

Appendix B

The details of input information used for providing
the training and testing data set for Artificial Neural Networks

Appendix Table B1 Node information of river network.

No.	Node No.	Type	No.	Node No.	Type	No.	Node No.	Type	No.	Node No.	Type
1	2	0	12	13	0	23	24	0	34	35	0
2	3	0	13	14	0	24	25	0	35	36	0
3	4	0	14	15	0	25	26	0	36	37	0
4	5	0	15	16	0	26	27	0	37	38	0
5	6	0	16	17	0	27	28	0	38	39	0
6	7	0	17	18	0	28	29	0	39	40	0
7	8	0	18	19	0	29	30	0	40	41	0
8	9	0	19	20	0	30	31	0	41	42	0
9	10	0	20	21	0	31	32	0	42	43	0
10	11	0	21	22	0	32	33	0	43	44	0
11	12	0	22	23	0	33	34	0			

Remark: Node Type 0 = common node

Node Type 1 = boundary node

Appendix Table B2 Branch information of river network.

No.	From	To	Type of Branch	Length (m)	No.	From	To	Type of Branch	Length (m)
1	1	2	O,	6000	23	23	24	O,	2700
2	2	3	O,	6000	24	24	25	O,	1000
3	3	4	O,	2750	25	25	26	O,	1000
4	4	5	O,	2750	26	26	27	O,	1000
5	5	6	O,	2750	27	27	28	O,	4400
6	6	7	O,	2750	28	28	29	O,	5000
7	7	8	O,	2500	29	29	30	O,	3000
8	8	9	O,	1000	30	30	31	O,	2000
9	9	10	O,	1000	31	31	32	O,	3400
10	10	11	O,	1000	32	32	33	O,	1600
11	11	12	O,	1000	33	33	34	O,	5000
12	12	13	S,	50	34	34	35	O,	5000
13	13	14	O,	1000	35	35	36	O,	3000
14	14	15	O,	1000	36	36	37	O,	2000
15	15	16	O,	1500	37	37	38	O,	5000
16	16	17	O,	1500	38	38	39	O,	4500
17	17	18	O,	1000	39	39	40	O,	5500
18	18	19	O,	1200	40	40	41	O,	5000
19	19	20	O,	1300	41	41	42	O,	5000
20	20	21	O,	1500	42	42	43	O,	4500
21	21	22	O,	1000	43	27	44	O,	1500
22	22	23	O,	1000					

Remark: O = Open Channel

S = Structure

Appendix Table B3 Cross section and roughness coefficient of river network.

No.	Node	No. Point	X	Y	Bank Index	n	No.	Node	No. Point	X	Y	Bank Index	n
1	2	13	-300	1.2	0	0.04				5210	1.2	0	0.04
			280	1.16	1	0.04	5	6	16	-510	1.2	0	0.04
			1060	0.5	0	0.03				0	1.02	1	0.04
			3800	-0.2	0	0.03				830	0.7	0	0.03
			4280	-1.06	0	0.03				1450	0.37	0	0.03
			4440	-2.41	0	0.03				2200	-0.2	0	0.03
			5170	-2.92	0	0.03				2220	-1.04	0	0.03
			5710	-2.71	0	0.03				2260	-1.5	0	0.03
			5900	-1.14	0	0.03				2300	-2.24	0	0.03
			6060	-0.2	0	0.03				2390	-2.56	0	0.03
			9280	0.5	0	0.03				2490	-2.33	0	0.03
			10560	1.04	1	0.04				2550	-2	0	0.03
			11300	1.2	0	0.04				2600	-0.2	0	0.03
2	3	16	-100	1.2	0	0.04				2930	0.17	0	0.03
			480	1.05	1	0.04				3280	0.49	0	0.03
			1230	0.67	0	0.03				3500	0.77	1	0.04
			2120	0.21	0	0.03				4200	1.2	0	0.04
			3000	-0.2	0	0.03	6	7	17	-84	1.1	0	0.04
			3100	-2	0	0.03				-28.7	0.9	1	0.04
			3200	-2.69	0	0.03				-5	0.06	0	0.03
			3590	-3.09	0	0.03				5	-0.96	0	0.03
			4170	-2.9	0	0.03				30	-2.06	0	0.03
			4340	-2.48	0	0.03				40	-2.17	0	0.03
			4500	-1.61	0	0.03				70	-3.66	0	0.03
			4600	-0.2	0	0.03				90	-5.06	0	0.03
			7460	0.39	0	0.03				107	-5.56	0	0.03
			9100	0.87	0	0.03				130	-5.66	0	0.03
			9970	1.15	1	0.04				155	-4.96	0	0.03
			10550	1.3	0	0.04				190	-4.16	0	0.03
3	4	16	-780	1.2	0	0.04				240	-2.06	0	0.03
			-270	1.15	1	0.04				250	-1.36	0	0.03
			0	0.79	0	0.03				265	-0.01	0	0.03
			1320	0.41	0	0.03				283.3	1	1	0.04
			2500	-0.2	0	0.03				390	1.09	0	0.04
			2600	-2	0	0.03	7	8	17	-79	1.12	0	0.04
			2640	-2.63	0	0.03				0	1.09	1	0.04
			2820	-2.92	0	0.03				8	0.06	0	0.03
			3090	-2.84	0	0.03				15	-0.96	0	0.03
			3260	-2.48	0	0.03				30	-2.06	0	0.03
			3300	-2	0	0.03				40	-2.58	0	0.03
			3400	-0.2	0	0.03				58	-3.66	0	0.03
			4370	0.5	0	0.03				90	-5.06	0	0.03
			5710	0.87	0	0.03				120	-5.59	0	0.03
			6000	1.13	1	0.04				150	-5.18	0	0.03
			7210	1.2	0	0.04				176	-4.66	0	0.03
4	5	16	-400	1.2	0	0.04				190	-4.16	0	0.03
			0	1.09	1	0.04				240	-2.06	0	0.03
			430	0.85	0	0.03				250	-1.36	0	0.03
			1000	0.5	0	0.03				265	-0.23	0	0.03
			1700	-0.2	0	0.03				270	1.15	1	0.04
			1800	-2	0	0.03				330	1.18	0	0.04
			1900	-2.61	0	0.03	8	9	16	-88.3	1.28	0	0.04
			2060	-2.9	0	0.03				0	1.22	1	0.04
			2340	-2.78	0	0.03				6.3	-0.48	0	0.03
			2450	-2.41	0	0.03				20	-2.64	0	0.03
			2500	-1.5	0	0.03				30	-3.64	0	0.03
			2600	-0.2	0	0.03				50	-5.18	0	0.03
			3360	0.5	0	0.03				64.1	-5.96	0	0.03
			4040	0.87	0	0.03				91	-6.62	0	0.03
			4420	1.13	1	0.04				133	-6.87	0	0.03

Appendix Table B3 (Continued)

No.	Node	No. Point	X	Y	Bank Index	n	No.	Node	No. Point	X	Y	Bank Index	n
9	10	14	173	-6.47	0	0.03	13	14	14	344	1.28	0	0.04
			201	-6.02	0	0.03				371	1.44	0	0.04
			215	-4.12	0	0.03				390	1.5	0	0.04
			236	-3.34	0	0.03				-71	1.55	0	0.04
			254	-1.16	0	0.03				-53.1	1.53	0	0.04
			287	1.15	1	0.04				-35	1.37	0	0.04
			379	1.28	0	0.04				1.6	1.15	1	0.04
			-71	1.55	0	0.04				14.1	-7.4	0	0.03
			-53.1	1.53	0	0.04				72	-7.4	0	0.03
			-35	1.37	0	0.04				123	-7.4	0	0.03
			1.6	1.15	1	0.04				176	-7.4	0	0.03
			14.1	-7.4	0	0.03				252	-7.4	0	0.03
			72	-7.4	0	0.03				314	-7.4	0	0.03
			123	-7.4	0	0.03				320	1.18	1	0.04
			176	-7.4	0	0.03				344	1.28	0	0.04
			252	-7.4	0	0.03				371	1.44	0	0.04
			314	-7.4	0	0.03				390	1.5	0	0.04
			320	1.18	1	0.04	14	15	16	-86	1.09	0	0.04
			344	1.28	0	0.04				0	0.93	1	0.04
10	11	14	371	1.44	0	0.04				4	-0.57	0	0.03
			390	1.5	0	0.04				20	-2.36	0	0.03
			-71	1.55	0	0.04				34	-3.64	0	0.03
			-53.1	1.53	0	0.04				50	-5.18	0	0.03
			-35	1.37	0	0.04				70	-6.4	0	0.03
			1.6	1.15	1	0.04				80	-6.71	0	0.03
			14.1	-7.4	0	0.03				100	-7	0	0.03
			72	-7.4	0	0.03				110	-7.06	0	0.03
			123	-7.4	0	0.03				120	-6.81	0	0.03
			176	-7.4	0	0.03				158	-5.18	0	0.03
			252	-7.4	0	0.03				171	-3.34	0	0.03
			314	-7.4	0	0.03				182	-1.61	0	0.03
			320	1.18	1	0.04				196	0.95	1	0.04
			344	1.28	0	0.04				275	0.96	0	0.04
			371	1.44	0	0.04	15	16	16	-74	1.03	0	0.04
			390	1.5	0	0.04				-4	0.88	1	0.04
11	12	14	-71	1.55	0	0.04				0	-0.1	0	0.03
			-53.1	1.53	0	0.04				20	-2.67	0	0.03
			-35	1.37	0	0.04				30	-4.18	0	0.03
			1.6	1.15	1	0.04				50	-5.18	0	0.03
			14.1	-7.4	0	0.03				70	-6.31	0	0.03
			72	-7.4	0	0.03				80	-6.65	0	0.03
			123	-7.4	0	0.03				108	-6.97	0	0.03
			176	-7.4	0	0.03				127	-6.47	0	0.03
			252	-7.4	0	0.03				142	-6.02	0	0.03
			314	-7.4	0	0.03				157	-4.12	0	0.03
			320	1.18	1	0.04				170	-3.34	0	0.03
			344	1.28	0	0.04				178	-0.85	0	0.03
			371	1.44	0	0.04				189	0.9	1	0.04
			390	1.5	0	0.04				252	0.96	0	0.04
12	13	14	-71	1.55	0	0.04	16	17	19	-80	0.87	0	0.04
			-53.1	1.53	0	0.04				-11	0.75	1	0.04
			-35	1.37	0	0.04				-5	-0.13	0	0.03
			1.6	1.15	1	0.04				0	-1.1	0	0.03
			14.1	-7.4	0	0.03				10	-3.04	0	0.03
			72	-7.4	0	0.03				30	-4.52	0	0.03
			123	-7.4	0	0.03				40	-5.34	0	0.03
			176	-7.4	0	0.03				50	-5.81	0	0.03
			252	-7.4	0	0.03				60	-6.18	0	0.03
			314	-7.4	0	0.03				80	-6.49	0	0.03
			320	1.18	1	0.04				105	-6.31	0	0.03

Appendix Table B3 (Continued)

No.	Node	No. Point	X	Y	Bank Index	n	No.	Node	No. Point	X	Y	Bank Index	n
17	18	19	124	-5.62	0	0.03	20	21	22	160	-3.15	0	0.03
			144	-4.87	0	0.03				180	-2.73	0	0.03
			159	-4.18	0	0.03				208	0.15	0	0.03
			171	-3.52	0	0.03				251	0.56	1	0.04
			180	-2.73	0	0.03				288	0.9	0	0.04
			201	-1.51	0	0.03				-95	0.93	0	0.04
			207	0.84	1	0.04				-57	0.53	1	0.04
			266	0.93	0	0.04				-10	-0.06	0	0.03
			-79	0.63	0	0.04				-5	-0.14	0	0.03
			-9	0.59	1	0.04				0	-0.17	0	0.03
			-2	-0.95	0	0.03				20	-2.89	0	0.03
			6	-1.32	0	0.03				30	-3.38	0	0.03
			19	-2	0	0.03				50	-5.89	0	0.03
			42	-4.27	0	0.03				70	-5.89	0	0.03
			54	-5.05	0	0.03				90	-6.45	0	0.03
			66	-5.93	0	0.03				100	-6.53	0	0.03
			93	-6.34	0	0.03				120	-5.74	0	0.03
			106	-6.21	0	0.03				130	-4.27	0	0.03
			124	-5.84	0	0.03				150	-3.4	0	0.03
			138	-5.24	0	0.03				160	-2.73	0	0.03
			152	-4.27	0	0.03				170	-2.69	0	0.03
			155	-3.76	0	0.03				180	-0.97	0	0.03
			159	-3.15	0	0.03				190	-0.77	0	0.03
			165	-2.73	0	0.03				200	-0.57	0	0.03
			174	-1.73	0	0.03				205	0.35	0	0.03
			195	0.4	1	0.04				240	0.62	1	0.04
18	19	19	259	0.53	0	0.04	21	22	22	292	0.84	0	0.04
			-66	0.93	0	0.04				-90	0.93	0	0.04
			0	0.78	1	0.04				-73	0.68	1	0.04
			7	-0.04	0	0.03				-10	-0.06	0	0.03
			21	-0.73	0	0.03				-5	-0.6	0	0.03
			35	-2.51	0	0.03				0	-1.29	0	0.03
			55	-4.61	0	0.03				9	-2.89	0	0.03
			74	-5.59	0	0.03				30	-4.36	0	0.03
			84	-6.13	0	0.03				46	-5.4	0	0.03
			95	-6.45	0	0.03				66	-5.84	0	0.03
			110	-6.49	0	0.03				90	-6.45	0	0.03
			131	-5.65	0	0.03				100	-5.93	0	0.03
			142	-5.24	0	0.03				135	-5.49	0	0.03
			160	-4.27	0	0.03				146	-4.27	0	0.03
			171	-3.76	0	0.03				164	-3.4	0	0.03
			182	-3.15	0	0.03				176	-2.73	0	0.03
			191	-2.73	0	0.03				181	-2.26	0	0.03
			197	-1.73	0	0.03				185	-1.67	0	0.03
			205	0.81	1	0.04				190	-1.23	0	0.03
			269	0.9	0	0.04				200	-0.57	0	0.03
19	20	19	-90	0.75	0	0.04	22	23	22	205	0.35	0	0.03
			-10	0.65	1	0.04				230	0.62	1	0.04
			-5	-0.19	0	0.03				290	0.87	0	0.04
			0	-1.32	0	0.03				-90	0.81	0	0.04
			10	-3.04	0	0.03				-50	0.46	1	0.04
			30	-5.58	0	0.03				-17	0	0	0.03
			40	-6.03	0	0.03				-5	-0.41	0	0.03
			50	-6.13	0	0.03				0	-0.79	0	0.03
			60	-6.45	0	0.03				16	-2.51	0	0.03
			80	-6.49	0	0.03				27	-3.74	0	0.03
			90	-5.37	0	0.03				42	-5.12	0	0.03
			100	-5.24	0	0.03				55	-5.34	0	0.03
			120	-4.27	0	0.03				73	-6.45	0	0.03
			140	-3.76	0	0.03				81	-6.21	0	0.03

Appendix Table B3 (Continued)

No.	Node	No. Point	X	Y	Bank Index	n	No.	Node	No. Point	X	Y	Bank Index	n
23	24	17	102	-5.74	0	0.03	26	27	17	175	0.68	1	0.04
			121	-4.9	0	0.03				285	0.86	0	0.04
			142	-4.21	0	0.03				-98	0.9	0	0.04
			160	-3.58	0	0.03				0	0.2	1	0.04
			170	-2.69	0	0.03				3	-1.61	0	0.03
			180	-1.61	0	0.03				10	-3.15	0	0.03
			190	-1	0	0.03				19	-6.88	0	0.03
			200	-0.57	0	0.03				33	-8.48	0	0.03
			205	0.35	0	0.03				46	-10.77	0	0.03
			230	0.62	1	0.04				67	-11.81	0	0.03
			296	0.84	0	0.04				73	-11.25	0	0.03
			-87	0.42	0	0.04				89	-9.63	0	0.03
			-9	-0.07	1	0.04				109	-7.17	0	0.03
			10	-1.61	0	0.03				119	-5.24	0	0.03
			20	-3.15	0	0.03				140	-4.28	0	0.03
			30	-6.88	0	0.03				153	-3.66	0	0.03
			50	-8.48	0	0.03				159	-0.59	0	0.03
			60	-11.31	0	0.03				175	0.73	1	0.04
			80	-11.81	0	0.03				268	0.91	0	0.04
			90	-11.78	0	0.03	27	28	20	-94	0.75	0	0.04
			100	-10.7	0	0.03				-40	0.32	1	0.04
			120	-9.67	0	0.03				-10	0.21	0	0.03
			130	-4.98	0	0.03				-5	0.06	0	0.03
			140	-3.49	0	0.03				0	-0.12	0	0.03
			150	-3.28	0	0.03				20	-3.83	0	0.03
			170	-1.6	0	0.03				40	-10.43	0	0.03
			175	0.91	1	0.04				50	-11.71	0	0.03
			283	1.17	0	0.04				80	-12.53	0	0.03
24	25	17	-78	0.42	0	0.04				90	-11.43	0	0.03
			-20	0.11	1	0.04				100	-11.27	0	0.03
			-4	-1.61	0	0.03				110	-10.51	0	0.03
			7	-4.19	0	0.03				130	-7.4	0	0.03
			30	-6.43	0	0.03				140	-4.23	0	0.03
			35	-8.48	0	0.03				185	0.51	0	0.03
			65	-10.86	0	0.03				190	0.61	0	0.03
			80	-11.47	0	0.03				200	0.62	0	0.03
			95	-10.77	0	0.03				210	0.95	0	0.03
			104	-10.07	0	0.03				220	1.1	1	0.04
			112	-8.75	0	0.03				280	1.3	0	0.04
			135	-5.37	0	0.03	28	29	19	-90	0.82	0	0.04
25	26	17	147	-4.32	0	0.03				-39	0.42	1	0.04
			160	-3.28	0	0.03				0	-0.17	0	0.03
			174	-1.6	0	0.03				10	-3.43	0	0.03
			184	0.91	1	0.04				20	-4.4	0	0.03
			256	1.08	0	0.04				30	-8	0	0.03
			-79	0.86	0	0.04				40	-8.24	0	0.03
			0	0.51	1	0.04				50	-9.1	0	0.03
			14	-1.34	0	0.03				60	-9.29	0	0.03
			23	-3.75	0	0.03				70	-9.9	0	0.03
			38	-6.6	0	0.03				80	-9.49	0	0.03
			44	-8.93	0	0.03				90	-8.6	0	0.03
			63	-9.54	0	0.03				110	-5.63	0	0.03
			82	-10.95	0	0.03				120	-4.7	0	0.03
			101	-11.61	0	0.03				140	-2	0	0.03
			113	-10.42	0	0.03				146	1.03	0	0.03
			122	-8.97	0	0.03				160	1.08	0	0.03
			130	-6.56	0	0.03				194	1.19	1	0.04
			140	-4.71	0	0.03				246	1.3	0	0.04
			150	-3	0	0.03	29	30	21	-96	0.86	0	0.04
			160	-1.34	0	0.03				-68	0.38	1	0.04

Appendix Table B3 (Continued)

No.	Node	No. Point	X	Y	Bank Index	n	No.	Node	No. Point	X	Y	Bank Index	n
			-40	-0.19	0	0.03				0	-1.6	0	0.03
			-13	-0.55	0	0.03				16	-4.58	0	0.03
			23	-3.66	0	0.03				30	-6.51	0	0.03
			38	-5.42	0	0.03				43	-7.92	0	0.03
			51	-7.08	0	0.03				60	-9.67	0	0.03
			60	-7.61	0	0.03				80	-10.33	0	0.03
			70	-8.49	0	0.03				90	-9.54	0	0.03
			87	-9.1	0	0.03				106	-7.35	0	0.03
			105	-10.2	0	0.03				121	-4.29	0	0.03
			119	-9.72	0	0.03				123	-3.42	0	0.03
			140	-9.28	0	0.03				140	-2.52	0	0.03
			150	-8.64	0	0.03				150	-0.81	0	0.03
			160	-4.58	0	0.03				160	0.55	1	0.04
			170	-3.57	0	0.03				255	1.34	0	0.04
			185	-1.34	0	0.03	33	34	15	-94	0.82	1	0.04
			190	-0.06	0	0.03				-6	-0.21	0	0.03
			200	0.6	0	0.03				10	-3.95	0	0.03
			210	0.95	1	0.04				30	-6.23	0	0.03
			279	1.25	0	0.04				50	-8.99	0	0.03
30	31	21	-96	0.73	0	0.04				60	-9.33	0	0.03
			-81	0.38	1	0.04				80	-11.83	0	0.03
			-40	-0.19	0	0.03				90	-11.48	0	0.03
			0	-0.25	0	0.03				100	-11.32	0	0.03
			20	-4.86	0	0.03				110	-9.14	0	0.03
			30	-5.42	0	0.03				120	-7.63	0	0.03
			40	-7.96	0	0.03				140	-3.23	0	0.03
			60	-7.96	0	0.03				150	-1.73	0	0.03
			70	-8.34	0	0.03				160	1.07	1	0.04
			80	-8.45	0	0.03				270	1.43	0	0.04
			120	-9.66	0	0.03	34	35	16	-48.7	0.92	0	0.04
			130	-9.34	0	0.03				-10.3	0.54	1	0.04
			140	-8.86	0	0.03				0	0.47	0	0.03
			150	-8.64	0	0.03				5	-2.12	0	0.03
			160	-6.84	0	0.03				15	-5.39	0	0.03
			170	-6.56	0	0.03				35	-12.72	0	0.03
			185	0.9	1	0.04				55	-12.64	0	0.03
			190	1.05	0	0.04				65	-12.62	0	0.03
			200	1.15	0	0.04				75	-11.8	0	0.03
			210	1.17	0	0.04				85	-10.44	0	0.03
			277	1.43	0	0.04				95	-10.22	0	0.03
31	32	17	-96	0.86	0	0.04				115	-7.62	0	0.03
			-39	0.46	1	0.04				125	-3.82	0	0.03
			-18	0.2	0	0.03				135	1.55	1	0.04
			0	-0.41	0	0.03				140	1.72	0	0.04
			36	-3.85	0	0.03				189.4	2	0	0.04
			57	-5.64	0	0.03	35	36	17	-90	1.15	0	0.04
			65	-6.51	0	0.03				-57	1.1	0	0.04
			72	-8.27	0	0.03				-5	0.97	1	0.04
			80	-9.63	0	0.03				5	-2.39	0	0.03
			90	-9.24	0	0.03				25	-7.2	0	0.03
			100	-8.75	0	0.03				45	-10.74	0	0.03
			129	-7	0	0.03				55	-13.4	0	0.03
			134	-4.93	0	0.03				65	-13.99	0	0.03
			140	-3.79	0	0.03				75	-13.04	0	0.03
			155	-1	0	0.03				85	-12.43	0	0.03
			167	0.9	1	0.04				105	-8.06	0	0.03
			270	1.34	0	0.04				115	-7.39	0	0.03
32	33	17	-79	0.86	0	0.04				125	-5.19	0	0.03
			-45	0.38	1	0.04				132	0.37	0	0.03
			-5	-0.46	0	0.03				135	1.14	1	0.04

Appendix Table B3 (Continued)

No.	Node	No. Point	X	Y	Bank Index	n	No.	Node	No. Point	X	Y	Bank Index	n
36	37	17	160	1.75	0	0.04	40	41	12	112	-0.12	0	0.03
			267	1.93	0	0.04				120	0.09	0	0.03
			-86	1	0	0.04				200.6	0.64	1	0.04
			-34	0.8	1	0.04				-85.6	0.78	0	0.04
			-22	0.19	0	0.03				-41.5	0.52	1	0.04
			-13	-2.39	0	0.03				-10	0.39	0	0.03
			11	-7.2	0	0.03				-5	0.33	0	0.03
			34	-10.74	0	0.03				0	-0.08	0	0.03
			49	-12.29	0	0.03				5	-4.31	0	0.03
			59	-13.6	0	0.03				30	-7.06	0	0.03
			71	-13.35	0	0.03				40	-6.32	0	0.03
			79	-12.43	0	0.03				50	-4.77	0	0.03
			88	-9.49	0	0.03				60	-0.07	0	0.03
			95	-7.39	0	0.03				65	1.13	1	0.04
			117	-5.19	0	0.03				167.7	1.27	0	0.04
37	38	12	132	-2.21	0	0.03	41	42	17	-94.4	0.74	0	0.04
			140	0.34	0	0.03				-57.5	0.56	1	0.04
			160	0.95	1	0.04				-30	0.47	0	0.03
			260	1.45	0	0.04				-20	0.36	0	0.03
			-88.8	0.91	0	0.04				-5	0.26	0	0.03
			-5.4	0.7	1	0.04				0	0.01	0	0.03
			5	-1.69	0	0.03				10	-4.43	0	0.03
			10	-7.69	0	0.03				20	-4.77	0	0.03
			40	-8.5	0	0.03				40	-7.05	0	0.03
			45	-9.2	0	0.03				45	-7.97	0	0.03
			50	-8.36	0	0.03				50	-7.56	0	0.03
			70	-1.33	0	0.03				70	-4.73	0	0.03
			85	-0.01	0	0.03				84	-1.53	0	0.03
			95	0.76	1	0.04				90	-0.01	0	0.03
			100	0.79	0	0.04				95	0.16	0	0.03
38	39	16	187.8	1.04	0	0.04				110	0.2	0	0.03
			-92	1.4	0	0.04				194.2	0.68	1	0.04
			-15	1.21	0	0.04	42	43	16	-90.4	1.6	0	0.04
			0	0.84	1	0.04				-51.9	1.33	0	0.04
			10	-4.09	0	0.03				-30	1.26	0	0.04
			20	-5.57	0	0.03				-20	0.98	0	0.04
			30	-5.91	0	0.03				-10	0.84	1	0.04
			40	-7.67	0	0.03				0	0.56	0	0.03
			45	-7.96	0	0.03				10	-1.99	0	0.03
			60	-4.8	0	0.03				20	-6.16	0	0.03
			70	-3.67	0	0.03				25	-6.44	0	0.03
			85	-0.62	0	0.03				30	-7.12	0	0.03
			90	0.83	1	0.04				35	-6.38	0	0.03
			95	0.83	0	0.04				45	-3.12	0	0.03
			100	0.93	0	0.04				50	-2.12	0	0.03
			110	1.01	0	0.04				60	1.27	1	0.04
39	40	16	204.6	1.11	0	0.04				65	1.47	0	0.04
			-90.4	0.84	1	0.04	43	44	15	156.5	1.47	0	0.04
			-23	0.03	0	0.03				-69.7	1.76	0	0.04
			-10	-0.24	0	0.03				1.3	1.64	1	0.04
			0	-0.24	0	0.03				16	-0.4	0	0.03
			10	-2.99	0	0.03				22	-0.63	0	0.03
			40	-7.87	0	0.03				28	-0.89	0	0.03
			50	-8.33	0	0.03				46	-6.61	0	0.03
			55	-9.61	0	0.03				52	-7.11	0	0.03
			60	-7.98	0	0.03				57	-7.01	0	0.03
			70	-6.44	0	0.03				80	-4.51	0	0.03
			80	-5.9	0	0.03				86	-3.61	0	0.03
			90	-5.71	0	0.03				92	-1.31	0	0.03
			105	-2.54	0	0.03				108	-0.41	0	0.03

Appendix Table B3 (Continued)

No.	Node	No. Point	X	Y	Bank Index	n	No.	Node	No. Point	X	Y	Bank Index	n
		114	0.95		1	0.04							
		134	1.26		0	0.04							
		187.2	1.52		0	0.04							

Remark: Bank Index 1 means this point is river bank
 Bank Index 0 means this point is not river bank

Appendix Table B4 Structural information.

No.	Branch No.	STR	Type	a	b	c	d	e	f	g	h	i	j	k	l
1	12	G	,1	6	20	9	-7	-7	-7	30	0	0	1	1	1

Remark: STR = structure type; a = number of opening; b = gate width (m);
 c = gate height (m); d = upstream floor elevation (m MSL);
 e = downstream floor elevation (m MSL); f = gate sill elevation (m MSL);
 g = base sill length (m); h = number of pier; i = pier thickness;
 j = discharge coefficient factor.

Appendix Table B5 Transition sectional data.

No.	Branch No.	Manning's	U/S Transition				U/S Transition			
			Tran. Length	Loss Coeff.	X	Y	Tran. Length	Loss Coeff.	X	Y
1	12	0.025	0	0	0	5.5	0	0	0	5.5
					0	-8			0	-8
					20	-8			20	-8
					40	-8			40	-8
					60	-8			60	-8
					80	-8			80	-8
					100	-8			100	-8
					120	-8			120	-8
					150	-8			150	-8
					180	-8			180	-8
					200	-8			200	-8
					200	5.5			200	5.5

Appendix Table B6 Flow direction data.

No.	Node No.	Direction Value	No.	Node No.	Direction Value
1	2	200	23	24	2400
2	3	300	24	25	2500
3	4	400	25	26	2600
4	5	500	26	27	2700
5	6	600	27	28	2800
6	7	700	28	29	2900
7	8	800	29	30	3000
8	9	900	30	31	3100
9	10	1000	31	32	3200
10	11	1100	32	33	3300
11	12	1200	33	34	3400
12	13	1300	34	35	3500
13	14	1400	35	36	3600
14	15	1500	36	37	3700
15	16	1600	37	38	3800
16	17	1700	38	39	3900
17	18	1800	39	40	4000
18	19	1900	40	41	4100
19	20	2000	41	42	4200
20	21	2100	42	43	4300
21	22	2200	43	1	100
22	23	2300			

Appendix Table B7 Sample of gate operation data.

No.	Branch No.	Gate name	Control type	Time unit	No. of data	Range	Opening
1	12	G	T	h	1	1	0

Appendix Table B8 Node and upstream hydrograph pattern number data.

No.	Node	Hydro. Pattern
1	43	43

Appendix Table B9 Sample of upstream hydrograph pattern data.

Time No.	Upstream hydrograph No.									
	1	2	3	4	5	6	7	8	9	10
1	77	77	77	85	90	87	84	73	88	75
2	78	90	71	76	79	84	80	74	83	81
3	75	75	76	86	80	81	90	89	74	84
4	86	89	82	82	89	76	90	79	74	83
5	80	73	75	73	79	82	76	82	87	82
6	84	76	72	83	86	81	86	86	77	87
7	81	71	71	89	86	70	83	70	75	75
8	80	72	89	83	90	77	74	75	73	72
9	86	75	70	75	81	74	74	76	76	86
10	84	87	82	80	73	78	79	87	89	82
11	89	89	72	86	77	82	72	77	80	77
12	80	87	77	84	86	70	70	71	86	78
13	85	75	83	87	86	72	74	88	78	89
14	87	86	73	82	76	80	76	86	78	78
15	73	72	75	83	88	87	74	87	70	71
16	87	81	72	89	83	76	77	78	84	78
17	88	79	80	75	78	75	72	83	85	72
18	83	78	82	81	77	78	81	72	70	85
19	76	79	89	75	80	74	88	76	75	85
20	79	78	81	77	71	84	77	84	89	77
21	88	85	81	82	72	89	79	82	75	80
22	75	86	87	81	78	89	74	88	79	81
23	72	78	76	86	80	86	80	83	87	84
24	72	81	86	84	86	85	83	83	73	88
25	76	82	83	80	73	89	76	90	73	84
26	76	79	77	89	78	76	80	72	77	82
27	78	82	80	72	77	76	76	80	89	88
28	73	75	71	86	89	79	82	89	82	73
29	89	75	75	86	81	73	89	78	86	84
30	87	78	78	76	84	87	76	90	85	74
31	85	82	88	83	78	74	90	86	74	72
32	89	88	88	73	79	72	87	71	79	89
33	85	73	88	86	87	74	73	74	85	76
34	83	85	80	72	79	73	79	90	78	76
35	89	77	87	82	75	72	89	83	89	82
36	83	83	71	89	81	74	85	73	71	85
37	76	86	75	86	86	85	80	86	84	86
38	71	74	86	71	71	79	80	74	73	73
39	71	87	89	83	70	86	85	87	71	79
40	85	72	79	84	70	71	87	83	90	86
41	89	76	81	74	74	76	73	75	77	85
42	87	71	85	85	73	82	76	79	83	75
43	82	86	80	80	73	90	89	78	73	85
44	86	72	83	88	75	76	73	70	84	86
45	74	76	71	79	74	81	81	82	72	79
46	89	88	78	83	89	80	82	80	88	74
47	87	86	72	75	72	76	85	88	72	81
48	77	70	82	71	79	77	79	88	88	75
49	87	77	70	74	79	86	74	72	76	78
50	80	90	88	82	89	79	72	88	77	76

Appendix Table B9 (Continued)

Time No.	Upstream hydrograph No.									
	1	2	3	4	5	6	7	8	9	10
51	72	86	76	75	87	89	82	74	79	75
52	75	73	87	83	84	71	71	76	75	73
53	80	90	81	75	89	82	72	85	71	70
54	75	84	73	83	81	88	85	78	74	79
55	86	84	81	79	88	85	73	84	89	89
56	79	70	82	75	78	83	75	83	74	74
57	76	76	84	86	86	76	79	86	83	82
58	80	77	73	76	74	79	85	82	84	89
59	79	84	78	75	83	87	88	75	75	76
60	78	70	80	72	72	87	86	77	73	82
61	82	77	75	80	81	77	72	87	87	75
62	75	78	82	85	88	86	87	89	76	74
63	85	84	77	76	84	78	82	84	82	73
64	90	75	80	88	73	73	82	88	73	87
65	90	88	84	81	85	85	71	71	80	71
66	85	82	80	85	85	90	85	79	83	84
67	71	71	80	85	75	88	78	70	81	79
68	89	85	74	88	78	77	82	79	81	70
69	74	72	76	71	77	86	89	87	83	78
70	70	87	84	90	86	85	73	78	83	85

Appendix Table B10 Sample of downstream boundary data.

Time No.	Downstream hydrograph No.									
	1	2	3	4	5	6	7	8	9	10
1	0	0	-0.3	-0.3	-0.1	-0.1	-0.1	-0.3	-0.4	-0.1
2	0	0	-0.2	-0.3	-0.1	0	-0.1	-0.2	-0.4	-0.1
3	0	0.1	-0.1	-0.3	-0.1	0	0	-0.1	-0.4	-0.2
4	0	0.2	0	-0.3	-0.2	0	0.1	0	-0.3	-0.3
5	-0.1	0.2	0.1	-0.2	-0.3	0	0.2	0.1	-0.3	-0.3
6	-0.2	0.2	0.2	-0.1	-0.3	-0.1	0.1	0.1	-0.1	-0.4
7	-0.3	0.1	0.3	0	-0.3	-0.2	0	0.2	0	-0.3
8	-0.3	0	0.3	0.1	-0.2	-0.2	0	0.2	0.1	-0.3
9	-0.3	0	0.3	0.2	-0.1	-0.2	-0.1	0.1	0.2	-0.2
10	-0.2	-0.1	0.2	0.3	0	-0.2	-0.1	0.1	0.2	-0.1
11	-0.1	-0.1	0.2	0.3	0.1	-0.1	-0.1	0	0.3	0
12	0	-0.1	0.1	0.4	0.2	0	-0.1	0	0.3	0.2
13	0.2	0	0.1	0.3	0.3	0.1	-0.1	-0.1	0.2	0.3
14	0.3	0	0	0.3	0.3	0.1	-0.1	-0.1	0.1	0.3
15	0.4	0.1	0	0.2	0.3	0.2	0	-0.1	0.1	0.3
16	0.4	0.2	0	0.1	0.2	0.2	0	-0.2	0	0.2
17	0.4	0.2	0	0	0.1	0.1	0	-0.2	-0.1	0.1
18	0.3	0.2	-0.1	0	0.1	0	0	-0.2	-0.1	0
19	0.2	0.1	-0.1	-0.1	0	0	-0.1	-0.2	-0.2	-0.1
20	0.1	0	-0.1	-0.1	-0.1	-0.1	-0.2	-0.3	-0.2	-0.1
21	0	-0.1	-0.2	-0.2	-0.1	-0.1	-0.2	-0.3	-0.2	-0.1
22	0	-0.1	-0.2	-0.2	-0.1	-0.2	-0.3	-0.4	-0.3	-0.1
23	0	-0.2	-0.3	-0.2	-0.1	-0.1	-0.3	-0.4	-0.3	-0.1
24	0	-0.2	-0.3	-0.2	-0.1	-0.1	-0.2	-0.4	-0.3	-0.1
25	0	-0.1	-0.3	-0.2	-0.1	-0.1	-0.2	-0.4	-0.3	0
26	0	0	-0.3	-0.2	-0.1	0	-0.1	-0.3	-0.4	0
27	0.1	0.1	-0.2	-0.3	0	0.1	0	-0.2	-0.4	0
28	0.1	0.2	-0.1	-0.3	-0.1	0.1	0.1	-0.1	-0.4	-0.1
29	0	0.2	0	-0.3	-0.2	0.1	0.2	0	-0.4	-0.2
30	-0.1	0.3	0.1	-0.2	-0.3	0	0.2	0.1	-0.3	-0.3
31	-0.1	0.2	0.2	-0.1	-0.3	-0.1	0.1	0.2	-0.2	-0.3
32	-0.2	0.1	0.3	0	-0.3	-0.2	0	0.2	-0.1	-0.3
33	-0.3	0.1	0.3	0.1	-0.2	-0.2	0	0.2	0	-0.3
34	-0.2	0	0.3	0.2	-0.1	-0.2	-0.1	0.2	0.1	-0.2
35	-0.2	0	0.3	0.3	0	-0.1	-0.1	0.1	0.2	-0.1
36	-0.1	0	0.2	0.3	0.1	-0.1	-0.1	0	0.3	0
37	0.1	0	0.2	0.4	0.2	0	-0.1	0	0.3	0.2
38	0.2	0	0.1	0.3	0.3	0.1	-0.1	-0.1	0.2	0.3
39	0.3	0	0.1	0.2	0.3	0.1	-0.1	-0.1	0.1	0.3
40	0.4	0.1	0	0.2	0.2	0.2	-0.1	-0.1	0.1	0.2
41	0.3	0.1	0	0.1	0.2	0.1	-0.1	-0.2	0	0.1
42	0.2	0.1	-0.1	0	0.1	0	-0.1	-0.2	-0.1	0
43	0.2	0	-0.1	0	0	-0.1	-0.1	-0.2	-0.1	-0.1
44	0.1	0	-0.2	-0.1	-0.1	-0.1	-0.2	-0.3	-0.1	-0.1
45	0	-0.1	-0.2	-0.1	-0.1	-0.2	-0.3	-0.3	-0.2	-0.1
46	-0.1	-0.2	-0.2	-0.2	-0.1	-0.2	-0.3	-0.4	-0.2	-0.1
47	-0.1	-0.2	-0.3	-0.2	-0.1	-0.2	-0.3	-0.4	-0.2	-0.1
48	0	-0.2	-0.3	-0.2	-0.1	-0.2	-0.3	-0.4	-0.2	0
49	0	-0.2	-0.3	-0.2	-0.1	-0.1	-0.2	-0.4	-0.2	0

Appendix Table B10 (Continued)

Time No.	Upstream hydrograph No.									
	1	2	3	4	5	6	7	8	9	10
50	0.1	-0.1	-0.3	-0.2	0	0	-0.2	-0.4	-0.3	0.1
51	0.1	0	-0.3	-0.2	0	0.1	-0.1	-0.3	-0.3	0.1
52	0.2	0.1	-0.2	-0.3	0	0.1	0	-0.2	-0.4	0.1
53	0.2	0.2	-0.1	-0.3	-0.1	0.1	0.1	-0.1	-0.4	-0.1
54	0.1	0.3	0	-0.3	-0.2	0	0.2	0	-0.4	-0.1
55	0	0.3	0.1	-0.2	-0.2	0	0.2	0.1	-0.3	-0.2
56	-0.1	0.3	0.2	-0.1	-0.3	-0.1	0.1	0.2	-0.2	-0.3
57	-0.2	0.2	0.3	0	-0.2	-0.1	0.1	0.2	-0.1	-0.3
58	-0.2	0.1	0.3	0.1	-0.1	-0.2	0	0.2	0	-0.2
59	-0.2	0.1	0.3	0.2	-0.1	-0.2	-0.1	0.2	0.1	-0.2
60	-0.1	0	0.3	0.3	0	-0.1	-0.1	0.2	0.3	-0.1
61	0	0	0.2	0.3	0.1	-0.1	-0.1	0.1	0.3	0
62	0.1	0	0.2	0.4	0.2	0	-0.1	0	0.3	0.2
63	0.2	0	0.1	0.3	0.3	0	-0.1	0	0.2	0.2
64	0.3	0	0.1	0.2	0.2	0.1	-0.1	-0.1	0.1	0.2
65	0.3	0	0	0.1	0.1	0.1	-0.1	-0.1	0.1	0.1
66	0.2	0	-0.1	0	0.1	0	-0.1	-0.2	0	0
67	0.1	0	-0.1	0	0	-0.1	-0.2	-0.2	-0.1	-0.1
68	0	-0.1	-0.2	-0.1	-0.1	-0.2	-0.2	-0.3	-0.1	-0.1
69	0	-0.1	-0.2	-0.1	-0.1	-0.2	-0.3	-0.3	-0.1	-0.2
70	-0.1	-0.2	-0.2	-0.1	-0.1	-0.2	-0.3	-0.3	-0.1	-0.2

Appendix Table B11 Sample of initial discharge data.

No.	Branch No.	initial discharge (m ³ /s) data sets									
		1	2	3	4	5	6	7	8	9	10
1	1	77.0	77.0	77.0	85.0	90.0	87.0	84.0	73.0	88.0	75.0
2	2	77.0	77.0	77.0	85.0	90.0	87.0	84.0	73.0	88.0	75.0
3	3	77.0	77.0	77.0	85.0	90.0	87.0	84.0	73.0	88.0	75.0
4	4	77.0	77.0	77.0	85.0	90.0	87.0	84.0	73.0	88.0	75.0
5	5	77.0	77.0	77.0	85.0	90.0	87.0	84.0	73.0	88.0	75.0
6	6	77.0	77.0	77.0	85.0	90.0	87.0	84.0	73.0	88.0	75.0
7	7	77.0	77.0	77.0	85.0	90.0	87.0	84.0	73.0	88.0	75.0
8	8	77.0	77.0	77.0	85.0	90.0	87.0	84.0	73.0	88.0	75.0
9	9	77.0	77.0	77.0	85.0	90.0	87.0	84.0	73.0	88.0	75.0
10	10	77.0	77.0	77.0	85.0	90.0	87.0	84.0	73.0	88.0	75.0
11	11	77.0	77.0	77.0	85.0	90.0	87.0	84.0	73.0	88.0	75.0
12	12	77.0	77.0	77.0	85.0	90.0	87.0	84.0	73.0	88.0	75.0
13	13	77.0	77.0	77.0	85.0	90.0	87.0	84.0	73.0	88.0	75.0
14	14	77.0	77.0	77.0	85.0	90.0	87.0	84.0	73.0	88.0	75.0
15	15	77.0	77.0	77.0	85.0	90.0	87.0	84.0	73.0	88.0	75.0
16	16	77.0	77.0	77.0	85.0	90.0	87.0	84.0	73.0	88.0	75.0
17	17	77.0	77.0	77.0	85.0	90.0	87.0	84.0	73.0	88.0	75.0
18	18	77.0	77.0	77.0	85.0	90.0	87.0	84.0	73.0	88.0	75.0
19	19	77.0	77.0	77.0	85.0	90.0	87.0	84.0	73.0	88.0	75.0
20	20	77.0	77.0	77.0	85.0	90.0	87.0	84.0	73.0	88.0	75.0
21	21	77.0	77.0	77.0	85.0	90.0	87.0	84.0	73.0	88.0	75.0
22	22	77.0	77.0	77.0	85.0	90.0	87.0	84.0	73.0	88.0	75.0
23	23	77.0	77.0	77.0	85.0	90.0	87.0	84.0	73.0	88.0	75.0
24	24	77.0	77.0	77.0	85.0	90.0	87.0	84.0	73.0	88.0	75.0
25	25	77.0	77.0	77.0	85.0	90.0	87.0	84.0	73.0	88.0	75.0
26	26	77.0	77.0	77.0	85.0	90.0	87.0	84.0	73.0	88.0	75.0
27	27	77.0	77.0	77.0	85.0	90.0	87.0	84.0	73.0	88.0	75.0
28	28	77.0	77.0	77.0	85.0	90.0	87.0	84.0	73.0	88.0	75.0
29	29	77.0	77.0	77.0	85.0	90.0	87.0	84.0	73.0	88.0	75.0
30	30	77.0	77.0	77.0	85.0	90.0	87.0	84.0	73.0	88.0	75.0
31	31	77.0	77.0	77.0	85.0	90.0	87.0	84.0	73.0	88.0	75.0
32	32	77.0	77.0	77.0	85.0	90.0	87.0	84.0	73.0	88.0	75.0
33	33	77.0	77.0	77.0	85.0	90.0	87.0	84.0	73.0	88.0	75.0
34	34	77.0	77.0	77.0	85.0	90.0	87.0	84.0	73.0	88.0	75.0
35	35	77.0	77.0	77.0	85.0	90.0	87.0	84.0	73.0	88.0	75.0
36	36	77.0	77.0	77.0	85.0	90.0	87.0	84.0	73.0	88.0	75.0
37	37	77.0	77.0	77.0	85.0	90.0	87.0	84.0	73.0	88.0	75.0
38	38	77.0	77.0	77.0	85.0	90.0	87.0	84.0	73.0	88.0	75.0
39	39	77.0	77.0	77.0	85.0	90.0	87.0	84.0	73.0	88.0	75.0
40	40	77.0	77.0	77.0	85.0	90.0	87.0	84.0	73.0	88.0	75.0
41	41	77.0	77.0	77.0	85.0	90.0	87.0	84.0	73.0	88.0	75.0
42	42	77.0	77.0	77.0	85.0	90.0	87.0	84.0	73.0	88.0	75.0

Appendix Table B12 Sample of initial water level data.

No.	Node No.	initial water level (m. MSL) data sets									
		1	2	3	4	5	6	7	8	9	10
1	2	0.00	0.00	-0.30	-0.30	-0.10	-0.10	-0.10	-0.30	-0.40	-0.10
2	3	0.01	0.01	-0.29	-0.28	-0.09	-0.09	-0.09	-0.29	-0.38	-0.09
3	4	0.01	0.01	-0.28	-0.27	-0.08	-0.08	-0.08	-0.28	-0.37	-0.08
4	5	0.03	0.03	-0.26	-0.25	-0.06	-0.06	-0.06	-0.26	-0.34	-0.07
5	6	0.03	0.03	-0.26	-0.25	-0.05	-0.06	-0.06	-0.26	-0.33	-0.07
6	7	0.03	0.03	-0.25	-0.24	-0.05	-0.05	-0.05	-0.26	-0.33	-0.06
7	8	0.04	0.04	-0.25	-0.23	-0.04	-0.05	-0.05	-0.25	-0.32	-0.06
8	9	0.04	0.04	-0.24	-0.23	-0.04	-0.04	-0.05	-0.25	-0.32	-0.06
9	10	0.04	0.04	-0.24	-0.23	-0.04	-0.04	-0.04	-0.25	-0.32	-0.06
10	11	0.04	0.04	-0.24	-0.23	-0.03	-0.04	-0.04	-0.25	-0.31	-0.05
11	12	0.05	0.05	-0.24	-0.22	-0.03	-0.04	-0.04	-0.24	-0.31	-0.05
12	13	0.09	0.09	-0.19	-0.16	0.03	0.03	0.02	-0.20	-0.25	-0.01
13	14	0.10	0.10	-0.19	-0.16	0.04	0.03	0.02	-0.20	-0.24	0.00
14	15	0.10	0.10	-0.19	-0.16	0.04	0.03	0.02	-0.20	-0.24	0.00
15	16	0.10	0.10	-0.18	-0.16	0.04	0.03	0.02	-0.20	-0.24	0.00
16	17	0.10	0.10	-0.18	-0.16	0.04	0.03	0.03	-0.19	-0.24	0.00
17	18	0.10	0.10	-0.18	-0.15	0.05	0.04	0.03	-0.19	-0.23	0.00
18	19	0.10	0.10	-0.18	-0.15	0.05	0.04	0.03	-0.19	-0.23	0.00
19	20	0.10	0.10	-0.18	-0.15	0.05	0.04	0.03	-0.19	-0.23	0.00
20	21	0.11	0.11	-0.18	-0.15	0.05	0.04	0.03	-0.19	-0.23	0.01
21	22	0.11	0.11	-0.17	-0.15	0.05	0.04	0.03	-0.19	-0.23	0.01
22	23	0.11	0.11	-0.17	-0.14	0.05	0.04	0.04	-0.18	-0.22	0.01
23	24	0.11	0.11	-0.17	-0.14	0.06	0.05	0.04	-0.18	-0.22	0.01
24	25	0.11	0.11	-0.17	-0.14	0.06	0.05	0.04	-0.18	-0.22	0.01
25	26	0.11	0.11	-0.17	-0.14	0.06	0.05	0.04	-0.18	-0.22	0.01
26	27	0.11	0.11	-0.17	-0.14	0.06	0.05	0.04	-0.18	-0.22	0.01
27	28	0.11	0.11	-0.17	-0.14	0.06	0.05	0.04	-0.18	-0.22	0.01
28	29	0.11	0.11	-0.17	-0.14	0.06	0.05	0.04	-0.18	-0.22	0.01
29	30	0.11	0.11	-0.16	-0.14	0.06	0.05	0.04	-0.18	-0.21	0.01
30	31	0.12	0.12	-0.16	-0.14	0.06	0.05	0.04	-0.18	-0.21	0.02
31	32	0.12	0.12	-0.16	-0.13	0.07	0.06	0.05	-0.18	-0.21	0.02
32	33	0.12	0.12	-0.16	-0.13	0.07	0.06	0.05	-0.18	-0.21	0.02
33	34	0.12	0.12	-0.16	-0.13	0.07	0.06	0.05	-0.17	-0.21	0.02
34	35	0.12	0.12	-0.16	-0.13	0.07	0.06	0.05	-0.17	-0.20	0.02
35	36	0.12	0.12	-0.16	-0.13	0.07	0.06	0.05	-0.17	-0.20	0.02
36	37	0.12	0.12	-0.16	-0.13	0.07	0.06	0.05	-0.17	-0.20	0.02
37	38	0.12	0.12	-0.15	-0.12	0.08	0.07	0.05	-0.17	-0.20	0.02
38	39	0.14	0.14	-0.14	-0.11	0.10	0.08	0.07	-0.15	-0.18	0.04
39	40	0.15	0.15	-0.12	-0.08	0.12	0.10	0.09	-0.14	-0.16	0.05
40	41	0.17	0.17	-0.11	-0.07	0.14	0.12	0.11	-0.13	-0.14	0.07
41	42	0.20	0.20	-0.07	-0.03	0.18	0.16	0.14	-0.10	-0.09	0.10
42	43	0.23	0.23	-0.04	0.02	0.23	0.21	0.19	-0.06	-0.05	0.13
43	1	0.00	0.00	-0.30	-0.30	-0.10	-0.10	-0.10	-0.30	-0.40	-0.10

Appendix Table B13 Node information used for salinity submodel.

No.	Node	Type	No.	Node	Type	No.	Node	Type	No.	Node	Type
1	1	2	12	12	0	23	23	0	34	34	0
2	2	0	13	13	0	24	24	0	35	35	0
3	3	0	14	14	0	25	25	0	36	36	0
4	4	0	15	15	0	26	26	0	37	37	0
5	5	0	16	16	0	27	27	0	38	38	0
6	6	0	17	17	0	28	28	0	39	39	0
7	7	0	18	18	0	29	29	0	40	40	0
8	8	0	19	19	0	30	30	0	41	41	0
9	9	0	20	20	0	31	31	0	42	42	0
10	10	0	21	21	0	32	32	0	43	43	2
11	11	0	22	22	0	33	33	0			

Remark: Node type 0 = common node

Node type 1 = junction node

Node type 2 = boundary node

Appendix Table B14 Boundary condition (ppt) used for salinity submodel.

Time	Node		Time	Node	
	1	43		1	43
	Type			Type	
	s	C		s	C
1	35		36	35	
2	35		37	35	
3	35		38	35	
4	35		39	35	
5	35		40	35	
6	35		41	35	
7	35		42	35	
8	35		43	35	
9	35		44	35	
10	35		45	35	
11	35		46	35	
12	35		47	35	
13	35		48	35	
14	35		49	35	
15	35		50	35	
16	35		51	35	
17	35		52	35	
18	35		53	35	
19	35		54	35	
20	35		55	35	
21	35		56	35	
22	35		57	35	
23	35		58	35	
24	35		59	35	
25	35		60	35	
26	35		61	35	
27	35		62	35	
28	35		63	35	
29	35		64	35	
30	35		65	35	
31	35		66	35	
32	35		67	35	
33	35		68	35	
34	35		69	35	
35	35		70	35	

Remark: c = Closed Boundary

s = Specified Value Boundary

dg = Upstream Water Mixing

Appendix Table B15 Sample of initial condition (ppt) used for salinity submodel.

No.	Node	SAL	No.	Node	SAL	No.	Node	SAL	No.	Node	SAL
1	1	35	12	12	5	23	23	0	34	34	0
2	2	32	13	13	0	24	24	0	35	35	0
3	3	30	14	14	0	25	25	0	36	36	0
4	4	28	15	15	0	26	26	0	37	37	0
5	5	26	16	16	0	27	27	0	38	38	0
6	6	24	17	17	0	28	28	0	39	39	0
7	7	22	18	18	0	29	29	0	40	40	0
8	8	20	19	19	0	30	30	0	41	41	0
9	9	18	20	20	0	31	31	0	42	42	0
10	10	15	21	21	0	32	32	0	43	43	0
11	11	10	22	22	0	33	33	0			

Remark: SAL = Salinity

Appendix Table B16 Diffusion coefficient (m²/s) used for salinity submodel.

No.	Node	Dx	No.	Node	Dx	No.	Node	Dx	No.	Node	Dx
1	1	40	12	12	40	23	23	40	34	34	40
2	2	40	13	13	40	24	24	40	35	35	40
3	3	40	14	14	40	25	25	40	36	36	40
4	4	40	15	15	40	26	26	40	37	37	40
5	5	40	16	16	40	27	27	40	38	38	40
6	6	40	17	17	40	28	28	40	39	39	40
7	7	40	18	18	40	29	29	40	40	40	40
8	8	40	19	19	40	30	30	40	41	41	40
9	9	40	20	20	40	31	31	40	42	42	40
10	10	40	21	21	40	32	32	40	43	43	40
11	11	40	22	22	40	33	33	40			

Appendix Table B17 Node information used for BOD/DO submodel.

No.	Node	Type	No.	Node	Type	No.	Node	Type	No.	Node	Type
1	1	2	12	12	0	23	23	0	34	34	0
2	2	0	13	13	0	24	24	0	35	35	0
3	3	0	14	14	0	25	25	0	36	36	0
4	4	0	15	15	0	26	26	0	37	37	0
5	5	0	16	16	0	27	27	0	38	38	0
6	6	0	17	17	0	28	28	0	39	39	0
7	7	0	18	18	0	29	29	0	40	40	0
8	8	0	19	19	0	30	30	0	41	41	0
9	9	0	20	20	0	31	31	0	42	42	0
10	10	0	21	21	0	32	32	0	43	43	2
11	11	0	22	22	0	33	33	0			

Remark: Node type 0 = common node

Node type 1 = junction node

Node type 2 = boundary node

Appendix Table B18 BOD boundary condition (mg/l) used for BOD/DO submodel.

Time	Node		Time	Node	
	1	43		1	43
	Type			Type	
	s	c		s	c
1	2.85		36	2.85	
2	2.85		37	2.85	
3	2.85		38	2.85	
4	2.85		39	2.85	
5	2.85		40	2.85	
6	2.85		41	2.85	
7	2.85		42	2.85	
8	2.85		43	2.85	
9	2.85		44	2.85	
10	2.85		45	2.85	
11	2.85		46	2.85	
12	2.85		47	2.85	
13	2.85		48	2.85	
14	2.85		49	2.85	
15	2.85		50	2.85	
16	2.85		51	2.85	
17	2.85		52	2.85	
18	2.85		53	2.85	
19	2.85		54	2.85	
20	2.85		55	2.85	
21	2.85		56	2.85	
22	2.85		57	2.85	
23	2.85		58	2.85	
24	2.85		59	2.85	
25	2.85		60	2.85	
26	2.85		61	2.85	
27	2.85		62	2.85	
28	2.85		63	2.85	
29	2.85		64	2.85	
30	2.85		65	2.85	
31	2.85		66	2.85	
32	2.85		67	2.85	
33	2.85		68	2.85	
34	2.85		69	2.85	
35	2.85		70	2.85	

Remark: c = Closed Boundary

s = Specified Value Boundary

dg = Upstream Water Mixing

Appendix Table B19 DO boundary condition (mg/l) used for BOD/DO submodel.

Time	Node		Time	Node	
	1	43		1	43
	Type			Type	
	s	c		s	c
1	4		36	4	
2	4		37	4	
3	4		38	4	
4	4		39	4	
5	4		40	4	
6	4		41	4	
7	4		42	4	
8	4		43	4	
9	4		44	4	
10	4		45	4	
11	4		46	4	
12	4		47	4	
13	4		48	4	
14	4		49	4	
15	4		50	4	
16	4		51	4	
17	4		52	4	
18	4		53	4	
19	4		54	4	
20	4		55	4	
21	4		56	4	
22	4		57	4	
23	4		58	4	
24	4		59	4	
25	4		60	4	
26	4		61	4	
27	4		62	4	
28	4		63	4	
29	4		64	4	
30	4		65	4	
31	4		66	4	
32	4		67	4	
33	4		68	4	
34	4		69	4	
35	4		70	4	

Remark: c = Closed Boundary

s = Specified Value Boundary

dg = Upstream Water Mixing

Appendix Table B20 Sample of initial condition (mg/l) used for BOD/DO submodel.

No.	Node	BOD	DO	No.	Node	BOD	DO	No.	Node	BOD	DO	No.	Node	BOD	DO
1	1	1	6	12	12	2	2	23	23	2	4	34	34	2.5	4
2	2	1	5.5	13	13	2	2	24	24	2.1	4	35	35	2.5	4
3	3	1.1	5	14	14	2	2	25	25	2.2	4	36	36	2.5	4
4	4	1.2	3.5	15	15	2	2	26	26	2.2	4	37	37	2.6	4
5	5	1.4	2.5	16	16	2	2	27	27	2.3	4	38	38	2.7	4
6	6	1.6	2	17	17	2	2	28	28	2.3	4	39	39	2.8	4
7	7	1.8	2	18	18	2	2	29	29	2.4	4	40	40	2.9	4
8	8	2	2	19	19	2	3.4	30	30	2.5	4	41	41	2.9	4
9	9	2	2	20	20	2	3.6	31	31	2.5	4	42	42	2.9	4
10	10	2	2	21	21	1.9	3.8	32	32	2.5	4	43	43	2.9	4
11	11	2	2	22	22	1.9	4	33	33	2.5	4				

Appendix Table B21 Diffusion coefficient (m²/s) used for BOD/DO submodel.

No.	Node	Dx		No.	Node	Dx		No.	Node	Dx		No.	Node	Dx	
		BOD	DO			BOD	DO			BOD	DO			BOD	DO
1	1	50	50	12	12	25	25	23	23	25	25	34	34	25	25
2	2	50	50	13	13	25	25	24	24	25	25	35	35	25	25
3	3	25	25	14	14	25	25	25	25	25	25	36	36	25	25
4	4	25	25	15	15	25	25	26	26	25	25	37	37	25	25
5	5	25	25	16	16	25	25	27	27	25	25	38	38	25	25
6	6	25	25	17	17	25	25	28	28	25	25	39	39	25	25
7	7	25	25	18	18	25	25	29	29	25	25	40	40	25	25
8	8	25	25	19	19	25	25	30	30	25	25	41	41	25	25
9	9	25	25	20	20	25	25	31	31	25	25	42	42	25	25
10	10	25	25	21	21	25	25	32	32	25	25	43	43	25	25
11	11	25	25	22	22	25	25	33	33	25	25				

Appendix Table B22 Load data of BOD/DO used for BOD/DO submodel.

Time	Node No.																							
	5			6			7			9			18			22			24			25		
	BOD	DO	Q	BOD	DO	Q	BOD	DO	Q	BOD	DO	Q	BOD	DO	Q	BOD	DO	Q	BOD	DO	Q	BOD	DO	Q
1	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
2	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
3	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
4	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
5	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
6	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
7	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
8	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
9	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
10	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
11	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
12	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
13	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
14	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
15	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
16	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
17	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
18	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
19	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
20	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
21	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
22	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
23	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
24	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
25	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
26	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
27	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
28	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
29	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
30	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
31	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
32	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
33	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
34	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
35	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0

Appendix Table B22 (Continued)

Time	Node No.																							
	5			6			7			9			18			22			24			25		
	BOD	DO	Q	BOD	DO	Q	BOD	DO	Q	BOD	DO	Q	BOD	DO	Q	BOD	DO	Q	BOD	DO	Q	BOD	DO	Q
36	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
37	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
38	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
39	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
40	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
41	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
42	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
43	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
44	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
45	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
46	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
47	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
48	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
49	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
50	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
51	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
52	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
53	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
54	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
55	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
56	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
57	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
58	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
59	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
60	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
61	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
62	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
63	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
64	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
65	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
66	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
67	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
68	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
69	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0
70	450	0	0	450	0	0	785	0	0	400	0	0	268	0	0	268	0	0	268	0	0	268	0	0

Time	Node No.																							
	26			29			31			33			35			38			40			42		
	BOD	DO	Q	BOD	DO	Q	BOD	DO	Q	BOD	DO	Q	BOD	DO	Q	BOD	DO	Q	BOD	DO	Q	BOD	DO	Q
1	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
2	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
3	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
4	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
5	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
6	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
7	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
8	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
9	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
10	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
11	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
12	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
13	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
14	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
15	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
16	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
17	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
18	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
19	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
20	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
21	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
22	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
23	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
24	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
25	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
26	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
27	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
28	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
29	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
30	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
31	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
32	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
33	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
34	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
35	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0

Appendix Table B22 (Continued)

Time	Node No.																							
	26			29			31			33			35			38			40			42		
	BOD	DO	Q	BOD	DO	Q	BOD	DO	Q	BOD	DO	Q	BOD	DO	Q	BOD	DO	Q	BOD	DO	Q	BOD	DO	Q
36	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
37	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
38	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
39	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
40	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
41	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
42	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
43	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
44	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
45	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
46	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
47	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
48	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
49	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
50	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
51	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
52	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
53	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
54	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
55	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
56	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
57	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
58	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
59	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
60	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
61	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
62	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
63	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
64	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
65	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
66	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
67	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
68	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
69	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0
70	268	0	0	1060	0	0	1062	0	0	1062	0	0	1124	0	0	1000	0	0	531	0	0	531	0	0

Remark: BOD = Discharged BOD (kg/day)

DO = Discharged DO (ppt)

Q = Discharged of waste water (m³/s)

Appendix Table B23 BOD and DO parameters used for BOD/DO submodel.

No.	Node	K1	K3	SOD	K2	No.	Node	K1	K3	SOD	K2
1	1	0.03	0	0	0.04	23	23	0.03	0	0	0.04
2	2	0.03	0	0	0.04	24	24	0.03	0	0	0.04
3	3	0.03	0	0	0.04	25	25	0.03	0	0	0.04
4	4	0.03	0	0	0.04	26	26	0.03	0	0	0.04
5	5	0.03	0	0	0.04	27	27	0.03	0	0	0.04
6	6	0.03	0	0	0.04	28	28	0.03	0	0	0.04
7	7	0.03	0	0	0.04	29	29	0.04	0	0	0.04
8	8	0.03	0	0	0.04	30	30	0.04	0	0	0.04
9	9	0.03	0	0	0.04	31	31	0.04	0	0	0.04
10	10	0.03	0	0	0.04	32	32	0.04	0	0	0.04
11	11	0.03	0	0	0.04	33	33	0.04	0	0	0.04
12	12	0.03	0	0	0.04	34	34	0.03	0	0	0.04
13	13	0.03	0	0	0.04	35	35	0.03	0	0	0.04
14	14	0.03	0	0	0.04	36	36	0.03	0	0	0.04
15	15	0.03	0	0	0.04	37	37	0.03	0	0	0.04
16	16	0.03	0	0	0.04	38	38	0.03	0	0	0.04
17	17	0.03	0	0	0.04	39	39	0.03	0	0	0.04
18	18	0.03	0	0	0.04	40	40	0.03	0	0	0.04
19	19	0.03	0	0	0.04	41	41	0.03	0	0	0.04
20	20	0.03	0	0	0.04	42	42	0.03	0	0	0.04
21	21	0.03	0	0	0.04	43	43	0.03	0	0	0.04
22	22	0.03	0	0	0.04						

Remark: K1 = Decaying rate (day^{-1})
K3 = Settling rate (day^{-1})
SOD = Sediment oxygen demand ($\text{gm/m}^2/\text{day}$)
K2 = Reaeration rate (day^{-1})

Appendix Table B24 The values of weighting factor and relative importance used for deriving coastal gate operating rules.

WF	relative importance					
	WL_US	SAL_US	DO_US	WL_DS	SAL_DS	DO_DS
1.0	0.3	0.1	0.1	0.1	0.3	0.1

Remark WL_US = water levels at upstream gate;
WL_DS = waters level at downstream gate;
SAL_US = salinity concentrations at upstream gate;
SAL_DS = salinity concentrations at downstream gate;
DO_US = dissolved oxygen concentrations at upstream gate; and
DO_DS = dissolved oxygen concentrations at downstream gate.

Appendix Table B25 The desired criteria used for deriving coastal gate operating rules.

Parameters	Maximum	Minimum	Target
WL_US (m)	0.3	0.0	0.30
WL_DS (m)	0.6	-0.3	0.15
SAL_US (ppt)	2.0	0.0	1.0
SAL_DS (ppt)	26	20	23
DO_US (mg/l)	9.0	3.0	6.0
DO_DS (mg/l)	9.0	3.0	6.0

Remark WL_US = water levels at upstream gate;
 WL_DS = waters level at downstream gate;
 SAL_US = salinity concentrations at upstream gate;
 SAL_DS = salinity concentrations at downstream gate;
 DO_US = dissolved oxygen concentrations at upstream gate; and
 DO_DS = dissolved oxygen concentrations at downstream gate.