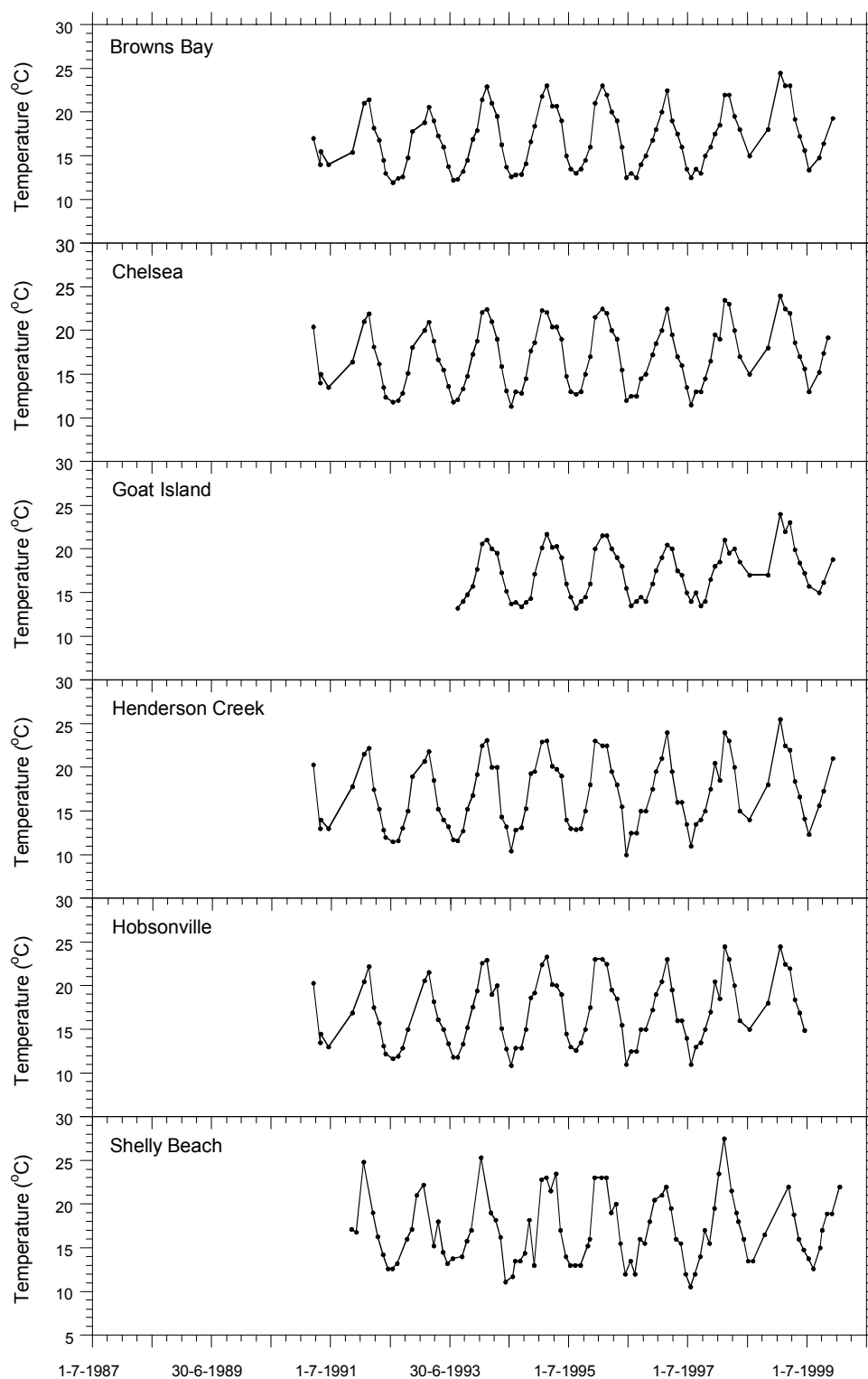
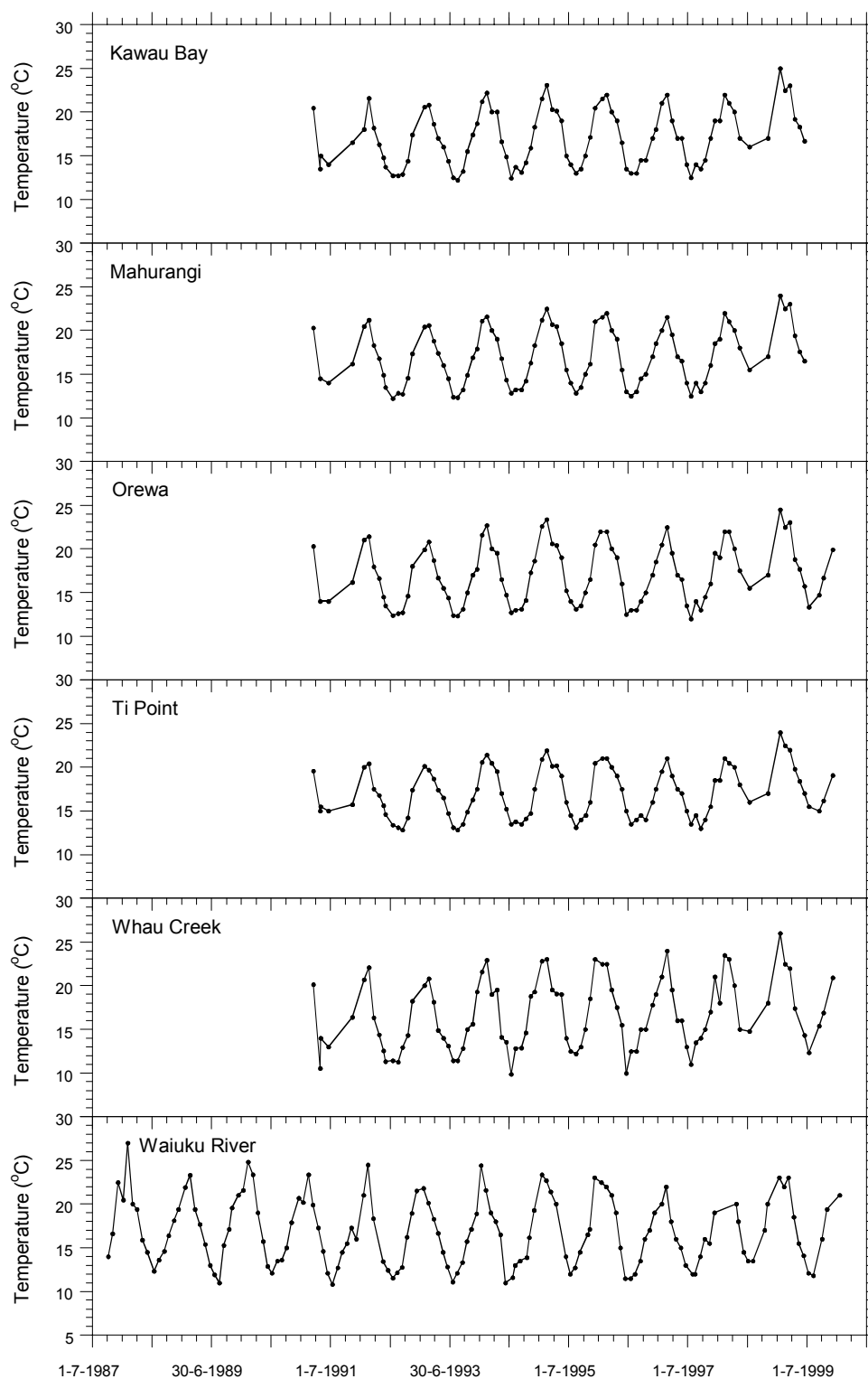
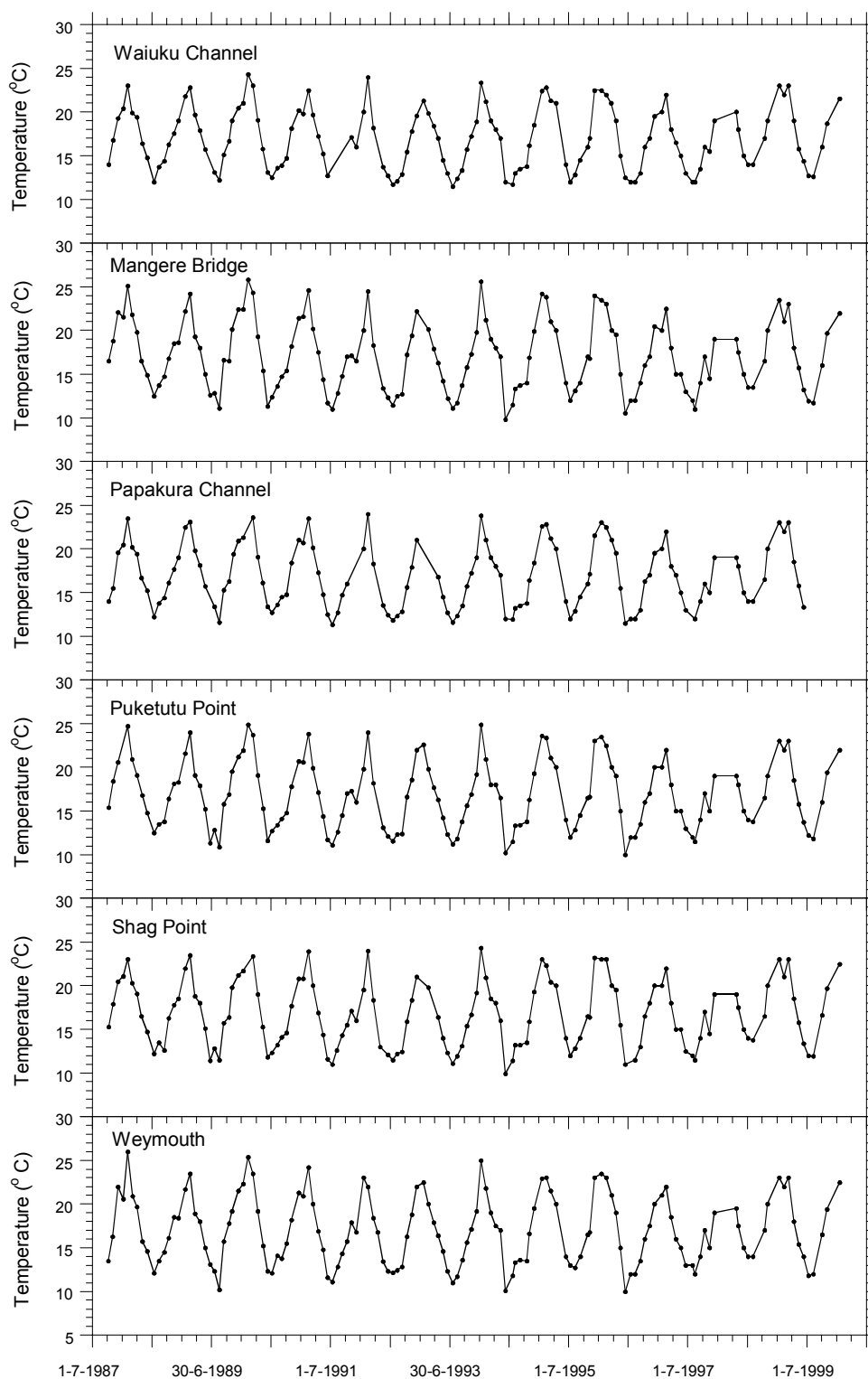








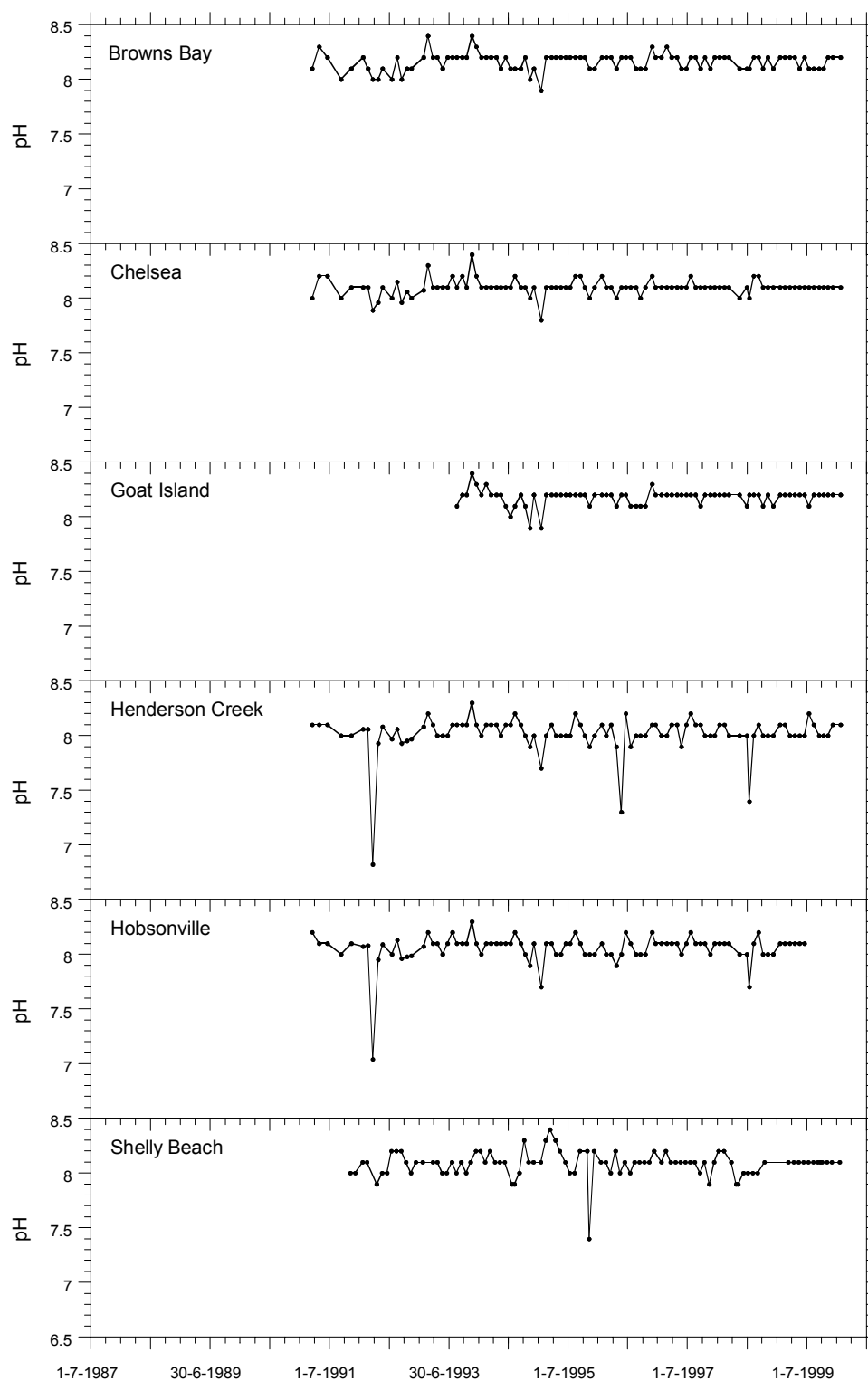
APPENDIX 21: PH – SALINE**a) pH (units) during January 1999 - December 1999**

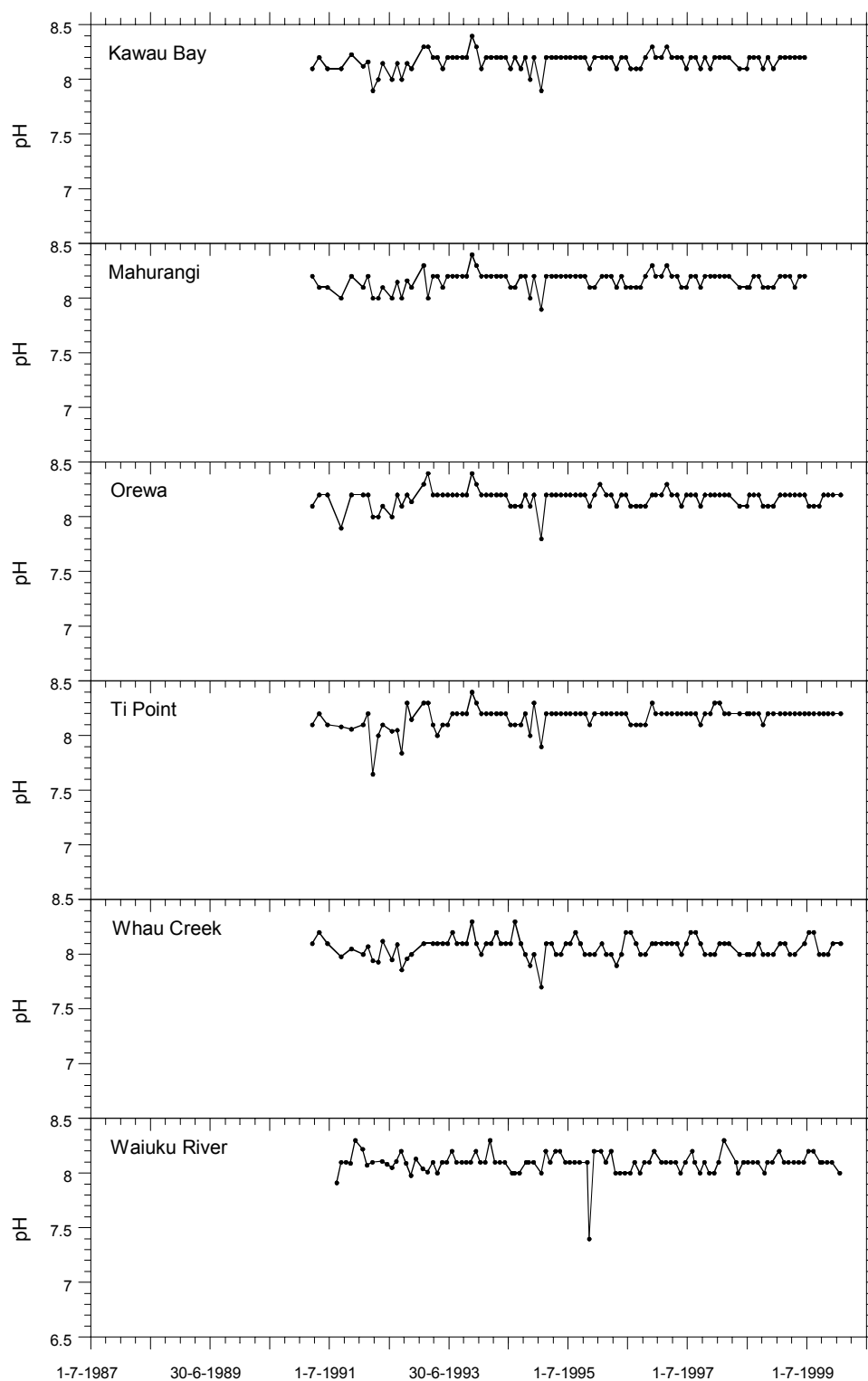
Date	Browns Bay	Chelsea Bay	Goat Island	Henderson	Hobsonville	Shelly Beach	Kawau Bay	Mahurangi	Orewa	Ti Point	Whau	Waiuku River	Waiuku Channel	Mangere Bridge	Papakura Channel	Puketutu Point	Shag Point	Weymouth
Jan-99	8.2	8.1	8.2	8.1	8.1		8.2	8.2	8.2	8.2	8.1	8.2	8.2	8.2	8.2	8.3	8.3	8.2
Feb-99	8.2	8.1	8.2	8.1	8.1		8.2	8.2	8.2	8.2	8.1	8.1	8.2	8.1	8.2	8.1	8.2	8.1
Mar-99	8.2	8.1	8.2	8.0	8.1	8.1	8.2	8.2	8.2	8.2	8.0	8.1	8.2	7.8	8.2	8.0	8.2	8.1
Apr-99	8.2	8.1	8.2	8.0	8.1	8.1	8.2	8.1	8.2	8.2	8.0	8.1	8.1	7.8	8.2	8.0	8.1	8.1
May-99	8.1	8.1	8.2	8.0	8.1	8.1	8.2	8.2	8.2	8.2		8.1	8.1	7.9	8.1	8.0	8.0	8.1
Jun-99	8.2	8.1	8.2	8.0	8.1	8.1	8.2	8.2	8.2	8.2	8.1	8.1	8.1	7.9	8.1	8.0	8.1	8.1
Jul-99	8.1	8.1	8.1	8.2		8.1			8.1	8.2	8.2	8.2	8.2	8.0		8.1	8.1	8.2
Aug-99	8.1	8.1	8.2	8.1		8.1			8.1	8.2	8.2	8.2	8.2	7.9		8.1	8.2	8.1
Sep-99	8.1	8.1	8.2	8.0		8.1			8.1	8.2	8.0	8.1	8.1	7.9		8.0	8.1	8.0
Oct-99	8.1	8.1	8.2	8.0		8.1			8.2	8.2	8.0	8.1	8.1	7.8		8.0	8.1	8.0
Nov-99	8.2	8.1	8.2	8.0		8.1			8.2	8.2	8.0	8.1	8.2	8.0		8.1	8.3	8.2
Dec-99	8.2	8.1	8.2	8.1		8.1			8.2	8.2	8.1	8.1	8.1	8.2		8.1	8.1	8.0
median	8.2	8.1	8.2	8.0	8.1	8.1	8.2	8.2	8.2	8.2	8.1	8.1	8.2	7.9	8.2	8.1	8.1	8.1
IQR/median (%)	1	0	0	1	0	0	0	0	0	0	1	0	1	2	0	1	1	1

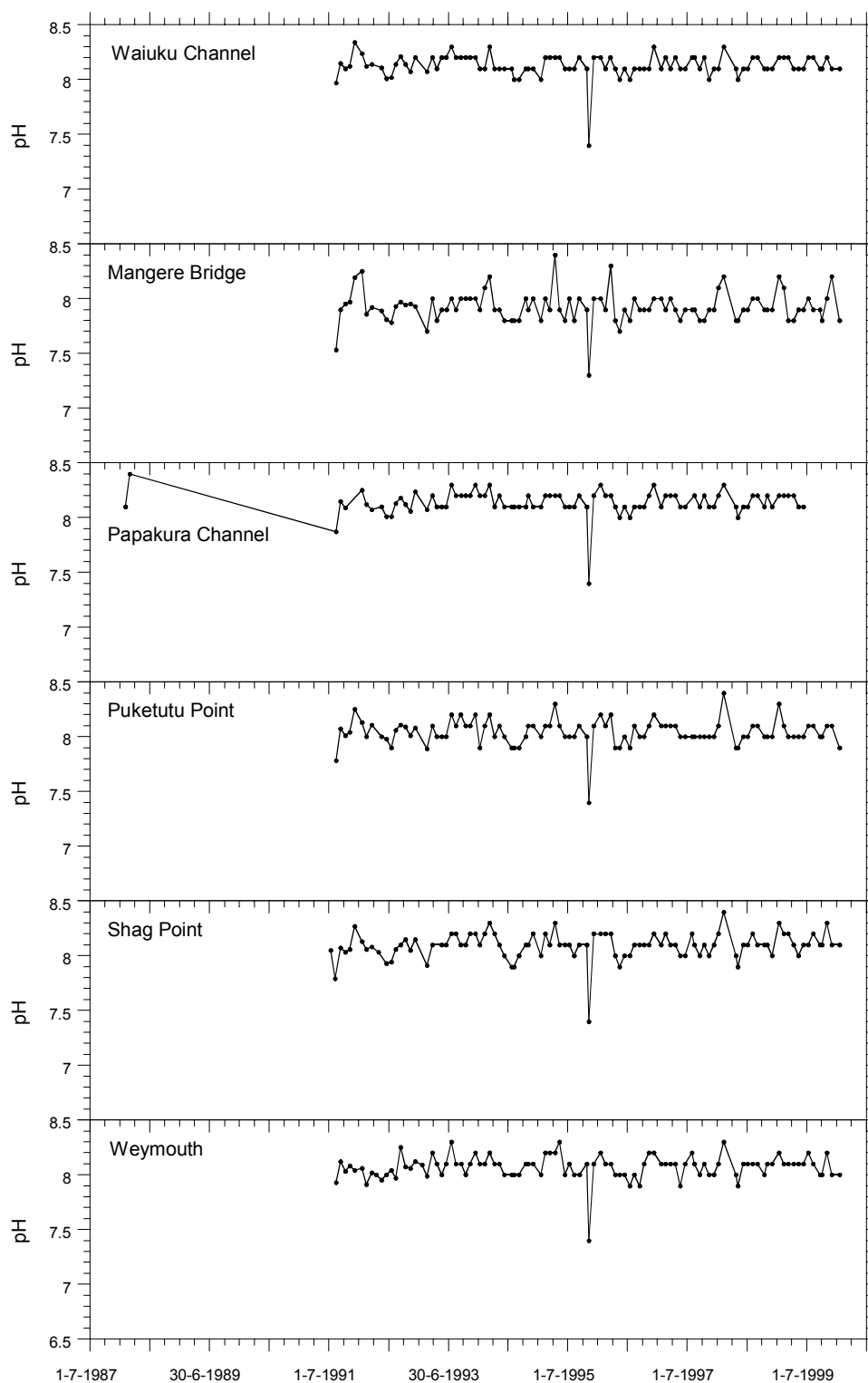
b) Statistical summary for all data to January 2000: pH (units)

Date	Browns Bay	Chelsea Bay	Goat Island	Henderson	Hobsonville	Shelly Beach	Kawau Bay	Mahurangi	Orewa	Ti Point	Whau	Waiuku River	Waiuku Channel	Mangere Bridge	Papakura Channel	Puketutu Point	Shag Point	Weymouth
N	99	99	77	99	92	94	92	92	99	99	97	100	99	99	91	99	99	101
Median	8.2	8.1	8.2	8.0	8.1	8.1	8.2	8.2	8.2	8.2	8.1	8.1	8.1	7.9	8.1	8.0	8.1	8.1
Normality	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Seasonality	N	N	Y	N	N	N	N	N	Y	Y	Y	N	N	Y	Y	Y	Y	N
Trend	NS	NS	NS	NS	NS	NS	NS	NS	NS	95%	NS	NS	NS	NS	NS	NS	90	NS
Slope	–	–	–	–	–	–	–	–	–	0	–	–	–	–	–	–	0	–

c) The graphs on the following page show all pH measurements up to January 2000 (where data are available)







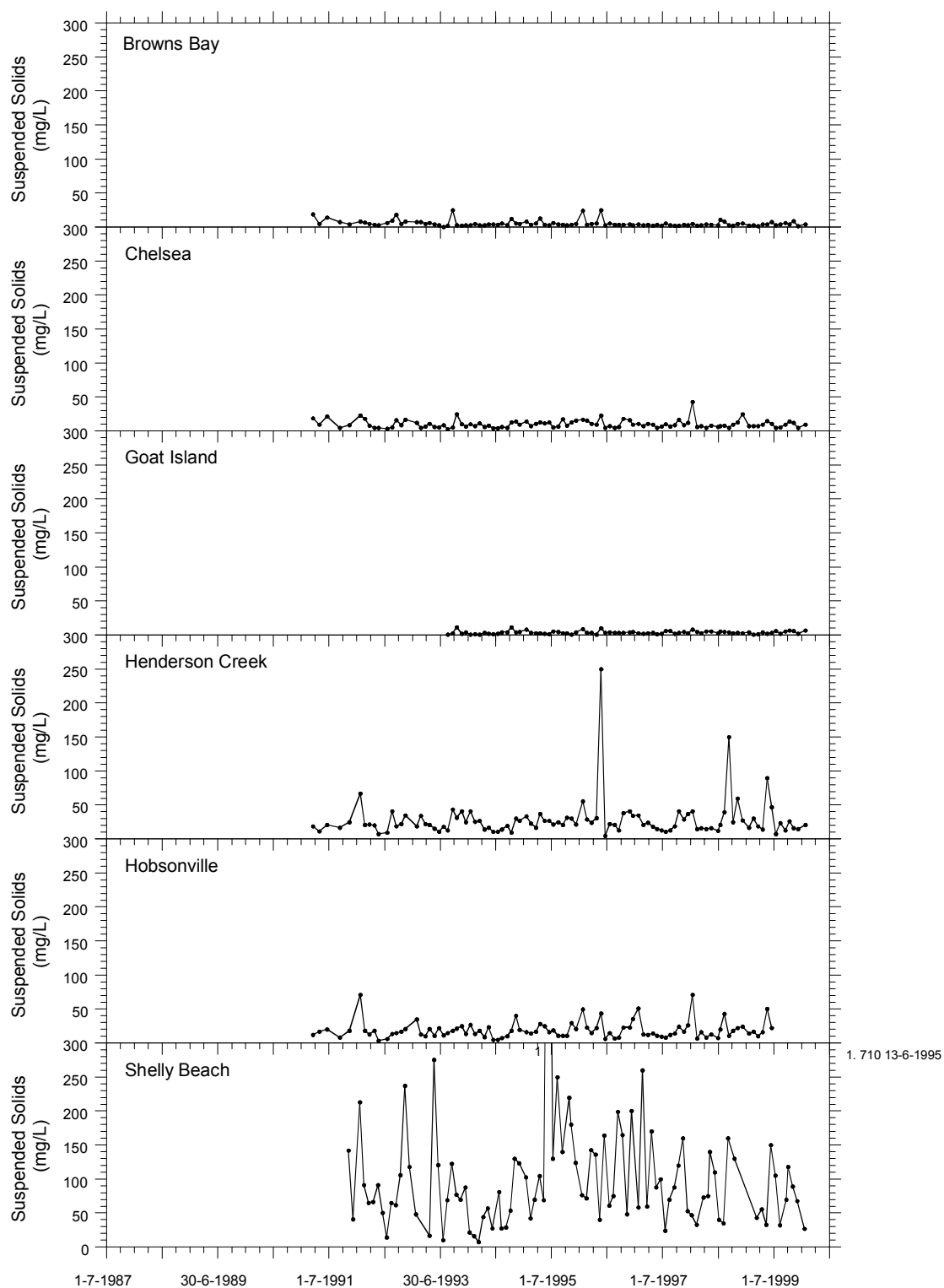
APPENDIX 22: SUSPENDED SOLIDS – SALINE**a) Suspended solids (mg/L) during January 1999 - December 1999**

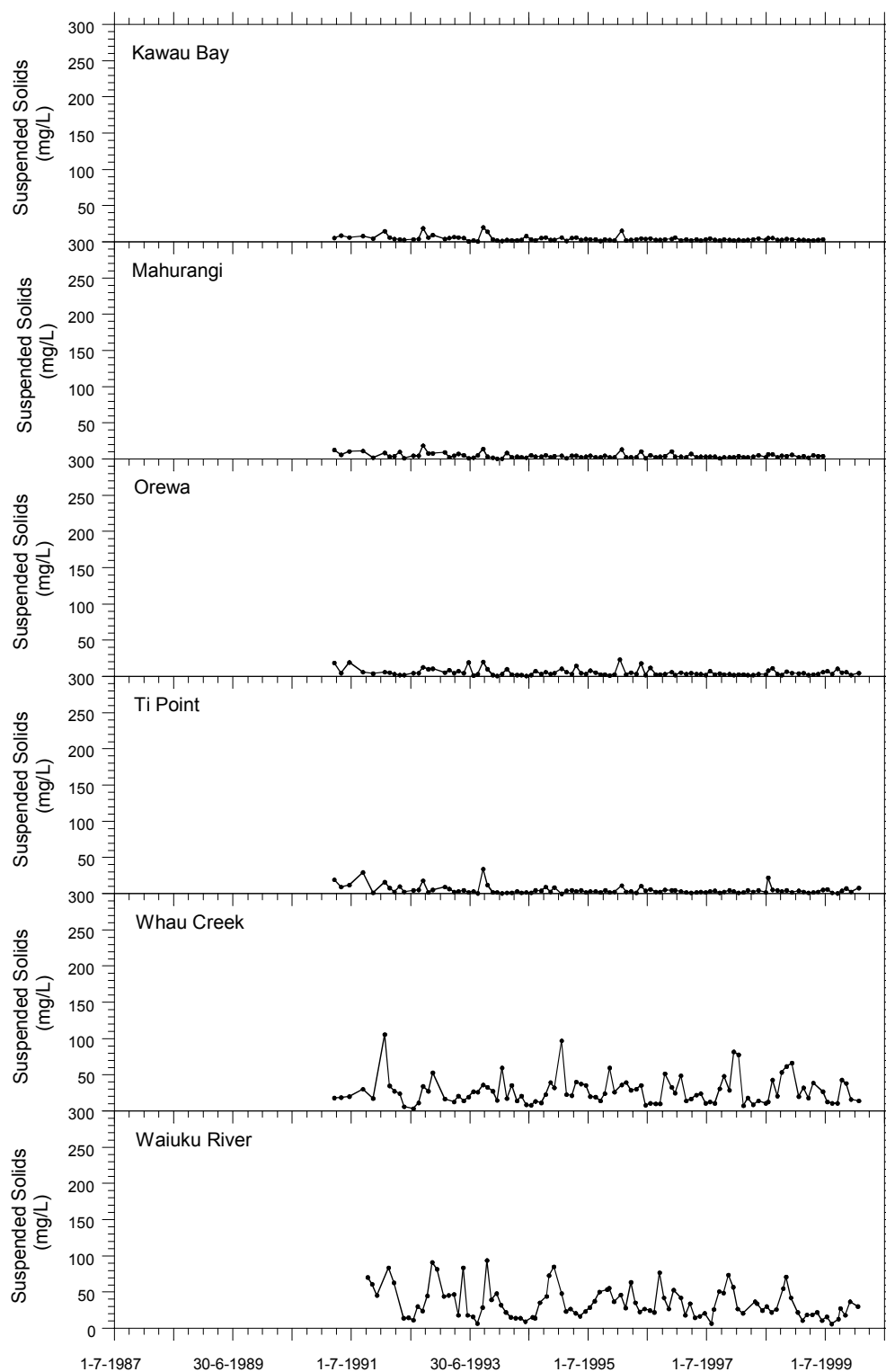
Date	Browns Bay	Chelsea Bay	Goat Island	Henderson	Hobsonville	Shelly Beach	Kawau Bay	Mahurangi	Orewa	Ti Point	Whau	Waiuku River	Waiuku Channel	Mangere Bridge	Papakura Channel	Puketutu Point	Shag Point	Weymouth
Jan-99	2.3	7.3	4.3	17.0	14.0		2.9	3.1	4.1	4.2	20.0	22	12	29	11	13	17	14
Feb-99	2.6	7.4	0.8	30.0	17.0		2.5	4.0	4.4	3.0	32.0	11	7.4	31	7.3	9.8	14	9.2
Mar-99	1.6	7.3	1.6	19.0	10.0	42.9	2.2	2.3	1.8	1.7	18.0	18.6	18.8	24.7	17.5	14.3	19.4	17.9
Apr-99	4.0	9.4	3.9	14.0	16.0	56.0	1.8	5.4	2.9	2.1	39.0	19	13	34	16	14	7.2	47
May-99	4.2	15.0	2.1	90.0	50.0	33.0	2.7	4.3	3.4	2.9	27.0	22	19	58	45	23	34	29
Jun-99	7.1	11.0	3.3	47.0	22.0	150.0	3.7	4.3	5.9	5.4	13.0	11	12	13	15	11	8.7	13
Jul-99	2.7	4.8	6.3	7.2		105.0			7.2	6.3	10.9	15.9	8.3	37.4		9.1	10.8	15.9
Aug-99	4.0	5.2	2.1	23.8		31.9			3.3	1.3	11.0	6.5	8.6	16.4		6.7	10.2	14.7
Sep-99	6.0	9.3	5.8	13.0		70.0			11.0	0.5	43.0	13	5.4	34		33	13	17
Oct-99	4.3	14.0	7.0	26.0		118.0			5.4	4.2	38.0	28	19	31		24	26	42
Nov-99	8.7	12.0	6.0	16.0		88.9			6.0	7.5	16.0	18.1	4.1	10.1		8.1	6.8	10.6
Dec-99	1.7	5.0	2.0	15.0		68.0			1.9	2.6	20.0	37	18	71		45	78	65
median	4.0	8.35	3.6	18.0	16.5	69.0	2.6	4.2	4.3	3.0	20	18.4	12.0	31.0	15.5	13.5	13.5	16.5
IQR/median (%)	55	54	105	68	38	79	22	24	64	85	103	52	84	39	33	101	83	112

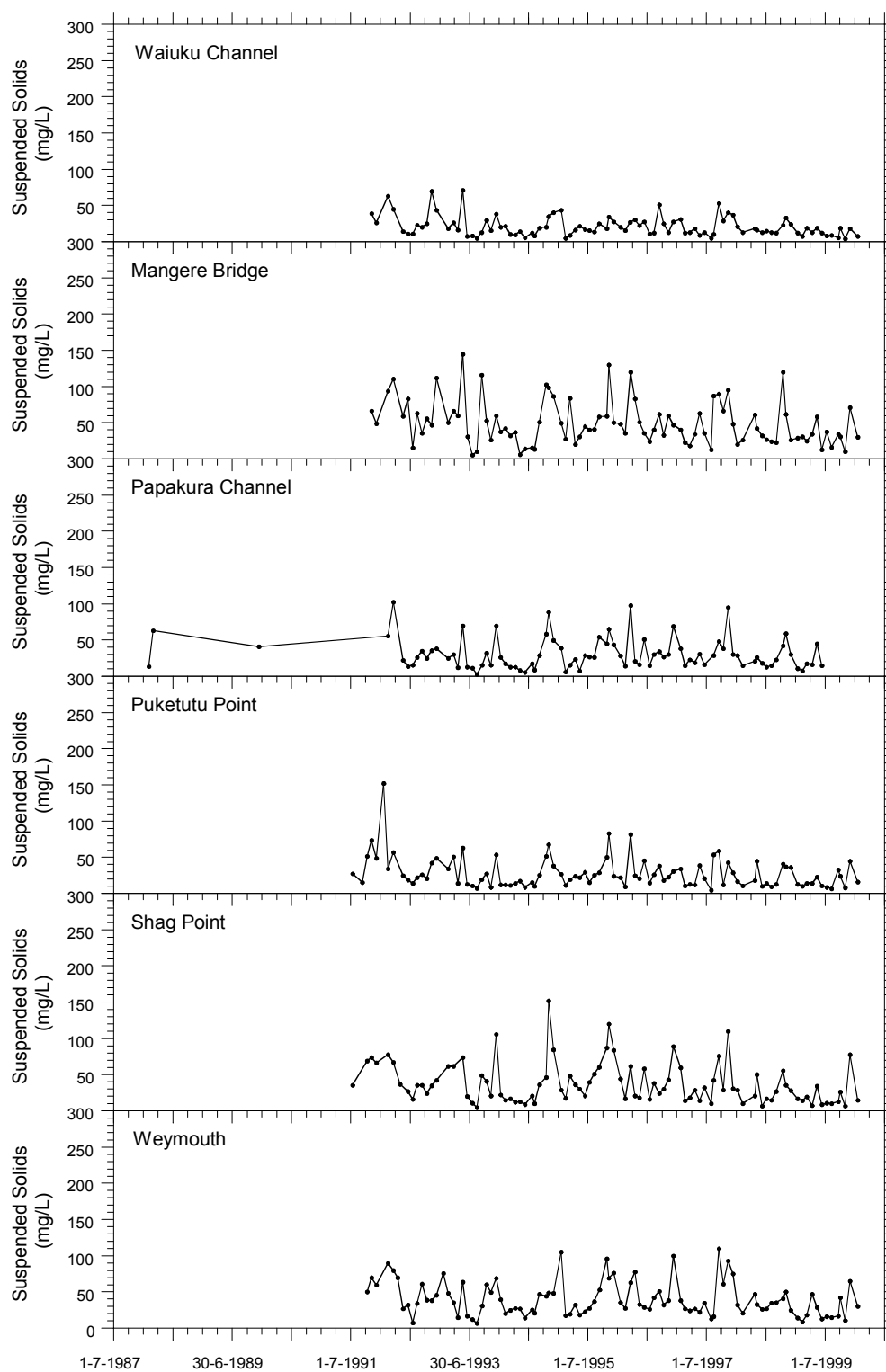
b) Statistical summary for all data to January 2000: Suspended solids (mg/L)

Date	Browns Bay	Chelsea Bay	Goat Island	Henderson	Hobsonville	Shelly Beach	Kawau Bay	Mahurangi	Orewa	Ti Point	Whau	Waiuku River	Waiuku Channel	Mangere Bridge	Papakura Channel	Puketutu Point	Shag Point	Weymouth
N	100	100	78	100	93	93	93	93	100	99	98	97	95	95	88	99	96	98
Median	3.9	9.2	3.5	21.4	16	75.0	3.3	3.7	4.0	3.6	22.9	28.8	18.0	41.9	26.0	22.2	29.5	34.5
Normality	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Seasonality	N	Y	Y	Y	Y	Y	Y	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y
Trend	99%	NS	90%	NS	NS	NS	99%	90%	80%	90%	NS	90%	95%	95%	NS	95%	95%	95%
Slope	-0.26	–	0.21	–	–	–	-0.26	-0.17	-0.18	-0.17	–	-1.46	-1.02	-2.88	–	-1.44	-2.63	-1.51

c) The graphs on the following page show all SS measurements up to January 2000 (where data are available)







APPENDIX 23: TURBIDITY – SALINE**a) Turbidity (NTU) during January 1999 - December 1999**

Date	Browns Bay	Chelsea Bay	Goat Island	Henderson	Hobsonville	Shelly Beach	Kawau Bay	Mahurangi	Orewa	Ti Point	Whau	Waiuku River	Waiuku Channel	Mangere Bridge	Papakura Channel	Puketutu Point	Shag Point	Weymouth
Jan-99	0.51	3	0.77	9.6	6		0.97	0.84	0.53	0.65	7.1	8.5	3.5	12.3	4.6	4.9	5.2	4.9
Feb-99	1.1	4.4	0.59	15.8	9.1		1.3	1.1	1.7	0.64	17.1	5.7	3.3	16	3.9	6.1	6.8	6.2
Mar-99	0.83	3.1	0.28	12.5	7.9	12	1	1.1	0.75	0.3	13.3	6.2	4.4	8.3	4.1	3.2	4.8	7.3
Apr-99	0.41	2.7	0.17	5	4.6	30.8	0.48	1.3	0.56	0.27	9.1	4.8	3.1	8.7	3.2	4.1	3	7.5
May-99	1.3	6.7	0.43	30.8	13.7	12.8	1.1	1.3	0.94	0.62	12.5	7.6	6.3	25.8	15.4	9.2	10.2	10.6
Jun-99	1.3	5.1	0.6	22.3	8.1	70	0.86	1.1	0.6	0.57	4.3	3.9	2.5	6.2	3.4	6.2	3.3	5.9
Jul-99	0.56	2.9	0.28	3.9		33.4			0.78	0.32	6.7	5	2.7	8.2		3	1.8	5.4
Aug-99	1.6	2.2	0.47	7.3		7.4			1.3	0.64	4.3	3.4	2.6	6.5		3	3.9	6.8
Sep-99	1.4	2.5	0.37	3.1		33			1.8	0.45	15	7	2.5	16		16	8	11
Oct-99	0.95	4.6	0.19	12		48			0.69	0.36	22	7.3	3.4	13		5.5	4.6	13
Nov-99	3	3.9	0.69	9.5		25			2	0.82	7.9	4.8	1.4	4		2.2	1.5	2.8
Dec-99	0.52	3	0.28	9.2		22			0.43	0.5	7.1	12	4.3	23		14	24	13
median	1.03	3.1	0.4	9.55	8.0	27.9	1.0	1.1	0.8	0.54	9.1	6.0	3.2	10.5	4.0	5.2	4.7	7.3
IQR/median (%)	20	52	78	69	30	65	19	14	106	64	80	43	35	78	24	73	82	65

b) Statistical summary for all data to January 2000: Turbidity (NTU)

Date	Browns Bay	Chelsea Bay	Goat Island	Henderson	Hobsonville	Shelly Beach	Kawau Bay	Mahurangi	Orewa	Ti Point	Whau	Waiuku River	Waiuku Channel	Mangere Bridge	Papakura Channel	Puketutu Point	Shag Point	Weymouth
N	100	99	78	100	93	92	93	93	100	100	98	145	144	145	132	144	144	146
Median	1.0	3.0	0.4	8.6	5.9	28.5	0.9	0.9	0.8	0.6	7.9	8.5	5.0	16.0	5.9	7.2	9.0	9.0
Normality	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y
Seasonality	N	Y	N	Y	Y	Y	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y
Trend	95%	NS	NS	NS	NS	NS	99%	90%	NS	99%	NS	90%	95%	95%	NS	95%	95%	95%
Slope	-0.059	NS	–	–	–	–	-0.071	-0.038	–	-0.048	–	-0.19	-0.20	-0.57	–	-0.22	-0.28	0.27

c) The graphs on the following page show all turbidity measurements up to January 2000 (where data are available)

