1952	2486.2	8-Nov-1952 24:00
1953	1325.2	3-Oct-1953 03:00
1954	2133.7	27-Aug-1954 03:00
1955	1814.5	5-May-1955 24:00
1956	2234.2	15-May-1956 24:00
1957	2326.2	16-Dec-1957 03:00
1958	3794.2	25-Feb-1958 12:00
1959	1462.0	30-May-1959 12:00
1960	1807.2	5-Jul-1960 24:00
1961	2240.0	23-Jan-1961 15:00
1962	2272.9	23-Jun-1962 12:00
1963	1156.9	13-Sep-1963 12:00
1964	2872.4	10-Mar-1964 12:00
1965	3246.2	6-Nov-1965 21:00
1966	2014.0	8-Jul-1966 03:00
1967	2585.9	1-Feb-1967 24:00

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1968      2764.4      6-Dec-1968 09:00
1969      1043.8      6-May-1969 12:00
1970      1501.4      30-Sep-1970 12:00
1971      2332.0      18-Oct-1971 12:00
*1972      1803.8      16-May-1972 09:00

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Average Annual Maximum 2170.7 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 333005 Whanganui natural at Paetawa
From 1-Jul-1951 00:00:00 to 30-Jun-1972 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1952 24:00:00	54453 at interval beginning 10-Apr-1952 24:00:00
30-Jun-1953 24:00:00	62495 at interval beginning 20-Mar-1953 24:00:00
30-Jun-1954 24:00:00	50942 at interval beginning 10-Apr-1954 24:00:00
30-Jun-1955 24:00:00	43042 at interval beginning 7-Apr-1955 24:00:00
30-Jun-1956 24:00:00	42164 at interval beginning 4-Apr-1956 24:00:00
30-Jun-1957 24:00:00	35198 at interval beginning 20-Feb-1957 24:00:00
30-Jun-1958 24:00:00	48808 at interval beginning 16-Feb-1958 12:00:00
30-Jun-1959 24:00:00	58543 at interval beginning 8-Dec-1958 06:00:00
30-Jun-1960 24:00:00	46521 at interval beginning 24-Jan-1960 06:00:00
30-Jun-1961 24:00:00	39770 at interval beginning 16-Jan-1961 03:00:00
30-Jun-1962 24:00:00	46076 at interval beginning 31-Dec-1961 18:00:00
30-Jun-1963 24:00:00	47786 at interval beginning 25-Mar-1963 15:00:00
30-Jun-1964 24:00:00	39689 at interval beginning 25-Feb-1964 12:00:00
30-Jun-1965 24:00:00	65788 at interval beginning 21-Apr-1965 21:00:00
30-Jun-1966 24:00:00	52926 at interval beginning 28-Mar-1966 09:00:00
30-Jun-1967 24:00:00	46712 at interval beginning 21-Apr-1967 03:00:00
30-Jun-1968 24:00:00	35097 at interval beginning 6-Apr-1968 06:00:00
30-Jun-1969 24:00:00	47482 at interval beginning 1-Apr-1969 24:00:00
30-Jun-1970 24:00:00	27037 at interval beginning 26-Feb-1970 12:00:00
30-Jun-1971 24:00:00	35919 at interval beginning 18-Apr-1971 21:00:00
30-Jun-1972 24:00:00	42498 at interval beginning 18-Feb-1972 06:00:00

Mean annual Minimum = 46140
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1951 to 1972 site 333005 Whanganui at Paetawa(simnat)
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1952	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1953	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1954	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1955	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	4.0	0.0	10.0	0.0	0.0	15.0
1956	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0
1957	0.0	0.0	0.0	0.0	0.0	0.0	3.0	11.0	6.0	0.0	0.0	0.0	0.0	20.0
1958	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1959	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1960	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

1961	0.0	0.0	0.0	0.0	0.0	2.0	17.5	0.0	0.0	0.0	0.0	0.0	19.5
1962	0.0	0.0	0.0	0.0	0.0	0.1	0.8	0.5	0.0	0.0	0.0	0.0	1.4
1963	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1964	0.0	0.0	0.0	0.0	0.0	5.0	0.0	17.3	0.0	0.0	0.0	0.0	22.3
1965	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1966	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1967	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1968	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	22.8	6.6	0.0	0.0	31.9
1969	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1970	0.0	0.0	0.0	0.0	1.8	0.0	7.4	28.0	25.5	23.1	9.8	0.0	95.5
1971	0.0	0.0	0.0	0.0	0.0	0.0	0.8	4.1	14.1	25.4	1.4	0.0	45.8
1972	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.8	2.9	0.0	0.0	0.0	7.6
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	0.0	0.0	0.0	0.0	1.8	5.0	17.5	28.0	25.5	25.4	9.8	0.0	
Mean	0.0	0.0	0.0	0.0	0.1	0.3	1.4	3.4	3.4	3.2	0.5	0.0	

6.29. Whanganui at Paetawa(simnat) (333005), July 1973 to July 1983 (1972 rules)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 333005 Wanganui natural at Paetawa

From 1-Jul-1973 00:00:01 to 1-Jul-1983 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	3152000	1250900	987564	845832	762084	693611	637516	585654	545327	508616
10	477000	450270	426371	404565	387954	372122	358534	346053	333229	321729
20	311575	302321	292805	283894	275843	268871	261573	253926	247162	240232
30	233100	227383	220770	215307	209845	204724	199876	195198	190938	186730
40	182650	178374	174184	170132	166107	161858	158343	154654	150945	147209
50	143874	140454	137264	134113	131113	128046	125008	121983	118835	116203
60	113440	110620	108171	105669	103301	100991	98726	96407	94396	92392
70	90354	88372	86402	84213	82280	80467	78452	76666	74656	72734
80	70913	68811	66983	64877	62693	60829	58854	57132	55064	53158
90	51008	49298	47728	46361	44764	42665	40474	37888	35246	31661
100	26085									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 333005 Wanganui natural at Paetawa

From 1-Jul-1973 00:00:01 to 1-Jul-1983 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	3107000	879789	667950	537258	464112	403834	366710	341198	315541	298302
10	280714	266187	252731	240000	228475	217858	209141	201172	193941	187612
20	182335	177024	172161	166731	161400	157461	152613	148184	144413	140725
30	137602	134358	131316	128365	125250	122324	119327	116753	114450	111871
40	109657	107536	105549	103692	101867	99843	97756	95976	94424	92883
50	91419	89825	88446	87057	85610	84197	82888	81782	80587	79256
60	77831	76642	75195	73783	72456	71151	69737	68282	67059	65816
70	64386	63107	61970	60944	59761	58709	57793	56869	55846	54642
80	53668	52595	51335	50293	49436	48481	47705	47018	46307	45500
90	44582	43579	41728	40243	38204	36896	35380	33117	31630	30522
100	26085									

Annual maximum series and mean annual flood (MAF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 333005 Wanganui natural at Paetawa
 From 1-Jul-1973 00:00:00 to 30-Jun-1983 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1973	2632.9	15-Sep-1973 24:00
1974	2969.8	2-Jul-1974 24:00
1975	3152.0	28-Aug-1975 09:00
1976	1977.1	28-Jun-1976 09:00
1977	1863.7	27-Jun-1977 24:00
1978	3107.0	11-Nov-1978 24:00
1979	2557.8	13-Oct-1979 21:00
1980	1949.1	30-Nov-1980 03:00
1981	1610.4	24-Sep-1981 03:00
1982	1467.7	19-Jul-1982 21:00
*1983	830.21	26-Apr-1983 18:00

Average Annual Maximum 2295.0 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 333005 Wanganui natural at Paetawa
 From 1-Jul-1973 00:00:00 to 30-Jun-1983 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1974 24:00:00	26176 at interval beginning 31-Mar-1974 09:00:00
30-Jun-1975 24:00:00	44025 at interval beginning 20-Apr-1975 12:00:00
30-Jun-1976 24:00:00	44711 at interval beginning 25-Mar-1976 21:00:00
30-Jun-1977 24:00:00	40428 at interval beginning 21-Mar-1977 03:00:00
30-Jun-1978 24:00:00	27051 at interval beginning 6-Mar-1978 12:00:00
30-Jun-1979 24:00:00	38256 at interval beginning 11-Feb-1979 03:00:00
30-Jun-1980 24:00:00	62274 at interval beginning 16-Feb-1980 18:00:00
30-Jun-1981 24:00:00	54337 at interval beginning 15-Mar-1981 18:00:00
30-Jun-1982 24:00:00	40755 at interval beginning 15-Feb-1982 21:00:00
30-Jun-1983 24:00:00	41762 at interval beginning 21-Mar-1983 24:00:00

Mean annual Minimum = 41978
 (For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
 Monthly totals 1973 to 1983 site 333005 Whanganui at Paetawa(simnat)
 Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1974	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.9	18.6	25.1	15.8	12.1	0.0	78.5
1975	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1976	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3	0.0	0.0	0.0	3.3
1978	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	25.4	27.8	15.5	7.8	5.5	84.4
1979	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	0.0	0.0	0.0	0.0	2.4

1980	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.6	0.0	0.0	0.0	0.0	3.6
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.8
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max	0.0	0.0	0.0	0.0	0.0	0.0	6.9	25.4	27.8	15.8	12.1	5.5	
Mean	0.0	0.0	0.0	0.0	0.0	0.0	0.9	5.0	5.7	3.1	2.0	0.5	

6.30. Whanganui at Paetawa(simnat) (333005), July 1984 to July 1992 (1983 rules)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 333005 Wanganui natural at Paetawa
 From 1-Jul-1984 00:00:01 to 1-Jul-1992 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	4084800	1256000	987883	831974	749239	689134	630904	585032	547396	516787
10	489515	465619	441936	421389	402829	384158	369374	354009	340169	327829
20	315365	304039	292906	282651	273453	264996	256863	248922	240639	233416
30	226760	219517	213148	206912	201632	195712	190281	185499	180783	176214
40	171843	167476	163468	159431	155749	152708	149424	146148	142944	139860
50	136819	133867	131226	128713	126243	123755	121226	119019	116570	114169
60	111576	109192	107103	104948	102542	100618	98458	96473	94334	92478
70	90725	88850	87113	85486	83774	81960	80323	78772	77292	75895
80	74383	72951	71418	69939	68443	66797	65279	63672	61967	60259
90	58252	56355	54510	52856	51237	49099	46707	44698	42223	39777
100	34070									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 333005 Wanganui natural at Paetawa
 From 1-Jul-1984 00:00:01 to 1-Jul-1992 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	4084800	985006	774126	657483	555832	490097	442781	399814	369280	340175
10	314803	292792	274824	260106	246014	234105	225640	215482	206667	197704
20	190032	181530	175283	169321	164491	159169	154930	150922	147480	143442
30	140478	137344	134288	131516	129078	126502	123878	121160	119218	116998
40	114894	112659	110449	108469	106765	104812	102745	101111	99363	97471
50	95570	93895	92363	90991	89579	88132	86958	85761	84548	83099
60	81862	80646	79466	78281	77260	76208	75134	74148	73124	72124
70	71090	70116	69161	68268	67113	66138	65284	64312	63349	62348
80	61491	60561	59159	58043	56929	55719	54774	53991	53162	52237
90	51345	50299	49045	47613	46482	45509	44296	42779	40220	37750
100	34070									

Annual maximum series and mean annual flood (MAF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 333005 Wanganui natural at Paetawa
 From 1-Jul-1984 00:00:00 to 30-Jun-1992 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
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*1984      1434.0      14-Dec-1984 06:00
1985      1844.8      21-Jun-1985 18:00
1986      2761.5      25-Jul-1986 09:00
1987      1437.2       8-Oct-1987 24:00
1988      1898.1      23-Aug-1988 15:00
1989      1963.3      15-Oct-1989 03:00
1990      4084.8       9-Mar-1990 12:00
1991      2599.4       6-Aug-1991 06:00
*1992      1151.8      14-Feb-1992 24:00

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Average Annual Maximum 2369.9 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 333005 Wanganui natural at Paetawa
 From 1-Jul-1984 00:00:00 to 30-Jun-1992 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1985 24:00:00	34186 at interval beginning 14-Apr-1985 15:00:00
30-Jun-1986 24:00:00	43208 at interval beginning 20-Apr-1986 12:00:00
30-Jun-1987 24:00:00	35616 at interval beginning 6-Jan-1987 12:00:00
30-Jun-1988 24:00:00	36950 at interval beginning 1-Feb-1988 15:00:00
30-Jun-1989 24:00:00	44266 at interval beginning 27-Apr-1989 15:00:00
30-Jun-1990 24:00:00	39813 at interval beginning 6-Mar-1990 24:00:00
30-Jun-1991 24:00:00	45020 at interval beginning 13-Jan-1991 09:00:00
30-Jun-1992 24:00:00	57993 at interval beginning 20-Dec-1991 06:00:00

Mean annual Minimum = 42132
 (For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
 Monthly totals 1984 to 1992 site 333005 Whanganui at Paetawa(simnat)
 Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
	1985	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	18.1	12.5	3.6	38.3
	1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1987	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.9
	1988	0.0	0.0	0.0	0.0	0.0	0.0	7.0	2.5	0.0	0.0	2.9	0.0	12.4
	1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.4
	1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.1	0.0	0.0	0.0	5.1
	1991	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max		0.0	0.0	0.0	0.0	0.0	0.0	7.0	2.5	5.1	18.1	12.5	3.6	
Mean		0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.3	1.1	2.3	1.9	0.5	

6.31. Whanganui at Paetawa(simnat) (333005), July 1993 to July 2003 (Planning Tribunal 1990)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 333005 Wanganui natural at Paetawa
From 1-Jul-1993 00:00:01 to 1-Jul-2003 00:00:01
Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	3816100	1428400	1127300	956024	834064	745387	673020	620363	575982	543286
10	513712	487305	463024	442342	424661	405477	388768	373486	358875	345092
20	332053	320237	308725	298032	287529	278121	269054	259611	251642	244753
30	237845	231227	225077	219075	213239	207399	202682	197991	193307	188313
40	183723	179671	175841	171830	167592	163739	159960	156031	152449	149199
50	146090	142906	139935	136870	133945	131280	128525	125810	122988	120431
60	117498	114750	112134	109454	106649	104092	101506	99294	97007	94795
70	92745	90930	89122	87289	85275	83274	81353	79473	77517	75578
80	73727	71727	69759	67872	65960	64076	62539	60749	58943	57438
90	55965	53934	51879	49772	47623	45157	43382	41784	40220	37716
100	34167									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 333005 Wanganui natural at Paetawa
From 1-Jul-1993 00:00:01 to 1-Jul-2003 00:00:01
Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	3028200	1177600	845259	690534	569852	504866	457896	421185	389628	365454
10	341355	321382	302995	287195	274497	261030	249358	239462	231003	222540
20	212998	205847	198800	191967	185400	180440	176063	170887	165891	161578
30	156754	152912	149344	145807	142500	139201	136102	132997	130289	127483
40	124511	121776	118687	115590	112690	110108	107371	105168	102862	100872
50	98979	97065	95186	93592	91895	90496	88942	87503	86020	84408
60	82837	81446	80163	78783	77399	75957	74673	73228	71699	70121
70	68787	67408	66057	64734	63622	62599	61391	60334	59067	58116
80	57109	56100	54844	53606	52438	51508	50224	49135	48014	46946
90	45503	44344	43499	42612	41798	40930	40250	39173	37711	35573
100	34167									

Annual maximum series and mean annual flood (MAF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 333005 Wanganui natural at Paetawa
From 1-Jul-1993 00:00:00 to 30-Jun-2003 24:00:00
Interval = 0
flow m3/s

Year	Maximum	Date & Time
*1993	1991.2	20-Nov-1993 21:00
1994	3028.2	7-Nov-1994 15:00
1995	2765.3	6-Sep-1995 06:00
1996	2532.5	30-Nov-1996 18:00
1997	1467.1	12-Nov-1997 12:00
1998	3805.5	27-Oct-1998 24:00
1999	2697.8	15-May-1999 21:00
2000	3816.1	1-Oct-2000 18:00

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2001      2495.1      8-Dec-2001 12:00
2002      1865.7      29-Sep-2002 03:00
*2003      1671.1      21-May-2003 03:00

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Average Annual Maximum 2719.2 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 333005 Whanganui natural at Paetawa
From 1-Jul-1993 00:00:00 to 30-Jun-2003 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1994 24:00:00	34464 at interval beginning 12-Mar-1994 15:00:00
30-Jun-1995 24:00:00	56627 at interval beginning 25-Jan-1995 12:00:00
30-Jun-1996 24:00:00	62495 at interval beginning 1-Feb-1996 15:00:00
30-Jun-1997 24:00:00	40867 at interval beginning 4-Apr-1997 09:00:00
30-Jun-1998 24:00:00	45578 at interval beginning 26-Mar-1998 12:00:00
30-Jun-1999 24:00:00	38074 at interval beginning 24-Feb-1999 21:00:00
30-Jun-2000 24:00:00	34898 at interval beginning 27-Mar-2000 18:00:00
30-Jun-2001 24:00:00	42351 at interval beginning 21-Mar-2001 21:00:00
30-Jun-2002 24:00:00	47155 at interval beginning 24-Apr-2002 03:00:00
30-Jun-2003 24:00:00	34209 at interval beginning 25-Mar-2003 24:00:00

Mean annual Minimum = 43672
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1993 to 2003 site 333005 Whanganui at Paetawa(simnat)
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
	1994	0.0	0.0	0.0	0.0	0.0	0.0	2.9	11.0	11.6	7.8	0.0	0.0	33.3
	1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3	0.0	0.0	2.3
	1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.3	9.3	3.8	0.0	0.0	28.3
	2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	24.4	5.8	0.0	0.0	30.4
	2001	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.0	0.0	0.0	1.8
	2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.6	21.8	17.8	4.5	0.0	57.6
Min		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max		0.0	0.0	0.0	0.0	0.0	0.0	2.9	15.3	24.4	17.8	4.5	0.0	
Mean		0.0	0.0	0.0	0.0	0.0	0.0	0.3	4.0	6.9	3.7	0.5	0.0	

6.32. Whanganui at Paetawa(sim consent) (8005), July 1962 to July 2003 (all data)

Flow duration curve tabulation (FDC), all data
Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
 Item 5
 From 1-Jul-1962 00:00:01 to 1-Jul-2003 00:00:01
 Paetawa l/s

	0	1	2	3	4	5	6	7	8	9
0	4074200	1257700	993365	839421	741367	668138	609957	562578	521206	488588
10	460146	435047	412777	391812	373527	356876	342572	328254	315531	303574
20	292760	282573	272616	263512	255068	247050	239166	231598	224498	217556
30	210945	205021	199044	193391	187986	182897	178125	173585	169269	164891
40	160633	156512	152529	148561	144768	141130	137644	134352	131176	127936
50	124973	121938	119059	116230	113545	110845	108206	105593	103050	100530
60	98103	95736	93423	91086	88847	86666	84551	82503	80437	78464
70	76620	74841	73082	71411	69658	68001	66445	64915	63405	62064
80	60593	59149	57705	56365	55147	54003	52963	51977	50991	50022
90	48962	48008	47005	45812	44594	43345	41945	40208	37816	34553
100	26085									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
 Item 5
 From 1-Jul-1962 00:00:01 to 1-Jul-2003 00:00:01
 Paetawa l/s

	0	1	2	3	4	5	6	7	8	9
0	4074200	976626	724533	587718	495731	437767	390129	356647	327034	303762
10	282348	265386	250957	236681	223846	212368	202200	193047	184706	177224
20	170582	164469	158660	153349	148102	143300	138822	134800	130927	127206
30	123811	120509	117372	114452	111809	109007	106222	103656	101107	98659
40	96247	94050	91881	89862	87932	86064	84315	82497	80730	79083
50	77558	76148	74775	73492	72253	71059	69763	68563	67434	66389
60	65345	64315	63257	62324	61429	60436	59505	58544	57648	56795
70	55996	55290	54622	53956	53321	52691	52101	51573	51015	50481
80	49921	49324	48771	48270	47754	47200	46585	45934	45294	44639
90	43974	43274	42521	41702	40614	39545	38182	36671	34790	31670
100	26085									

Annual maximum series and mean annual flood (MAF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
 From 1-Jul-1962 00:00:00 to 30-Jun-2003 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1962	2036.1	7-Oct-1962 06:00
1963	1133.6	13-Sep-1963 12:00
1964	2824.7	10-Mar-1964 12:00
1965	3206.7	6-Nov-1965 21:00
1966	1966.4	8-Jul-1966 03:00
1967	2575.1	1-Feb-1967 24:00
1968	2734.5	6-Dec-1968 06:00
1969	1032.9	6-May-1969 12:00
1970	1469.6	4-Aug-1970 24:00
1971	2285.7	18-Oct-1971 12:00
1972	1756.1	16-May-1972 09:00
1973	2585.3	15-Sep-1973 24:00
1974	2956.7	2-Jul-1974 24:00

1975	3104.3	28-Aug-1975	09:00
1976	1960.8	28-Jun-1976	09:00
1977	1816.1	27-Jun-1977	24:00
1978	3059.4	11-Nov-1978	24:00
1979	2521.5	13-Oct-1979	21:00
1980	1929.3	30-Nov-1980	03:00
1981	1589.2	24-Sep-1981	03:00
1982	1428.2	19-Jul-1982	21:00
1983	1647.0	7-Nov-1983	18:00
1984	1386.4	14-Dec-1984	06:00
1985	1797.1	21-Jun-1985	18:00
1986	2718.4	25-Jul-1986	12:00
1987	1392.6	8-Oct-1987	24:00
1988	1872.4	23-Aug-1988	15:00
1989	1933.1	4-Feb-1989	09:00
1990	4074.2	9-Mar-1990	12:00
1991	2581.5	6-Aug-1991	06:00
1992	1753.2	9-Aug-1992	18:00
1993	2146.0	15-May-1993	24:00
1994	2980.6	7-Nov-1994	15:00
1995	2736.1	6-Sep-1995	06:00
1996	2508.7	30-Nov-1996	18:00
1997	1451.4	12-Nov-1997	12:00
1998	3771.6	27-Oct-1998	24:00
1999	2659.2	15-May-1999	21:00
2000	3768.4	1-Oct-2000	18:00
2001	2468.3	8-Dec-2001	12:00
2002	1841.9	29-Sep-2002	03:00
*2003	1648.4	21-May-2003	03:00

Average Annual Maximum 2285.6 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is O:\elfhzlc22\Rawdata\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
From 1-Jul-1962 00:00:00 to 30-Jun-2003 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Paetawa l/s)			
30-Jun-1963 24:00:00	45699	at interval beginning	3-Feb-1963	03:00:00
30-Jun-1964 24:00:00	38210	at interval beginning	9-Dec-1963	06:00:00
30-Jun-1965 24:00:00	55095	at interval beginning	19-Apr-1965	21:00:00
30-Jun-1966 24:00:00	41851	at interval beginning	28-Mar-1966	09:00:00
30-Jun-1967 24:00:00	42462	at interval beginning	8-Mar-1967	21:00:00
30-Jun-1968 24:00:00	35097	at interval beginning	6-Apr-1968	06:00:00
30-Jun-1969 24:00:00	45140	at interval beginning	13-Jun-1969	09:00:00
30-Jun-1970 24:00:00	27037	at interval beginning	26-Feb-1970	12:00:00
30-Jun-1971 24:00:00	35919	at interval beginning	18-Apr-1971	21:00:00
30-Jun-1972 24:00:00	42498	at interval beginning	18-Feb-1972	06:00:00
30-Jun-1973 24:00:00	33718	at interval beginning	5-Apr-1973	12:00:00
30-Jun-1974 24:00:00	26176	at interval beginning	31-Mar-1974	09:00:00
30-Jun-1975 24:00:00	44025	at interval beginning	20-Apr-1975	12:00:00
30-Jun-1976 24:00:00	42246	at interval beginning	23-Mar-1976	06:00:00
30-Jun-1977 24:00:00	40428	at interval beginning	21-Mar-1977	03:00:00
30-Jun-1978 24:00:00	27051	at interval beginning	6-Mar-1978	12:00:00
30-Jun-1979 24:00:00	37875	at interval beginning	11-Feb-1979	06:00:00
30-Jun-1980 24:00:00	49604	at interval beginning	16-Feb-1980	18:00:00
30-Jun-1981 24:00:00	48580	at interval beginning	26-Feb-1981	24:00:00
30-Jun-1982 24:00:00	40044	at interval beginning	14-Feb-1982	24:00:00
30-Jun-1983 24:00:00	41632	at interval beginning	6-Mar-1983	06:00:00
30-Jun-1984 24:00:00	41439	at interval beginning	16-Jan-1984	15:00:00

30-Jun-1985 24:00:00	33153 at interval beginning	3-Jun-1985 12:00:00
30-Jun-1986 24:00:00	40592 at interval beginning	19-Oct-1985 15:00:00
30-Jun-1987 24:00:00	35466 at interval beginning	6-Jan-1987 15:00:00
30-Jun-1988 24:00:00	36950 at interval beginning	1-Feb-1988 15:00:00
30-Jun-1989 24:00:00	44266 at interval beginning	27-Apr-1989 15:00:00
30-Jun-1990 24:00:00	39813 at interval beginning	6-Mar-1990 24:00:00
30-Jun-1991 24:00:00	44655 at interval beginning	5-Jan-1991 21:00:00
30-Jun-1992 24:00:00	50181 at interval beginning	20-Dec-1991 03:00:00
30-Jun-1993 24:00:00	42417 at interval beginning	16-Feb-1993 15:00:00
30-Jun-1994 24:00:00	34464 at interval beginning	12-Mar-1994 15:00:00
30-Jun-1995 24:00:00	48813 at interval beginning	25-Jan-1995 09:00:00
30-Jun-1996 24:00:00	50199 at interval beginning	31-Jan-1996 03:00:00
30-Jun-1997 24:00:00	40867 at interval beginning	4-Apr-1997 09:00:00
30-Jun-1998 24:00:00	44938 at interval beginning	27-Mar-1998 03:00:00
30-Jun-1999 24:00:00	38074 at interval beginning	24-Feb-1999 21:00:00
30-Jun-2000 24:00:00	34898 at interval beginning	27-Mar-2000 18:00:00
30-Jun-2001 24:00:00	39397 at interval beginning	22-Mar-2001 03:00:00
30-Jun-2002 24:00:00	46666 at interval beginning	4-Oct-2001 15:00:00
30-Jun-2003 24:00:00	34209 at interval beginning	25-Mar-2003 24:00:00

Mean annual Minimum = 40533
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1962 to 2003 site 80055 Whanganui at Paetawa(sim consent)
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1963	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1964	0.0	0.0	0.0	0.0	0.0	0.0	6.9	0.0	12.1	0.0	0.0	0.0	0.0	19.0
1965	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1966	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1967	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1968	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.9	5.1	0.0	0.0	21.0
1969	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1970	0.0	0.0	0.0	0.0	10.6	0.0	2.0	28.0	23.6	22.1	6.3	0.0	0.0	92.6
1971	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0	8.5	23.3	1.4	0.0	34.4
1972	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1973	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.3	10.6	14.6	0.0	NaN	40.5
1974	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.4	15.9	24.1	15.8	6.9	0.0	67.0
1975	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
1976	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1978	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	19.1	27.1	14.4	2.8	6.8	71.3
1979	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.9
1980	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.1	0.0	0.0	0.0	0.6
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NaN	0.0
1985	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	3.1	17.8	5.0	3.8	29.9
1986	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6
1987	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.9
1988	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.4	2.5	0.0	0.0	0.0	0.0	7.9
1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.3
1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.6	0.0	0.0	0.0	2.6
1991	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

1993	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NaN	0.0
1994	0.0	0.0	0.0	0.0	0.0	0.0	0.6	9.3	8.4	7.1	0.0	0.0	25.4
1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.8
1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.1	5.4	1.3	0.0	0.0	15.8
2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.9	4.1	0.0	0.0	18.0
2001	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.9	0.0	0.0	0.0	4.9
2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	18.8	15.0	0.6	0.0	38.4
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max	0.0	0.0	0.0	0.6	10.6	6.9	5.4	28.0	27.1	23.3	6.9	6.8	6.8
Mean	0.0	0.0	0.0	0.0	0.3	0.2	0.4	2.9	4.1	3.5	0.6	0.3	0.3

6.33. Whanganui at Paetawa(sim consent) (8005), July 1962 to July 1972 (pre-diversion)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
Item 5

From 1-Jul-1962 00:00:01 to 1-Jul-1972 00:00:01

Paetawa l/s

	0	1	2	3	4	5	6	7	8	9
0	3206700	1202500	953919	803400	699696	633588	583305	537668	496877	467041
10	440776	419042	398168	378315	360582	345243	329694	317100	305255	294537
20	284164	274280	265208	257292	249241	241614	233929	226819	219975	213405
30	207544	202076	196703	191016	185787	181152	176463	171836	167882	163532
40	159338	155546	151774	147596	144005	140853	137547	134324	131051	128127
50	125394	122332	119232	116411	113658	111033	108432	106001	103573	101021
60	98642	96347	94136	91510	89241	87079	84954	82866	80525	78196
70	76108	74186	72446	70615	68785	67180	65464	63706	62082	60520
80	58847	57152	55803	54704	53704	52670	51757	50731	49662	48689
90	47668	46576	45579	44757	43596	41873	39907	38232	35824	31454
100	26995									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
Item 5

From 1-Jul-1962 00:00:01 to 1-Jul-1972 00:00:01

Paetawa l/s

	0	1	2	3	4	5	6	7	8	9
0	3206700	1030800	756206	630295	533497	463923	417486	379898	346493	319150
10	298426	278669	262568	249079	234810	221774	209958	199486	190081	182293
20	175461	169120	163511	157629	152088	146784	142124	137884	133627	129500
30	125845	122173	118497	115029	112068	109271	106452	103766	101089	98414
40	95753	93321	90904	88629	86711	85120	83519	81527	79360	77457
50	75719	74305	72912	71552	70103	68826	67572	66348	65174	63943
60	62747	61723	60807	59954	58819	57693	56706	55912	55255	54591
70	54009	53327	52682	52115	51562	51005	50486	49887	49332	48825
80	48306	47780	47237	46665	46064	45577	45121	44691	44065	43245
90	42297	41164	40168	39335	38420	37466	36269	33445	31523	28917

100 26995

Annual maximum series and mean annual flood (MAF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
 From 1-Jul-1962 00:00:00 to 30-Jun-1972 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1962	2036.1	7-Oct-1962 06:00
1963	1133.6	13-Sep-1963 12:00
1964	2824.7	10-Mar-1964 12:00
1965	3206.7	6-Nov-1965 21:00
1966	1966.4	8-Jul-1966 03:00
1967	2575.1	1-Feb-1967 24:00
1968	2734.5	6-Dec-1968 06:00
1969	1032.9	6-May-1969 12:00
1970	1469.6	4-Aug-1970 24:00
1971	2285.7	18-Oct-1971 12:00
*1972	1756.1	16-May-1972 09:00

Average Annual Maximum 2136.6 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
 From 1-Jul-1962 00:00:00 to 30-Jun-1972 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Paetawa l/s)
30-Jun-1963 24:00:00	45699 at interval beginning 3-Feb-1963 03:00:00
30-Jun-1964 24:00:00	38210 at interval beginning 9-Dec-1963 06:00:00
30-Jun-1965 24:00:00	55095 at interval beginning 19-Apr-1965 21:00:00
30-Jun-1966 24:00:00	41851 at interval beginning 28-Mar-1966 09:00:00
30-Jun-1967 24:00:00	42462 at interval beginning 8-Mar-1967 21:00:00
30-Jun-1968 24:00:00	35097 at interval beginning 6-Apr-1968 06:00:00
30-Jun-1969 24:00:00	45140 at interval beginning 13-Jun-1969 09:00:00
30-Jun-1970 24:00:00	27037 at interval beginning 26-Feb-1970 12:00:00
30-Jun-1971 24:00:00	35919 at interval beginning 18-Apr-1971 21:00:00
30-Jun-1972 24:00:00	42498 at interval beginning 18-Feb-1972 06:00:00

Mean annual Minimum = 40901
 (For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
 Monthly totals 1962 to 1972 site 80055 Whanganui at Paetawa(sim consent)
 Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1963	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1964	0.0	0.0	0.0	0.0	0.0	0.0	6.9	0.0	12.1	0.0	0.0	0.0	0.0	19.0

1965	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1966	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1967	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1968	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.9	5.1	0.0	0.0	21.0
1969	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1970	0.0	0.0	0.0	0.0	10.6	0.0	2.0	28.0	23.6	22.1	6.3	0.0	92.6
1971	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0	8.5	23.3	1.4	0.0	34.4
1972	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max	0.0	0.0	0.0	0.0	10.6	6.9	2.0	28.0	23.6	23.3	6.3	0.0	0.0
Mean	0.0	0.0	0.0	0.0	1.1	0.7	0.3	4.0	4.8	5.0	0.8	0.0	0.0

6.34. Whanganui at Paetawa(sim consent) (8005), July 1973 to July 1983 (1972 rules)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
Item 5
From 1-Jul-1973 00:00:01 to 1-Jul-1983 00:00:01
Paetawa l/s

	0	1	2	3	4	5	6	7	8	9
0	3104300	1221100	954062	813926	726031	661580	607525	558290	515046	480974
10	451390	424914	401093	380217	364065	348792	335226	323001	311134	300203
20	290705	281501	272257	263396	255552	248289	241021	234023	227212	220675
30	214165	208045	201857	196317	191083	185993	181077	176902	172625	168975
40	164903	160955	156740	152666	148690	144756	141139	137769	134066	130543
50	127159	123998	120693	117820	114813	112023	109059	106026	103037	100250
60	97756	95108	92741	90365	88188	86117	84058	81948	79766	77838
70	75955	74073	72180	70421	68679	67059	65510	64018	62578	60926
80	59221	57709	56290	54928	53742	52614	51349	50214	49072	48173
90	47197	46123	44886	43941	43008	41898	40228	37400	34848	31603
100	26085									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
Item 5
From 1-Jul-1973 00:00:01 to 1-Jul-1983 00:00:01
Paetawa l/s

	0	1	2	3	4	5	6	7	8	9
0	3059400	849807	642238	507119	434692	378184	341539	314494	292596	275415
10	259554	245022	231426	219068	207019	197491	188705	180549	174146	169381
20	163934	158889	153896	148227	143507	139026	135194	130832	127207	123410
30	120396	117556	114637	111800	108851	105700	102826	100127	97788	95560
40	93513	91408	89699	88027	86135	84496	82762	80855	79223	77705
50	76299	75043	73681	72422	71181	69906	68749	67681	66586	65609
60	64535	63445	62479	61440	60090	58975	58046	57114	56226	55409
70	54639	53917	53271	52597	51868	51196	50567	49895	49285	48753
80	48213	47678	47177	46695	46024	45385	44788	44342	43803	43312
90	42771	42153	41272	40102	38222	36895	35373	33113	31636	30517
100	26085									

Annual maximum series and mean annual flood (MAF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
 From 1-Jul-1973 00:00:00 to 30-Jun-1983 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1973	2585.3	15-Sep-1973 24:00
1974	2956.7	2-Jul-1974 24:00
1975	3104.3	28-Aug-1975 09:00
1976	1960.8	28-Jun-1976 09:00
1977	1816.1	27-Jun-1977 24:00
1978	3059.4	11-Nov-1978 24:00
1979	2521.5	13-Oct-1979 21:00
1980	1929.3	30-Nov-1980 03:00
1981	1589.2	24-Sep-1981 03:00
1982	1428.2	19-Jul-1982 21:00
*1983	819.18	26-Apr-1983 18:00

Average Annual Maximum 2262.8 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
 From 1-Jul-1973 00:00:00 to 30-Jun-1983 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Paetawa l/s)
30-Jun-1974 24:00:00	26176 at interval beginning 31-Mar-1974 09:00:00
30-Jun-1975 24:00:00	44025 at interval beginning 20-Apr-1975 12:00:00
30-Jun-1976 24:00:00	42246 at interval beginning 23-Mar-1976 06:00:00
30-Jun-1977 24:00:00	40428 at interval beginning 21-Mar-1977 03:00:00
30-Jun-1978 24:00:00	27051 at interval beginning 6-Mar-1978 12:00:00
30-Jun-1979 24:00:00	37875 at interval beginning 11-Feb-1979 06:00:00
30-Jun-1980 24:00:00	49604 at interval beginning 16-Feb-1980 18:00:00
30-Jun-1981 24:00:00	48580 at interval beginning 26-Feb-1981 24:00:00
30-Jun-1982 24:00:00	40044 at interval beginning 14-Feb-1982 24:00:00
30-Jun-1983 24:00:00	41632 at interval beginning 6-Mar-1983 06:00:00

Mean annual Minimum = 39766
 (For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
 Monthly totals 1973 to 1983 site 80055 Whanganui at Paetawa(sim consent)
 Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1974	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.4	15.9	24.1	15.8	6.9	0.0	67.0
1975	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
1976	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1978	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	19.1	27.1	14.4	2.8	6.8	71.3
1979	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.9

1980	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.1	0.0	0.0	0.0	0.6
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max	0.0	0.0	0.0	0.0	0.0	0.0	4.4	19.1	27.1	15.8	6.9	6.8	
Mean	0.0	0.0	0.0	0.0	0.0	0.0	0.5	3.6	5.1	3.0	1.0	0.7	

6.35. Whanganui at Paetawa(sim consent) (8005), July 1984 to July 1992 (1983 rules)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
 Item 5
 From 1-Jul-1984 00:00:01 to 1-Jul-1992 00:00:01
 Paetawa l/s

	0	1	2	3	4	5	6	7	8	9
0	4074200	1217200	953614	801104	720217	660291	599882	555081	517449	487770
10	463279	436864	414619	394519	376175	358817	344920	330528	317041	304591
20	292970	282119	271162	261526	253011	244538	236856	228540	221354	213483
30	206824	200210	193656	187936	182493	177534	172497	167673	163034	158577
40	154330	150406	146302	142716	139125	136050	133062	130276	127029	124143
50	121408	118531	115708	113016	110427	108166	105779	103448	101245	99056
60	96876	94646	92709	90649	88502	86301	84323	82362	80469	78690
70	76966	75374	73784	72231	70654	69082	67666	66295	65010	63764
80	62489	61226	60003	58808	57607	56434	55302	54122	53016	52097
90	51275	50328	49324	48415	47466	46445	44984	43557	41830	39499
100	32628									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
 Item 5
 From 1-Jul-1984 00:00:01 to 1-Jul-1992 00:00:01
 Paetawa l/s

	0	1	2	3	4	5	6	7	8	9
0	4074200	939127	739309	630258	528390	460478	413854	371997	340326	313771
10	290154	267843	252432	237234	223570	212813	203662	193728	186145	178056
20	169520	162249	155728	150811	145463	140809	136554	132971	129830	126479
30	123530	120559	117230	114470	111849	109382	106997	104611	102535	100744
40	98716	96801	94727	93017	91286	89533	87551	85553	83884	82130
50	80592	79126	77894	76514	75304	74104	72873	71802	70491	69247
60	68212	67275	66339	65374	64509	63641	62674	61877	60930	60083
70	59331	58574	57862	57207	56459	55770	55174	54566	53887	53262
80	52713	52219	51789	51347	50866	50310	49737	49232	48714	48198
90	47687	47165	46521	45803	45001	44174	43376	42267	40219	37754
100	34070									

Annual maximum series and mean annual flood (MAF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
 From 1-Jul-1984 00:00:00 to 30-Jun-1992 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1984	1386.4	14-Dec-1984 06:00
1985	1797.1	21-Jun-1985 18:00
1986	2718.4	25-Jul-1986 12:00
1987	1392.6	8-Oct-1987 24:00
1988	1872.4	23-Aug-1988 15:00
1989	1933.1	4-Feb-1989 09:00
1990	4074.2	9-Mar-1990 12:00
1991	2581.5	6-Aug-1991 06:00
*1992	1133.5	14-Feb-1992 24:00

Average Annual Maximum 2338.5 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
From 1-Jul-1984 00:00:00 to 30-Jun-1992 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Paetawa l/s)
30-Jun-1985 24:00:00	33153 at interval beginning 3-Jun-1985 12:00:00
30-Jun-1986 24:00:00	40592 at interval beginning 19-Oct-1985 15:00:00
30-Jun-1987 24:00:00	35466 at interval beginning 6-Jan-1987 15:00:00
30-Jun-1988 24:00:00	36950 at interval beginning 1-Feb-1988 15:00:00
30-Jun-1989 24:00:00	44266 at interval beginning 27-Apr-1989 15:00:00
30-Jun-1990 24:00:00	39813 at interval beginning 6-Mar-1990 24:00:00
30-Jun-1991 24:00:00	44655 at interval beginning 5-Jan-1991 21:00:00
30-Jun-1992 24:00:00	50181 at interval beginning 20-Dec-1991 03:00:00

Mean annual Minimum = 40635
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1984 to 1992 site 80055 Whanganui at Paetawa(sim consent)
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
	1985	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	3.1	17.8	5.0	3.8	29.9
	1986	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6
	1987	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.9
	1988	0.0	0.0	0.0	0.0	0.0	0.0	5.4	2.5	0.0	0.0	0.0	0.0	7.9
	1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.3
	1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.6	0.0	0.0	0.0	2.6
	1991	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max		0.0	0.0	0.0	0.6	0.0	0.0	5.4	2.5	3.1	17.8	5.0	3.8	
Mean		0.0	0.0	0.0	0.1	0.0	0.0	0.8	0.3	0.7	2.3	0.6	0.5	

6.36. Whanganui at Paetawa(sim consent) (8005), July 1993 to July 2003 (Planning Tribunal 1990)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
Item 5

From 1-Jul-1993 00:00:01 to 1-Jul-2003 00:00:01

Paetawa l/s

	0	1	2	3	4	5	6	7	8	9
0	3771600	1400300	1092900	920434	802990	714135	640059	589540	545078	512564
10	485701	459105	435420	415746	396785	379094	363213	347714	333728	320526
20	307784	296214	285247	274735	265025	256049	247232	238400	230750	223774
30	217315	210453	204774	199031	193262	187997	182730	178131	173737	169242
40	164964	161200	157155	153406	149794	146020	142318	138553	135334	132167
50	128909	125794	122801	120181	117523	115146	112715	110091	107486	104980
60	102194	99525	96956	94448	91945	89373	87066	84820	82544	80522
70	78673	76966	75262	73710	72114	70446	68680	66884	65255	63652
80	62357	61004	59593	58178	56686	55266	54109	53064	52086	51253
90	50383	49333	48374	47337	45989	44201	42714	41526	40156	37708
100	34167									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
Item 5

From 1-Jul-1993 00:00:01 to 1-Jul-2003 00:00:01

Paetawa l/s

	0	1	2	3	4	5	6	7	8	9
0	2980600	1151600	816469	656130	538600	475547	430919	394575	364044	337462
10	315697	296738	278714	264167	251395	238835	227584	218054	209039	200678
20	192978	185422	178059	171766	166252	160916	155977	151341	146624	142234
30	138027	134687	131081	127569	124208	121093	118063	115449	113019	110544
40	107646	104958	102088	99207	96481	94130	91601	89253	87377	85415
50	83519	81524	80068	78510	77122	75647	74353	73167	71927	70712
60	69413	68010	66853	65823	64579	63486	62576	61676	60758	59801
70	58825	57742	56655	55718	54913	54159	53434	52777	52093	51582
80	51087	50608	50061	49452	48831	48334	47780	47120	46283	45306
90	44418	43559	42776	42131	41468	40836	40162	39131	37707	35599
100	34167									

Annual maximum series and mean annual flood (MAF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4

From 1-Jul-1993 00:00:00 to 30-Jun-2003 24:00:00

Interval = 0

flow m3/s

Year	Maximum	Date & Time
*1993	1943.6	20-Nov-1993 21:00
1994	2980.6	7-Nov-1994 15:00
1995	2736.1	6-Sep-1995 06:00
1996	2508.7	30-Nov-1996 18:00
1997	1451.4	12-Nov-1997 12:00
1998	3771.6	27-Oct-1998 24:00

1999	2659.2	15-May-1999	21:00
2000	3768.4	1-Oct-2000	18:00
2001	2468.3	8-Dec-2001	12:00
2002	1841.9	29-Sep-2002	03:00
*2003	1648.4	21-May-2003	03:00

Average Annual Maximum 2687.4 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
From 1-Jul-1993 00:00:00 to 30-Jun-2003 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Paetawa l/s)
30-Jun-1994 24:00:00	34464 at interval beginning 12-Mar-1994 15:00:00
30-Jun-1995 24:00:00	48813 at interval beginning 25-Jan-1995 09:00:00
30-Jun-1996 24:00:00	50199 at interval beginning 31-Jan-1996 03:00:00
30-Jun-1997 24:00:00	40867 at interval beginning 4-Apr-1997 09:00:00
30-Jun-1998 24:00:00	44938 at interval beginning 27-Mar-1998 03:00:00
30-Jun-1999 24:00:00	38074 at interval beginning 24-Feb-1999 21:00:00
30-Jun-2000 24:00:00	34898 at interval beginning 27-Mar-2000 18:00:00
30-Jun-2001 24:00:00	39397 at interval beginning 22-Mar-2001 03:00:00
30-Jun-2002 24:00:00	46666 at interval beginning 4-Oct-2001 15:00:00
30-Jun-2003 24:00:00	34209 at interval beginning 25-Mar-2003 24:00:00

Mean annual Minimum = 41253
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1993 to 2003 site 80055 Whanganui at Paetawa(sim consent)
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1994	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	9.3	8.4	7.1	0.0	0.0	25.4
1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.8
1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.1	5.4	1.3	0.0	0.0	15.8
2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.9	4.1	0.0	0.0	18.0
2001	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.9	0.0	0.0	0.0	4.9
2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	18.8	15.0	0.6	0.0	38.4
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	9.3	18.8	15.0	0.6	0.0	
Mean	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	2.2	5.1	2.8	0.1	0.0	

6.37. Whanganui at Piriaka (33356), July 1971 to July 2003 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 33356 Whanganui at Piriaka
 From 1-Jul-1971 00:00:01 to 1-Jul-2003 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	1056400	176302	124785	99912	85137	73804	65997	60186	55511	51839
10	48792	46244	43900	41861	39977	38355	36870	35548	34442	33380
20	32416	31473	30586	29790	29075	28365	27716	27124	26541	25995
30	25471	24972	24451	24005	23549	23137	22728	22350	21944	21586
40	21248	20896	20584	20278	20009	19733	19473	19222	18989	18752
50	18552	18324	18146	17926	17739	17525	17326	17109	16910	16707
60	16499	16308	16061	15870	15630	15421	15233	14999	14795	14564
70	14357	14160	13937	13716	13514	13313	13068	12835	12605	12387
80	12157	11882	11658	11399	11174	10930	10719	10476	10244	9958
90	9675	9350	8954	8652	8360	8098	7846	7619	7441	7145
100	3872									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 33356 Whanganui at Piriaka
 From 1-Jul-1971 00:00:01 to 1-Jul-2003 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	934190	143751	91154	69941	58639	52082	47042	42945	39624	37091
10	35005	33296	31776	30490	29430	28344	27376	26551	25838	25133
20	24440	23804	23216	22738	22252	21783	21341	20987	20643	20343
30	20068	19800	19564	19335	19124	18931	18742	18548	18384	18200
40	18034	17870	17696	17540	17354	17204	17012	16830	16682	16486
50	16296	16122	15920	15741	15525	15320	15132	14922	14754	14543
60	14372	14160	13971	13760	13584	13382	13182	12973	12793	12587
70	12404	12222	12014	11825	11603	11420	11251	11027	10874	10702
80	10536	10348	10175	9992	9782	9579	9348	9073	8824	8628
90	8437	8261	8092	7953	7810	7669	7529	7374	7207	6948
100	3872									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 33356 Whanganui at Piriaka
 From 1-Jul-1971 00:00:00 to 30-Jun-2003 24:00:00
 Interval = 0
 flow m³/s

Year	Maximum	Date & Time
*1971	550.18	19-Oct-1971 04:28
1972	625.55	5-Mar-1972 08:44
1973	470.26	11-Jan-1973 18:03
1974	352.70	3-Jul-1974 09:00
1975	391.00	7-Jun-1975 07:15
1976	484.59	30-Apr-1976 13:00
1977	490.60	28-Jun-1977 18:30
1978	894.38	12-Nov-1978 21:15
1979	571.89	14-Oct-1979 17:00
1980	583.26	22-Jan-1980 22:45

1981	522.18	25-Sep-1981	01:00
1982	404.18	25-Feb-1982	00:30
1983	382.70	3-Apr-1983	13:15
1984	502.68	16-Dec-1984	20:45
1985	387.44	2-Dec-1985	11:45
1986	668.77	26-Jul-1986	01:30
1987	291.22	22-Jan-1987	14:45
1988	533.24	8-Jun-1988	09:00
1989	443.14	22-Jan-1989	10:45
1990	769.05	10-Mar-1990	19:15
1991	670.09	7-Aug-1991	05:45
1992	460.78	18-Jan-1992	00:45
1993	892.92	21-Nov-1993	15:15
1994	645.98	16-Nov-1994	14:30
1995	623.00	7-Sep-1995	04:15
1996	877.41	1-Dec-1996	11:00
1997	934.19	9-Apr-1997	06:00
1998	1056.5	28-Oct-1998	18:30
1999	509.41	16-May-1999	22:15
2000	874.46	2-Oct-2000	20:40
2001	715.12	25-May-2001	15:15
2002	587.73	26-Dec-2002	07:50
*2003	534.94	22-May-2003	06:10

Average Annual Maximum 600.53 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 33356 Whanganui at Piriaka
From 1-Jul-1971 00:00:00 to 30-Jun-2003 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1972 24:00:00	14700 at interval beginning 3-Mar-1972 11:23:18
30-Jun-1973 24:00:00	12716 at interval beginning 23-Jun-1973 13:00:00
30-Jun-1974 24:00:00	6170 at interval beginning 20-Mar-1974 02:15:00
30-Jun-1975 24:00:00	6877 at interval beginning 31-Mar-1975 01:00:00
30-Jun-1976 24:00:00	7097 at interval beginning 13-Mar-1976 23:15:00
30-Jun-1977 24:00:00	6735 at interval beginning 6-Mar-1977 09:15:00
30-Jun-1978 24:00:00	5919 at interval beginning 31-Mar-1978 05:45:00
30-Jun-1979 24:00:00	6896 at interval beginning 3-Jul-1978 18:15:00
30-Jun-1980 24:00:00	7934 at interval beginning 13-Jul-1979 08:00:00
30-Jun-1981 24:00:00	8633 at interval beginning 20-Mar-1981 16:00:00
30-Jun-1982 24:00:00	9406 at interval beginning 7-Feb-1982 14:00:00
30-Jun-1983 24:00:00	6683 at interval beginning 15-Mar-1983 07:00:00
30-Jun-1984 24:00:00	6826 at interval beginning 2-Mar-1984 07:15:00
30-Jun-1985 24:00:00	6225 at interval beginning 17-May-1985 08:15:00
30-Jun-1986 24:00:00	6469 at interval beginning 25-Apr-1986 08:45:00
30-Jun-1987 24:00:00	6772 at interval beginning 23-Feb-1987 02:00:00
30-Jun-1988 24:00:00	7091 at interval beginning 8-Mar-1988 12:00:00
30-Jun-1989 24:00:00	7500 at interval beginning 10-Apr-1989 08:30:00
30-Jun-1990 24:00:00	7560 at interval beginning 24-Feb-1990 19:15:00
30-Jun-1991 24:00:00	7602 at interval beginning 25-Mar-1991 24:00:00
30-Jun-1992 24:00:00	8446 at interval beginning 5-Jun-1992 08:15:00
30-Jun-1993 24:00:00	12404 at interval beginning 27-Nov-1992 00:30:00
30-Jun-1994 24:00:00	10758 at interval beginning 14-Aug-1993 07:45:00
30-Jun-1995 24:00:00	11752 at interval beginning 19-Dec-1994 19:15:00
30-Jun-1996 24:00:00	15108 at interval beginning 9-Dec-1995 17:30:00
30-Jun-1997 24:00:00	13387 at interval beginning 16-Jun-1997 19:00:00
30-Jun-1998 24:00:00	12435 at interval beginning 9-Aug-1997 20:15:00
30-Jun-1999 24:00:00	12173 at interval beginning 24-Jan-1999 09:30:00

30-Jun-2000 24:00:00 11733 at interval beginning 18-Oct-1999 17:15:00
 30-Jun-2001 24:00:00 10288 at interval beginning 18-Jul-2000 21:00:00
 30-Jun-2002 24:00:00 9920 at interval beginning 3-Oct-2001 13:25:00
 30-Jun-2003 24:00:00 11454 at interval beginning 11-Jan-2003 09:10:00

Mean annual Minimum = 9240
 (For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
 Monthly totals 1971 to 2003 site 33356 Whanganui at Piriaka
 Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1972	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1973	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	NaN	0.3
1974	0.0	0.0	0.0	0.1	0.0	0.0	1.6	10.0	13.2	10.8	5.2	0.1	0.1	41.0
1975	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9	6.0	2.0	0.0	0.0	0.0	10.0
1976	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	4.2	1.2	0.0	0.0	0.0	5.5
1977	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.4	4.2	1.3	0.0	0.0	6.2
1978	0.0	0.0	0.0	0.0	0.0	0.1	6.5	0.6	1.3	10.1	1.0	3.9	23.7	
1979	2.9	0.0	0.0	0.0	0.0	0.0	1.4	0.5	0.0	0.1	0.1	0.2	5.4	
1980	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.3	
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.2	0.1	0.0	0.0	0.7	
1982	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.2	0.8	
1983	0.1	0.2	0.0	0.0	0.2	0.0	0.0	0.9	9.9	0.1	0.0	0.0	11.5	
1984	0.0	0.1	0.0	0.0	0.2	7.8	2.4	6.0	2.8	11.1	0.1	NaN	30.7	
1985	0.0	0.0	0.2	0.0	0.1	0.0	0.3	4.0	14.5	2.2	3.7	0.5	25.4	
1986	0.0	0.0	0.1	0.3	0.3	0.1	0.0	0.2	1.7	4.9	1.2	0.0	9.0	
1987	0.0	0.0	0.0	0.0	0.2	0.2	0.7	2.4	1.8	0.0	0.1	0.0	5.5	
1988	0.1	0.1	0.0	0.0	0.0	0.1	0.2	0.3	1.0	1.1	0.5	0.0	3.4	
1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.1	0.0	0.5	
1990	0.0	0.1	0.2	0.0	0.1	0.3	0.0	0.5	0.2	0.2	0.0	0.1	1.8	
1991	0.0	0.0	0.0	0.1	0.0	0.4	0.1	0.2	0.6	0.2	0.2	0.0	1.8	
1992	0.0	0.0	0.0	0.1	0.0	0.3	0.0	0.2	0.0	0.2	0.2	0.0	1.1	
1993	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.1	0.0	0.0	NaN	0.5	
1994	3.9	8.3	0.3	8.3	0.1	0.3	0.4	0.8	0.0	0.0	0.3	0.0	22.7	
1995	0.0	0.0	0.0	0.0	0.0	1.1	0.2	0.1	0.0	0.0	0.0	0.0	1.6	
1996	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.4	
1997	0.0	0.0	0.0	0.0	0.1	0.0	0.2	0.0	0.0	0.1	0.0	0.0	0.6	
1998	0.0	0.2	0.1	0.0	0.0	0.2	0.0	0.0	0.1	0.1	0.0	0.0	0.8	
1999	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.1	0.0	0.0	0.0	0.6	
2000	0.1	0.0	0.0	1.0	0.1	0.0	0.1	0.0	0.1	0.2	0.0	0.0	1.5	
2001	10.2	0.0	0.0	0.0	2.7	0.1	0.1	4.5	14.5	0.0	0.2	0.0	32.3	
2002	1.8	0.0	8.9	11.4	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	22.4	
2003	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.1	0.1	0.0	0.0	0.0	3.4	
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	10.2	8.3	8.9	11.4	2.7	7.8	6.5	10.0	14.5	11.1	5.2	3.9		
Mean	0.6	0.3	0.3	0.7	0.1	0.4	0.6	1.1	2.4	1.5	0.4	0.2		

6.38. Whanganui at Piriaka (33356), July 1973 to July 1983 (1972 rules)

Flow duration curve tabulation (FDC), all data
 Exceedance percentiles

Source is HORIZONS.MTD Site 33356 Whanganui at Piriaka
 From 1-Jul-1973 00:00:01 to 1-Jul-1983 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	894382	147532	104672	84225	70616	62445	56682	52043	48201	45076
10	42162	39687	37679	36138	34752	33605	32518	31486	30521	29583
20	28839	28072	27328	26683	26020	25504	24937	24426	23920	23455
30	22978	22541	22125	21757	21397	21048	20697	20341	19976	19609
40	19307	19003	18658	18350	18063	17794	17497	17244	16936	16656
50	16403	16098	15861	15583	15327	15117	14847	14633	14372	14162
60	13904	13738	13501	13296	13065	12879	12672	12450	12264	12064
70	11871	11677	11489	11290	11116	10943	10808	10640	10480	10357
80	10178	9998	9779	9620	9350	9111	8843	8644	8476	8328
90	8197	8090	7933	7815	7692	7568	7440	7312	7186	6936
100	4024									

Flow duration curve tabulation (FDC), summer season
 Exceedance percentiles

Source is HORIZONS.MTD Site 33356 Whanganui at Piriaka
 From 1-Jul-1973 00:00:01 to 1-Jul-1983 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	894382	113781	78020	60089	52387	45757	40580	37230	34396	32215
10	30435	28938	27396	26078	25194	24349	23557	22775	22115	21461
20	20972	20426	19922	19493	19102	18679	18290	17931	17586	17259
30	16907	16613	16274	15947	15633	15381	15105	14838	14596	14382
40	14175	13940	13725	13578	13362	13150	12992	12832	12652	12505
50	12359	12190	12077	11914	11752	11630	11494	11374	11249	11120
60	11023	10900	10800	10691	10572	10481	10355	10249	10141	10025
70	9896	9779	9657	9488	9342	9139	8967	8805	8709	8565
80	8480	8382	8314	8197	8134	8071	8008	7919	7849	7754
90	7664	7596	7525	7452	7381	7313	7241	7085	6950	6750
100	4245									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 33356 Whanganui at Piriaka
 From 1-Jul-1973 00:00:00 to 30-Jun-1983 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1973	459.59	16-Sep-1973 21:45
1974	352.70	3-Jul-1974 09:00
1975	391.00	7-Jun-1975 07:15
1976	484.59	30-Apr-1976 13:00
1977	490.60	28-Jun-1977 18:30
1978	894.38	12-Nov-1978 21:15
1979	571.89	14-Oct-1979 17:00
1980	583.26	22-Jan-1980 22:45
1981	522.18	25-Sep-1981 01:00
1982	404.18	25-Feb-1982 00:30
*1983	382.70	3-Apr-1983 13:15

Average Annual Maximum 521.64 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 33356 Whanganui at Piriaka
 From 1-Jul-1973 00:00:00 to 30-Jun-1983 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1974 24:00:00	6170 at interval beginning 20-Mar-1974 02:15:00
30-Jun-1975 24:00:00	6877 at interval beginning 31-Mar-1975 01:00:00
30-Jun-1976 24:00:00	7097 at interval beginning 13-Mar-1976 23:15:00
30-Jun-1977 24:00:00	6735 at interval beginning 6-Mar-1977 09:15:00
30-Jun-1978 24:00:00	5919 at interval beginning 31-Mar-1978 05:45:00
30-Jun-1979 24:00:00	6896 at interval beginning 3-Jul-1978 18:15:00
30-Jun-1980 24:00:00	7934 at interval beginning 13-Jul-1979 08:00:00
30-Jun-1981 24:00:00	8633 at interval beginning 20-Mar-1981 16:00:00
30-Jun-1982 24:00:00	9406 at interval beginning 7-Feb-1982 14:00:00
30-Jun-1983 24:00:00	6683 at interval beginning 15-Mar-1983 07:00:00

Mean annual Minimum = 7235
 (For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
 Monthly totals 1973 to 1983 site 33356 Whanganui at Piriaka
 Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1974	0.0	0.0	0.0	0.1	0.0	0.0	1.6	10.0	13.2	10.8	5.2	0.1	41.0	
1975	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9	6.0	2.0	0.0	0.0	10.0	
1976	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	4.2	1.2	0.0	0.0	5.5	
1977	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.4	4.2	1.3	0.0	0.0	6.2	
1978	0.0	0.0	0.0	0.0	0.0	0.1	6.5	0.6	1.3	10.1	1.0	3.9	23.7	
1979	2.9	0.0	0.0	0.0	0.0	0.0	1.4	0.5	0.0	0.1	0.1	0.2	5.4	
1980	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.3	
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.2	0.1	0.0	0.0	0.7	
1982	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.2	0.8	
1983	0.1	0.2	0.0	0.0	0.2	0.0	0.0	0.9	9.9	0.1	0.0	0.0	11.5	
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Max	2.9	0.2	0.0	0.1	0.2	0.1	6.5	10.0	13.2	10.8	5.2	3.9		
Mean	0.3	0.0	0.0	0.0	0.0	0.0	1.0	1.5	3.9	2.6	0.6	0.4		

6.39. Whanganui at Piriaka (33356), July 1984 to July 1992 (1983 rules)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 33356 Whanganui at Piriaka
 From 1-Jul-1984 00:00:01 to 1-Jul-1992 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	769051	170345	121075	95857	81611	69288	62101	56329	51740	48091
10	45298	42713	40283	38398	36614	34987	33604	32466	31361	30276

20	29427	28520	27651	26884	26185	25469	24761	24137	23557	23017
30	22514	22049	21551	21149	20730	20270	19891	19496	19081	18642
40	18325	18031	17710	17382	17044	16709	16472	16153	15824	15611
50	15335	15093	14832	14609	14376	14224	14081	13852	13691	13555
60	13399	13166	13017	12853	12667	12471	12330	12197	12064	11895
70	11693	11566	11404	11262	11120	10975	10833	10671	10478	10336
80	10193	10047	9867	9721	9580	9415	9221	9025	8804	8630
90	8449	8266	8070	7906	7759	7623	7496	7392	7277	6984
100	3889									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 33356 Whanganui at Piriaka
 From 1-Jul-1984 00:00:01 to 1-Jul-1992 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	769051	165722	108465	79577	63029	54194	48236	43512	39967	37018
10	34236	32199	30357	29090	27724	26594	25654	24584	23542	22722
20	22115	21556	20930	20389	19908	19364	18906	18434	18087	17742
30	17360	16993	16628	16260	15902	15664	15402	15108	14881	14603
40	14432	14235	14064	13924	13736	13588	13463	13293	13137	12977
50	12841	12694	12521	12417	12317	12217	12097	11911	11806	11708
60	11580	11471	11374	11273	11169	10985	10871	10779	10671	10567
70	10425	10333	10237	10135	10023	9886	9703	9585	9472	9326
80	9190	9053	8892	8746	8625	8506	8384	8257	8131	8019
90	7913	7807	7703	7606	7530	7440	7318	7174	7044	6800
100	3917									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 33356 Whanganui at Piriaka
 From 1-Jul-1984 00:00:00 to 30-Jun-1992 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1984	502.68	16-Dec-1984 20:45
1985	387.44	2-Dec-1985 11:45
1986	668.77	26-Jul-1986 01:30
1987	291.22	22-Jan-1987 14:45
1988	533.24	8-Jun-1988 09:00
1989	443.14	22-Jan-1989 10:45
1990	769.05	10-Mar-1990 19:15
1991	670.09	7-Aug-1991 05:45
*1992	460.78	18-Jan-1992 00:45

Average Annual Maximum 537.56 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 33356 Whanganui at Piriaka
 From 1-Jul-1984 00:00:00 to 30-Jun-1992 24:00:00

Minimum moving averages over 1.000day interval

Year Ending Minimum Value (Flow l/s)

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30-Jun-1985 24:00:00      6225 at interval beginning 17-May-1985 08:15:00
30-Jun-1986 24:00:00      6469 at interval beginning 25-Apr-1986 08:45:00
30-Jun-1987 24:00:00      6772 at interval beginning 23-Feb-1987 02:00:00
30-Jun-1988 24:00:00      7091 at interval beginning  8-Mar-1988 12:00:00
30-Jun-1989 24:00:00      7500 at interval beginning 10-Apr-1989 08:30:00
30-Jun-1990 24:00:00      7560 at interval beginning 24-Feb-1990 19:15:00
30-Jun-1991 24:00:00      7602 at interval beginning 25-Mar-1991 24:00:00
30-Jun-1992 24:00:00      8446 at interval beginning  5-Jun-1992 08:15:00

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Mean annual Minimum = 7208
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1984 to 1992 site 33356 Whanganui at Piriaka
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1985	0.0	0.0	0.2	0.0	0.1	0.0	0.3	4.0	14.5	2.2	3.7	0.5	25.4	
1986	0.0	0.0	0.1	0.3	0.3	0.1	0.0	0.2	1.7	4.9	1.2	0.0	9.0	
1987	0.0	0.0	0.0	0.0	0.2	0.2	0.7	2.4	1.8	0.0	0.1	0.0	5.5	
1988	0.1	0.1	0.0	0.0	0.0	0.1	0.2	0.3	1.0	1.1	0.5	0.0	3.4	
1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.1	0.0	0.5	
1990	0.0	0.1	0.2	0.0	0.1	0.3	0.0	0.5	0.2	0.2	0.0	0.1	1.8	
1991	0.0	0.0	0.0	0.1	0.0	0.4	0.1	0.2	0.6	0.2	0.2	0.0	1.8	
1992	0.0	0.0	0.0	0.1	0.0	0.3	0.0	0.2	0.0	0.2	0.2	0.0	1.1	
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	0.1	0.1	0.2	0.3	0.3	0.4	0.7	4.0	14.5	4.9	3.7	0.5		
Mean	0.0	0.0	0.1	0.1	0.1	0.2	0.2	1.0	2.5	1.1	0.7	0.1		

6.40. Whanganui at Piriaka (33356), July 1993 to July 2003 (Planning Tribunal 1990)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 33356 Whanganui at Piriaka
From 1-Jul-1993 00:00:01 to 1-Jul-2003 00:00:01
Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	1056400	199568	134258	104707	88306	76339	67639	61832	57034	53209
10	50170	47580	45221	43325	41536	39928	38477	37136	35919	34849
20	33861	32884	31940	31122	30336	29621	28973	28344	27762	27234
30	26724	26250	25788	25341	24917	24485	24102	23752	23411	23073
40	22767	22447	22119	21792	21479	21202	20933	20700	20485	20273
50	20088	19894	19711	19553	19382	19237	19093	18936	18791	18657
60	18527	18396	18264	18138	18019	17898	17770	17635	17504	17380
70	17256	17131	17008	16864	16743	16620	16483	16343	16210	16057
80	15893	15739	15570	15407	15249	15056	14888	14714	14535	14342
90	14120	13889	13642	13429	13180	12902	12583	12195	11733	11069
100	4566									

Flow duration curve tabulation (FDC), summer season
Exceedance percentiles

Source is HORIZONS.MTD Site 33356 Whanganui at Piriaka
From 1-Jul-1993 00:00:01 to 1-Jul-2003 00:00:01
Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	934190	162897	93745	73184	60447	53130	48124	44060	40766	38241
10	36285	34689	33324	32030	30955	29923	29009	28119	27360	26713
20	26117	25545	24996	24517	24058	23639	23246	22881	22543	22181
30	21825	21504	21232	20994	20772	20584	20414	20253	20094	19928
40	19779	19654	19537	19413	19280	19169	19062	18958	18857	18770
50	18672	18558	18465	18372	18279	18200	18121	18027	17930	17832
60	17740	17649	17557	17467	17377	17284	17191	17097	17005	16915
70	16829	16742	16656	16547	16438	16335	16242	16137	16022	15914
80	15779	15629	15464	15319	15161	15030	14880	14753	14553	14369
90	14183	13984	13759	13542	13351	13100	12829	12531	12109	11375
100	4566									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 33356 Whanganui at Piriaka
From 1-Jul-1993 00:00:00 to 30-Jun-2003 24:00:00
Interval = 0
flow m3/s

Year	Maximum	Date & Time
*1993	892.92	21-Nov-1993 15:15
1994	645.98	16-Nov-1994 14:30
1995	623.00	7-Sep-1995 04:15
1996	877.41	1-Dec-1996 11:00
1997	934.19	9-Apr-1997 06:00
1998	1056.5	28-Oct-1998 18:30
1999	509.41	16-May-1999 22:15
2000	874.46	2-Oct-2000 20:40
2001	715.12	25-May-2001 15:15
2002	587.73	26-Dec-2002 07:50
*2003	534.94	22-May-2003 06:10

Average Annual Maximum 758.19 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 33356 Whanganui at Piriaka
From 1-Jul-1993 00:00:00 to 30-Jun-2003 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1994 24:00:00	10758 at interval beginning 14-Aug-1993 07:45:00
30-Jun-1995 24:00:00	11752 at interval beginning 19-Dec-1994 19:15:00
30-Jun-1996 24:00:00	15108 at interval beginning 9-Dec-1995 17:30:00
30-Jun-1997 24:00:00	13387 at interval beginning 16-Jun-1997 19:00:00
30-Jun-1998 24:00:00	12435 at interval beginning 9-Aug-1997 20:15:00
30-Jun-1999 24:00:00	12173 at interval beginning 24-Jan-1999 09:30:00
30-Jun-2000 24:00:00	11733 at interval beginning 18-Oct-1999 17:15:00
30-Jun-2001 24:00:00	10288 at interval beginning 18-Jul-2000 21:00:00
30-Jun-2002 24:00:00	9920 at interval beginning 3-Oct-2001 13:25:00
30-Jun-2003 24:00:00	11454 at interval beginning 11-Jan-2003 09:10:00

Mean annual Minimum = 11901
 (For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
 Monthly totals 1993 to 2003 site 33356 Whanganui at Piriaka
 Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1994	3.9	8.3	0.3	8.3	0.1	0.3	0.4	0.8	0.0	0.0	0.3	0.0	22.7	
1995	0.0	0.0	0.0	0.0	0.0	1.1	0.2	0.1	0.0	0.0	0.0	0.0	1.6	
1996	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.4	
1997	0.0	0.0	0.0	0.0	0.1	0.0	0.2	0.0	0.0	0.1	0.0	0.0	0.6	
1998	0.0	0.2	0.1	0.0	0.0	0.2	0.0	0.0	0.1	0.1	0.0	0.0	0.8	
1999	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.1	0.0	0.0	0.0	0.6	
2000	0.1	0.0	0.0	1.0	0.1	0.0	0.1	0.0	0.1	0.2	0.0	0.0	1.5	
2001	10.2	0.0	0.0	0.0	2.7	0.1	0.1	4.5	14.5	0.0	0.2	0.0	32.3	
2002	1.8	0.0	8.9	11.4	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	22.4	
2003	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.1	0.1	0.0	0.0	0.0	3.4	
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Max	10.2	8.3	8.9	11.4	2.7	1.1	3.0	4.5	14.5	0.2	0.3	0.1		
Mean	1.6	0.9	0.9	2.1	0.3	0.2	0.4	0.6	1.5	0.1	0.1	0.0		

6.41. Whanganui at Piriaka(simnat) (33300), July 1964 to July 2003 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 33300 Simulated Natural Flow at Whanganui sites

Item 4

From 1-Jul-1964 00:00:01 to 1-Jul-2003 00:00:01

Piriaka l/s

	0	1	2	3	4	5	6	7	8	9	
0	987965	205110	152531	128252	112370	101165	93276	87124	81842	77546	
10	73866	70568	67732	65203	63009	61049	59197	57574	56007	54674	
20	53454	52220	51093	50068	49104	48163	47338	46520	45754	45063	
30	44367	43720	43066	42448	41853	41273	40701	40151	39643	39142	
40	38648	38165	37714	37262	36845	36425	36033	35640	35258	34861	
50	34469	34084	33720	33344	32986	32627	32286	31939	31598	31235	
60	30890	30536	30192	29850	29488	29154	28813	28490	28167	27838	
70	27499	27182	26860	26553	26238	25896	25582	25267	24937	24593	
80	24266	23938	23598	23282	22956	22587	22190	21808	21421	21029	
90	20639	20213	19773	19236	18696	18012	17213	16268	15247	14351	
100	7500	(estimate)									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 33300 Simulated Natural Flow at Whanganui sites

Item 4

From 1-Jul-1964 00:00:01 to 1-Jul-2003 00:00:01
Piriaka l/s

	0	1	2	3	4	5	6	7	8	9
0	843598	173786	117370	95172	83166	75038	68964	63940	60140	57315
10	55010	52938	51035	49455	47958	46621	45442	44339	43362	42474
20	41617	40815	40105	39493	38910	38332	37785	37298	36818	36386
30	35982	35585	35216	34779	34408	34029	33684	33322	32979	32627
40	32305	31974	31659	31318	31016	30697	30379	30064	29774	29468
50	29201	28914	28630	28335	28064	27767	27483	27225	26965	26712
60	26481	26224	25952	25688	25444	25189	24931	24656	24406	24127
70	23865	23591	23345	23115	22879	22628	22355	22121	21863	21616
80	21381	21146	20909	20666	20425	20183	19943	19667	19360	19060
90	18748	18380	17997	17574	17079	16516	15728	14989	14453	13620
100	10852									

Annual maximum series and mean annual flood (MAF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 33300 Simulated Natural Flow at Whanganui sites
From 1-Jul-1964 00:00:00 to 30-Jun-2003 24:00:00
Interval = 0
flow m3/s

Year	Maximum	Date & Time
*1964	327.83	25-Oct-1964 03:00
1965	695.46	7-Nov-1965 15:00
1966	508.75	6-Dec-1966 12:00
1967	637.18	2-Feb-1967 15:00
1968	390.68	6-Dec-1968 24:00
1969	265.19	23-Apr-1969 15:00
1970	377.13	17-Sep-1970 09:00
1971	573.83	1-Jun-1971 03:00
1972	482.38	10-Mar-1972 18:00
1973	484.65	16-Sep-1973 15:00
1974	356.16	3-Jul-1974 03:00
1975	396.31	28-Aug-1975 15:00
1976	490.91	29-Jun-1976 06:00
1977	498.04	28-Jun-1977 12:00
1978	824.32	12-Nov-1978 15:00
1979	562.74	14-Oct-1979 09:00
1980	546.77	30-Nov-1980 15:00
1981	527.74	24-Sep-1981 18:00
1982	383.30	24-Feb-1982 18:00
1983	359.30	3-Apr-1983 06:00
1984	436.42	16-Dec-1984 15:00
1985	323.45	2-Dec-1985 03:00
1986	667.03	25-Jul-1986 18:00
1987	278.55	14-Nov-1987 15:00
1988	550.91	8-Jun-1988 03:00
1989	461.76	15-Oct-1989 09:00
1990	746.65	10-Mar-1990 12:00
1991	652.42	6-Aug-1991 21:00
1992	449.87	17-Jan-1992 18:00
1993	843.60	21-Nov-1993 09:00
1994	628.65	7-Nov-1994 06:00
1995	645.55	6-Sep-1995 21:00
1996	839.87	1-Dec-1996 03:00
1997	777.56	8-Apr-1997 21:00
1998	987.97	28-Oct-1998 12:00
1999	504.44	16-May-1999 15:00
2000	822.90	2-Oct-2000 12:00

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2001      676.10      25-May-2001 09:00
2002      541.75      25-Dec-2002 24:00
*2003      489.36      21-May-2003 15:00

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Average Annual Maximum 557.80 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is O:\elfhzlc22\Rawdata\EXTPD.MTD Site 33300 Simulated Natural Flow at Whanganui sites

From 4-Jul-1964 00:00:00 to 30-Jun-2003 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Piriaka l/s)
3-Jul-1965 24:00:00	26113 at interval beginning 9-Feb-1965 15:00:00
3-Jul-1966 24:00:00	23851 at interval beginning 28-Mar-1966 09:00:00
3-Jul-1967 24:00:00	18142 at interval beginning 16-Jun-1967 18:00:00
3-Jul-1968 24:00:00	16201 at interval beginning 5-Apr-1968 18:00:00
3-Jul-1969 24:00:00	18868 at interval beginning 1-Apr-1969 24:00:00
3-Jul-1970 24:00:00	12463 at interval beginning 3-May-1970 21:00:00
3-Jul-1971 24:00:00	14288 at interval beginning 25-Apr-1971 24:00:00
3-Jul-1972 24:00:00	16423 at interval beginning 3-Mar-1972 03:00:00
3-Jul-1973 24:00:00	15671 at interval beginning 18-Apr-1973 21:00:00
3-Jul-1974 24:00:00	12379 at interval beginning 30-Mar-1974 21:00:00
3-Jul-1975 24:00:00	18809 at interval beginning 3-Feb-1975 21:00:00
3-Jul-1976 24:00:00	19188 at interval beginning 20-Apr-1976 24:00:00
3-Jul-1977 24:00:00	18166 at interval beginning 21-Mar-1977 21:00:00
3-Jul-1978 24:00:00	12995 at interval beginning 6-Mar-1978 03:00:00
3-Jul-1979 24:00:00	18375 at interval beginning 10-Feb-1979 12:00:00
3-Jul-1980 24:00:00	21009 at interval beginning 24-Feb-1980 09:00:00
3-Jul-1981 24:00:00	18984 at interval beginning 7-Mar-1981 21:00:00
3-Jul-1982 24:00:00	16885 at interval beginning 20-Apr-1982 21:00:00
3-Jul-1983 24:00:00	19991 at interval beginning 22-Mar-1983 03:00:00
3-Jul-1984 24:00:00	14913 at interval beginning 17-Jan-1984 09:00:00
3-Jul-1985 24:00:00	15033 at interval beginning 3-Jun-1985 24:00:00
3-Jul-1986 24:00:00	18943 at interval beginning 18-Apr-1986 24:00:00
3-Jul-1987 24:00:00	15205 at interval beginning 6-Jan-1987 12:00:00
3-Jul-1988 24:00:00	18573 at interval beginning 30-Apr-1988 24:00:00
3-Jul-1989 24:00:00	17398 at interval beginning 28-Apr-1989 09:00:00
3-Jul-1990 24:00:00	18009 at interval beginning 7-Mar-1990 24:00:00
3-Jul-1991 24:00:00	19534 at interval beginning 12-Jan-1991 21:00:00
3-Jul-1992 24:00:00	22894 at interval beginning 14-Jul-1991 24:00:00
3-Jul-1993 24:00:00	15428 at interval beginning 8-May-1993 09:00:00
3-Jul-1994 24:00:00	12544 at interval beginning 9-Apr-1994 24:00:00
3-Jul-1995 24:00:00	25808 at interval beginning 25-Jan-1995 12:00:00
3-Jul-1996 24:00:00	26640 at interval beginning 13-Mar-1996 06:00:00
3-Jul-1997 24:00:00	19340 at interval beginning 4-Apr-1997 09:00:00
3-Jul-1998 24:00:00	17201 at interval beginning 26-Mar-1998 12:00:00
3-Jul-1999 24:00:00	17593 at interval beginning 4-Mar-1999 06:00:00
3-Jul-2000 24:00:00	16866 at interval beginning 28-Mar-2000 03:00:00
3-Jul-2001 24:00:00	18080 at interval beginning 22-Mar-2001 09:00:00
3-Jul-2002 24:00:00	20084 at interval beginning 23-Apr-2002 15:00:00
30-Jun-2003 24:00:00 (PARTIAL)	14320 at interval beginning 15-Apr-2003 21:00:00

Mean annual Minimum = 18129 becomes 18031
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD

Monthly totals 1964 to 2003 site 333004 Whanganui at Piriaka(simnat)

Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1965	NaN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1966	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1967	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0
1968	4.9	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.5	8.4	0.0	0.0	31.9
1969	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1970	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.4	28.0	29.4	24.5	14.9	0.0	106.1
1971	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.0	25.1	2.6	0.0	36.8
1972	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.4	2.6	0.8	0.0	0.0	7.8
1973	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.9	7.8	17.0	0.0	NaN	33.6
1974	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.6	24.9	29.1	23.3	22.5	0.0	103.4
1975	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.5
1976	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1978	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	13.3	29.4	21.8	22.3	11.0	97.8
1979	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	3.1
1980	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.3
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.3
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.0	0.0	0.0	0.0	NaN	1.8
1985	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	17.0	23.4	28.9	5.0	75.8
1986	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1987	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0
1988	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.9	0.0	0.0	4.9
1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0
1991	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.3
1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.5	15.0	4.9	6.8	NaN	32.1
1994	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.6	22.5	24.4	10.9	0.0	0.0	63.4
1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.1	0.0	0.4
1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.0	0.0	0.0	0.0	7.0
1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	7.9	9.8	1.8	0.0	0.0	19.6
2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	24.0	11.1	0.4	0.0	35.6
2001	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.1	0.5	0.0	0.0	4.6
2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.6	29.6	27.1	16.1	0.0	83.5
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	4.9	1.1	0.0	0.0	0.1	0.0	9.4	28.0	29.6	27.1	28.9	11.0		
Mean	0.2	0.0	0.0	0.0	0.0	0.0	0.6	3.3	6.6	5.3	2.9	0.5		

6.42. Whanganui at Piriaka(simnat) (33300), July 1964 to July 1972 (pre-diversion)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 33300 Simulated Natural Flow at Whanganui sites

Item 4

From 1-Jul-1964 00:00:01 to 1-Jul-1972 00:00:01

Piriaka l/s

	0	1	2	3	4	5	6	7	8	9
0	695462	205532	152612	129849	115214	105315	97370	90516	85120	80472
10	76519	72801	69750	67029	64530	62202	60141	58139	56593	55110
20	53801	52489	51299	50253	49206	48253	47368	46506	45682	44929
30	44191	43523	42919	42358	41826	41309	40738	40140	39627	39126
40	38647	38209	37791	37345	36955	36568	36199	35868	35491	35107
50	34692	34292	33898	33469	33025	32569	32142	31747	31291	30941
60	30595	30238	29879	29436	29051	28663	28313	28061	27758	27455
70	27155	26835	26563	26273	25925	25572	25247	24958	24657	24336
80	24009	23701	23358	23047	22657	22131	21709	21257	20864	20402
90	20004	19611	19193	18705	18024	17185	16434	15394	14428	13520
100	7500	(estimate)								

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 33300 Simulated Natural Flow at Whanganui sites

Item 4

From 1-Jul-1964 00:00:01 to 1-Jul-1972 00:00:01

Piriaka l/s

	0	1	2	3	4	5	6	7	8	9
0	695462	185319	117849	98999	85843	77549	72033	67003	63162	59980
10	57347	55287	53311	51625	50095	48738	47379	45996	44750	43619
20	42746	42031	41240	40477	39835	39176	38504	37954	37344	36920
30	36514	36108	35782	35334	34901	34487	34107	33754	33257	32794
40	32309	31881	31403	31094	30717	30413	30057	29703	29347	28994
50	28646	28329	28104	27845	27599	27339	27086	26802	26566	26334
60	26047	25747	25507	25257	25015	24804	24530	24268	24013	23752
70	23467	23233	22980	22722	22364	22053	21764	21460	21207	20986
80	20741	20437	20173	19947	19709	19446	19231	19009	18707	18309
90	17846	17337	16979	16509	15935	15344	14759	14219	13733	13231
100	12420									

Annual maximum series and mean annual flood (MAF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 33300 Simulated Natural Flow at Whanganui sites

From 1-Jul-1964 00:00:00 to 30-Jun-1972 24:00:00

Interval = 0

flow m3/s

Year	Maximum	Date & Time
*1964	327.83	25-Oct-1964 03:00
1965	695.46	7-Nov-1965 15:00
1966	508.75	6-Dec-1966 12:00
1967	637.18	2-Feb-1967 15:00
1968	390.68	6-Dec-1968 24:00
1969	265.19	23-Apr-1969 15:00
1970	377.13	17-Sep-1970 09:00
1971	573.83	1-Jun-1971 03:00
*1972	482.38	10-Mar-1972 18:00

Average Annual Maximum 492.60 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is O:\elfhzlc22\Rawdata\EXTPD.MTD Site 33300 Simulated Natural Flow at Whanganui sites
From 4-Jul-1964 00:00:00 to 30-Jun-1972 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Piriaka l/s)
3-Jul-1965 24:00:00	26113 at interval beginning 9-Feb-1965 15:00:00
3-Jul-1966 24:00:00	23851 at interval beginning 28-Mar-1966 09:00:00
3-Jul-1967 24:00:00	18142 at interval beginning 16-Jun-1967 18:00:00
3-Jul-1968 24:00:00	16201 at interval beginning 5-Apr-1968 18:00:00
3-Jul-1969 24:00:00	18868 at interval beginning 1-Apr-1969 24:00:00
3-Jul-1970 24:00:00	12463 at interval beginning 3-May-1970 21:00:00
3-Jul-1971 24:00:00	14288 at interval beginning 25-Apr-1971 24:00:00
30-Jun-1972 24:00:00 (PARTIAL)	16423 at interval beginning 3-Mar-1972 03:00:00

Mean annual Minimum = 18561 becomes 18294
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1964 to 1972 site 333004 Whanganui at Piriaka(simnat)
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
	1965	NaN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1966	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1967	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0
	1968	4.9	1.1	0.0	0.0	0.0	0.0	0.0	0.0	17.5	8.4	0.0	0.0	31.9
	1969	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1970	0.0	0.0	0.0	0.0	0.0	0.0	9.4	28.0	29.4	24.5	14.9	0.0	106.1
	1971	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.0	25.1	2.6	0.0	36.8
	1972	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.4	2.6	0.8	0.0	0.0	7.8
Min		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max		4.9	1.1	0.0	0.0	0.0	0.0	9.4	28.0	29.4	25.1	14.9	1.0	
Mean		0.7	0.1	0.0	0.0	0.0	0.0	1.2	4.0	7.3	7.3	2.2	0.1	

6.43. Whanganui at Piriaka(simnat) (33300), July 1973 to July 1983 (1972 rules)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 33300 Simulated Natural Flow at Whanganui sites

Item 4

From 1-Jul-1973 00:00:01 to 1-Jul-1983 00:00:01

Piriaka l/s

	0	1	2	3	4	5	6	7	8	9
0	824323	184187	139873	117023	102854	93579	86809	80999	76295	71997
10	68373	65468	62994	60902	59135	57547	56149	54840	53693	52496
20	51480	50437	49485	48595	47779	47063	46389	45699	45044	44405

30	43820	43239	42671	42093	41515	41002	40516	40063	39623	39196
40	38769	38345	37937	37568	37190	36831	36467	36137	35774	35445
50	35137	34765	34431	34079	33776	33421	33117	32778	32460	32122
60	31801	31474	31141	30796	30427	30075	29670	29278	28905	28568
70	28220	27819	27449	27075	26648	26189	25728	25325	24802	24376
80	23931	23531	23179	22797	22409	22068	21664	21295	20932	20552
90	20162	19776	19249	18680	17873	16914	15980	15188	14618	14104
100	10852									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 33300 Simulated Natural Flow at Whanganui sites

Item 4

From 1-Jul-1973 00:00:01 to 1-Jul-1983 00:00:01

Piriaka l/s

	0	1	2	3	4	5	6	7	8	9
0	824323	140971	102365	85791	75067	66984	61332	57916	55199	52926
10	50910	49080	47583	46211	44892	43921	42979	42046	41189	40446
20	39822	39268	38720	38225	37755	37368	36945	36561	36172	35789
30	35478	35182	34767	34416	34101	33818	33506	33211	32908	32626
40	32331	32024	31748	31457	31202	30940	30619	30274	29968	29631
50	29343	29034	28754	28458	28172	27819	27526	27226	26929	26639
60	26343	26008	25714	25437	25134	24813	24515	24219	23866	23605
70	23386	23158	22929	22619	22379	22166	21933	21667	21456	21242
80	21061	20855	20649	20456	20256	20045	19839	19579	19272	18917
90	18582	18137	17492	16709	16083	15396	14839	14565	14190	13319
100	10852									

Annual maximum series and mean annual flood (MAF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 33300 Simulated Natural Flow at Whanganui sites

From 1-Jul-1973 00:00:00 to 30-Jun-1983 24:00:00

Interval = 0

flow m3/s

Year	Maximum	Date & Time
*1973	484.65	16-Sep-1973 15:00
1974	356.16	3-Jul-1974 03:00
1975	396.31	28-Aug-1975 15:00
1976	490.91	29-Jun-1976 06:00
1977	498.04	28-Jun-1977 12:00
1978	824.32	12-Nov-1978 15:00
1979	562.74	14-Oct-1979 09:00
1980	546.77	30-Nov-1980 15:00
1981	527.74	24-Sep-1981 18:00
1982	383.30	24-Feb-1982 18:00
*1983	359.30	3-Apr-1983 06:00

Average Annual Maximum 509.59 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 33300 Simulated Natural Flow at Whanganui sites

From 1-Jul-1973 00:00:00 to 30-Jun-1983 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Piriaka l/s)
30-Jun-1974 24:00:00	12379 at interval beginning 30-Mar-1974 21:00:00
30-Jun-1975 24:00:00	18809 at interval beginning 3-Feb-1975 21:00:00
30-Jun-1976 24:00:00	19188 at interval beginning 20-Apr-1976 24:00:00
30-Jun-1977 24:00:00	18166 at interval beginning 21-Mar-1977 21:00:00
30-Jun-1978 24:00:00	12995 at interval beginning 6-Mar-1978 03:00:00
30-Jun-1979 24:00:00	17081 at interval beginning 3-Jul-1978 09:00:00
30-Jun-1980 24:00:00	21009 at interval beginning 24-Feb-1980 09:00:00
30-Jun-1981 24:00:00	18984 at interval beginning 7-Mar-1981 21:00:00
30-Jun-1982 24:00:00	16885 at interval beginning 20-Apr-1982 21:00:00
30-Jun-1983 24:00:00	19991 at interval beginning 22-Mar-1983 03:00:00

Mean annual Minimum = 17549
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1973 to 1983 site 333004 Whanganui at Piriaka(simnat)
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1974	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.6	24.9	29.1	23.3	22.5	0.0	103.4
1975	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.5
1976	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1978	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	13.3	29.4	21.8	22.3	11.0	97.8
1979	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	3.1
1980	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.3
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.3
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.6	24.9	29.4	23.3	22.5	11.0	
Mean	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.4	3.9	5.9	4.5	4.5	1.1	

6.44. Whanganui at Piriaka(simnat) (33300), July 1984 to July 1992 (1983 rules)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 33300 Simulated Natural Flow at Whanganui sites

Item 4

From 1-Jul-1984 00:00:01 to 1-Jul-1992 00:00:01

Piriaka l/s

	0	1	2	3	4	5	6	7	8	9
0	746654	203969	152427	125423	109400	99423	91704	85212	80075	75556
10	71968	68707	65759	63351	61275	59358	57603	55794	54363	53109
20	51823	50617	49607	48499	47504	46507	45655	44841	44007	43248

30	42489	41804	41086	40417	39827	39274	38709	38181	37686	37193
40	36765	36323	35932	35517	35125	34741	34362	33977	33613	33265
50	32913	32597	32287	31971	31684	31347	31009	30728	30438	30149
60	29874	29584	29287	29036	28778	28505	28238	27964	27650	27365
70	27091	26788	26530	26296	26026	25777	25564	25312	25078	24842
80	24577	24345	24070	23783	23500	23211	22941	22605	22222	21847
90	21526	21143	20789	20459	20111	19638	19090	18319	17053	15875
100	14243									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 33300 Simulated Natural Flow at Whanganui sites

Item 4

From 1-Jul-1984 00:00:01 to 1-Jul-1992 00:00:01

Piriaka l/s

	0	1	2	3	4	5	6	7	8	9
0	746654	192462	135512	104826	89389	78026	70154	64447	60104	56675
10	54295	52260	50392	48717	47129	45944	44734	43662	42640	41733
20	40747	39915	39323	38657	38072	37510	36869	36443	36031	35602
30	35196	34741	34358	33924	33547	33189	32850	32543	32245	31951
40	31689	31402	31120	30823	30590	30322	30088	29859	29613	29356
50	29167	28968	28759	28525	28306	28086	27847	27615	27376	27167
60	26915	26706	26527	26354	26153	25922	25696	25520	25286	25086
70	24878	24661	24469	24258	24037	23761	23531	23293	23078	22895
80	22663	22432	22178	21945	21718	21515	21319	21074	20850	20622
90	20409	20209	19992	19706	19375	19052	18575	17940	17126	16125
100	14243									

Annual maximum series and mean annual flood (MAF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 33300 Simulated Natural Flow at Whanganui sites

From 1-Jul-1984 00:00:00 to 30-Jun-1992 24:00:00

Interval = 0

flow m3/s

Year	Maximum	Date & Time
*1984	436.42	16-Dec-1984 15:00
1985	323.45	2-Dec-1985 03:00
1986	667.03	25-Jul-1986 18:00
1987	278.55	14-Nov-1987 15:00
1988	550.91	8-Jun-1988 03:00
1989	461.76	15-Oct-1989 09:00
1990	746.65	10-Mar-1990 12:00
1991	652.42	6-Aug-1991 21:00
*1992	449.87	17-Jan-1992 18:00

Average Annual Maximum 525.83 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 33300 Simulated Natural Flow at Whanganui sites

From 1-Jul-1984 00:00:00 to 30-Jun-1992 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Piriaka l/s)
30-Jun-1985 24:00:00	15033 at interval beginning 3-Jun-1985 24:00:00
30-Jun-1986 24:00:00	18943 at interval beginning 18-Apr-1986 24:00:00
30-Jun-1987 24:00:00	15205 at interval beginning 6-Jan-1987 12:00:00
30-Jun-1988 24:00:00	18573 at interval beginning 30-Apr-1988 24:00:00
30-Jun-1989 24:00:00	17398 at interval beginning 28-Apr-1989 09:00:00
30-Jun-1990 24:00:00	18009 at interval beginning 7-Mar-1990 24:00:00
30-Jun-1991 24:00:00	19534 at interval beginning 12-Jan-1991 21:00:00
30-Jun-1992 24:00:00	22894 at interval beginning 14-Jul-1991 24:00:00

Mean annual Minimum = 18199
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1984 to 1992 site 333004 Whanganui at Piriaka(simnat)
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1985	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	17.0	23.4	28.9	5.0	75.8
1986	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1987	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0
1988	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.9	0.0	0.0	4.9
1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0
1991	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.3
1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	0.0	0.0	0.0	0.0	0.0	0.1	0.0	1.0	1.5	17.0	23.4	28.9	5.0	
Mean	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	2.5	3.6	3.6	0.6	

6.45. Whanganui at Piriaka(simnat) (33300), July 1993 to July 2003 (Planning Tribunal 1990)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 33300 Simulated Natural Flow at Whanganui sites

Item 4

From 1-Jul-1993 00:00:01 to 1-Jul-2003 00:00:01

Piriaka l/s

	0	1	2	3	4	5	6	7	8	9
0	987965	232642	166807	137435	119583	106562	96782	90490	85184	80570
10	76788	73953	70981	68597	66376	64469	62659	60965	59268	57821
20	56391	55113	53957	52767	51654	50641	49641	48781	47921	47181
30	46410	45748	45152	44550	43943	43357	42709	42113	41565	41038
40	40464	39918	39413	38873	38326	37801	37314	36842	36381	35901
50	35424	34970	34542	34110	33709	33324	32935	32542	32182	31809
60	31452	31064	30657	30265	29890	29511	29199	28813	28480	28106
70	27741	27375	27050	26762	26461	26165	25861	25551	25231	24887

```

80 24529 24188 23880 23557 23269 22951 22591 22220 21861 21457
90 21094 20668 20133 19629 18927 18278 17530 16420 15182 14317
100 12080

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Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 33300 Simulated Natural Flow at Whanganui sites

Item 4

From 1-Jul-1993 00:00:01 to 1-Jul-2003 00:00:01

Piriaka l/s

	0	1	2	3	4	5	6	7	8	9
0	843598	196758	127602	102111	89328	80246	74527	69767	65633	62472
10	59444	57510	55656	54015	52152	50687	49349	48023	46912	45913
20	45071	44233	43452	42566	41809	41147	40501	39914	39365	38878
30	38354	37795	37348	36861	36438	36014	35590	35212	34828	34483
40	34048	33702	33389	33025	32645	32282	31923	31575	31186	30789
50	30405	30031	29720	29438	29190	28836	28531	28176	27843	27518
60	27205	26962	26710	26480	26217	25948	25683	25402	25087	24731
70	24421	24107	23839	23510	23251	22968	22701	22416	22177	21919
80	21624	21340	21067	20762	20470	20185	19892	19587	19213	18875
90	18622	18201	17828	17391	16825	15889	15205	14691	14323	13418
100	12080									

Annual maximum series and mean annual flood (MAF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 33300 Simulated Natural Flow at Whanganui sites

From 1-Jul-1993 00:00:00 to 30-Jun-2003 24:00:00

Interval = 0

flow m3/s

Year	Maximum	Date & Time
*1993	843.60	21-Nov-1993 09:00
1994	628.65	7-Nov-1994 06:00
1995	645.55	6-Sep-1995 21:00
1996	839.87	1-Dec-1996 03:00
1997	777.56	8-Apr-1997 21:00
1998	987.97	28-Oct-1998 12:00
1999	504.44	16-May-1999 15:00
2000	822.90	2-Oct-2000 12:00
2001	676.10	25-May-2001 09:00
2002	541.75	25-Dec-2002 24:00
*2003	489.36	21-May-2003 15:00

Average Annual Maximum 713.87 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 33300 Simulated Natural Flow at Whanganui sites

From 1-Jul-1993 00:00:00 to 30-Jun-2003 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Piriaka l/s)
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30-Jun-1994 24:00:00      12544 at interval beginning 9-Apr-1994 24:00:00
30-Jun-1995 24:00:00      25808 at interval beginning 25-Jan-1995 12:00:00
30-Jun-1996 24:00:00      26640 at interval beginning 13-Mar-1996 06:00:00
30-Jun-1997 24:00:00      19340 at interval beginning 4-Apr-1997 09:00:00
30-Jun-1998 24:00:00      17201 at interval beginning 26-Mar-1998 12:00:00
30-Jun-1999 24:00:00      17593 at interval beginning 4-Mar-1999 06:00:00
30-Jun-2000 24:00:00      16866 at interval beginning 28-Mar-2000 03:00:00
30-Jun-2001 24:00:00      18080 at interval beginning 22-Mar-2001 09:00:00
30-Jun-2002 24:00:00      20084 at interval beginning 23-Apr-2002 15:00:00
30-Jun-2003 24:00:00      14320 at interval beginning 15-Apr-2003 21:00:00

```

Mean annual Minimum = 18848
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1993 to 2003 site 333004 Whanganui at Piriaka(simnat)
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1994	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.6	22.5	24.4	10.9	0.0	0.0	63.4
1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.1	0.0	0.4
1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.0	0.0	0.0	0.0	7.0
1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	7.9	9.8	1.8	0.0	0.0	19.6
2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	24.0	11.1	0.4	0.0	35.6
2001	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.1	0.5	0.0	0.0	4.6
2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.6	29.6	27.1	16.1	0.0	83.5
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.6	22.5	29.6	27.1	16.1	0.0	
Mean	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	4.1	9.9	5.2	1.7	0.0	

6.46. Whanganui at Piriaka(sim consent) (8005), July 1964 to July 2003 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
Item 4
From 4-Jul-1964 00:00:01 to 1-Jul-2003 00:00:01
Piriaka l/s

	0	1	2	3	4	5	6	7	8	9
0	940346	162098	110825	87759	74116	65142	58718	53957	50368	47334
10	44760	42509	40503	38804	37288	35984	34869	33806	32844	31947
20	31078	30274	29562	28846	28183	27560	26986	26434	25925	25428
30	24954	24521	24102	23740	23334	22955	22587	22223	21896	21572
40	21267	20984	20701	20430	20196	19961	19733	19515	19306	19110
50	18933	18769	18610	18446	18292	18144	17994	17842	17692	17545
60	17399	17253	17106	16963	16827	16696	16565	16436	16305	16180
70	16057	15930	15799	15670	15534	15400	15274	15147	15019	14893
80	14764	14638	14518	14395	14260	14121	13981	13838	13694	13546

90 13390 13225 13057 12852 12626 12367 12063 11678 11118 10189
 100 7500 (estimate)

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
 Item 4

From 4-Jul-1964 00:00:01 to 1-Jul-2003 00:00:01
 Piriaka l/s

	0	1	2	3	4	5	6	7	8	9
0	812504	131562	77976	58761	49748	43399	38898	35914	33759	31979
10	30312	28870	27754	26735	25861	25128	24376	23759	23131	22609
20	22163	21749	21352	21036	20757	20476	20253	20031	19830	19639
30	19439	19270	19115	18974	18842	18718	18594	18469	18347	18232
40	18121	18003	17888	17772	17657	17547	17441	17332	17220	17113
50	17007	16901	16797	16700	16599	16501	16402	16301	16205	16109
60	16015	15920	15824	15726	15627	15525	15422	15328	15240	15149
70	15053	14964	14874	14783	14691	14605	14521	14438	14344	14246
80	14145	14044	13944	13843	13741	13636	13528	13419	13306	13176
90	13057	12917	12756	12579	12371	12145	11872	11502	10939	10054
100	-11392									

Annual maximum series and mean annual flood (MAF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4

From 4-Jul-1964 00:00:00 to 30-Jun-2003 24:00:00

Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1964	280.21	25-Oct-1964 03:00
1965	647.84	7-Nov-1965 15:00
1966	461.13	6-Dec-1966 12:00
1967	589.56	2-Feb-1967 15:00
1968	343.06	6-Dec-1968 24:00
1969	241.60	23-Apr-1969 15:00
1970	329.51	17-Sep-1970 09:00
1971	526.21	1-Jun-1971 03:00
1972	434.76	10-Mar-1972 18:00
1973	437.03	16-Sep-1973 15:00
1974	308.54	3-Jul-1974 03:00
1975	348.69	28-Aug-1975 15:00
1976	443.29	29-Jun-1976 06:00
1977	450.42	28-Jun-1977 12:00
1978	776.70	12-Nov-1978 15:00
1979	515.12	14-Oct-1979 09:00
1980	523.34	30-Nov-1980 15:00
1981	480.13	24-Sep-1981 18:00
1982	347.70	24-Feb-1982 18:00
1983	346.51	3-Apr-1983 06:00
1984	417.33	16-Dec-1984 15:00
1985	310.54	2-Dec-1985 03:00
1986	619.41	25-Jul-1986 18:00
1987	252.99	22-Jan-1987 09:00
1988	503.29	8-Jun-1988 03:00
1989	426.74	15-Oct-1989 09:00
1990	699.04	10-Mar-1990 12:00
1991	604.80	6-Aug-1991 21:00
1992	432.45	17-Jan-1992 18:00
1993	795.98	21-Nov-1993 09:00

1994	581.04	7-Nov-1994	06:00
1995	597.93	6-Sep-1995	21:00
1996	812.50	1-Dec-1996	03:00
1997	746.56	8-Apr-1997	21:00
1998	940.35	28-Oct-1998	12:00
1999	456.82	16-May-1999	15:00
2000	775.28	2-Oct-2000	12:00
2001	628.48	25-May-2001	09:00
2002	524.48	25-Dec-2002	24:00
*2003	441.74	21-May-2003	15:00

Average Annual Maximum 517.82 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is O:\elfhzlc22\Rawdata\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
From 4-Jul-1964 00:00:00 to 30-Jun-2003 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Piriaka l/s)
3-Jul-1965 24:00:00	5133 at interval beginning 23-Jan-1965 12:00:00
3-Jul-1966 24:00:00	7224 at interval beginning 14-Dec-1965 21:00:00
3-Jul-1967 24:00:00	3731 at interval beginning 29-Nov-1966 09:00:00
3-Jul-1968 24:00:00	6589 at interval beginning 19-Jul-1967 18:00:00
3-Jul-1969 24:00:00	8091 at interval beginning 13-Apr-1969 21:00:00
3-Jul-1970 24:00:00	4265 at interval beginning 27-Oct-1969 18:00:00
3-Jul-1971 24:00:00	7448 at interval beginning 5-May-1971 03:00:00
3-Jul-1972 24:00:00	7772 at interval beginning 24-Feb-1972 09:00:00
3-Jul-1973 24:00:00	8689 at interval beginning 23-Apr-1973 15:00:00
3-Jul-1974 24:00:00	11485 at interval beginning 9-Jun-1974 24:00:00
3-Jul-1975 24:00:00	170 at interval beginning 24-Apr-1975 09:00:00
3-Jul-1976 24:00:00	11571 at interval beginning 27-Feb-1976 12:00:00
3-Jul-1977 24:00:00	12440 at interval beginning 31-Mar-1977 09:00:00
3-Jul-1978 24:00:00	8454 at interval beginning 6-Jun-1978 12:00:00
3-Jul-1979 24:00:00	7415 at interval beginning 28-Feb-1979 12:00:00
3-Jul-1980 24:00:00	5692 at interval beginning 23-Feb-1980 06:00:00
3-Jul-1981 24:00:00	11387 at interval beginning 2-Feb-1981 18:00:00
3-Jul-1982 24:00:00	8475 at interval beginning 7-Apr-1982 09:00:00
3-Jul-1983 24:00:00	10708 at interval beginning 11-Jul-1982 24:00:00
3-Jul-1984 24:00:00	7405 at interval beginning 6-Mar-1984 12:00:00
3-Jul-1985 24:00:00	7722 at interval beginning 17-Feb-1985 15:00:00
3-Jul-1986 24:00:00	9341 at interval beginning 19-Oct-1985 18:00:00
3-Jul-1987 24:00:00	9954 at interval beginning 8-Feb-1987 24:00:00
3-Jul-1988 24:00:00	10645 at interval beginning 16-Feb-1988 21:00:00
3-Jul-1989 24:00:00	10378 at interval beginning 23-Feb-1989 06:00:00
3-Jul-1990 24:00:00	9763 at interval beginning 18-Apr-1990 21:00:00
3-Jul-1991 24:00:00	5276 at interval beginning 10-Apr-1991 21:00:00
3-Jul-1992 24:00:00	11226 at interval beginning 4-Jun-1992 24:00:00
3-Jul-1993 24:00:00	12672 at interval beginning 26-Jan-1993 24:00:00
3-Jul-1994 24:00:00	11612 at interval beginning 13-Aug-1993 24:00:00
3-Jul-1995 24:00:00	11614 at interval beginning 19-Dec-1994 18:00:00
3-Jul-1996 24:00:00	11460 at interval beginning 16-Mar-1996 18:00:00
3-Jul-1997 24:00:00	10983 at interval beginning 6-Mar-1997 24:00:00
3-Jul-1998 24:00:00	10766 at interval beginning 12-Mar-1998 18:00:00
3-Jul-1999 24:00:00	10809 at interval beginning 23-Jan-1999 24:00:00
3-Jul-2000 24:00:00	11807 at interval beginning 12-Apr-2000 09:00:00
3-Jul-2001 24:00:00	10678 at interval beginning 13-Mar-2001 03:00:00
3-Jul-2002 24:00:00	10542 at interval beginning 5-Oct-2001 12:00:00
30-Jun-2003 24:00:00 (PARTIAL)	10545 at interval beginning 2-Jun-2003 15:00:00

Mean annual Minimum = 8984 becomes 9257

(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
 Monthly totals 1964 to 2003 site 80054 Whanganui at Piriaka(sim consent)
 Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1965	NaN	0.0	0.0	0.0	0.6	0.1	1.0	0.4	0.0	0.0	0.0	0.0	0.0	2.1
1966	0.0	0.0	0.0	0.1	0.0	0.4	0.0	0.8	0.0	0.0	0.0	0.0	0.0	1.3
1967	0.0	0.0	0.0	0.0	0.5	0.0	0.1	0.0	0.6	0.3	0.4	0.4	0.4	2.3
1968	1.0	0.3	0.0	0.1	0.0	0.0	0.3	0.6	0.1	0.0	0.3	0.0	0.0	2.6
1969	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.4	0.3	0.0	0.9
1970	0.0	0.0	0.0	0.8	0.5	0.3	0.1	0.0	0.0	0.3	0.6	0.0	0.0	2.5
1971	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.4
1972	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.0	0.5	0.0	0.3	0.0	1.3
1973	0.0	0.0	0.0	0.0	0.6	0.1	0.0	0.0	0.3	1.4	0.0	NaN	0.0	2.4
1974	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1975	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9	0.0	0.0	0.0	1.9
1976	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.3
1978	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.3	4.3
1979	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.6	0.0	0.0	0.0	0.0	0.9
1980	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3	0.0	0.0	0.0	0.0	0.0	2.3
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1	0.0	0.0	0.0	2.1
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.8	0.0	0.0	NaN	0.0	1.0
1985	0.0	0.0	0.0	0.0	0.1	0.0	0.0	1.4	0.0	0.0	0.0	0.0	4.6	6.1
1986	0.0	0.0	0.0	0.4	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8
1987	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.3	0.0	0.0	0.0	0.6
1988	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.4
1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.5
1990	0.0	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.0	0.3	0.0	0.0	0.0	0.6
1991	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	3.5	0.0	0.0	0.0	3.6
1992	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1993	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NaN	0.0	0.0
1994	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.1	0.1	0.0	0.0	0.0	0.9
1995	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.4
1996	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.9
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.8	0.0	0.0	0.0	0.0	0.9
1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	0.4	0.0	0.0	0.0	0.0	2.0
1999	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.5
2000	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.4
2001	3.6	0.0	0.0	0.0	0.0	0.0	0.0	0.4	3.9	0.5	0.3	0.0	0.0	8.6
2002	0.0	0.0	0.6	5.6	0.0	0.3	0.0	0.1	0.0	0.0	0.0	0.0	0.0	6.6
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.3	0.0	2.9	0.0	3.6
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	3.6	0.3	0.6	5.6	0.6	0.4	1.0	2.3	3.9	3.5	0.6	4.6	0.0	
Mean	0.1	0.0	0.0	0.2	0.1	0.0	0.1	0.2	0.2	0.3	0.1	0.3	0.0	

6.47. Whanganui at Piriaka(sim consent) (8005), July 1964 to July 1972 (pre-diversion)

Flow duration curve tabulation (FDC), all data
 Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
 Item 4
 From 4-Jul-1964 00:00:01 to 1-Jul-1972 00:00:01
 Piriaka l/s

	0	1	2	3	4	5	6	7	8	9
0	647843	160546	108050	87755	76253	68190	61171	56258	52368	48759
10	45492	42828	40832	38839	37076	35763	34673	33717	32762	31919
20	31076	30285	29653	29005	28366	27702	27060	26462	25905	25386
30	24866	24438	24066	23713	23325	22938	22620	22305	22028	21747
40	21477	21211	20930	20644	20348	20042	19745	19463	19241	19049
50	18862	18630	18417	18248	18072	17866	17672	17466	17282	17097
60	16966	16815	16666	16526	16382	16249	16130	15993	15860	15734
70	15595	15451	15307	15174	15039	14913	14791	14660	14523	14383
80	14247	14117	13980	13832	13701	13579	13455	13323	13182	13043
90	12858	12662	12430	12151	11822	11434	10900	10378	9900	8571
100	7500 (estimate)									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
 Item 4
 From 4-Jul-1964 00:00:01 to 1-Jul-1972 00:00:01
 Piriaka l/s

	0	1	2	3	4	5	6	7	8	9
0	647843	142361	78191	59992	51281	43691	38890	36024	33932	32062
10	30310	28971	27925	26876	25996	25202	24439	23753	23088	22626
20	22270	21933	21562	21181	20891	20571	20292	19975	19683	19370
30	19179	19023	18864	18661	18468	18318	18174	17997	17836	17665
40	17504	17369	17235	17104	17011	16902	16771	16679	16573	16471
50	16370	16272	16177	16082	15973	15862	15762	15668	15565	15457
60	15362	15278	15167	15066	14969	14883	14797	14705	14609	14511
70	14396	14299	14206	14111	14015	13920	13829	13737	13649	13566
80	13481	13394	13300	13195	13108	13009	12888	12765	12628	12461
90	12305	12107	11906	11635	11359	10978	10607	10209	9871	8567
100	7500 (estimate)									

Annual maximum series and mean annual flood (MAF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
 From 4-Jul-1964 00:00:00 to 30-Jun-1972 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1964	280.21	25-Oct-1964 03:00
1965	647.84	7-Nov-1965 15:00
1966	461.13	6-Dec-1966 12:00
1967	589.56	2-Feb-1967 15:00
1968	343.06	6-Dec-1968 24:00
1969	241.60	23-Apr-1969 15:00
1970	329.51	17-Sep-1970 09:00
1971	526.21	1-Jun-1971 03:00
*1972	434.76	10-Mar-1972 18:00

Average Annual Maximum 448.42 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
 From 4-Jul-1964 00:00:00 to 30-Jun-1972 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Piriaka l/s)
3-Jul-1965 24:00:00	5133 at interval beginning 23-Jan-1965 12:00:00
3-Jul-1966 24:00:00	7224 at interval beginning 14-Dec-1965 21:00:00
3-Jul-1967 24:00:00	3731 at interval beginning 29-Nov-1966 09:00:00
3-Jul-1968 24:00:00	6589 at interval beginning 19-Jul-1967 18:00:00
3-Jul-1969 24:00:00	8091 at interval beginning 13-Apr-1969 21:00:00
3-Jul-1970 24:00:00	4265 at interval beginning 27-Oct-1969 18:00:00
3-Jul-1971 24:00:00	7448 at interval beginning 5-May-1971 03:00:00
30-Jun-1972 24:00:00 (PARTIAL)	7772 at interval beginning 24-Feb-1972 09:00:00

Mean annual Minimum = 6069 becomes 6282
 (For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
 Monthly totals 1964 to 1972 site 80054 Whanganui at Piriaka(sim consent)
 Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
	1965	NaN	0.0	0.0	0.0	0.6	0.1	1.0	0.4	0.0	0.0	0.0	0.0	2.1
	1966	0.0	0.0	0.0	0.1	0.0	0.4	0.0	0.8	0.0	0.0	0.0	0.0	1.3
	1967	0.0	0.0	0.0	0.0	0.5	0.0	0.1	0.0	0.6	0.3	0.4	0.4	2.3
	1968	1.0	0.3	0.0	0.1	0.0	0.0	0.3	0.6	0.1	0.0	0.3	0.0	2.6
	1969	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.4	0.3	0.0	0.9
	1970	0.0	0.0	0.0	0.8	0.5	0.3	0.1	0.0	0.0	0.3	0.6	0.0	2.5
	1971	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.3	0.0	0.4
	1972	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.0	0.5	0.0	0.3	1.3
Min		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max		1.0	0.3	0.0	0.8	0.6	0.4	1.0	0.8	0.6	0.5	0.6	0.4	
Mean		0.1	0.0	0.0	0.1	0.2	0.1	0.2	0.3	0.1	0.2	0.2	0.1	

6.48. Whanganui at Piriaka(sim consent) (8005), July 1973 to July 1983 (1972 rules)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
 Item 4

From 1-Jul-1973 00:00:01 to 1-Jul-1983 00:00:01

Piriaka l/s

	0	1	2	3	4	5	6	7	8	9
0	776704	142262	98696	79890	68285	60291	54779	50763	47045	44194
10	41717	39695	38095	36826	35678	34606	33548	32584	31832	31027
20	30266	29589	28906	28342	27775	27239	26717	26213	25764	25308

30	24883	24492	24131	23779	23402	23025	22636	22267	21924	21586
40	21295	21007	20729	20488	20272	20069	19881	19680	19452	19266
50	19063	18872	18705	18551	18413	18276	18145	17999	17855	17706
60	17556	17412	17282	17134	16984	16850	16719	16593	16477	16352
70	16222	16093	15963	15836	15699	15556	15420	15282	15149	15012
80	14894	14763	14639	14534	14430	14298	14153	13999	13844	13682
90	13519	13335	13144	12935	12706	12424	12156	11814	11288	10572
100	7500	(estimate)								

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
 Item 4
 From 1-Jul-1973 00:00:01 to 1-Jul-1983 00:00:01
 Piriaka l/s

	0	1	2	3	4	5	6	7	8	9
0	776704	101170	66977	52394	43796	38541	35413	33128	31417	29673
10	28324	27300	26177	25341	24575	23924	23359	22747	22177	21737
20	21304	20949	20666	20445	20225	20037	19889	19730	19530	19351
30	19209	19048	18886	18755	18628	18510	18408	18311	18216	18112
40	17997	17884	17777	17671	17551	17454	17359	17258	17151	17038
50	16927	16826	16730	16629	16543	16456	16354	16261	16165	16067
60	15974	15884	15792	15694	15600	15503	15404	15307	15216	15116
70	15017	14933	14853	14767	14683	14612	14547	14484	14397	14311
80	14217	14116	14017	13916	13815	13710	13607	13490	13370	13247
90	13121	12980	12827	12666	12468	12267	12057	11801	11383	10582
100	7500	(estimate)								

Annual maximum series and mean annual flood (MAF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
 From 1-Jul-1973 00:00:00 to 30-Jun-1983 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1973	437.03	16-Sep-1973 15:00
1974	308.54	3-Jul-1974 03:00
1975	348.69	28-Aug-1975 15:00
1976	443.29	29-Jun-1976 06:00
1977	450.42	28-Jun-1977 12:00
1978	776.70	12-Nov-1978 15:00
1979	515.12	14-Oct-1979 09:00
1980	523.34	30-Nov-1980 15:00
1981	480.13	24-Sep-1981 18:00
1982	347.70	24-Feb-1982 18:00
*1983	346.51	3-Apr-1983 06:00

Average Annual Maximum 465.99 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
 From 1-Jul-1973 00:00:00 to 30-Jun-1983 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Piriaka l/s)
30-Jun-1974 24:00:00	11485 at interval beginning 9-Jun-1974 24:00:00
30-Jun-1975 24:00:00	170 at interval beginning 24-Apr-1975 09:00:00
30-Jun-1976 24:00:00	11571 at interval beginning 27-Feb-1976 12:00:00
30-Jun-1977 24:00:00	12440 at interval beginning 31-Mar-1977 09:00:00
30-Jun-1978 24:00:00	8454 at interval beginning 6-Jun-1978 12:00:00
30-Jun-1979 24:00:00	7415 at interval beginning 28-Feb-1979 12:00:00
30-Jun-1980 24:00:00	5692 at interval beginning 23-Feb-1980 06:00:00
30-Jun-1981 24:00:00	11387 at interval beginning 2-Feb-1981 18:00:00
30-Jun-1982 24:00:00	8475 at interval beginning 7-Apr-1982 09:00:00
30-Jun-1983 24:00:00	10708 at interval beginning 11-Jul-1982 24:00:00

Mean annual Minimum = 8780 becomes 9632
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1973 to 1983 site 80054 Whanganui at Piriaka(sim consent)
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1974	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1975	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9	0.0	0.0	1.9
1976	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.3
1978	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.3	4.3
1979	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.6	0.0	0.0	0.0	0.9
1980	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3	0.0	0.0	0.0	0.0	2.3
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1	0.0	0.0	2.1
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	2.3	0.6	2.1	0.0	4.3	
Mean	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.1	0.4	0.0	0.4	

6.49. Whanganui at Piriaka(sim consent) (8005), July 1984 to July 1992 (1983 rules)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
Item 4

From 1-Jul-1984 00:00:01 to 1-Jul-1992 00:00:01
Piriaka l/s

	0	1	2	3	4	5	6	7	8	9
0	699035	160370	110458	85062	71103	63154	57114	52445	48888	46344
10	43657	41435	39259	37685	36221	34923	33753	32710	31657	30651
20	29781	28888	28110	27435	26812	26174	25656	25197	24712	24231
30	23777	23342	22928	22493	22109	21721	21371	21033	20716	20412
40	20141	19897	19685	19488	19282	19080	18921	18763	18610	18452
50	18288	18134	17978	17809	17652	17507	17372	17242	17104	16972
60	16852	16729	16619	16503	16384	16274	16167	16058	15939	15817

70	15706	15594	15479	15362	15259	15153	15033	14907	14788	14674
80	14550	14441	14318	14190	14064	13926	13803	13684	13546	13404
90	13265	13114	12959	12777	12558	12277	11948	11536	11057	10210
100	7500 (estimate)									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
 Item 4
 From 1-Jul-1984 00:00:01 to 1-Jul-1992 00:00:01
 Piriaka l/s

	0	1	2	3	4	5	6	7	8	9
0	699035	153820	90416	66458	52815	45162	39112	36070	33647	31683
10	29896	28244	27047	25963	25340	24566	23889	23227	22614	22158
20	21665	21257	20934	20582	20286	20034	19825	19647	19476	19292
30	19126	18996	18879	18750	18629	18507	18389	18260	18133	18014
40	17885	17760	17640	17521	17409	17306	17197	17091	16988	16894
50	16801	16708	16623	16528	16430	16338	16255	16170	16086	16002
60	15911	15824	15739	15650	15559	15466	15376	15299	15224	15149
70	15063	14980	14895	14799	14713	14624	14534	14456	14367	14270
80	14173	14072	13963	13858	13764	13670	13566	13461	13368	13259
90	13126	12995	12848	12676	12468	12190	11813	11425	10939	10104
100	7500 (estimate)									

Annual maximum series and mean annual flood (MAF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
 From 1-Jul-1984 00:00:00 to 30-Jun-1992 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1984	417.33	16-Dec-1984 15:00
1985	310.54	2-Dec-1985 03:00
1986	619.41	25-Jul-1986 18:00
1987	252.99	22-Jan-1987 09:00
1988	503.29	8-Jun-1988 03:00
1989	426.74	15-Oct-1989 09:00
1990	699.04	10-Mar-1990 12:00
1991	604.80	6-Aug-1991 21:00
*1992	432.45	17-Jan-1992 18:00

Average Annual Maximum 488.12 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
 From 1-Jul-1984 00:00:00 to 30-Jun-1992 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Piriaka l/s)
30-Jun-1985 24:00:00	7722 at interval beginning 17-Feb-1985 15:00:00
30-Jun-1986 24:00:00	9341 at interval beginning 19-Oct-1985 18:00:00
30-Jun-1987 24:00:00	9954 at interval beginning 8-Feb-1987 24:00:00
30-Jun-1988 24:00:00	10645 at interval beginning 16-Feb-1988 21:00:00

30-Jun-1989 24:00:00 10378 at interval beginning 23-Feb-1989 06:00:00
 30-Jun-1990 24:00:00 9763 at interval beginning 18-Apr-1990 21:00:00
 30-Jun-1991 24:00:00 5276 at interval beginning 10-Apr-1991 21:00:00
 30-Jun-1992 24:00:00 11226 at interval beginning 4-Jun-1992 24:00:00

Mean annual Minimum = 9288
 (For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
 Monthly totals 1984 to 1992 site 80054 Whanganui at Piriaka(sim consent)
 Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1985	0.0	0.0	0.0	0.0	0.1	0.0	0.0	1.4	0.0	0.0	0.0	4.6	6.1	
1986	0.0	0.0	0.0	0.4	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	
1987	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.3	0.0	0.0	0.6	
1988	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.4	
1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.5	
1990	0.0	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.0	0.3	0.0	0.0	0.6	
1991	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	3.5	0.0	0.0	3.6	
1992	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Max	0.0	0.0	0.1	0.4	0.4	0.1	0.4	1.4	0.0	3.5	0.0	4.6		
Mean	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.3	0.0	0.5	0.0	0.6		

6.50. Whanganui at Piriaka(sim consent) (8005), July 1993 to July 2003 (Planning Tribunal 1990)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
 Item 4
 From 1-Jul-1993 00:00:01 to 1-Jul-2003 00:00:01
 Piriaka l/s

	0	1	2	3	4	5	6	7	8	9	
0	940346	190861	124269	96520	79835	68440	61013	55694	52008	49225	
10	46615	44536	42787	41130	39569	38219	36976	35755	34783	33743	
20	32830	31937	31091	30333	29613	28935	28241	27643	27110	26594	
30	26122	25658	25146	24686	24260	23867	23463	23115	22753	22398	
40	22075	21738	21421	21163	20911	20654	20411	20215	19991	19760	
50	19573	19380	19194	19018	18856	18719	18577	18420	18257	18104	
60	17962	17818	17675	17541	17393	17241	17090	16932	16789	16643	
70	16491	16344	16198	16071	15942	15791	15648	15508	15360	15222	
80	15086	14953	14825	14682	14545	14422	14285	14141	14009	13862	
90	13710	13545	13372	13188	12989	12756	12499	12216	11857	11386	
100	7500	(estimate)									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
 Item 4
 From 1-Jul-1993 00:00:01 to 1-Jul-2003 00:00:01
 Piriaka l/s

	0	1	2	3	4	5	6	7	8	9
0	812504	155411	89326	65769	53790	48073	43614	40012	37521	35488
10	33893	32412	31134	29893	28867	27846	27040	26325	25690	24974
20	24331	23801	23290	22823	22385	22006	21649	21339	21106	20878
30	20650	20423	20256	20073	19875	19717	19555	19402	19264	19125
40	18998	18882	18774	18680	18555	18433	18301	18184	18072	17967
50	17867	17746	17650	17552	17446	17315	17190	17082	16958	16842
60	16734	16622	16503	16385	16262	16153	16055	15953	15842	15722
70	15609	15490	15373	15275	15178	15073	14975	14881	14784	14676
80	14576	14487	14402	14311	14206	14097	13992	13890	13770	13647
90	13507	13371	13228	13087	12918	12711	12467	12205	11877	11402
100	7500	(estimate)								

Annual maximum series and mean annual flood (MAF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
 From 1-Jul-1993 00:00:00 to 30-Jun-2003 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1993	795.98	21-Nov-1993 09:00
1994	581.04	7-Nov-1994 06:00
1995	597.93	6-Sep-1995 21:00
1996	812.50	1-Dec-1996 03:00
1997	746.56	8-Apr-1997 21:00
1998	940.35	28-Oct-1998 12:00
1999	456.82	16-May-1999 15:00
2000	775.28	2-Oct-2000 12:00
2001	628.48	25-May-2001 09:00
2002	524.48	25-Dec-2002 24:00
*2003	441.74	21-May-2003 15:00

Average Annual Maximum 673.71 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
 From 1-Jul-1993 00:00:00 to 30-Jun-2003 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Piriaka l/s)
30-Jun-1994 24:00:00	11612 at interval beginning 13-Aug-1993 24:00:00
30-Jun-1995 24:00:00	11614 at interval beginning 19-Dec-1994 18:00:00
30-Jun-1996 24:00:00	11460 at interval beginning 16-Mar-1996 18:00:00
30-Jun-1997 24:00:00	10983 at interval beginning 6-Mar-1997 24:00:00
30-Jun-1998 24:00:00	10766 at interval beginning 12-Mar-1998 18:00:00
30-Jun-1999 24:00:00	10809 at interval beginning 23-Jan-1999 24:00:00
30-Jun-2000 24:00:00	11807 at interval beginning 12-Apr-2000 09:00:00
30-Jun-2001 24:00:00	10678 at interval beginning 13-Mar-2001 03:00:00
30-Jun-2002 24:00:00	10542 at interval beginning 5-Oct-2001 12:00:00
30-Jun-2003 24:00:00	10545 at interval beginning 2-Jun-2003 15:00:00

Mean annual Minimum = 11082

(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
 Monthly totals 1993 to 2003 site 80054 Whanganui at Piriaka(sim consent)
 Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
	1994	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.1	0.1	0.0	0.0	0.9
	1995	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.4
	1996	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.8	0.0	0.0	0.0	0.9
	1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.8	0.0	0.0	0.0	0.9
	1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	0.4	0.0	0.0	0.0	2.0
	1999	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.5
	2000	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.4
	2001	3.6	0.0	0.0	0.0	0.0	0.0	0.0	0.4	3.9	0.5	0.3	0.0	8.6
	2002	0.0	0.0	0.6	5.6	0.0	0.3	0.0	0.1	0.0	0.0	0.0	0.0	6.6
	2003	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.3	0.0	2.9	3.6
Min		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max		3.6	0.0	0.6	5.6	0.0	0.3	0.5	1.6	3.9	0.5	0.3	2.9	
Mean		0.4	0.0	0.1	0.6	0.0	0.0	0.1	0.3	0.6	0.1	0.0	0.3	

6.51. Whanganui at Te Maire (33302), July 1962 to July 2004 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 33302 Whanganui at Te Maire
 From 1-Jul-1962 00:00:01 to 1-Jul-2004 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	1801400	428823	325956	273878	238901	214850	196869	182329	170391	160473
10	152392	145022	138436	132560	127204	122446	118146	114053	110280	106884
20	103673	100677	97894	95254	92843	90438	88246	86164	84110	82050
30	80090	78167	76360	74622	73031	71477	69926	68407	66841	65435
40	64092	62738	61414	60133	58955	57766	56625	55539	54490	53433
50	52421	51411	50436	49421	48479	47608	46762	45910	45059	44267
60	43472	42714	41923	41205	40457	39699	38957	38260	37566	36934
70	36303	35674	35038	34431	33831	33230	32692	32177	31699	31264
80	30817	30382	29960	29543	29042	28573	27981	27333	26600	25789
90	25026	24293	23615	22927	22047	21071	19928	18784	17480	15281
100	11573									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 33302 Whanganui at Te Maire
 From 1-Jul-1962 00:00:01 to 1-Jul-2004 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
--	---	---	---	---	---	---	---	---	---	---

0	1393600	335504	236381	192048	163961	147493	134616	123909	115277	108462
10	102593	97170	92466	88370	84812	81320	78142	75340	72901	70627
20	68409	66252	64484	62641	60920	59371	57861	56477	55215	54037
30	52897	51790	50786	49687	48735	47939	47188	46388	45589	44839
40	44134	43418	42758	42078	41449	40855	40180	39567	38969	38394
50	37890	37354	36874	36425	35990	35501	35078	34646	34205	33769
60	33335	32965	32605	32247	31919	31616	31315	31036	30747	30461
70	30179	29922	29637	29315	28972	28655	28297	27904	27511	27036
80	26571	26034	25521	25053	24558	24137	23724	23339	22889	22378
90	21860	21335	20724	20067	19483	18785	18076	17224	16051	14301
100	11573									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 33302 Whanganui at Te Maire
 From 1-Jul-1962 00:00:00 to 30-Jun-2004 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1962	772.21	4-Dec-1962 06:00
1963	772.41	10-Jan-1963 12:00
1964	1097.5	11-Mar-1964 16:30
1965	1152.8	8-Nov-1965 03:00
1966	920.56	26-Apr-1966 23:59
1967	850.13	2-Feb-1967 21:16
1968	732.57	7-Dec-1968 22:45
1969	455.59	24-Apr-1969 00:30
1970	640.92	17-Sep-1970 17:00
1971	800.57	1-Jun-1971 12:00
1972	697.37	11-Mar-1972 04:15
1973	819.43	16-Sep-1973 24:00
1974	524.81	3-Jul-1974 12:00
1975	790.68	29-Aug-1975 12:00
1976	632.79	30-Apr-1976 15:15
1977	805.02	28-Jun-1977 21:30
1978	1349.8	13-Nov-1978 00:15
1979	1006.5	14-Oct-1979 19:15
1980	851.82	23-Jan-1980 01:15
1981	725.27	25-Sep-1981 03:15
1982	543.98	25-Feb-1982 03:45
1983	522.16	8-Nov-1983 17:15
1984	656.41	16-Dec-1984 23:30
1985	511.26	2-Dec-1985 14:15
1986	1217.0	26-Jul-1986 04:45
1987	442.91	22-Jan-1987 18:15
1988	1084.0	8-Jun-1988 12:45
1989	868.72	15-Oct-1989 18:00
1990	913.53	10-Mar-1990 20:45
1991	1003.1	7-Aug-1991 08:00
1992	648.92	10-Aug-1992 20:45
1993	1138.5	21-Nov-1993 17:45
1994	951.17	8-Nov-1994 17:45
1995	1133.9	7-Sep-1995 06:30
1996	1244.3	21-Apr-1996 11:45
1997	1207.9	9-Apr-1997 08:30
1998	1801.4	28-Oct-1998 22:00
1999	919.16	17-May-1999 00:45
2000	1466.0	2-Oct-2000 23:45
2001	1058.0	25-May-2001 17:15
2002	773.30	30-Sep-2002 00:45
2003	1252.5	4-Oct-2003 04:00
*2004	1393.6	29-Feb-2004 06:45

Average Annual Maximum 902.06 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 33302 Whanganui at Te Maire
From 1-Jul-1962 00:00:00 to 30-Jun-2004 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1963 24:00:00	27446 at interval beginning 9-Apr-1963 12:00:00
30-Jun-1964 24:00:00	28000 at interval beginning 26-Apr-1964 12:00:00
30-Jun-1965 24:00:00	38925 at interval beginning 22-Apr-1965 24:00:00
30-Jun-1966 24:00:00	41657 at interval beginning 26-Oct-1965 18:00:00
30-Jun-1967 24:00:00	31490 at interval beginning 22-Apr-1967 17:30:00
30-Jun-1968 24:00:00	27698 at interval beginning 3-Apr-1968 19:45:00
30-Jun-1969 24:00:00	28551 at interval beginning 2-Apr-1969 10:15:00
30-Jun-1970 24:00:00	18622 at interval beginning 24-Mar-1970 21:00:00
30-Jun-1971 24:00:00	19797 at interval beginning 18-Apr-1971 21:15:00
30-Jun-1972 24:00:00	25830 at interval beginning 3-Mar-1972 09:30:00
30-Jun-1973 24:00:00	19487 at interval beginning 19-Apr-1973 20:00:00
30-Jun-1974 24:00:00	12946 at interval beginning 12-Apr-1974 07:00:00
30-Jun-1975 24:00:00	16507 at interval beginning 11-Mar-1975 01:30:00
30-Jun-1976 24:00:00	18079 at interval beginning 25-Mar-1976 21:00:00
30-Jun-1977 24:00:00	14792 at interval beginning 6-Mar-1977 16:30:00
30-Jun-1978 24:00:00	12300 at interval beginning 31-Mar-1978 15:15:00
30-Jun-1979 24:00:00	17399 at interval beginning 4-Feb-1979 08:45:00
30-Jun-1980 24:00:00	25014 at interval beginning 1-Jul-1979 06:45:00
30-Jun-1981 24:00:00	21312 at interval beginning 23-Mar-1981 22:30:00
30-Jun-1982 24:00:00	19549 at interval beginning 14-Feb-1982 21:45:00
30-Jun-1983 24:00:00	16348 at interval beginning 22-Mar-1983 11:45:00
30-Jun-1984 24:00:00	20353 at interval beginning 25-Apr-1984 02:45:00
30-Jun-1985 24:00:00	16208 at interval beginning 17-May-1985 15:45:00
30-Jun-1986 24:00:00	15838 at interval beginning 21-Apr-1986 08:30:00
30-Jun-1987 24:00:00	18212 at interval beginning 26-Feb-1987 04:15:00
30-Jun-1988 24:00:00	16247 at interval beginning 8-Mar-1988 23:00:00
30-Jun-1989 24:00:00	17764 at interval beginning 13-Apr-1989 19:00:00
30-Jun-1990 24:00:00	17543 at interval beginning 6-Mar-1990 23:15:00
30-Jun-1991 24:00:00	20818 at interval beginning 2-Apr-1991 21:45:00
30-Jun-1992 24:00:00	20876 at interval beginning 6-Mar-1992 17:15:00
30-Jun-1993 24:00:00	26667 at interval beginning 27-Mar-1993 18:00:00
30-Jun-1994 24:00:00	23064 at interval beginning 11-Apr-1994 03:00:00
30-Jun-1995 24:00:00	29357 at interval beginning 9-Mar-1995 20:45:00
30-Jun-1996 24:00:00	29989 at interval beginning 12-Mar-1996 11:00:00
30-Jun-1997 24:00:00	25165 at interval beginning 4-Apr-1997 08:45:00
30-Jun-1998 24:00:00	29745 at interval beginning 10-Aug-1997 01:30:00
30-Jun-1999 24:00:00	24283 at interval beginning 28-Mar-1999 06:00:00
30-Jun-2000 24:00:00	23429 at interval beginning 28-Mar-2000 16:30:00
30-Jun-2001 24:00:00	23076 at interval beginning 17-Jul-2000 17:45:00
30-Jun-2002 24:00:00	21328 at interval beginning 5-Oct-2001 24:00:00
30-Jun-2003 24:00:00	21862 at interval beginning 30-Apr-2003 12:00:00
30-Jun-2004 24:00:00	23024 at interval beginning 26-Aug-2003 15:30:00

Mean annual Minimum = 22538
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1962 to 2004 site 33302 Whanganui at Te Maire
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1963	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	3.5	0.0	0.0	3.7
1964	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.3	0.0	1.5	0.0	0.0	6.8
1965	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1966	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1967	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1968	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.9	7.5	0.0	0.0	17.5
1969	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.4	0.0	0.0	1.5
1970	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.3	28.0	29.3	24.5	14.3	0.0	101.3
1971	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3	21.1	27.8	3.2	0.0	55.3
1972	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.1	3.8	0.1	0.0	0.0	7.0
1973	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	7.5	14.0	0.0	NaN	23.5
1974	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.2	23.4	29.1	23.2	21.7	0.0	103.5
1975	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.8	0.3	0.0	0.0	5.0
1976	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.2	25.8	5.1	0.0	0.0	35.0
1978	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.7	26.1	23.7	20.3	21.1	8.8	110.7
1979	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	1.1
1980	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.5	0.0	0.0	0.0	8.5
1984	0.0	0.0	0.0	0.0	0.0	0.0	3.8	6.5	4.1	2.2	4.5	0.0	NaN	20.9
1985	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.2	11.3	8.9	0.0	23.5
1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0	20.7	0.0	0.0	26.7
1987	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1988	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3	3.1	4.7	0.0	10.1
1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.0	1.5
1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0
1991	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NaN	0.0
1994	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0	9.8	0.0	0.0	15.8
1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.4
1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	5.3	0.6	0.0	0.0	6.9
2000	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	12.3	3.9	0.0	0.0	16.3
2001	6.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.8
2002	0.0	0.0	2.2	9.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.7
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.9	20.3	10.6	0.0	42.8
2004	0.0	13.3	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.0
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	6.8	13.3	2.2	9.5	0.0	3.8	10.7	28.0	29.3	27.8	21.7	8.8		
Mean	0.2	0.3	0.1	0.2	0.0	0.1	0.7	2.4	5.1	4.9	2.0	0.2		

6.52. Whanganui at Te Maire (33302), July 1962 to July 1972 (pre-diversion)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 33302 Whanganui at Te Maire
 From 1-Jul-1962 00:00:01 to 1-Jul-1972 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	1152800	445804	355451	302690	272993	249813	230111	215351	202990	192188
10	182853	174561	167432	161187	156118	150926	145800	141049	136996	133314
20	129693	126190	122846	119800	116776	114104	111514	109228	106931	104495
30	102145	100081	97979	96027	94370	92675	90924	89271	87804	86260
40	84777	83115	81456	79903	78393	76974	75660	74303	73072	71878
50	70599	69329	67932	66577	65459	64305	63168	62053	60969	59906
60	58964	57988	56971	55978	54957	53936	52882	51803	50863	49911
70	48987	48150	47396	46631	45784	44936	44256	43415	42592	41717
80	41048	40088	39420	38603	37979	37192	36642	35791	35035	34036
90	32996	32196	31267	30245	29594	28632	27096	23411	21548	20286
100	16906									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 33302 Whanganui at Te Maire
 From 1-Jul-1962 00:00:01 to 1-Jul-1972 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	1152800	411662	281571	238390	208731	184539	168136	157926	149184	141244
10	134490	127943	122623	117622	113565	109686	106185	102909	99727	96503
20	93691	91286	88822	86657	84257	82128	80088	78207	76540	75028
30	73571	72123	70656	69238	67761	66286	65319	64202	62894	61745
40	60486	59419	58413	57236	56141	55125	54167	53061	52007	51164
50	50228	49306	48592	47996	47453	46818	46108	45384	44752	44251
60	43564	42941	42319	41745	41379	40777	40121	39695	39195	38687
70	38320	37880	37376	36960	36676	36254	35735	35306	34810	34239
80	33700	33153	32651	32319	31819	31370	30996	30298	29936	29576
90	28965	28567	28004	26791	24502	22969	21898	21180	20441	19761
100	16906									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 33302 Whanganui at Te Maire
 From 1-Jul-1962 00:00:00 to 30-Jun-1972 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1962	772.21	4-Dec-1962 06:00
1963	772.41	10-Jan-1963 12:00
1964	1097.5	11-Mar-1964 16:30
1965	1152.8	8-Nov-1965 03:00
1966	920.56	26-Apr-1966 23:59
1967	850.13	2-Feb-1967 21:16
1968	732.57	7-Dec-1968 22:45
1969	455.59	24-Apr-1969 00:30
1970	640.92	17-Sep-1970 17:00
1971	800.57	1-Jun-1971 12:00
*1972	697.37	11-Mar-1972 04:15

Average Annual Maximum 824.78 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 33302 Whanganui at Te Maire

From 1-Jul-1962 00:00:00 to 30-Jun-1972 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1963 24:00:00	27446 at interval beginning 9-Apr-1963 12:00:00
30-Jun-1964 24:00:00	28000 at interval beginning 26-Apr-1964 12:00:00
30-Jun-1965 24:00:00	38925 at interval beginning 22-Apr-1965 24:00:00
30-Jun-1966 24:00:00	41657 at interval beginning 26-Oct-1965 18:00:00
30-Jun-1967 24:00:00	31490 at interval beginning 22-Apr-1967 17:30:00
30-Jun-1968 24:00:00	27698 at interval beginning 3-Apr-1968 19:45:00
30-Jun-1969 24:00:00	28551 at interval beginning 2-Apr-1969 10:15:00
30-Jun-1970 24:00:00	18622 at interval beginning 24-Mar-1970 21:00:00
30-Jun-1971 24:00:00	19797 at interval beginning 18-Apr-1971 21:15:00
30-Jun-1972 24:00:00	25830 at interval beginning 3-Mar-1972 09:30:00

Mean annual Minimum = 28802
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1962 to 1972 site 33302 Whanganui at Te Maire
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
	1963	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	3.5	0.0	0.0	3.7
	1964	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.3	0.0	1.5	0.0	0.0	6.8
	1965	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1966	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1967	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1968	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.9	7.5	0.0	0.0	17.5
	1969	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.4	0.0	0.0	1.5
	1970	0.0	0.0	0.0	0.0	0.0	0.0	5.3	28.0	29.3	24.5	14.3	0.0	101.3
	1971	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3	21.1	27.8	3.2	0.0	55.3
	1972	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.1	3.8	0.1	0.0	0.0	7.0
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.3	28.0	29.3	27.8	14.3	0.0	
Mean	0.0	0.0	0.0	0.0	0.0	0.0	0.5	4.0	6.4	6.6	1.8	0.0		

6.53. Whanganui at Te Maire (33302), July 1973 to July 1983 (1972 rules)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 33302 Whanganui at Te Maire
From 1-Jul-1973 00:00:01 to 1-Jul-1983 00:00:01
Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	1349800	359028	274066	228355	201834	183623	169160	157388	147568	139639
10	132577	126631	121442	116714	112375	108296	104782	101449	98400	95375
20	92713	90327	88152	86174	84295	82399	80599	78897	77178	75448
30	73878	72362	70770	69298	67814	66379	65040	63788	62433	61059

40	59692	58368	57098	55988	54869	53754	52642	51466	50405	49314
50	48362	47477	46568	45675	44817	43947	43240	42476	41779	41034
60	40315	39475	38710	37947	37199	36472	35855	35164	34521	33878
70	33150	32474	31832	31151	30471	29785	29156	28537	27843	27004
80	26193	25451	24722	24000	23249	22475	21819	21099	20234	19653
90	19071	18514	17928	17241	16646	15856	15181	14722	14122	13349
100	11573									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 33302 Whanganui at Te Maire

From 1-Jul-1973 00:00:01 to 1-Jul-1983 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	1349800	250981	183484	151171	134074	121144	109425	100483	93142	87535
10	83251	79357	76091	73202	70638	68136	65987	63941	62061	60100
20	58142	56587	55248	53984	52799	51430	50275	49155	48229	47388
30	46576	45730	44906	44125	43441	42815	42172	41559	40906	40261
40	39560	38907	38308	37672	37072	36509	36061	35599	35142	34673
50	34245	33721	33200	32702	32207	31741	31280	30760	30232	29700
60	29230	28759	28243	27664	27033	26467	25957	25486	25019	24568
70	24180	23748	23320	22863	22435	22047	21659	21289	20770	20340
80	19954	19682	19421	19073	18780	18487	18194	17896	17530	17136
90	16778	16437	15940	15448	15038	14695	14230	13796	13363	13019
100	11573									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 33302 Whanganui at Te Maire

From 1-Jul-1973 00:00:00 to 30-Jun-1983 24:00:00

Interval = 0

flow m3/s

Year	Maximum	Date & Time
*1973	819.43	16-Sep-1973 24:00
1974	524.81	3-Jul-1974 12:00
1975	790.68	29-Aug-1975 12:00
1976	632.79	30-Apr-1976 15:15
1977	805.02	28-Jun-1977 21:30
1978	1349.8	13-Nov-1978 00:15
1979	1006.5	14-Oct-1979 19:15
1980	851.82	23-Jan-1980 01:15
1981	725.27	25-Sep-1981 03:15
1982	543.98	25-Feb-1982 03:45
*1983	488.70	3-Apr-1983 15:45

Average Annual Maximum 803.41 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 33302 Whanganui at Te Maire

From 1-Jul-1973 00:00:00 to 30-Jun-1983 24:00:00

Minimum moving averages over 1.000day interval

Year Ending Minimum Value (Flow l/s)

30-Jun-1974 24:00:00	12946 at interval beginning	12-Apr-1974 07:00:00
30-Jun-1975 24:00:00	16507 at interval beginning	11-Mar-1975 01:30:00
30-Jun-1976 24:00:00	18079 at interval beginning	25-Mar-1976 21:00:00
30-Jun-1977 24:00:00	14792 at interval beginning	6-Mar-1977 16:30:00
30-Jun-1978 24:00:00	12300 at interval beginning	31-Mar-1978 15:15:00
30-Jun-1979 24:00:00	17399 at interval beginning	4-Feb-1979 08:45:00
30-Jun-1980 24:00:00	25014 at interval beginning	1-Jul-1979 06:45:00
30-Jun-1981 24:00:00	21312 at interval beginning	23-Mar-1981 22:30:00
30-Jun-1982 24:00:00	19549 at interval beginning	14-Feb-1982 21:45:00
30-Jun-1983 24:00:00	16348 at interval beginning	22-Mar-1983 11:45:00

Mean annual Minimum = 17425
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1973 to 1983 site 33302 Whanganui at Te Maire
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1974	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.2	23.4	29.1	23.2	21.7	0.0	103.5
1975	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.8	0.3	0.0	0.0	5.0
1976	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.2	25.8	5.1	0.0	0.0	35.0
1978	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.7	26.1	23.7	20.3	21.1	8.8	110.7
1979	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	1.1
1980	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.5	0.0	0.0	0.0	8.5
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.7	26.1	29.1	23.2	21.7	8.8	
Mean	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7	5.5	9.2	4.9	4.3	0.9	

6.54. Whanganui at Te Maire (33302), July 1984 to July 1992 (1983 rules)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 33302 Whanganui at Te Maire
From 1-Jul-1984 00:00:01 to 1-Jul-1992 00:00:01
Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	1217000	365103	275099	233296	204702	185300	169646	156784	146448	137752
10	130231	123090	117357	112083	107639	103786	99999	96852	93697	90680
20	87910	85577	83344	81013	78653	76343	74256	72440	70773	69210
30	67554	65909	64354	62983	61533	60137	58815	57552	56349	55274
40	54152	52997	51984	51070	50080	49138	48294	47385	46493	45565
50	44727	43823	43018	42154	41402	40666	39940	39235	38523	37832
60	37174	36475	35833	35147	34557	33961	33443	32950	32485	31952
70	31466	31011	30496	29994	29481	28941	28445	27877	27377	26823
80	26224	25732	25267	24813	24438	24115	23806	23526	23198	22809
90	22329	21833	21320	20796	20153	19482	18909	18327	17884	17212

100 14255

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 33302 Whanganui at Te Maire

From 1-Jul-1984 00:00:01 to 1-Jul-1992 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	998551	296840	216569	169310	139078	121688	111071	102726	95373	89282
10	84533	79999	75447	72340	69415	66188	63481	61256	59437	57746
20	56246	54990	53730	52532	51392	50278	49111	48103	47107	46170
30	45281	44354	43479	42665	41847	41127	40464	39754	39081	38392
40	37733	37153	36553	36035	35391	34859	34384	33897	33500	33111
50	32739	32346	31928	31583	31178	30850	30468	30015	29616	29200
60	28806	28446	28059	27665	27306	26952	26587	26193	25861	25565
70	25269	24980	24709	24483	24283	24078	23874	23699	23537	23366
80	23163	22944	22668	22412	22133	21887	21609	21330	21034	20735
90	20342	19947	19521	19128	18795	18404	18091	17838	17327	16633
100	14255									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 33302 Whanganui at Te Maire

From 1-Jul-1984 00:00:00 to 30-Jun-1992 24:00:00

Interval = 0

flow m3/s

Year	Maximum	Date & Time
*1984	656.41	16-Dec-1984 23:30
1985	511.26	2-Dec-1985 14:15
1986	1217.0	26-Jul-1986 04:45
1987	442.91	22-Jan-1987 18:15
1988	1084.0	8-Jun-1988 12:45
1989	868.72	15-Oct-1989 18:00
1990	913.53	10-Mar-1990 20:45
1991	1003.1	7-Aug-1991 08:00
*1992	542.73	18-Jan-1992 03:15

Average Annual Maximum 862.92 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 33302 Whanganui at Te Maire

From 1-Jul-1984 00:00:00 to 30-Jun-1992 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1985 24:00:00	16208 at interval beginning 17-May-1985 15:45:00
30-Jun-1986 24:00:00	15838 at interval beginning 21-Apr-1986 08:30:00
30-Jun-1987 24:00:00	18212 at interval beginning 26-Feb-1987 04:15:00
30-Jun-1988 24:00:00	16247 at interval beginning 8-Mar-1988 23:00:00
30-Jun-1989 24:00:00	17764 at interval beginning 13-Apr-1989 19:00:00
30-Jun-1990 24:00:00	17543 at interval beginning 6-Mar-1990 23:15:00
30-Jun-1991 24:00:00	20818 at interval beginning 2-Apr-1991 21:45:00
30-Jun-1992 24:00:00	20876 at interval beginning 6-Mar-1992 17:15:00

Mean annual Minimum = 17938
 (For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
 Monthly totals 1984 to 1992 site 33302 Whanganui at Te Maire
 Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1985	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.2	11.3	8.9	0.0	23.5
1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0	20.7	0.0	0.0	26.7
1987	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1988	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3	3.1	4.7	0.0	10.1
1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.0	1.5
1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0
1991	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0	20.7	8.9	0.0	
Mean	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	4.6	1.7	0.0	

6.55. Whanganui at Te Maire (33302), July 1993 to July 2004 (Planning Tribunal 1990)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 33302 Whanganui at Te Maire
 From 1-Jul-1993 00:00:01 to 1-Jul-2004 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	1801400	502175	385581	308201	262300	229872	207179	189689	174939	162725
10	153509	145810	138263	131293	125380	120185	115335	110578	106333	102630
20	99199	95902	92951	89994	87244	84514	81805	79403	77236	75254
30	73358	71531	69759	68031	66444	64911	63412	61944	60607	59387
40	58206	57068	55974	54905	53957	53058	52129	51263	50356	49357
50	48359	47526	46664	45874	45086	44370	43629	42892	42178	41475
60	40792	40084	39346	38675	38040	37430	36882	36377	35890	35374
70	34901	34464	34002	33545	33146	32767	32400	32064	31771	31494
80	31227	30984	30750	30522	30292	30068	29847	29614	29334	29000
90	28643	28226	27786	27363	26910	26390	25743	25093	24310	23499
100	19814									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 33302 Whanganui at Te Maire
 From 1-Jul-1993 00:00:01 to 1-Jul-2004 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
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0 1393600 409563 271888 212111 177852 156440 141174 127357 117244 109002
10 103103 97610 92634 88288 84364 80536 76946 73796 71019 68545
20 66126 64038 62149 60376 58823 57366 55965 54667 53415 52343
30 51375 50345 49326 48395 47645 46865 46083 45355 44710 44036
40 43318 42615 41932 41272 40597 39875 39219 38667 38139 37644
50 37159 36700 36308 35936 35533 35165 34857 34533 34194 33863
60 33526 33225 32961 32697 32430 32187 31981 31796 31614 31429
70 31256 31090 30950 30812 30664 30515 30376 30237 30092 29946
80 29797 29645 29461 29254 29024 28781 28507 28247 27942 27715
90 27426 27109 26846 26511 26103 25611 25163 24650 24008 23446
100 21680

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Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 33302 Whanganui at Te Maire
From 1-Jul-1993 00:00:00 to 30-Jun-2004 24:00:00
Interval = 0
flow m3/s

Year	Maximum	Date & Time
*1993	1138.5	21-Nov-1993 17:45
1994	951.17	8-Nov-1994 17:45
1995	1133.9	7-Sep-1995 06:30
1996	1244.3	21-Apr-1996 11:45
1997	1207.9	9-Apr-1997 08:30
1998	1801.4	28-Oct-1998 22:00
1999	919.16	17-May-1999 00:45
2000	1466.0	2-Oct-2000 23:45
2001	1058.0	25-May-2001 17:15
2002	773.30	30-Sep-2002 00:45
2003	1252.5	4-Oct-2003 04:00
*2004	1393.6	29-Feb-2004 06:45

Average Annual Maximum 1180.8 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 33302 Whanganui at Te Maire
From 1-Jul-1993 00:00:00 to 30-Jun-2004 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1994 24:00:00	23064 at interval beginning 11-Apr-1994 03:00:00
30-Jun-1995 24:00:00	29357 at interval beginning 9-Mar-1995 20:45:00
30-Jun-1996 24:00:00	29989 at interval beginning 12-Mar-1996 11:00:00
30-Jun-1997 24:00:00	25165 at interval beginning 4-Apr-1997 08:45:00
30-Jun-1998 24:00:00	29745 at interval beginning 10-Aug-1997 01:30:00
30-Jun-1999 24:00:00	24283 at interval beginning 28-Mar-1999 06:00:00
30-Jun-2000 24:00:00	23429 at interval beginning 28-Mar-2000 16:30:00
30-Jun-2001 24:00:00	23076 at interval beginning 17-Jul-2000 17:45:00
30-Jun-2002 24:00:00	21328 at interval beginning 5-Oct-2001 24:00:00
30-Jun-2003 24:00:00	21862 at interval beginning 30-Apr-2003 12:00:00
30-Jun-2004 24:00:00	23024 at interval beginning 26-Aug-2003 15:30:00

Mean annual Minimum = 24938
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
 Monthly totals 1993 to 2004 site 33302 Whanganui at Te Maire
 Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1994	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0	9.8	0.0	0.0	15.8
1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.4
1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	5.3	0.6	0.0	0.0	6.9
2000	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	12.3	3.9	0.0	0.0	0.0	16.3
2001	6.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.8
2002	0.0	0.0	2.2	9.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.7
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.9	20.3	10.6	0.0	0.0	42.8
2004	0.0	13.3	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.0
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	6.8	13.3	2.2	9.5	0.0	0.0	0.0	0.0	1.0	12.3	20.3	10.6	0.0	
Mean	0.6	1.2	0.3	0.9	0.0	0.0	0.0	0.1	3.2	3.2	1.0	0.0	0.0	

6.56. Whanganui at Te Maire (simnat) (33300), July 1962 to July 2003 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 33300 Simulated Natural Flow at Whanganui sites

Item 2

From 1-Jul-1962 00:00:01 to 1-Jul-2003 00:00:01
 Te Maire l/s

	0	1	2	3	4	5	6	7	8	9
0	1769300	445751	343823	288699	256437	232566	213947	199646	187841	177779
10	169113	161613	154997	148949	143524	138363	133866	129832	125990	122370
20	118875	115686	112771	110141	107590	105082	102664	100492	98342	96172
30	94267	92397	90586	88917	87225	85637	84052	82396	80850	79344
40	77931	76551	75173	73917	72660	71416	70171	68979	67805	66659
50	65584	64493	63478	62453	61464	60424	59538	58621	57726	56814
60	55935	55069	54216	53415	52618	51786	51025	50244	49472	48726
70	47987	47262	46527	45696	44937	44225	43460	42721	41942	41219
80	40481	39751	39060	38285	37512	36747	35882	35046	34110	33216
90	32462	31710	30928	30084	29178	28160	26822	25361	23546	21424
100	13505									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 33300 Simulated Natural Flow at Whanganui sites

Item 2

From 1-Jul-1962 00:00:01 to 1-Jul-2003 00:00:01
 Te Maire l/s

	0	1	2	3	4	5	6	7	8	9
0	1313100	340071	247264	202744	176307	158426	145396	134886	127061	119875
10	113776	108900	104339	100377	96493	93074	90092	87489	85034	82685
20	80589	78660	76927	75265	73750	72238	70762	69409	68121	66833
30	65728	64690	63673	62633	61659	60653	59723	58780	57917	57076
40	56251	55472	54729	54036	53357	52677	52001	51382	50791	50179
50	49536	48934	48329	47756	47185	46605	45999	45391	44820	44258
60	43664	43111	42541	41972	41442	40975	40480	39963	39502	39022
70	38525	38024	37518	37019	36585	36026	35516	35031	34463	33946
80	33417	32987	32584	32166	31736	31330	30879	30420	29999	29534
90	28987	28498	27796	27063	26122	25286	24333	23132	21702	20115
100	13505									

Annual maximum series and mean annual flood (MAF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 33300 Simulated Natural Flow at Whanganui sites

From 1-Jul-1962 00:00:00 to 30-Jun-2003 24:00:00

Interval = 0

flow m3/s

Year	Maximum	Date & Time
*1962	765.11	3-Dec-1962 21:00
1963	730.76	10-Jan-1963 06:00
1964	1089.7	11-Mar-1964 09:00
1965	1121.3	7-Nov-1965 18:00
1966	809.67	6-Dec-1966 15:00
1967	744.43	2-Feb-1967 15:00
1968	717.98	7-Dec-1968 15:00
1969	439.06	23-Apr-1969 18:00
1970	633.76	30-Sep-1970 15:00
1971	760.74	18-Oct-1971 24:00
1972	692.01	10-Mar-1972 21:00
1973	825.58	16-Sep-1973 18:00
1974	546.45	3-Jul-1974 15:00
1975	799.99	29-Aug-1975 06:00
1976	641.22	29-Jun-1976 09:00
1977	820.52	28-Jun-1977 15:00
1978	1313.1	12-Nov-1978 18:00
1979	1027.5	14-Oct-1979 12:00
1980	824.95	22-Jan-1980 18:00
1981	720.39	24-Sep-1981 21:00
1982	560.44	24-Feb-1982 21:00
1983	497.12	8-Nov-1983 09:00
1984	592.97	16-Dec-1984 18:00
1985	470.11	2-Dec-1985 06:00
1986	1242.1	25-Jul-1986 21:00
1987	452.69	22-Jan-1987 12:00
1988	1109.7	8-Jun-1988 06:00
1989	893.39	15-Oct-1989 12:00
1990	923.09	10-Mar-1990 12:00
1991	1018.9	6-Aug-1991 24:00
1992	667.25	14-Aug-1992 18:00
1993	1110.0	21-Nov-1993 09:00
1994	976.59	8-Nov-1994 18:00
1995	1151.2	6-Sep-1995 24:00
1996	1225.2	21-Apr-1996 03:00
1997	1156.4	8-Apr-1997 24:00
1998	1769.3	28-Oct-1998 15:00
1999	923.95	16-May-1999 18:00
2000	1457.4	2-Oct-2000 15:00
2001	1071.6	25-May-2001 09:00
2002	765.12	29-Sep-2002 18:00

*2003 710.20 21-May-2003 24:00

Average Annual Maximum 882.34 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is O:\elfhzlc22\Rawdata\EXTPD.MTD Site 33300 Simulated Natural Flow at Whanganui sites

From 1-Jul-1962 00:00:00 to 30-Jun-2003 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Te Maire l/s)
30-Jun-1963 24:00:00	27446 at interval beginning 9-Apr-1963 03:00:00
30-Jun-1964 24:00:00	27984 at interval beginning 25-Apr-1964 24:00:00
30-Jun-1965 24:00:00	38925 at interval beginning 22-Apr-1965 15:00:00
30-Jun-1966 24:00:00	41601 at interval beginning 26-Oct-1965 12:00:00
30-Jun-1967 24:00:00	31480 at interval beginning 22-Apr-1967 09:00:00
30-Jun-1968 24:00:00	27698 at interval beginning 3-Apr-1968 12:00:00
30-Jun-1969 24:00:00	28554 at interval beginning 2-Apr-1969 03:00:00
30-Jun-1970 24:00:00	18622 at interval beginning 24-Mar-1970 12:00:00
30-Jun-1971 24:00:00	19789 at interval beginning 18-Apr-1971 15:00:00
30-Jun-1972 24:00:00	27564 at interval beginning 2-Mar-1972 24:00:00
30-Jun-1973 24:00:00	21967 at interval beginning 19-Apr-1973 12:00:00
30-Jun-1974 24:00:00	16703 at interval beginning 31-Mar-1974 06:00:00
30-Jun-1975 24:00:00	29048 at interval beginning 10-Mar-1975 24:00:00
30-Jun-1976 24:00:00	29734 at interval beginning 21-Apr-1976 06:00:00
30-Jun-1977 24:00:00	25305 at interval beginning 21-Mar-1977 21:00:00
30-Jun-1978 24:00:00	16570 at interval beginning 6-Mar-1978 06:00:00
30-Jun-1979 24:00:00	26580 at interval beginning 10-Feb-1979 21:00:00
30-Jun-1980 24:00:00	39854 at interval beginning 1-Jul-1979 03:00:00
30-Jun-1981 24:00:00	31332 at interval beginning 8-Mar-1981 03:00:00
30-Jun-1982 24:00:00	30200 at interval beginning 7-May-1982 09:00:00
30-Jun-1983 24:00:00	29425 at interval beginning 22-Mar-1983 09:00:00
30-Jun-1984 24:00:00	25085 at interval beginning 16-Jan-1984 15:00:00
30-Jun-1985 24:00:00	24180 at interval beginning 16-Apr-1985 15:00:00
30-Jun-1986 24:00:00	27382 at interval beginning 20-Apr-1986 24:00:00
30-Jun-1987 24:00:00	23352 at interval beginning 6-Jan-1987 12:00:00
30-Jun-1988 24:00:00	26978 at interval beginning 1-Feb-1988 09:00:00
30-Jun-1989 24:00:00	25350 at interval beginning 22-Apr-1989 12:00:00
30-Jun-1990 24:00:00	27556 at interval beginning 6-Mar-1990 15:00:00
30-Jun-1991 24:00:00	28504 at interval beginning 12-Jan-1991 21:00:00
30-Jun-1992 24:00:00	36664 at interval beginning 20-Dec-1991 12:00:00
30-Jun-1993 24:00:00	26497 at interval beginning 1-May-1993 18:00:00
30-Jun-1994 24:00:00	21055 at interval beginning 10-Apr-1994 18:00:00
30-Jun-1995 24:00:00	36760 at interval beginning 25-Jan-1995 21:00:00
30-Jun-1996 24:00:00	39477 at interval beginning 13-Mar-1996 09:00:00
30-Jun-1997 24:00:00	27362 at interval beginning 4-Apr-1997 12:00:00
30-Jun-1998 24:00:00	29275 at interval beginning 27-Mar-1998 18:00:00
30-Jun-1999 24:00:00	25772 at interval beginning 4-Mar-1999 18:00:00
30-Jun-2000 24:00:00	24581 at interval beginning 28-Mar-2000 03:00:00
30-Jun-2001 24:00:00	31758 at interval beginning 21-Mar-2001 18:00:00
30-Jun-2002 24:00:00	28485 at interval beginning 23-Apr-2002 24:00:00
30-Jun-2003 24:00:00	23449 at interval beginning 26-Apr-2003 06:00:00

Mean annual Minimum = 27949
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD

Monthly totals 1962 to 2003 site 333002 Whanganui at Te Maire (simnat)

Days < MALF

Season ending in Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1963	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	3.5	0.0	0.0	3.8
1964	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.5	0.0	3.6	0.0	0.0	9.1
1965	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1966	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1967	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1968	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.9	7.4	0.0	0.0	19.3
1969	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0
1970	0.0	0.0	0.0	0.0	0.0	0.0	6.0	28.0	29.3	24.5	14.0	0.0	101.8
1971	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.6	21.8	27.5	2.8	0.0	55.6
1972	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	2.9	0.0	0.0	0.0	5.4
1973	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.5	20.9	19.8	0.0	NaN	56.1
1974	0.0	0.0	0.0	0.0	0.0	0.0	5.6	25.5	29.1	23.0	22.6	0.0	105.9
1975	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1976	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.1	2.1	0.0	0.0	17.3
1978	0.0	0.0	0.0	0.0	0.0	0.0	4.6	27.3	31.0	20.9	22.6	10.0	116.4
1979	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.4
1980	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.0	0.0	0.0	0.0	NaN	1.8
1985	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.6	18.4	13.5	4.4	39.9
1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	0.0	0.0	1.6
1987	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.9
1988	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.1	0.0	0.9
1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.5	0.0	0.0	6.5
1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.6
1991	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.4
1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	9.4	1.1	5.0	NaN	15.9
1994	0.0	0.0	0.0	0.0	0.0	0.0	4.5	19.3	23.6	10.9	0.0	0.0	58.3
1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3	0.0	0.0	2.3
1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.5	15.8	4.8	0.0	0.0	35.0
2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	26.4	8.3	0.0	0.0	34.6
2001	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.1	0.0	0.0	4.1
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.8	26.8	26.4	15.1	0.1	76.1
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	0.0	0.0	0.0	0.0	0.0	0.0	6.0	28.0	31.0	27.5	22.6	10.0	
Mean	0.0	0.0	0.0	0.0	0.0	0.0	0.6	3.7	6.5	5.3	2.3	0.4	

6.57. Whanganui at Te Maire (simnat) (33300), July 1962 to July 1972 (pre-diversion)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 33300 Simulated Natural Flow at Whanganui sites

Item 2

From 1-Jul-1962 00:00:01 to 1-Jul-1972 00:00:01
Te Maire l/s

	0	1	2	3	4	5	6	7	8	9
0	1121300	446861	357047	303139	273038	249973	230563	215298	202871	192694
10	183023	174531	167833	161283	156030	151022	145818	141248	136956	133353
20	129807	126313	123025	119928	116855	114291	111697	109408	106967	104713
30	102256	100281	98245	96201	94522	92909	91211	89448	88023	86539
40	84990	83400	81760	80276	78662	77319	75962	74589	73320	72070
50	70782	69513	68192	66800	65661	64585	63465	62298	61200	60055
60	59122	58194	57170	56156	55181	54150	53144	52070	51054	50082
70	49157	48291	47506	46685	45841	45007	44310	43497	42657	41815
80	41149	40220	39538	38756	38131	37314	36788	36006	35192	34218
90	33216	32438	31530	30492	29696	28674	27537	23716	21686	20383
100	18240									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 33300 Simulated Natural Flow at Whanganui sites

Item 2

From 1-Jul-1962 00:00:01 to 1-Jul-1972 00:00:01
Te Maire l/s

	0	1	2	3	4	5	6	7	8	9
0	1121300	414247	281790	239351	208933	186338	168355	157539	148803	141255
10	133746	127691	122537	117110	113398	109544	105824	102769	99606	96511
20	93659	91174	88707	86746	84294	82182	80285	78442	76860	75143
30	73650	72196	70658	69291	67769	66347	65413	64262	62958	61711
40	60402	59396	58280	57154	56077	55057	54052	52983	51933	51115
50	50186	49314	48565	47979	47393	46747	46030	45313	44694	44147
60	43501	42910	42303	41738	41325	40777	40133	39707	39210	38701
70	38297	37907	37410	37034	36768	36332	35817	35381	34918	34354
80	33846	33280	32759	32435	31975	31488	31120	30427	29951	29597
90	29008	28579	28097	27076	24727	23005	21966	21289	20451	19775
100	18240									

Annual maximum series and mean annual flood (MAF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 33300 Simulated Natural Flow at Whanganui sites

From 1-Jul-1962 00:00:00 to 30-Jun-1972 24:00:00

Interval = 0

flow m3/s

Year	Maximum	Date & Time
*1962	765.11	3-Dec-1962 21:00
1963	730.76	10-Jan-1963 06:00
1964	1089.7	11-Mar-1964 09:00
1965	1121.3	7-Nov-1965 18:00
1966	809.67	6-Dec-1966 15:00
1967	744.43	2-Feb-1967 15:00
1968	717.98	7-Dec-1968 15:00
1969	439.06	23-Apr-1969 18:00
1970	633.76	30-Sep-1970 15:00
1971	760.74	18-Oct-1971 24:00
*1972	692.01	10-Mar-1972 21:00

Average Annual Maximum 783.05 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 33300 Simulated Natural Flow at Whanganui sites
From 1-Jul-1962 00:00:00 to 30-Jun-1972 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Te Maire l/s)
30-Jun-1963 24:00:00	27446 at interval beginning 9-Apr-1963 03:00:00
30-Jun-1964 24:00:00	27984 at interval beginning 25-Apr-1964 24:00:00
30-Jun-1965 24:00:00	38925 at interval beginning 22-Apr-1965 15:00:00
30-Jun-1966 24:00:00	41601 at interval beginning 26-Oct-1965 12:00:00
30-Jun-1967 24:00:00	31480 at interval beginning 22-Apr-1967 09:00:00
30-Jun-1968 24:00:00	27698 at interval beginning 3-Apr-1968 12:00:00
30-Jun-1969 24:00:00	28554 at interval beginning 2-Apr-1969 03:00:00
30-Jun-1970 24:00:00	18622 at interval beginning 24-Mar-1970 12:00:00
30-Jun-1971 24:00:00	19789 at interval beginning 18-Apr-1971 15:00:00
30-Jun-1972 24:00:00	27564 at interval beginning 2-Mar-1972 24:00:00

Mean annual Minimum = 28966
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1962 to 1972 site 333002 Whanganui at Te Maire (simnat)
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
	1963	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	3.5	0.0	0.0	3.8
	1964	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.5	0.0	3.6	0.0	0.0	9.1
	1965	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1966	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1967	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1968	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.9	7.4	0.0	0.0	19.3
	1969	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0
	1970	0.0	0.0	0.0	0.0	0.0	0.0	6.0	28.0	29.3	24.5	14.0	0.0	101.8
	1971	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.6	21.8	27.5	2.8	0.0	55.6
	1972	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	2.9	0.0	0.0	0.0	5.4
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0	28.0	29.3	27.5	14.0	0.0	
Mean	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	4.0	6.6	6.9	1.7	0.0	

6.58. Whanganui at Te Maire (simnat) (33300), July 1973 to July 1983 (1972 rules)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 33300 Simulated Natural Flow at Whanganui sites

Item 2

From 1-Jul-1973 00:00:01 to 1-Jul-1983 00:00:01

Te Maire l/s

	0	1	2	3	4	5	6	7	8	9
0	1313100	398706	308201	261386	233005	214375	199156	186779	175702	166371
10	158559	151916	145989	141114	136372	132230	128586	125173	121625	118123
20	115222	112656	110298	108120	105935	103826	101925	100124	98282	96357
30	94476	92880	91260	89679	88108	86596	85208	83787	82174	80635
40	79223	77871	76589	75288	74086	72882	71664	70533	69445	68420
50	67383	66236	65156	64141	63194	62209	61355	60439	59639	58782
60	57896	56963	56057	55177	54300	53424	52563	51668	50876	50028
70	49202	48425	47612	46721	45775	44890	43953	43052	42246	41419
80	40615	39631	38571	37436	36340	35445	34526	33535	32754	31912
90	31241	30540	29912	28493	26501	25007	23190	22141	21100	19932
100	13505									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 33300 Simulated Natural Flow at Whanganui sites

Item 2

From 1-Jul-1973 00:00:01 to 1-Jul-1983 00:00:01

Te Maire l/s

	0	1	2	3	4	5	6	7	8	9
0	1313100	283085	210112	176633	155161	139143	130151	122323	114479	109037
10	103995	100255	96563	93356	90617	88058	85616	83687	81317	79459
20	77565	76061	74634	73217	71871	70640	69353	68351	67380	66176
30	65226	64379	63556	62733	61802	61008	60145	59390	58514	57745
40	56983	56265	55576	54848	54204	53641	53046	52412	51734	51194
50	50543	49921	49212	48618	48079	47461	46827	46196	45601	44974
60	44337	43652	42986	42375	41762	41129	40671	39994	39414	38746
70	37976	37327	36658	36052	35538	35091	34563	34004	33482	33063
80	32656	32179	31830	31497	31055	30666	30380	30006	29508	28546
90	27279	26288	25387	24317	23187	22350	21303	20311	19939	19259
100	13505									

Annual maximum series and mean annual flood (MAF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 33300 Simulated Natural Flow at Whanganui sites

From 1-Jul-1973 00:00:00 to 30-Jun-1983 24:00:00

Interval = 0

flow m3/s

Year	Maximum	Date & Time
*1973	825.58	16-Sep-1973 18:00
1974	546.45	3-Jul-1974 15:00
1975	799.99	29-Aug-1975 06:00
1976	641.22	29-Jun-1976 09:00
1977	820.52	28-Jun-1977 15:00
1978	1313.1	12-Nov-1978 18:00
1979	1027.5	14-Oct-1979 12:00
1980	824.95	22-Jan-1980 18:00
1981	720.39	24-Sep-1981 21:00
1982	560.44	24-Feb-1982 21:00
*1983	473.90	3-Apr-1983 09:00

Average Annual Maximum 806.06 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 33300 Simulated Natural Flow at Whanganui sites

From 1-Jul-1973 00:00:00 to 30-Jun-1983 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Te Maire l/s)
30-Jun-1974 24:00:00	16703 at interval beginning 31-Mar-1974 06:00:00
30-Jun-1975 24:00:00	29048 at interval beginning 10-Mar-1975 24:00:00
30-Jun-1976 24:00:00	29734 at interval beginning 21-Apr-1976 06:00:00
30-Jun-1977 24:00:00	25305 at interval beginning 21-Mar-1977 21:00:00
30-Jun-1978 24:00:00	16570 at interval beginning 6-Mar-1978 06:00:00
30-Jun-1979 24:00:00	26580 at interval beginning 10-Feb-1979 21:00:00
30-Jun-1980 24:00:00	39854 at interval beginning 1-Jul-1979 03:00:00
30-Jun-1981 24:00:00	31332 at interval beginning 8-Mar-1981 03:00:00
30-Jun-1982 24:00:00	30200 at interval beginning 7-May-1982 09:00:00
30-Jun-1983 24:00:00	29425 at interval beginning 22-Mar-1983 09:00:00

Mean annual Minimum = 27475
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD

Monthly totals 1973 to 1983 site 333002 Whanganui at Te Maire (simnat)

Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
	1974	0.0	0.0	0.0	0.0	0.0	0.0	5.6	25.5	29.1	23.0	22.6	0.0	105.9
	1975	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1976	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.1	2.1	0.0	0.0	17.3
	1978	0.0	0.0	0.0	0.0	0.0	0.0	4.6	27.3	31.0	20.9	22.6	10.0	116.4
	1979	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.4
	1980	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
	1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max		0.0	0.0	0.0	0.0	0.0	0.0	5.6	27.3	31.0	23.0	22.6	10.0	
Mean		0.0	0.0	0.0	0.0	0.0	0.0	1.0	5.3	7.5	4.6	4.5	1.0	

6.59. Whanganui at Te Maire (simnat) (33300), July 1984 to July 1992 (1983 rules)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 33300 Simulated Natural Flow at Whanganui sites

Item 2

From 1-Jul-1984 00:00:01 to 1-Jul-1992 00:00:01

Te Maire l/s

	0	1	2	3	4	5	6	7	8	9
0	1242100	397830	309790	264283	235406	214101	198181	184868	174000	165187
10	157428	150100	143473	137585	132487	128388	124128	120215	116751	113459
20	110336	107664	104884	102201	99814	97180	94789	92679	90822	89148
30	87329	85514	83787	82338	80853	79328	77972	76579	75123	73912
40	72621	71395	70126	69069	67999	66961	65997	64994	63913	62881
50	61958	61031	60036	59168	58295	57371	56496	55583	54780	54037
60	53399	52780	52067	51465	50885	50227	49531	48918	48334	47700
70	47142	46634	45951	45286	44658	43972	43388	42759	42121	41450
80	40860	40276	39672	39142	38595	37962	37334	36537	35855	35103
90	34216	33452	32803	32211	31449	30729	29669	28824	27723	26310
100	18083									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 33300 Simulated Natural Flow at Whanganui sites

Item 2

From 1-Jul-1984 00:00:01 to 1-Jul-1992 00:00:01

Te Maire l/s

	0	1	2	3	4	5	6	7	8	9
0	995597	327352	248767	198457	165957	147855	134010	124812	116167	109635
10	104418	99933	94522	91110	88055	85357	82968	81223	79117	77483
20	75751	74112	72585	71111	69664	68497	67125	66052	65061	63842
30	62796	61988	61042	60062	59276	58488	57690	56887	55990	55223
40	54575	53915	53280	52743	52163	51722	51217	50770	50311	49775
50	49255	48784	48303	47781	47328	46861	46439	45876	45390	44870
60	44325	43798	43361	42907	42490	41998	41551	41113	40759	40383
70	39940	39601	39233	38864	38448	37983	37538	37075	36557	36101
80	35685	35212	34718	34241	33840	33447	33081	32746	32437	32064
90	31609	31292	30921	30430	29893	29375	28872	28072	27182	25916
100	18083									

Annual maximum series and mean annual flood (MAF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 33300 Simulated Natural Flow at Whanganui sites

From 1-Jul-1984 00:00:00 to 30-Jun-1992 24:00:00

Interval = 0

flow m3/s

Year	Maximum	Date & Time
*1984	592.97	16-Dec-1984 18:00
1985	470.11	2-Dec-1985 06:00
1986	1242.1	25-Jul-1986 21:00
1987	452.69	22-Jan-1987 12:00
1988	1109.7	8-Jun-1988 06:00
1989	893.39	15-Oct-1989 12:00
1990	923.09	10-Mar-1990 12:00
1991	1018.9	6-Aug-1991 24:00
*1992	528.82	17-Jan-1992 21:00

Average Annual Maximum 872.85 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 33300 Simulated Natural Flow at Whanganui sites
 From 1-Jul-1984 00:00:00 to 30-Jun-1992 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Te Maire l/s)
30-Jun-1985 24:00:00	24180 at interval beginning 16-Apr-1985 15:00:00
30-Jun-1986 24:00:00	27382 at interval beginning 20-Apr-1986 24:00:00
30-Jun-1987 24:00:00	23352 at interval beginning 6-Jan-1987 12:00:00
30-Jun-1988 24:00:00	26978 at interval beginning 1-Feb-1988 09:00:00
30-Jun-1989 24:00:00	25350 at interval beginning 22-Apr-1989 12:00:00
30-Jun-1990 24:00:00	27556 at interval beginning 6-Mar-1990 15:00:00
30-Jun-1991 24:00:00	28504 at interval beginning 12-Jan-1991 21:00:00
30-Jun-1992 24:00:00	36664 at interval beginning 20-Dec-1991 12:00:00

Mean annual Minimum = 27496
 (For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
 Monthly totals 1984 to 1992 site 333002 Whanganui at Te Maire (simnat)
 Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
	1985	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.6	18.4	13.5	4.4	39.9
	1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	0.0	0.0	1.6
	1987	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.9
	1988	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.1	0.0	0.9
	1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.5	0.0	0.0	6.5
	1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.6
	1991	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.4
	1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max		0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.8	3.6	18.4	13.5	4.4	
Mean		0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.5	3.4	1.7	0.5	

6.60. Whanganui at Te Maire (simnat) (33300), July 1993 to July 2003 (Planning Tribunal 1990)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 33300 Simulated Natural Flow at Whanganui sites

Item 2

From 1-Jul-1993 00:00:01 to 1-Jul-2003 00:00:01
 Te Maire l/s

	0	1	2	3	4	5	6	7	8	9
0	1769300	523288	402762	325627	281158	249651	227802	209819	196343	184781
10	175615	167103	159133	152472	146547	140864	135452	131109	126248	122474

20	118778	115267	112112	109284	106144	103301	100658	98207	95887	93854
30	91747	89810	87867	86128	84481	82735	81165	79651	78235	76826
40	75459	74203	73051	71845	70543	69251	68007	66897	65765	64729
50	63731	62726	61707	60636	59631	58611	57759	56965	56197	55431
60	54642	53956	53175	52455	51754	51022	50354	49628	48885	48125
70	47377	46572	45710	44966	44281	43597	42858	42128	41410	40685
80	40034	39428	38788	38098	37328	36538	35576	34650	33809	32947
90	32235	31483	30658	29838	29022	28012	27068	26043	25070	23984
100	20947									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 33300 Simulated Natural Flow at Whanganui sites

Item 2

From 1-Jul-1993 00:00:01 to 1-Jul-2003 00:00:01

Te Maire l/s

	0	1	2	3	4	5	6	7	8	9
0	1225200	406997	265220	210949	185853	167623	152351	139869	131329	124110
10	117770	111969	107300	102903	98819	95124	92024	89148	86409	84084
20	81761	79691	77833	76185	74523	72948	71504	69859	68592	67268
30	66176	65031	64044	63082	62151	61197	60226	59230	58217	57467
40	56732	56067	55375	54670	54087	53449	52822	52199	51655	51098
50	50575	50079	49510	48881	48159	47504	46838	46137	45440	44860
60	44267	43658	43028	42402	41847	41240	40708	40218	39720	39267
70	38793	38350	37788	37274	36801	36203	35493	34825	34241	33544
80	33000	32496	32024	31582	31076	30597	30180	29745	29345	28897
90	28397	27846	27391	26830	26292	25676	25140	24619	24016	23354
100	20947									

Annual maximum series and mean annual flood (MAF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 33300 Simulated Natural Flow at Whanganui sites

From 1-Jul-1993 00:00:00 to 30-Jun-2003 24:00:00

Interval = 0

flow m3/s

Year	Maximum	Date & Time
*1993	1110.0	21-Nov-1993 09:00
1994	976.59	8-Nov-1994 18:00
1995	1151.2	6-Sep-1995 24:00
1996	1225.2	21-Apr-1996 03:00
1997	1156.4	8-Apr-1997 24:00
1998	1769.3	28-Oct-1998 15:00
1999	923.95	16-May-1999 18:00
2000	1457.4	2-Oct-2000 15:00
2001	1071.6	25-May-2001 09:00
2002	765.12	29-Sep-2002 18:00
*2003	710.20	21-May-2003 24:00

Average Annual Maximum 1166.3 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 33300 Simulated Natural Flow at Whanganui sites

From 1-Jul-1993 00:00:00 to 30-Jun-2003 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Te Maire l/s)
30-Jun-1994 24:00:00	21055 at interval beginning 10-Apr-1994 18:00:00
30-Jun-1995 24:00:00	36760 at interval beginning 25-Jan-1995 21:00:00
30-Jun-1996 24:00:00	39477 at interval beginning 13-Mar-1996 09:00:00
30-Jun-1997 24:00:00	27362 at interval beginning 4-Apr-1997 12:00:00
30-Jun-1998 24:00:00	29275 at interval beginning 27-Mar-1998 18:00:00
30-Jun-1999 24:00:00	25772 at interval beginning 4-Mar-1999 18:00:00
30-Jun-2000 24:00:00	24581 at interval beginning 28-Mar-2000 03:00:00
30-Jun-2001 24:00:00	31758 at interval beginning 21-Mar-2001 18:00:00
30-Jun-2002 24:00:00	28485 at interval beginning 23-Apr-2002 24:00:00
30-Jun-2003 24:00:00	23449 at interval beginning 26-Apr-2003 06:00:00

Mean annual Minimum = 28797
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1993 to 2003 site 333002 Whanganui at Te Maire (simnat)
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
	1994	0.0	0.0	0.0	0.0	0.0	0.0	4.5	19.3	23.6	10.9	0.0	0.0	58.3
	1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3	0.0	0.0	2.3
	1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
	1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.5	15.8	4.8	0.0	0.0	35.0
	2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	26.4	8.3	0.0	0.0	34.6
	2001	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.1	0.0	0.0	4.1
	2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.8	26.8	26.4	15.1	0.1	76.1
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.5	19.3	26.8	26.4	15.1	0.1	
Mean	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	4.1	9.3	5.7	1.5	0.0	

6.61. Whanganui at Te Maire (sim consent) (8005), July 1962 to July 2003 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
Item 2

From 1-Jul-1962 00:00:01 to 1-Jul-2003 00:00:01
Te Maire l/s

	0	1	2	3	4	5	6	7	8	9
0	1721700	400747	302828	250277	218864	197051	180614	167441	157074	147846
10	140385	133772	127888	122674	117915	113413	109526	106032	102612	99504
20	96471	93833	91245	88873	86574	84359	82281	80257	78350	76581

30	74821	73185	71685	70107	68573	67147	65750	64291	62908	61519
40	60255	59065	57876	56710	55471	54378	53285	52221	51250	50260
50	49302	48355	47440	46575	45750	44912	44115	43311	42562	41770
60	41006	40230	39411	38679	37970	37322	36693	36053	35450	34823
70	34215	33605	32997	32350	31747	31149	30463	29910	29602	29241
80	29223	29205	29187	29170	29152	29134	29116	29099	29081	29063
90	29045	29028	29010	28887	28091	27206	26079	24822	23177	21153
100	13505									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
 Item 2
 From 1-Jul-1962 00:00:01 to 1-Jul-2003 00:00:01
 Te Maire l/s

	0	1	2	3	4	5	6	7	8	9
0	1265500	297614	206591	166730	143923	128114	116627	107361	100350	94344
10	89402	85108	81145	77547	74375	71530	69062	66827	64639	62587
20	60737	59165	57730	56301	54907	53544	52327	51229	50176	49110
30	48078	47134	46242	45381	44557	43788	43024	42318	41558	40819
40	40088	39380	38756	38165	37624	37122	36632	36127	35637	35143
50	34672	34195	33727	33290	32804	32297	31851	31450	30977	30476
60	29998	29736	29622	29411	29178	29170	29162	29154	29145	29137
70	29129	29121	29113	29104	29096	29088	29080	29071	29063	29055
80	29047	29038	29030	29022	29014	29005	28997	28989	28981	28973
90	28665	28098	27500	26692	25879	25094	24169	23028	21646	20110
100	13505									

Annual maximum series and mean annual flood (MAF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
 From 1-Jul-1962 00:00:00 to 30-Jun-2003 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1962	717.49	3-Dec-1962 21:00
1963	683.14	10-Jan-1963 06:00
1964	1042.1	11-Mar-1964 09:00
1965	1073.7	7-Nov-1965 18:00
1966	762.05	6-Dec-1966 15:00
1967	696.82	2-Feb-1967 15:00
1968	670.36	7-Dec-1968 15:00
1969	391.44	23-Apr-1969 18:00
1970	586.14	30-Sep-1970 15:00
1971	713.12	18-Oct-1971 24:00
1972	644.39	10-Mar-1972 21:00
1973	777.96	16-Sep-1973 18:00
1974	498.84	3-Jul-1974 15:00
1975	752.37	29-Aug-1975 06:00
1976	593.61	29-Jun-1976 09:00
1977	772.90	28-Jun-1977 15:00
1978	1265.5	12-Nov-1978 18:00
1979	979.85	14-Oct-1979 12:00
1980	777.33	22-Jan-1980 06:00
1981	672.77	24-Sep-1981 21:00
1982	525.78	24-Feb-1982 21:00
1983	449.51	8-Nov-1983 09:00
1984	545.35	16-Dec-1984 18:00
1985	422.49	2-Dec-1985 06:00

1986	1194.5	25-Jul-1986	21:00
1987	405.07	22-Jan-1987	12:00
1988	1062.1	8-Jun-1988	06:00
1989	845.77	15-Oct-1989	12:00
1990	875.47	10-Mar-1990	12:00
1991	971.25	6-Aug-1991	24:00
1992	619.63	14-Aug-1992	18:00
1993	1062.4	21-Nov-1993	09:00
1994	928.97	8-Nov-1994	18:00
1995	1103.6	6-Sep-1995	24:00
1996	1177.6	21-Apr-1996	03:00
1997	1108.8	8-Apr-1997	24:00
1998	1721.7	28-Oct-1998	15:00
1999	876.33	16-May-1999	18:00
2000	1409.8	2-Oct-2000	15:00
2001	1024.0	25-May-2001	09:00
2002	717.50	29-Sep-2002	18:00
*2003	662.58	21-May-2003	24:00

Average Annual Maximum 835.05 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is O:\elfhzlc22\Rawdata\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
From 1-Jul-1962 00:00:00 to 30-Jun-2003 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Te Maire l/s)
30-Jun-1963 24:00:00	27446 at interval beginning 9-Apr-1963 03:00:00
30-Jun-1964 24:00:00	24106 at interval beginning 29-Oct-1963 24:00:00
30-Jun-1965 24:00:00	29000 at interval beginning 19-Apr-1965 21:00:00
30-Jun-1966 24:00:00	28140 at interval beginning 26-Oct-1965 12:00:00
30-Jun-1967 24:00:00	29000 at interval beginning 4-Mar-1967 24:00:00
30-Jun-1968 24:00:00	27698 at interval beginning 3-Apr-1968 12:00:00
30-Jun-1969 24:00:00	26807 at interval beginning 13-Jun-1969 21:00:00
30-Jun-1970 24:00:00	18622 at interval beginning 24-Mar-1970 12:00:00
30-Jun-1971 24:00:00	19789 at interval beginning 18-Apr-1971 15:00:00
30-Jun-1972 24:00:00	27147 at interval beginning 25-Jul-1971 06:00:00
30-Jun-1973 24:00:00	21967 at interval beginning 19-Apr-1973 12:00:00
30-Jun-1974 24:00:00	16703 at interval beginning 31-Mar-1974 06:00:00
30-Jun-1975 24:00:00	27423 at interval beginning 29-Nov-1974 24:00:00
30-Jun-1976 24:00:00	29000 at interval beginning 4-Dec-1975 09:00:00
30-Jun-1977 24:00:00	25305 at interval beginning 21-Mar-1977 21:00:00
30-Jun-1978 24:00:00	15194 at interval beginning 6-Jun-1978 18:00:00
30-Jun-1979 24:00:00	23032 at interval beginning 3-Jul-1978 09:00:00
30-Jun-1980 24:00:00	28080 at interval beginning 1-Jul-1979 03:00:00
30-Jun-1981 24:00:00	28602 at interval beginning 1-Mar-1981 09:00:00
30-Jun-1982 24:00:00	29000 at interval beginning 20-Jan-1982 03:00:00
30-Jun-1983 24:00:00	26228 at interval beginning 11-Jul-1982 15:00:00
30-Jun-1984 24:00:00	25085 at interval beginning 16-Jan-1984 15:00:00
30-Jun-1985 24:00:00	18929 at interval beginning 4-Jun-1985 03:00:00
30-Jun-1986 24:00:00	21996 at interval beginning 19-Oct-1985 21:00:00
30-Jun-1987 24:00:00	23332 at interval beginning 6-Jan-1987 15:00:00
30-Jun-1988 24:00:00	26978 at interval beginning 1-Feb-1988 09:00:00
30-Jun-1989 24:00:00	25350 at interval beginning 22-Apr-1989 12:00:00
30-Jun-1990 24:00:00	26880 at interval beginning 20-Aug-1989 18:00:00
30-Jun-1991 24:00:00	27881 at interval beginning 2-Apr-1991 18:00:00
30-Jun-1992 24:00:00	25453 at interval beginning 5-Jun-1992 03:00:00
30-Jun-1993 24:00:00	26497 at interval beginning 1-May-1993 18:00:00
30-Jun-1994 24:00:00	21055 at interval beginning 10-Apr-1994 18:00:00
30-Jun-1995 24:00:00	29000 at interval beginning 20-Dec-1994 09:00:00

30-Jun-1996 24:00:00	29000 at interval beginning	29-Jan-1996 15:00:00
30-Jun-1997 24:00:00	27362 at interval beginning	4-Apr-1997 12:00:00
30-Jun-1998 24:00:00	29000 at interval beginning	7-Jan-1998 18:00:00
30-Jun-1999 24:00:00	25772 at interval beginning	4-Mar-1999 18:00:00
30-Jun-2000 24:00:00	24581 at interval beginning	28-Mar-2000 03:00:00
30-Jun-2001 24:00:00	23451 at interval beginning	17-Jul-2000 09:00:00
30-Jun-2002 24:00:00	21937 at interval beginning	5-Oct-2001 15:00:00
30-Jun-2003 24:00:00	23449 at interval beginning	26-Apr-2003 06:00:00

Mean annual Minimum = 25153
 (For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
 Monthly totals 1962 to 2003 site 80052 Whanganui at Te Maire (sim consent)
 Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1963	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1964	0.0	0.0	0.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5
1965	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1966	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1967	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1968	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1969	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1970	0.0	0.0	0.0	0.0	13.0	0.0	0.8	27.8	28.5	23.6	11.6	0.0	105.3	
1971	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.4	25.8	2.6	0.0	40.8	
1972	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1973	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.9	6.0	16.9	0.0	NaN	24.3	
1974	0.0	0.0	0.0	0.0	0.0	0.0	0.6	17.4	28.6	21.0	20.9	0.6	89.1	
1975	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1976	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1978	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.6	29.6	18.9	17.6	14.1	97.9	
1979	2.6	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	3.0	
1980	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0	NaN	0.9	
1985	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.3	0.3	5.0	10.5	
1986	0.0	0.0	0.0	5.6	2.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.4	
1987	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.9	
1988	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.3	
1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1991	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NaN	0.0	
1994	0.0	0.0	0.0	0.0	0.0	0.0	0.5	11.4	17.3	10.8	0.0	0.0	39.9	
1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.3	
2000	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	7.4	3.0	0.0	0.0	10.5	
2001	7.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.0	
2002	0.0	0.0	2.4	9.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.5	
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.3	21.9	4.5	0.1	37.8	

```

Min  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0
Max  7.0  0.0  2.4  9.1 13.0  0.0  0.9 27.8 29.6 25.8 20.9 14.1
Mean 0.2  0.0  0.1  0.4  0.4  0.0  0.1  1.8  3.4  3.6  1.4  0.5

```

**6.62. Whanganui at Te Maire (sim consent) (8005), July 1962 to July 1972 (pre-
diversion)**

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
Item 2
From 1-Jul-1962 00:00:01 to 1-Jul-1972 00:00:01
Te Maire l/s

	0	1	2	3	4	5	6	7	8	9
0	1073700	399644	314674	262624	232459	211489	194830	181020	169822	160286
10	151807	144361	138323	132646	128183	123459	119438	115570	112106	108931
20	106043	102873	100211	97550	95009	92838	90498	88255	86181	84124
30	82212	80365	78680	77161	75525	73937	72494	71253	69858	68388
40	67119	65806	64401	63041	61777	60570	59453	58293	57149	55835
50	54577	53351	52204	51159	50163	49258	48258	47359	46490	45597
60	44597	43707	42895	42114	41185	40258	39319	38398	37525	36753
70	35966	35236	34523	33767	33042	32291	31605	30870	30079	29703
80	29378	29090	29071	29052	29033	29014	28995	28976	28957	28938
90	28919	28900	28881	28862	28702	27887	25594	23160	21594	20340
100	17938									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
Item 2
From 1-Jul-1962 00:00:01 to 1-Jul-1972 00:00:01
Te Maire l/s

	0	1	2	3	4	5	6	7	8	9
0	1073700	366534	237712	200126	172192	150426	135766	126247	118513	111470
10	106123	101049	96312	92406	88810	85580	82363	79456	76686	74168
20	71930	69794	67982	66196	64384	62465	60848	59637	58197	56934
30	55462	54049	52799	51633	50537	49367	48262	47251	46036	44896
40	43959	43018	42305	41390	40522	39674	38832	38039	37300	36711
50	36055	35458	34844	34245	33630	33114	32573	32000	31534	31048
60	30471	29975	29829	29712	29426	29170	29000	28990	28980	28970
70	28961	28951	28941	28931	28921	28911	28901	28891	28881	28871
80	28861	28851	28842	28832	28822	28812	28802	28792	28782	28772
90	28559	28111	27392	25351	23990	22642	21835	21191	20409	19754
100	18240									

Annual maximum series and mean annual flood (MAF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
From 1-Jul-1962 00:00:00 to 30-Jun-1972 24:00:00
Interval = 0
flow m3/s

Year	Maximum	Date & Time

```

*1962      717.49      3-Dec-1962 21:00
1963      683.14     10-Jan-1963 06:00
1964     1042.1     11-Mar-1964 09:00
1965     1073.7      7-Nov-1965 18:00
1966      762.05      6-Dec-1966 15:00
1967      696.82      2-Feb-1967 15:00
1968      670.36      7-Dec-1968 15:00
1969      391.44     23-Apr-1969 18:00
1970      586.14     30-Sep-1970 15:00
1971      713.12     18-Oct-1971 24:00
*1972      644.39     10-Mar-1972 21:00

```

Average Annual Maximum 735.43 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
From 1-Jul-1962 00:00:00 to 30-Jun-1972 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Te Maire l/s)
30-Jun-1963 24:00:00	27446 at interval beginning 9-Apr-1963 03:00:00
30-Jun-1964 24:00:00	24106 at interval beginning 29-Oct-1963 24:00:00
30-Jun-1965 24:00:00	29000 at interval beginning 19-Apr-1965 21:00:00
30-Jun-1966 24:00:00	28140 at interval beginning 26-Oct-1965 12:00:00
30-Jun-1967 24:00:00	29000 at interval beginning 4-Mar-1967 24:00:00
30-Jun-1968 24:00:00	27698 at interval beginning 3-Apr-1968 12:00:00
30-Jun-1969 24:00:00	26807 at interval beginning 13-Jun-1969 21:00:00
30-Jun-1970 24:00:00	18622 at interval beginning 24-Mar-1970 12:00:00
30-Jun-1971 24:00:00	19789 at interval beginning 18-Apr-1971 15:00:00
30-Jun-1972 24:00:00	27147 at interval beginning 25-Jul-1971 06:00:00

Mean annual Minimum = 25776
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1962 to 1972 site 80052 Whanganui at Te Maire (sim consent)
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
	1963	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1964	0.0	0.0	0.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5
	1965	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1966	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
	1967	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1968	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1969	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1970	0.0	0.0	0.0	0.0	13.0	0.0	0.8	27.8	28.5	23.6	11.6	0.0	105.3
	1971	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.4	25.8	2.6	0.0	40.8
	1972	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max		0.0	0.0	0.0	2.5	13.0	0.0	0.8	27.8	28.5	25.8	11.6	0.0	
Mean		0.0	0.0	0.0	0.3	1.3	0.0	0.1	2.8	4.1	4.9	1.4	0.0	

6.63. Whanganui at Te Maire (sim consent) (8005), July 1973 to July 1983 (1972 rules)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
Item 2

From 1-Jul-1973 00:00:01 to 1-Jul-1983 00:00:01

Te Maire l/s

	0	1	2	3	4	5	6	7	8	9
0	1265500	355696	270998	225460	199821	182370	168204	156567	147080	139688
10	132457	126922	122066	117257	113128	109270	106043	102744	99626	96794
20	94223	91940	89887	87970	85906	84231	82463	80736	78999	77279
30	75790	74193	72683	71197	69699	68364	66969	65671	64301	62924
40	61653	60307	59101	58013	56947	55818	54616	53482	52417	51425
50	50454	49467	48572	47641	46801	46013	45276	44504	43786	42981
60	42120	41326	40498	39721	38982	38282	37627	37013	36326	35647
70	34960	34267	33600	32967	32258	31626	30948	30189	29799	29478
80	29005	28986	28967	28948	28930	28911	28892	28873	28854	28835
90	28816	28798	28639	27263	25933	24458	22980	21883	20611	19724
100	13505									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
Item 2

From 1-Jul-1973 00:00:01 to 1-Jul-1983 00:00:01

Te Maire l/s

	0	1	2	3	4	5	6	7	8	9
0	1265500	239092	175819	146309	126861	114135	104087	96367	90335	86053
10	81974	78475	75720	72681	70305	68162	65992	63946	62062	60278
20	58764	57438	56282	54892	53552	52437	51430	50441	49514	48626
30	47733	46919	46207	45498	44790	44113	43476	42721	41952	41315
40	40572	39864	39310	38767	38275	37819	37363	36951	36457	35943
50	35442	34921	34438	33947	33485	33023	32449	31982	31557	31007
60	30452	29921	29774	29693	29432	29155	29148	29140	29133	29126
70	29118	29111	29104	29096	29089	29082	29074	29067	29060	29052
80	29045	29038	29030	29023	29016	29008	29001	28994	28987	28982
90	27267	26289	25391	24318	23198	22356	21308	20313	19939	19254
100	13505									

Annual maximum series and mean annual flood (MAF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
From 1-Jul-1973 00:00:00 to 30-Jun-1983 24:00:00

Interval = 0

flow m³/s

Year	Maximum	Date & Time
*1973	777.96	16-Sep-1973 18:00
1974	498.84	3-Jul-1974 15:00
1975	752.37	29-Aug-1975 06:00
1976	593.61	29-Jun-1976 09:00
1977	772.90	28-Jun-1977 15:00

1978	1265.5	12-Nov-1978 18:00
1979	979.85	14-Oct-1979 12:00
1980	777.33	22-Jan-1980 06:00
1981	672.77	24-Sep-1981 21:00
1982	525.78	24-Feb-1982 21:00
*1983	430.17	3-Apr-1983 09:00

Average Annual Maximum 759.88 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
From 1-Jul-1973 00:00:00 to 30-Jun-1983 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Te Maire l/s)
30-Jun-1974 24:00:00	16703 at interval beginning 31-Mar-1974 06:00:00
30-Jun-1975 24:00:00	27423 at interval beginning 29-Nov-1974 24:00:00
30-Jun-1976 24:00:00	29000 at interval beginning 4-Dec-1975 09:00:00
30-Jun-1977 24:00:00	25305 at interval beginning 21-Mar-1977 21:00:00
30-Jun-1978 24:00:00	15194 at interval beginning 6-Jun-1978 18:00:00
30-Jun-1979 24:00:00	23032 at interval beginning 3-Jul-1978 09:00:00
30-Jun-1980 24:00:00	28080 at interval beginning 1-Jul-1979 03:00:00
30-Jun-1981 24:00:00	28602 at interval beginning 1-Mar-1981 09:00:00
30-Jun-1982 24:00:00	29000 at interval beginning 20-Jan-1982 03:00:00
30-Jun-1983 24:00:00	26228 at interval beginning 11-Jul-1982 15:00:00

Mean annual Minimum = 24857
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1973 to 1983 site 80052 Whanganui at Te Maire (sim consent)
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1974	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	17.4	28.6	21.0	20.9	0.6	89.1
1975	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1976	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1978	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.6	29.6	18.9	17.6	14.1	97.9
1979	2.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	3.0
1980	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	2.6	0.0	0.0	0.0	0.0	0.0	0.0	0.6	17.6	29.6	21.0	20.9	14.1	
Mean	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.1	3.5	5.8	4.0	3.9	1.5	

6.64. Whanganui at Te Maire (sim consent) (8005), July 1984 to July 1992 (1983 rules)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
 Item 2
 From 1-Jul-1984 00:00:01 to 1-Jul-1992 00:00:01
 Te Maire l/s

	0	1	2	3	4	5	6	7	8	9
0	1194500	352365	268005	224133	197449	179580	165572	154309	144159	137006
10	129306	122645	117011	112111	107852	104055	100730	97639	94297	91403
20	88761	86503	84062	81634	79205	76999	75069	73456	71705	70072
30	68375	66980	65606	64247	62904	61416	60227	59022	57833	56609
40	55386	54436	53398	52351	51500	50657	49822	48814	47981	47051
50	46189	45342	44510	43706	42975	42361	41606	40944	40284	39583
60	38891	38275	37649	37102	36594	36122	35599	35092	34585	34135
70	33607	33045	32510	32017	31537	30957	30308	29830	29483	29122
80	29016	29002	28988	28975	28961	28947	28933	28919	28905	28891
90	28878	28864	28850	28836	28822	28808	28328	27567	26562	25228
100	18083									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
 Item 2
 From 1-Jul-1984 00:00:01 to 1-Jul-1992 00:00:01
 Te Maire l/s

	0	1	2	3	4	5	6	7	8	9
0	947978	282060	205841	160211	133058	116440	105455	97580	90752	85429
10	80077	75993	72263	69258	66720	64332	62428	60634	59030	57638
20	56127	54797	53608	52241	51180	50338	49355	48384	47404	46537
30	45563	44735	43993	43275	42669	41989	41295	40659	40038	39421
40	38827	38284	37737	37292	36848	36441	36069	35642	35242	34809
50	34403	34058	33617	33175	32710	32275	31913	31589	31181	30713
60	30231	29888	29753	29495	29273	29077	29062	29056	29050	29044
70	29039	29033	29027	29022	29016	29010	29004	28999	28993	28987
80	28982	28976	28970	28964	28959	28953	28947	28941	28936	28930
90	28924	28919	28913	28907	28901	28677	28022	27413	26450	25311
100	18083									

Annual maximum series and mean annual flood (MAF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
 From 1-Jul-1984 00:00:00 to 30-Jun-1992 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1984	545.35	16-Dec-1984 18:00
1985	422.49	2-Dec-1985 06:00
1986	1194.5	25-Jul-1986 21:00
1987	405.07	22-Jan-1987 12:00
1988	1062.1	8-Jun-1988 06:00
1989	845.77	15-Oct-1989 12:00
1990	875.47	10-Mar-1990 12:00
1991	971.25	6-Aug-1991 24:00

*1992 481.21 17-Jan-1992 21:00

Average Annual Maximum 825.23 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
From 1-Jul-1984 00:00:00 to 30-Jun-1992 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Te Maire l/s)
30-Jun-1985 24:00:00	18929 at interval beginning 4-Jun-1985 03:00:00
30-Jun-1986 24:00:00	21996 at interval beginning 19-Oct-1985 21:00:00
30-Jun-1987 24:00:00	23332 at interval beginning 6-Jan-1987 15:00:00
30-Jun-1988 24:00:00	26978 at interval beginning 1-Feb-1988 09:00:00
30-Jun-1989 24:00:00	25350 at interval beginning 22-Apr-1989 12:00:00
30-Jun-1990 24:00:00	26880 at interval beginning 20-Aug-1989 18:00:00
30-Jun-1991 24:00:00	27881 at interval beginning 2-Apr-1991 18:00:00
30-Jun-1992 24:00:00	25453 at interval beginning 5-Jun-1992 03:00:00

Mean annual Minimum = 24600
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1984 to 1992 site 80052 Whanganui at Te Maire (sim consent)
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
	1985	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.3	0.3	5.0	10.5
	1986	0.0	0.0	0.0	5.6	2.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.4
	1987	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.9
	1988	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.3
	1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1991	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max		0.0	0.0	0.0	5.6	2.8	0.0	0.9	0.0	0.0	5.3	0.3	5.0	
Mean		0.0	0.0	0.0	0.7	0.3	0.0	0.1	0.0	0.0	0.7	0.0	0.6	

6.65. Whanganui at Te Maire (sim consent) (8005), July 1993 to July 2003 (Planning Tribunal 1990)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
Item 2

From 1-Jul-1993 00:00:01 to 1-Jul-2003 00:00:01

Te Maire l/s

	0	1	2	3	4	5	6	7	8	9
0	1721700	477017	361812	284805	242943	213448	192917	176403	163911	154145
10	146424	138291	131475	125730	120169	115395	110449	106256	102425	98850
20	95738	92672	89649	86924	84072	81573	79202	77156	75160	73355
30	71608	69824	68081	66435	64907	63432	61861	60614	59401	58198
40	57004	55827	54784	53882	52921	51999	51044	49993	48933	47911
50	47004	46155	45365	44628	43928	43160	42430	41715	41018	40248
60	39460	38752	38053	37485	36882	36281	35673	35105	34594	33977
70	33404	32783	32169	31587	30971	30344	29778	29478	29204	29182
80	29161	29139	29117	29095	29073	29051	29030	29008	28986	28964
90	28942	28921	28899	28425	27717	27024	26286	25526	24659	23702
100	20947									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
Item 2

From 1-Jul-1993 00:00:01 to 1-Jul-2003 00:00:01

Te Maire l/s

	0	1	2	3	4	5	6	7	8	9
0	1177600	365579	224732	175068	152251	136580	123634	112872	104588	97423
10	92317	87646	83541	79343	75751	72477	70031	67443	65074	63122
20	61113	59309	57721	56160	54754	53428	52343	51142	49917	48814
30	47794	46929	46131	45341	44653	43938	43191	42468	41694	40885
40	40166	39415	38803	38208	37671	37151	36690	36185	35714	35254
50	34867	34435	33926	33492	32998	32482	31985	31564	31082	30630
60	30086	29782	29570	29357	29207	29196	29185	29173	29162	29150
70	29139	29127	29116	29104	29093	29081	29070	29059	29047	29036
80	29024	29013	29001	28990	28978	28967	28956	28944	28933	28741
90	28240	27761	27313	26746	26238	25669	25140	24605	24031	23285
100	20947									

Annual maximum series and mean annual flood (MAF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4

From 1-Jul-1993 00:00:00 to 30-Jun-2003 24:00:00

Interval = 0

flow m3/s

Year	Maximum	Date & Time
*1993	1062.4	21-Nov-1993 09:00
1994	928.97	8-Nov-1994 18:00
1995	1103.6	6-Sep-1995 24:00
1996	1177.6	21-Apr-1996 03:00
1997	1108.8	8-Apr-1997 24:00
1998	1721.7	28-Oct-1998 15:00
1999	876.33	16-May-1999 18:00
2000	1409.8	2-Oct-2000 15:00
2001	1024.0	25-May-2001 09:00
2002	717.50	29-Sep-2002 18:00
*2003	662.58	21-May-2003 24:00

Average Annual Maximum 1118.7 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is O:\ELFHZLC22\RAWDATA\EXTPD.MTD Site 8005 Whanganui 2001 at Scenario 4
 From 1-Jul-1993 00:00:00 to 30-Jun-2003 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Te Maire l/s)
30-Jun-1994 24:00:00	21055 at interval beginning 10-Apr-1994 18:00:00
30-Jun-1995 24:00:00	29000 at interval beginning 20-Dec-1994 09:00:00
30-Jun-1996 24:00:00	29000 at interval beginning 29-Jan-1996 15:00:00
30-Jun-1997 24:00:00	27362 at interval beginning 4-Apr-1997 12:00:00
30-Jun-1998 24:00:00	29000 at interval beginning 7-Jan-1998 18:00:00
30-Jun-1999 24:00:00	25772 at interval beginning 4-Mar-1999 18:00:00
30-Jun-2000 24:00:00	24581 at interval beginning 28-Mar-2000 03:00:00
30-Jun-2001 24:00:00	23451 at interval beginning 17-Jul-2000 09:00:00
30-Jun-2002 24:00:00	21937 at interval beginning 5-Oct-2001 15:00:00
30-Jun-2003 24:00:00	23449 at interval beginning 26-Apr-2003 06:00:00

Mean annual Minimum = 25461
 (For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
 Monthly totals 1993 to 2003 site 80052 Whanganui at Te Maire (sim consent)
 Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
	1994	0.0	0.0	0.0	0.0	0.0	0.0	0.5	11.4	17.3	10.8	0.0	0.0	39.9
	1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.3
	2000	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	7.4	3.0	0.0	0.0	10.5
	2001	7.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.0
	2002	0.0	0.0	2.4	9.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.5
	2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.3	21.9	4.5	0.1	37.8
Min		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max		7.0	0.0	2.4	9.1	0.0	0.0	0.5	11.4	17.3	21.9	4.5	0.1	
Mean		0.7	0.0	0.2	0.9	0.0	0.0	0.0	1.1	3.6	3.6	0.5	0.0	

6.66. Whanganui at Te Porere (33347), July 1966 to July 2001 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 33347 Whanganui at Te Porere
 From 1-Jul-1966 00:00:01 to 1-Jul-2001 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	51596	5530	3668	2947	2553	2322	2160	2043	1957	1887
10	1831	1783	1740	1705	1672	1643	1616	1591	1565	1542

20	1521	1500	1482	1464	1446	1430	1415	1400	1385	1373
30	1358	1345	1331	1319	1309	1296	1285	1273	1264	1253
40	1244	1232	1224	1213	1206	1194	1186	1176	1168	1159
50	1151	1144	1134	1129	1119	1111	1104	1095	1089	1079
60	1074	1067	1058	1053	1044	1039	1032	1022	1019	1012
70	1006	1002	993	987	984	975	970	966	956	951
80	946	937	933	924	919	911	903	898	887	881
90	871	859	848	834	816	795	769	748	707	656
100	509									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 33347 Whanganui at Te Porere

From 1-Jul-1966 00:00:01 to 1-Jul-2001 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	51596	4671	2991	2387	2121	1975	1880	1808	1749	1707
10	1665	1627	1594	1561	1535	1504	1479	1457	1438	1419
20	1401	1386	1375	1360	1350	1335	1324	1312	1301	1290
30	1279	1270	1260	1250	1240	1230	1223	1213	1207	1197
40	1189	1181	1172	1167	1159	1151	1146	1138	1131	1126
50	1118	1111	1105	1096	1092	1083	1075	1072	1066	1059
60	1056	1047	1039	1036	1027	1022	1016	1008	1003	1000
70	992	987	984	976	971	968	960	954	950	942
80	935	931	922	917	911	903	900	888	880	870
90	855	839	825	809	792	773	757	733	703	672
100	509									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 33347 Whanganui at Te Porere

From 1-Jul-1966 00:00:00 to 30-Jun-2001 24:00:00

Interval = 0

flow m3/s

Year	Maximum	Date & Time
*1966	25.944	6-Dec-1966 15:12
1967	49.774	2-Feb-1967 20:44
1968	28.512	7-Dec-1968 03:30
1969	23.936	23-Apr-1969 19:00
1970	16.026	14-Dec-1970 19:45
1971	36.134	14-May-1971 18:15
1972	14.948	5-Mar-1972 06:45
1973	43.228	11-Jan-1973 15:00
1974	17.062	3-Jul-1974 04:45
1975	20.142	7-Jun-1975 02:15
1976	27.237	30-Apr-1976 09:45
1977	27.332	28-Jun-1977 14:45
1978	26.855	12-Nov-1978 16:45
1979	22.989	14-Oct-1979 14:15
1980	28.209	22-Jan-1980 23:15
1981	18.819	24-Sep-1981 22:30
1982	40.713	24-Feb-1982 22:00
1983	21.786	3-Apr-1983 10:30
1984	10.927	30-Jun-1984 13:30
1985	17.692	24-Dec-1985 00:15
1986	32.592	25-Jul-1986 21:15
1987	24.052	25-Dec-1987 22:00
1988	34.113	29-Dec-1988 11:00
1989	48.335	3-Jan-1989 00:15

1990	51.596	9-Mar-1990	22:00
1991	36.783	17-Feb-1991	22:45
1992	26.287	17-Jan-1992	22:30
1993	34.826	21-Nov-1993	11:15
1994	41.125	7-Nov-1994	13:30
1995	23.339	13-Mar-1995	06:15
1996	46.385	1-Dec-1996	07:45
1997	27.618	9-Apr-1997	02:15
1998	38.994	21-Oct-1998	02:45
1999	36.325	8-Apr-1999	15:15
2000	36.864	29-Dec-2000	04:00
*2001	26.009	25-May-2001	11:30

Average Annual Maximum 30.340 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 33347 Whanganui at Te Porere
From 1-Jul-1966 00:00:00 to 30-Jun-2001 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1967 24:00:00	845 at interval beginning 14-Jun-1967 12:45:00
30-Jun-1968 24:00:00	747 at interval beginning 15-May-1968 20:45:00
30-Jun-1969 24:00:00	853 at interval beginning 16-May-1969 20:15:00
30-Jun-1970 24:00:00	509 at interval beginning 30-Apr-1970 23:00:00
30-Jun-1971 24:00:00	782 at interval beginning 2-May-1971 09:15:00
30-Jun-1972 24:00:00	895 at interval beginning 12-May-1972 10:45:00
30-Jun-1973 24:00:00	669 at interval beginning 13-Apr-1973 04:15:00
30-Jun-1974 24:00:00	600 at interval beginning 11-May-1974 06:30:00
30-Jun-1975 24:00:00	701 at interval beginning 1-Jul-1974 12:30:00
30-Jun-1976 24:00:00	903 at interval beginning 28-Apr-1976 10:45:00
30-Jun-1977 24:00:00	838 at interval beginning 19-Apr-1977 12:30:00
30-Jun-1978 24:00:00	605 at interval beginning 30-Jun-1978 18:00:00
30-Jun-1979 24:00:00	600 at interval beginning 1-Jul-1978 18:00:00
30-Jun-1980 24:00:00	872 at interval beginning 21-Jul-1979 04:45:00
30-Jun-1981 24:00:00	897 at interval beginning 9-Apr-1981 07:15:00
30-Jun-1982 24:00:00	886 at interval beginning 5-May-1982 22:15:00
30-Jun-1983 24:00:00	846 at interval beginning 12-Jul-1982 05:30:00
30-Jun-1984 24:00:00	887 at interval beginning 24-Apr-1984 11:45:00
30-Jun-1985 24:00:00	708 at interval beginning 30-May-1985 20:00:00
30-Jun-1986 24:00:00	798 at interval beginning 19-Nov-1985 02:00:00
30-Jun-1987 24:00:00	821 at interval beginning 19-Mar-1987 13:45:00
30-Jun-1988 24:00:00	805 at interval beginning 1-Sep-1987 14:00:00
30-Jun-1989 24:00:00	997 at interval beginning 7-Jun-1989 14:45:00
30-Jun-1990 24:00:00	863 at interval beginning 8-Mar-1990 03:00:00
30-Jun-1991 24:00:00	884 at interval beginning 3-Jun-1991 18:00:00
30-Jun-1992 24:00:00	853 at interval beginning 16-Jul-1991 08:30:00
30-Jun-1993 24:00:00	883 at interval beginning 8-May-1993 13:30:00
30-Jun-1994 24:00:00	698 at interval beginning 10-Apr-1994 14:15:00
30-Jun-1995 24:00:00	1103 at interval beginning 27-May-1995 11:15:00
30-Jun-1996 24:00:00	1175 at interval beginning 13-Mar-1996 16:45:00
30-Jun-1997 24:00:00	815 at interval beginning 29-Jun-1997 16:30:00
30-Jun-1998 24:00:00	755 at interval beginning 8-Aug-1997 21:15:00
30-Jun-1999 24:00:00	818 at interval beginning 12-May-1999 23:15:00
30-Jun-2000 24:00:00	827 at interval beginning 6-May-2000 03:00:00
Gap from 26-Apr-2001 21:15:00 to 27-Apr-2001 00:15:00 of 3.00 Hours	
30-Jun-2001 24:00:00(PARTIAL)	811 at interval beginning 17-Jul-2000 19:00:00

Mean annual Minimum = 816
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD

Monthly totals 1966 to 2001 site 33347 Whanganui at Te Porere

Days < MALF

Season
ending
in

Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1967	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1968	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7	20.5	14.4	0.0	37.6
1969	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1970	0.0	0.0	0.0	0.2	29.8	16.0	27.2	28.0	30.6	27.7	23.3	12.0	194.7
1971	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.6	8.0	0.0	15.5
1972	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1973	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.0	28.9	27.7	4.0	0.0	81.6
1974	19.5	6.6	0.0	0.0	0.0	0.0	0.0	8.4	29.9	26.3	24.3	22.0	137.1
1975	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.2	0.0	0.0	15.0
1976	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1977	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1978	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.3	26.0	27.5	27.2	106.0
1979	5.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.5
1980	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.8	30.1	13.6	58.5
1986	1.2	0.0	0.0	3.2	4.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.5
1987	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1988	0.0	0.1	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.3	5.6	0.0	7.5
1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1991	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1994	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.1	25.5	20.5	11.9	0.0	76.0
1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	1.6
1998	6.4	9.4	6.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	22.1
1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.6
2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2001	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NaN	0.0	0.0	3.0
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max	19.5	9.4	6.3	3.2	29.8	16.0	27.2	28.0	30.6	27.7	30.1	27.2	
Mean	1.1	0.5	0.2	0.1	1.0	0.5	0.8	2.2	4.1	5.4	4.3	2.2	

6.67. Kai Iwi at Handley Rd (33502), July 1978 to July 2004 (all data)

Flow duration curve tabulation (FDC), all data

Exceedance percentiles

Source is HORIZONS.MTD Site 33502 Kai Iwi at Handley Rd

From 1-Jul-1978 00:00:01 to 1-Jul-2004 00:00:01

Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	70326	8886	6110	4993	4348	3880	3525	3231	3001	2812
10	2644	2498	2368	2256	2157	2073	1993	1920	1852	1794
20	1739	1691	1643	1599	1555	1515	1480	1448	1417	1387
30	1358	1332	1307	1283	1260	1238	1217	1196	1177	1159
40	1142	1125	1109	1094	1078	1063	1048	1035	1022	1010
50	998	986	974	963	953	941	929	917	906	895
60	884	873	862	851	840	830	819	809	799	788
70	778	767	758	748	738	728	718	708	699	690
80	681	673	663	655	647	638	629	620	609	600
90	591	580	569	556	543	528	514	499	479	450
100	178									

Flow duration curve tabulation (FDC), summer season

Exceedance percentiles

Source is HORIZONS.MTD Site 33502 Kai Iwi at Handley Rd
 From 1-Jul-1978 00:00:01 to 1-Jul-2004 00:00:01
 Flow l/s

	0	1	2	3	4	5	6	7	8	9
0	70326	5918	3947	3147	2700	2347	2112	1943	1809	1693
10	1598	1519	1452	1396	1346	1302	1265	1235	1204	1177
20	1155	1134	1115	1097	1079	1062	1045	1031	1016	1003
30	989	976	964	952	938	925	912	901	889	878
40	868	858	850	841	832	823	813	805	797	790
50	781	773	765	757	750	742	736	729	722	716
60	710	705	699	692	686	681	676	670	664	660
70	654	649	644	639	634	628	622	617	611	605
80	599	594	588	582	576	570	563	556	549	541
90	533	525	517	509	501	491	481	468	449	416
100	178									

Annual maximum series and mean annual flood (MAF)

Source is HORIZONS.MTD Site 33502 Kai Iwi at Handley Rd
 From 1-Jul-1978 00:00:00 to 30-Jun-2004 24:00:00
 Interval = 0
 flow m3/s

Year	Maximum	Date & Time
*1978	37.817	21-Oct-1978 23:01
1979	25.996	30-Dec-1979 21:36
1980	23.036	12-Jun-1980 12:12
1981	27.807	18-Oct-1981 06:56
1982	29.276	5-Jun-1982 09:16
1983	23.424	21-May-1983 03:32
1984	13.282	16-Jul-1984 00:58
1985	28.641	28-Jul-1985 21:32
1986	21.454	26-Jul-1986 22:20
1987	14.022	5-Mar-1987 10:00
1988	19.526	25-Jul-1988 06:15
1989	24.602	19-Oct-1989 02:30
1990	24.566	21-Mar-1990 03:45
1991	34.717	11-Apr-1991 12:30
1992	31.429	23-Jul-1992 16:30
1993	13.958	22-Nov-1993 09:45
1994	35.922	16-Nov-1994 14:45
1995	15.147	11-Oct-1995 00:15
1996	17.493	12-Jun-1996 05:30
1997	26.246	15-Oct-1997 11:45

1998	49.673	21-Oct-1998 09:00
1999	63.826	29-Nov-1999 06:00
*2000	26.014	2-Oct-2000 18:30
2001	28.191	16-Aug-2001 05:00
2002	28.827	9-Aug-2002 18:00
2003	29.395	10-Jun-2003 16:45
*2004	70.326	16-Feb-2004 10:30

Average Annual Maximum 27.102 (complete yrs)

"*" denotes years with gaps in the data or incomplete years

Annual minimum series and mean annual low flow (MALF)

Source is HORIZONS.MTD Site 33502 Kai Iwi at Handley Rd
From 1-Jul-1978 00:00:00 to 30-Jun-2004 24:00:00

Minimum moving averages over 1.000day interval

Year Ending	Minimum Value (Flow l/s)
30-Jun-1979 24:00:00	828 at interval beginning 5-Mar-1979 23:58:05
30-Jun-1980 24:00:00	647 at interval beginning 2-Feb-1980 16:18:06
30-Jun-1981 24:00:00	646 at interval beginning 27-Feb-1981 11:37:04
30-Jun-1982 24:00:00	562 at interval beginning 28-Feb-1982 09:44:17
30-Jun-1983 24:00:00	568 at interval beginning 1-Mar-1983 08:57:23
30-Jun-1984 24:00:00	375 at interval beginning 10-Feb-1984 20:00:00
30-Jun-1985 24:00:00	344 at interval beginning 20-Mar-1985 09:48:55
30-Jun-1986 24:00:00	311 at interval beginning 15-Feb-1986 03:55:41
30-Jun-1987 24:00:00	416 at interval beginning 20-Mar-1987 00:36:19
30-Jun-1988 24:00:00	388 at interval beginning 18-Jan-1988 12:15:00
30-Jun-1989 24:00:00	454 at interval beginning 19-Jan-1989 01:30:00
30-Jun-1990 24:00:00	558 at interval beginning 3-Mar-1990 19:45:00
30-Jun-1991 24:00:00	529 at interval beginning 13-Jan-1991 23:15:00
30-Jun-1992 24:00:00	481 at interval beginning 4-Feb-1992 06:30:00
30-Jun-1993 24:00:00	674 at interval beginning 18-Feb-1993 18:00:00
30-Jun-1994 24:00:00	472 at interval beginning 15-Feb-1994 16:15:00
30-Jun-1995 24:00:00	524 at interval beginning 19-Feb-1995 00:45:00
30-Jun-1996 24:00:00	557 at interval beginning 6-Feb-1996 02:45:00
30-Jun-1997 24:00:00	681 at interval beginning 19-Mar-1997 16:15:00
30-Jun-1998 24:00:00	547 at interval beginning 8-Feb-1998 08:15:00
30-Jun-1999 24:00:00	537 at interval beginning 19-Feb-1999 13:45:00
30-Jun-2000 24:00:00	477 at interval beginning 10-Mar-2000 22:45:00
Gap from 2-Oct-2000 18:30:00 to 12-Oct-2000 11:00:00 of 9.69 Days	
30-Jun-2001 24:00:00 (PARTIAL)	444 at interval beginning 10-Feb-2001 02:15:00
30-Jun-2002 24:00:00	572 at interval beginning 13-Mar-2002 10:15:00
30-Jun-2003 24:00:00	503 at interval beginning 28-Jun-2003 06:45:00
30-Jun-2004 24:00:00	554 at interval beginning 18-Jan-2004 08:45:00

Mean annual Minimum = 528 becomes 525
(For complete years only)

Days per month below MALF

Source is O:\ELFHZLC22\WORKING\JCD\DBT\RESULTS\TEMP.MTD
Monthly totals 1978 to 2004 site 33502 Kai Iwi at Handley Rd
Days < MALF

Season ending in	Year	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
	1979	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

1980	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	0.0	0.0	0.0	0.0	0.0	0.0	2.6	14.8	2.0	5.7	0.0	0.3	25.5
1985	0.0	0.0	0.0	7.1	16.8	15.7	5.3	18.0	18.4	17.8	4.6	0.1	103.8
1986	0.0	0.0	0.0	2.8	1.4	5.6	2.9	15.0	11.2	3.6	0.0	0.0	42.5
1987	0.0	0.0	0.0	0.0	0.0	3.1	5.7	8.0	3.1	0.0	0.0	0.0	19.8
1988	0.0	0.0	0.0	0.0	0.0	0.0	24.8	4.3	9.4	19.0	3.0	0.0	60.5
1989	0.0	0.0	0.0	0.0	0.0	14.8	19.6	15.9	4.5	15.1	0.0	0.0	69.9
1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1991	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.2
1992	0.0	0.0	0.0	0.0	0.0	0.0	0.1	2.8	0.0	0.0	0.0	0.0	2.9
1993	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1994	0.0	0.0	0.0	0.0	0.0	0.0	6.8	13.0	1.3	0.0	0.0	0.0	21.0
1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.8
1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1999	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
2000	0.0	0.0	0.0	0.0	0.0	0.0	0.6	5.3	23.6	5.7	0.0	0.0	35.2
2001	0.0	0.0	0.0	NaN	0.0	1.7	11.2	14.6	22.0	10.0	3.0	0.0	62.5
2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.9	0.0	0.0	2.3	10.3
2004	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max	0.0	0.0	0.0	7.1	16.8	15.7	24.8	18.0	23.6	19.0	4.6	2.3	103.8
Mean	0.0	0.0	0.0	0.4	0.7	1.6	3.1	4.3	4.0	3.0	0.4	0.1	19.8