

FINAL

Appendix B

Table B1: Observed Low Dissolved Oxygen in the Surface Layer, Loch Raven Reservoir

Date	Location	DO (mg/l)		Temperature (°C)				Cause
		15 ft	20 ft	5 ft	10 ft	15 ft	20 ft	
6/22/92	Upper	5.83	4.7	21.46	20.95	19.37	17.35	Stratification
8/31/92	Lower	9.21	3.72	24.53	24.18	24.12	22.19	Stratification
8/9/93	Middle	8.43	4.61	26.3	26.01	25.29	23.14	Stratification
9/13/93	Lower	6.61	3.52	24.38	24.39	24	21.97	Stratification
9/13/93	Middle	8.23	4.75	23.88	23.91	23.9	22.76	Entrainment
9/27/93	Lower	1.61	0.26	21.12	20.93	20.48	19.34	Entrainment
7/19/94	Middle	8.57	4.83	28.5	28.33	27.42	23.61	Stratification
8/1/94	Lower	6.36	3.91	27.63	27.36	25.26	23.14	Stratification
8/1/94	Middle	4.85	2.15	27.8	27.55	25.75	23.43	Stratification
8/15/94	Lower	3.31	0.18	26.71	26.67	25.54	22.81	Stratification
8/15/94	Middle	8.68	1.37	26.17	26.11	25.9	23.47	Stratification
8/24/94	Lower	7.43	0.2	24.42	24.31	24.29	22.46	Entrainment
8/24/94	Middle	8.01	0.44	24.38	24.21	24.1	22.08	Stratification
8/29/94	Lower	4.56	0.34	25.97	25.88	24.27	21.43	Stratification
9/12/94	Middle	8.37	3.2	22.82	22.75	22.67	21.94	Entrainment
9/26/94	Lower	5	1.3	21.45	21.22	20.87	20.13	Entrainment
8/28/95	Lower	3.55	1.1	27.15	27.15	24.91	23.11	Stratification
8/28/95	Middle	8.51	2.34	27.11	27.11	27.01	23.8	Stratification
9/11/95	Lower	7.8	1.12	24.73	24.76	24.76	22.61	Stratification
9/11/95	Middle	8.62	3.01	24.67	24.62	24.55	21.39	Stratification
9/25/95	Lower	7.13	1.54	20.83	20.84	20.82	19.55	Entrainment
9/28/95	Lower	6.44	3.22	20.45	20.37	20.34	19.87	Entrainment
7/22/96	Lower	5.29	2.66	25.49	24.83	20.64	19.7	Stratification
7/22/96	Middle	5.81	4.4	25.3	25.15	10.96	19.89	Stratification
8/5/96	Lower	4.13	1.71	25.67	22.53	20.8	19.92	Stratification
8/26/96	Lower	3.42	1.81	26.09	22.4	20.17	19.44	Stratification
9/9/96	Lower	7.12	3.4	24.08	22.91	21.61	19.86	Stratification
9/9/96	Middle	6.98	4.51	24.91	23.42	21.58	20.08	Stratification
9/23/96	Lower	8.44	3.5	21.01	20.98	20.96	20.12	Entrainment
9/23/96	Middle	7.84	1.88	20.6	20.59	20.59	20	Entrainment
9/8/97	Lower	8.84	4.18	23.93	23.92	23.91	22.03	Entrainment
9/22/97	Lower	9.43	2.9	22.59	22.55	22.5	21.29	Entrainment
10/27/97	Lower	2.56	3.4	15.27	15.26	15.1	14.97	Entrainment
8/31/98	Lower	8.4	4.26	27.6	27.49	25.54	23.57	Stratification
9/15/98	Lower	5.37	2.45	24.42	23.91	23.19	22.54	Entrainment
9/28/98	Lower	9	2.85	24.15	23.64	23.08	22.05	Stratification
10/6/98	Lower	6.55	0.26	20.4	20.39	20.35	19.6	Entrainment
11/10/98	Lower	5.62	2.24	12.67	12.67	12.67	12.22	Entrainment
6/21/99	Lower	8.54	4.04	22.82	22.82	22.83	19.61	Stratification
6/21/99	Middle	9.17	4.15	22.72	22.7	22.66	19.19	Stratification
8/6/02	Upper	4.73	3.57	28.44	27.47	25.96	23.98	Stratification
9/10/02	Lower	8.37	4.89	24.34	24.27	24.22	23.74	Entrainment
9/23/02	Upper	7.92	4.54	23.94	23.67	23.46	22.34	Entrainment
10/29/02	Lower	4.97	4.95	15.32	15.32	15.33	15.33	Entrainment

Date	Location	DO (mg/l)		Temperature (°C)				Cause
		15 ft	20 ft	5 ft	10 ft	15 ft	20 ft	
11/12/02	Lower	4.59	6.56	12.43	12.38	12.21	11.67	Entrainment
8/5/03	Middle	7.46	4.97	26.42	23.51	20.12	19.06	Stratification
8/19/03	Middle	5.84	4.53	26.98	22.6	20.65	19.68	Stratification
8/19/03	Upper	6	4.05	25.7	22.14	20.53	19.45	Stratification
9/9/03	Lower	2.76	0.66	23.85	23.75	20.34	19.71	Stratification
9/9/03	Middle	4.76	3.24	23.82	23.38	20.98	19.67	Stratification
9/23/03	Lower	4.23	2.07	20.55	20.46	19.85	18.9	Entrainment
7/13/04	Middle	4.48	4.61	26.55	24.77	22.08	21.05	Stratification

Table B2: Observed Low Dissolved Oxygen in the Surface Layer, Prettyboy Reservoir

Date	Location	DO (mg/l)		Temperature (° C)				Cause
		15 ft	20 ft	5 ft	10 ft	15 ft	20 ft	
9/14/92	Lower	9.74	3.75	23.04	22.95	22.9	22.57	Entrainment
8/12/96	Lower	5.08	2.7	25.52	25.53	23.97	22.53	Stratification
9/21/99	Lower	5.48	4.27	21.95	21.96	21.78	21.44	Entrainment
10/19/99	Lower	4.96	4.98	17.05	17.05	17.05	17.05	Entrainment
7/22/02	Middle	6.59	2.63	27.35	27.24	25.93	24.34	Stratification
8/26/02	Lower	6.55	4.11	27.66	27.64	27.08	26.21	Entrainment
8/26/02	Middle	6.12	2.24	27.04	27.04	26.93	26.13	Entrainment
9/17/02	Lower	4.34	1.68	23.78	23.57	23.18	22.98	Entrainment
9/17/02	Middle	5.86	3.92	23.34	23.26	23.04	22.8	Entrainment
10/21/02	Lower	4.09	2.81	16.68	16.68	16.68	16.59	Entrainment
6/17/03	Lower	7.4	4.15	17.3	15.85	14.32	12.88	Stratification
6/17/03	Middle	6.14	4.54	21.12	17.59	13.98	11.48	Stratification
7/29/03	Middle	10.46	4.03	26.87	26.65	23.56	20.14	Stratification
8/12/03	Lower	3.42	5.95	26.45	26.37	23.82	21.52	Stratification
8/12/03	Middle	5.58	2.14	26.72	26.53	23.96	21.57	Stratification
6/21/04	Middle	6	4.03	24.27	22.89	20.34	16.63	Stratification

Table B3: Maximum Chla concentration (µg/l) in surface layer by month, Loch Raven Reservoir

Location	Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Lower	1992	8.1	6.4	4.4	4.8	10.6	7.7	15.7	17.8	7.3	5.1	4.8	5.9
Lower	1993	5.7	6.4	8.0	8.5	21.2	14.4	12.9	11.2	11.3	5.6	2.8	13.5
Lower	1994	5.9	11.2	11.4	20.6	18.4	20.3	8.5	9.8	3.8	3.0	2.3	1.4
Lower	1995	2.6	4.6		4.4	7.3	5.8	11.4	7.4	3.0	3.7	3.9	7.1
Lower	1996	6.0	12.1	35.3	9.8	7.4	4.6	18.1	22.7	11.7	6.6	4.9	2.2
Lower	1997	1.9	12.0	4.8	3.0	4.8	6.8	5.6	8.4	3.6	8.9	4.7	5.3
Lower	1998	4.4	3.5	14.3	1.2	11.1	10.2	10.8	5.8	8.2	42.8	3.5	4.7
Lower	1999	6.5	5.8	8.9	14.8	8.9	8.9	4.9	6.4	10.5	5.6	4.4	4.6
Lower	2000		6.5	6.9	7.1	7.2	5.6	15.5	10.9	6.7	7.9	6.9	4.7
Lower	2001	5.9	6.7	8.0	8.7	4.7	11.6	4.5	9.4	7.2	4.2	6.2	6.8
Lower	2002	5.8	4.0	4.5	1.7	7.9	3.8	2.8	2.4	6.5	8.1	2.4	4.9

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Location	Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Lower	2003	9.8	7.2	8.1	10.0	9.4	26.0	9.4	19.2	9.6	7.2	9.0	2.1
Lower	2004	2.6	5.3	20.3	12.5								
Middle	1992	9.9	7.0	4.6	5.7	2.6	10.1	18.3	14.1	8.8	4.8	5.9	7.5
Middle	1993	6.9	7.0	5.7	8.3	15.6	14.0	30.0	13.5	6.9	7.8	5.1	6.9
Middle	1994	2.8	14.1	5.1	15.2	19.6	10.1	18.7	20.4	3.8	2.6	2.1	1.0
Middle	1995	2.6	4.2		4.0	13.0	8.2	13.3	8.2	3.5	5.6	5.6	7.4
Middle	1996		8.9	21.2	10.4	2.4	10.9	8.3	9.6	9.8	6.4	3.7	2.5
Middle	1997	1.6	16.1	5.6	3.5	4.0	12.0	7.1	8.3	5.7	13.3	6.8	7.0
Middle	1998	3.7	4.2	8.1	3.8	10.1	13.6	10.5	10.1	4.5	17.3	2.6	5.4
Middle	1999	6.5	5.6	27.0	10.7	19.6	9.3	8.5	7.9	6.9	5.6	5.1	3.9
Middle	2000		6.5	6.9	7.9	6.6	4.5	9.3	10.3	7.1	8.6	8.5	5.6
Middle	2001	2.8	4.5	9.2	9.6	4.7	8.2	6.9	11.6	6.0	4.5	7.4	8.1
Middle	2002	7.6	4.2	5.1	3.1	7.4	6.1	5.4	5.3	8.5	4.9	7.4	6.4
Middle	2003	7.0	6.5	7.6	7.4	15.1	11.4	17.2	19.1	10.3	52.6	6.5	2.6
Middle	2004	2.3	5.1	15.5	12.1								
Upper	1992	10.0	4.5	4.8	3.0	4.1	7.7	10.0	12.1	9.3	7.6	6.6	6.4
Upper	1993	4.8	6.1	6.4	6.7	10.3	5.2	10.2	12.9	12.2	6.7	5.8	15.0
Upper	1994	3.7	4.9	2.6	9.4	20.0	9.9	10.7	14.9	8.1	3.5	1.6	4.5
Upper	1995	3.5	3.2		4.5	13.8	9.7	8.5	8.7	4.9	5.3	8.5	8.2
Upper	1996		2.1	27.7	12.1	9.2	3.9	8.5	13.4	12.7	11.6	3.7	2.5
Upper	1997	1.5	8.3	5.3	7.6	5.5	5.2	7.4	5.6	6.1	43.2	9.0	5.1
Upper	1998	4.7	5.3	6.9	4.2	8.1	6.4	14.2	6.4	5.8	9.4	9.4	4.4
Upper	1999	1.4	6.6	6.1	16.4	22.4	9.2	7.4	9.6	9.3	6.9	2.3	3.9
Upper	2000		7.4	6.5	6.7	6.1	6.3	17.0	10.5	10.8	11.2	7.8	4.7
Upper	2001	1.9	3.5	9.1	4.7	4.7	8.8	3.7	13.2	7.6	6.0	10.1	12.5
Upper	2002	6.9	4.7	4.7	4.0	7.9	3.1	14.2	4.5	7.4	5.4	9.4	6.0
Upper	2003	4.2	2.1	2.3	4.0	47.1	19.3	12.3	16.1	10.7	8.1	1.9	1.4
Upper	2004	2.1	1.7	14.0	11.0								
Lower	Average	5.4	7.1	11.2	8.2	9.9	10.5	10.0	11.0	7.4	9.1	4.6	5.3
Middle	Average	4.9	7.2	10.1	7.8	10.1	9.9	12.8	11.5	6.8	11.2	5.5	5.4
Upper	Average	4.1	4.6	8.0	7.3	13.3	7.9	10.3	10.7	8.7	10.4	6.3	6.2

Table B4: Maximum Chla concentration (µg/l) in surface layer by month, Prettyboy Reservoir

Location	Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Lower	1992	4.2	11.3	5.3		7.9	6.1	3.9	10.7	20.1	11.0	6.4	7.9
Lower	1993	3.9	9.4	9.6	19.3	12.9	7.7	6.9	8.2	11.9	10.0	5.4	4.2
Lower	1994	10.9	9.6	4.0	27.6	27.1	4.9	7.4	10.2	5.1	5.1	4.0	3.0
Lower	1995	5.4		10.5	8.1	3.0	4.6	11.7	13.2	12.3	5.8	3.8	6.0
Lower	1996	9.0	25.0	30.8	13.5	2.6	3.1	4.6	14.2	10.3	6.9	4.0	4.2
Lower	1997	11.8	13.9	16.3	15.5	7.1	3.1	4.6	4.9	7.0		9.6	4.4
Lower	1998	5.9	7.4	4.2	3.1	7.5	16.0	6.8	4.3	4.7	4.4	4.3	10.3
Lower	1999	5.3	22.3	4.0	8.0	1.3	2.6	3.7	11.6	17.0	12.0	4.1	3.1
Lower	2000	3.0	6.5	7.6	11.9	2.8	2.6	0.3	5.4	9.7	3.6	4.4	5.5
Lower	2001			7.8	3.7	5.4	2.3	2.1	6.1	10.8	6.0	4.2	4.5
Lower	2002	8.8	9.8	8.1	14.6	2.8	4.5	12.0	16.7	29.1	6.2	6.8	13.8
Lower	2003	12.5		34.3	22.9	6.5	22.8	32.8	11.2	13.6	8.1	2.6	2.4
Lower	2004	7.6	6.0	12.9	14.2								
Middle	1992	10.9	11.6	12.7		6.2	13.0	15.1	13.4	37.4	31.1	17.1	10.8
Middle	1993	8.6	11.4	10.3	8.1	14.2	13.2	7.0	7.5	6.5	9.4	8.2	5.2
Middle	1994	13.5	14.1	6.5	21.5	12.5	9.2	4.6	18.2	7.2	5.4	4.9	5.1
Middle	1995	6.8		9.5	7.1	2.7	5.8	7.7	12.0	9.7	8.7	6.0	9.8
Middle	1996	12.0	3.3	30.1	9.5	3.0	5.2		12.7	6.3	10.1	4.6	6.7
Middle	1997	33.1	10.7	10.9	13.4	8.9	4.9	2.1	4.7	4.0		6.6	10.1
Middle	1998	6.5	14.3	5.4	3.1	9.9	11.2	13.5	3.1	4.4	3.3	8.9	5.4
Middle	1999	5.3	20.6	6.6	8.5	2.1	1.9	5.2	19.3	25.6	21.5	7.9	9.1
Middle	2000	6.1	6.7	5.6	10.9	8.5	6.3	5.0	4.9	9.0	5.8	7.2	8.9
Middle	2001	12.9	7.4	9.3	8.8	5.1	3.0	3.1	6.5	11.6	10.8	13.4	14.6
Middle	2002	10.3	16.4	18.6	11.2	10.7	7.9	12.6	19.7	32.7	48.1	13.4	10.1
Middle	2003	8.7		16.8	8.3	5.8	19.1	23.0	4.7	7.2	6.9	4.9	7.1
Middle	2004	7.4	4.4	12.5	11.8								
Lower	Average	7.4	12.1	11.9	13.5	7.3	6.7	8.0	9.7	12.6	7.2	5.0	5.8
Middle	Average	10.9	11.0	11.9	10.2	7.5	8.4	9.0	10.6	13.5	14.7	8.6	8.6

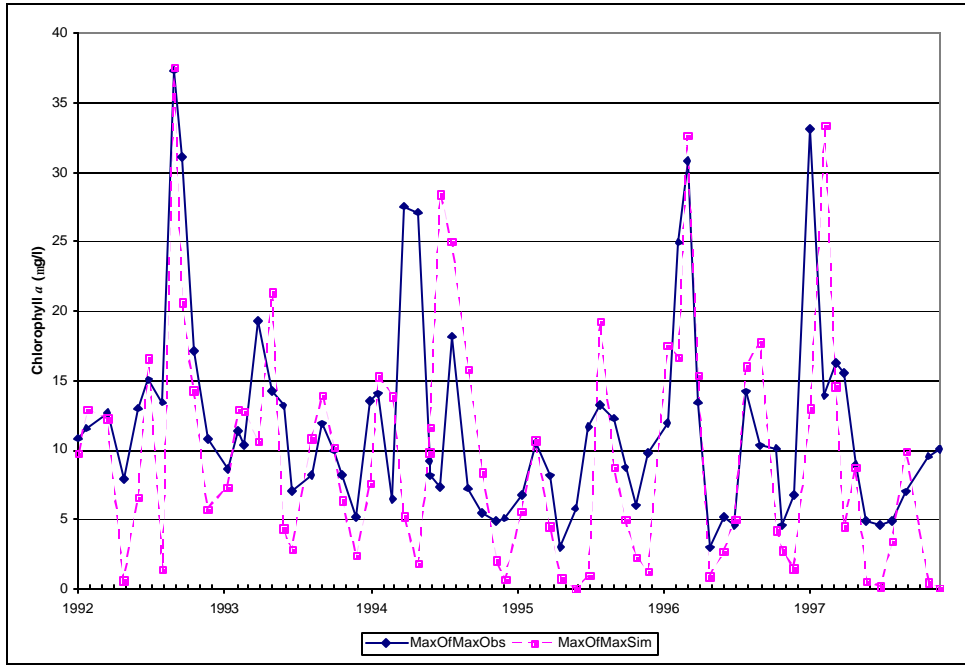


Figure B1: Observed and Simulated Maximum Chlorophyll Concentrations By Date, Calibration Scenario, Prettyboy Reservoir

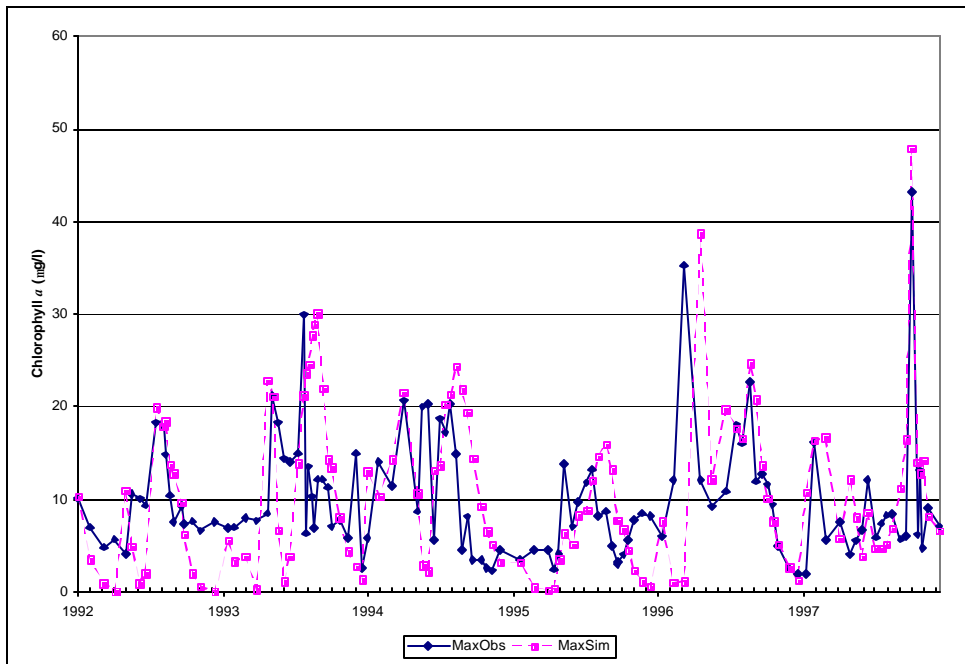


Figure B2: Observed and Simulated Maximum Chlorophyll Concentrations By Date, Calibration Scenario, Loch Raven Reservoir

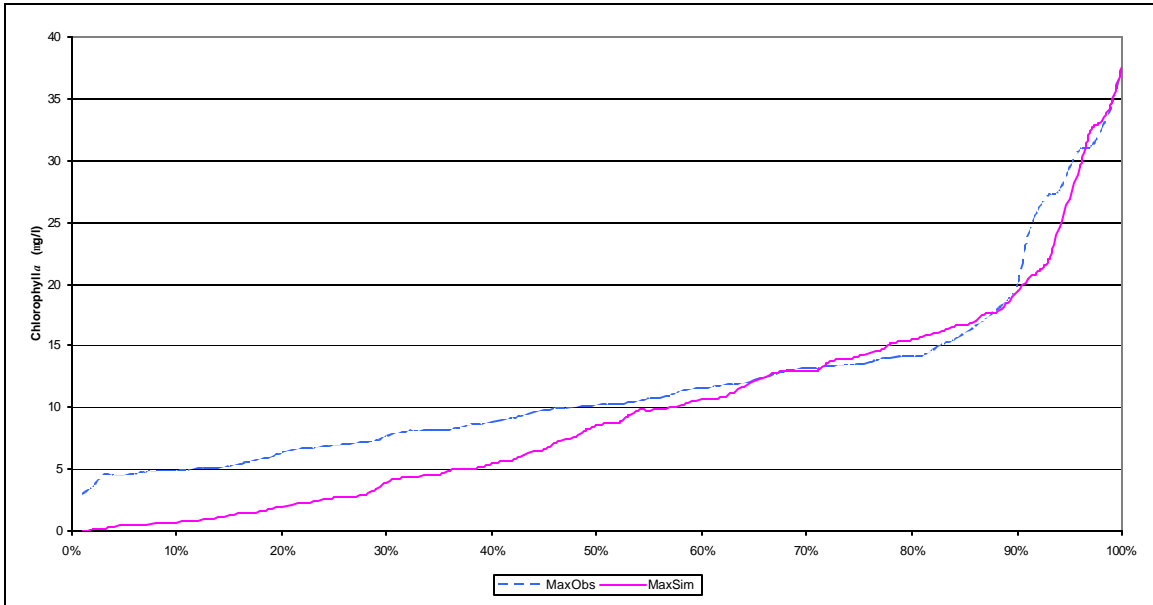


Figure B3: Cumulative Distribution of Observed and Simulated Maximum Chla Concentrations, Calibration Scenario, Prettyboy Reservoir

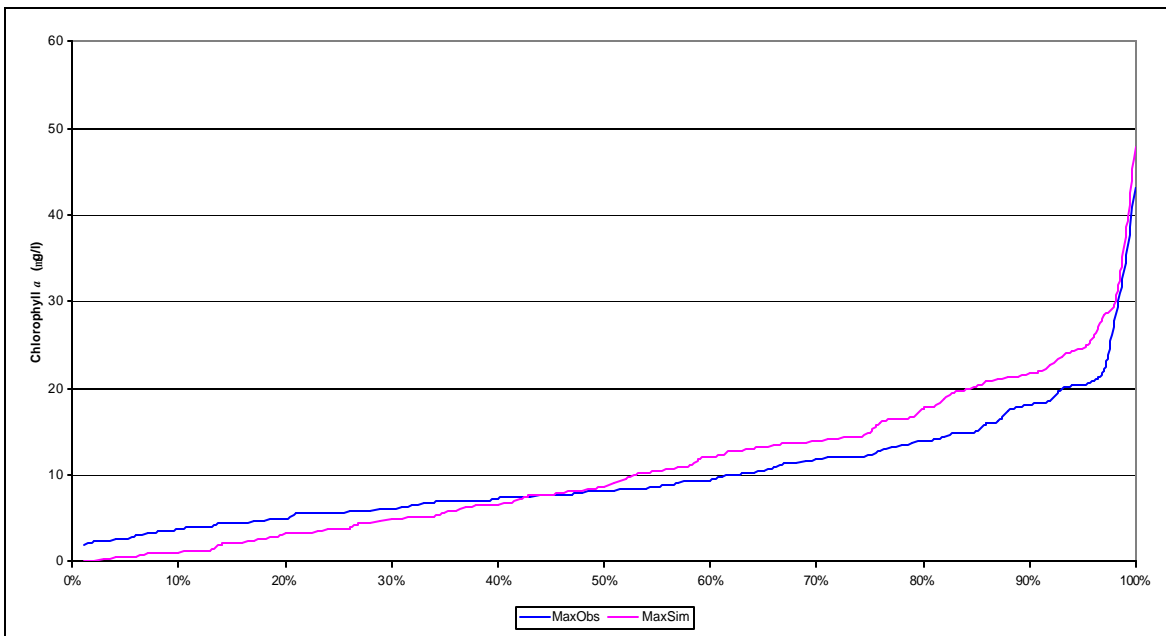


Figure B4: Cumulative Distribution of Observed and Simulated Maximum Chla Concentrations, Calibration Scenario, Loch Raven Reservoir

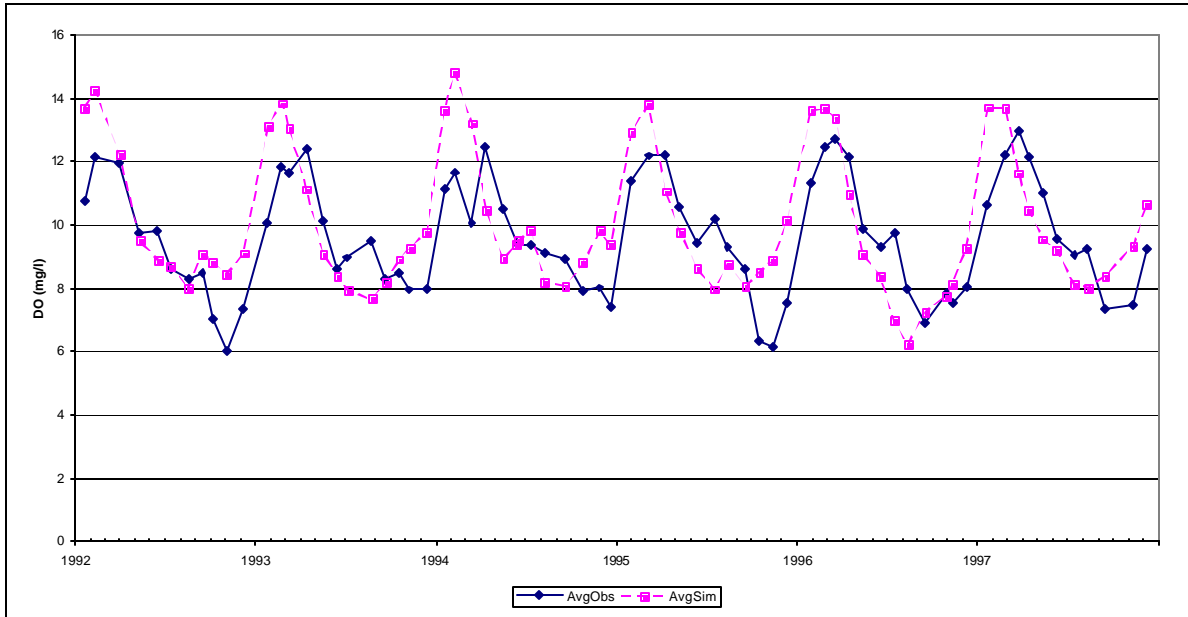


Figure B5: Observed and Simulated Average Surface DO Concentrations, Lower Stations, Calibration Scenario, Prettyboy Reservoir

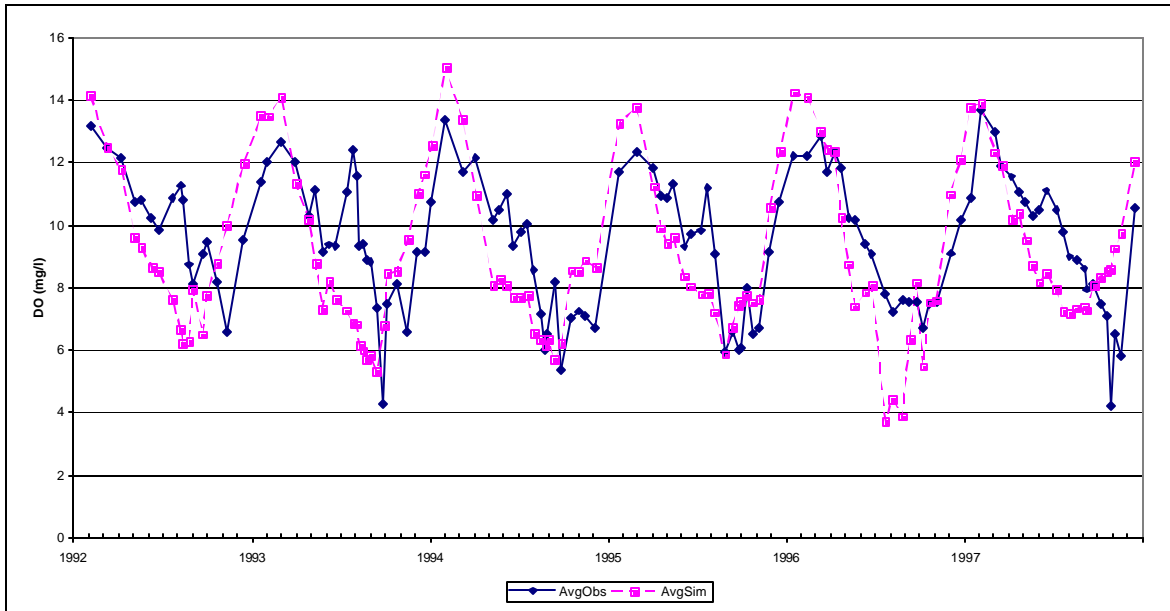


Figure B6: Observed and Simulated Average Surface DO Concentrations, Lower Station, Calibration Scenario, Loch Reservoir

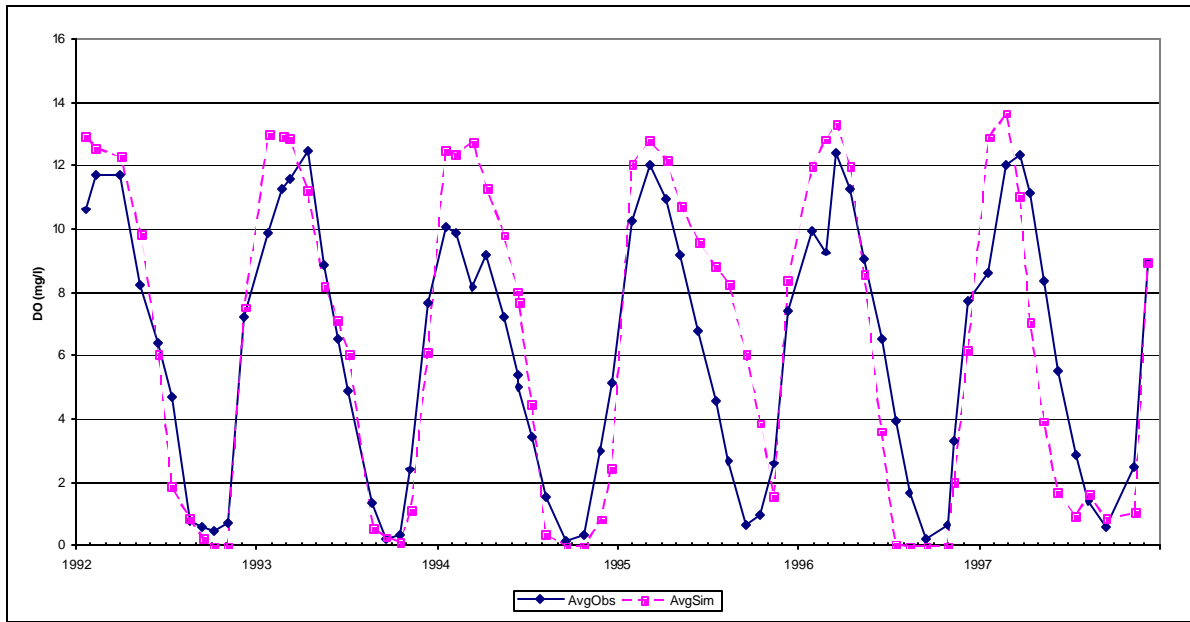


Figure B7: Observed and Simulated Average Bottom DO Concentrations, Lower Stations, Calibration Scenario, Prettyboy Reservoir

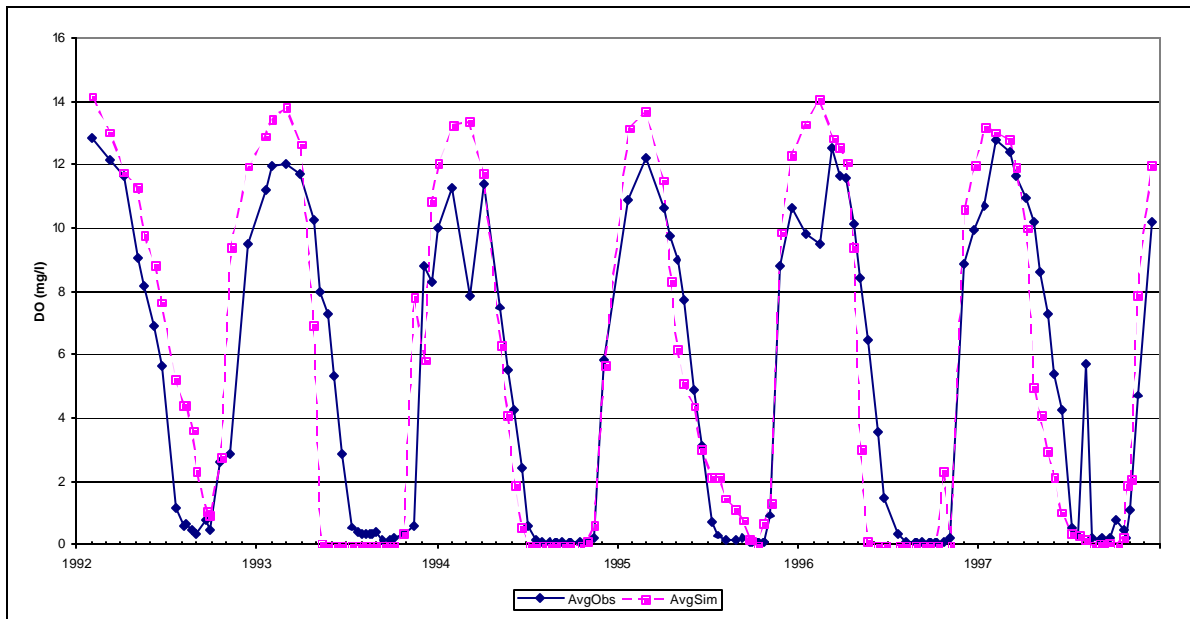


Figure B8: Observed and Simulated Average Bottom DO Concentrations, Lower Station, Calibration Scenario, Loch Raven Reservoir

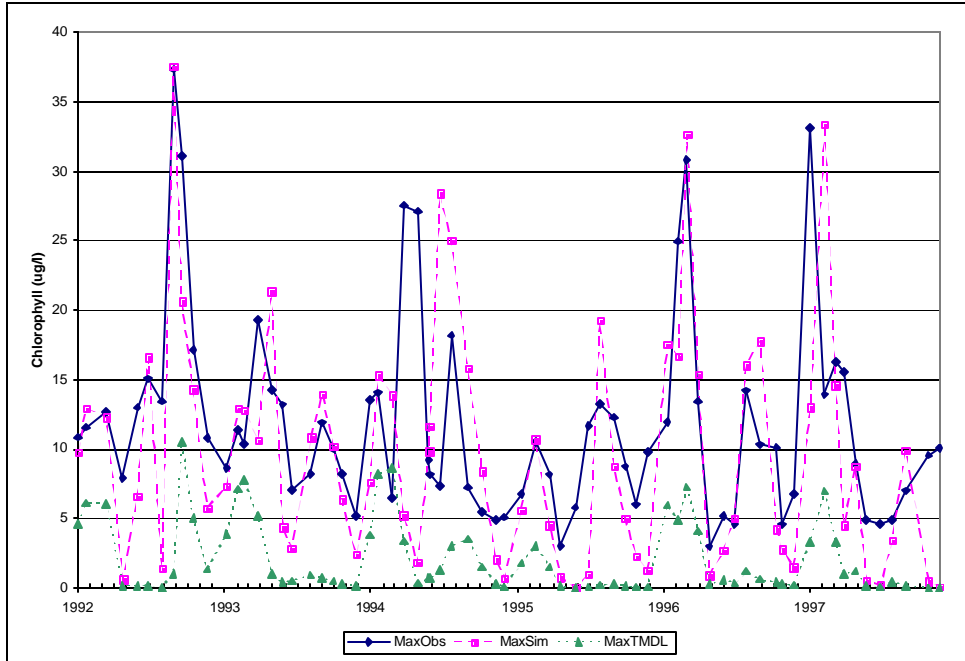


Figure B9: Observed and Simulated Maximum Chlorophyll Concentrations By Date, TMDL Scenario, Prettyboy Reservoir

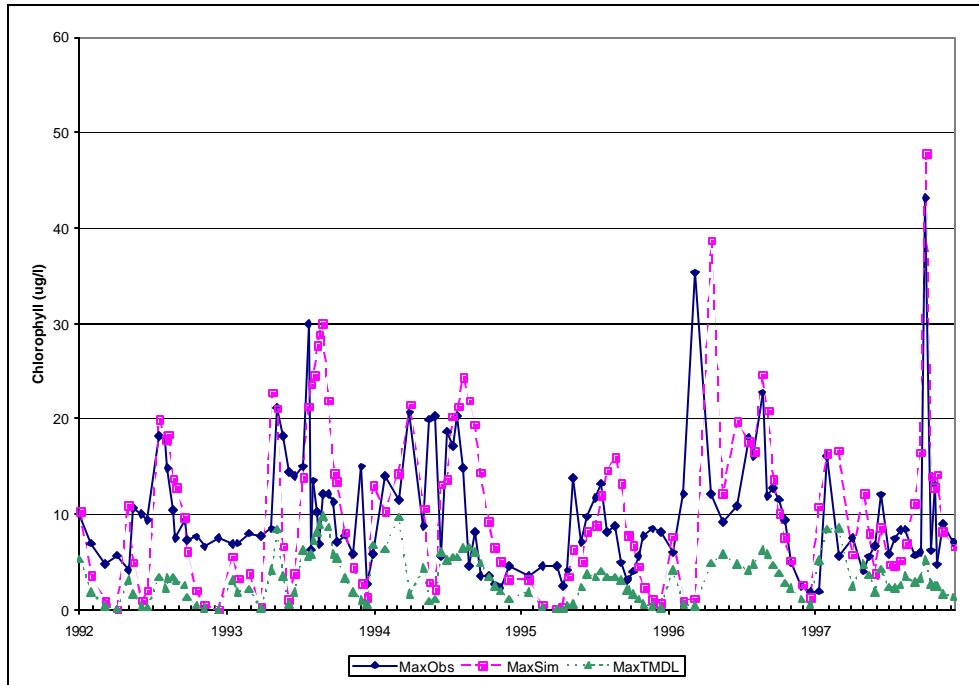


Figure B10: Observed and Simulated Maximum Chlorophyll Concentrations By Date, TMDL Scenario, Loch Raven Reservoir

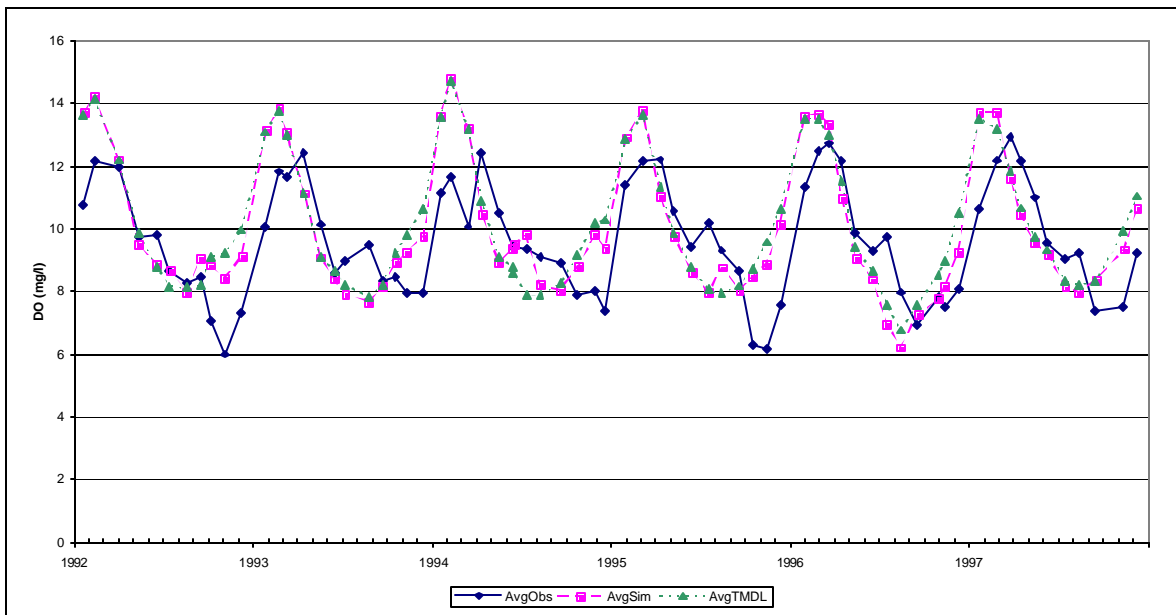


Figure B11: Observed and Simulated Average Surface DO Concentrations, Lower Stations, TMDL Scenario, Prettyboy Reservoir

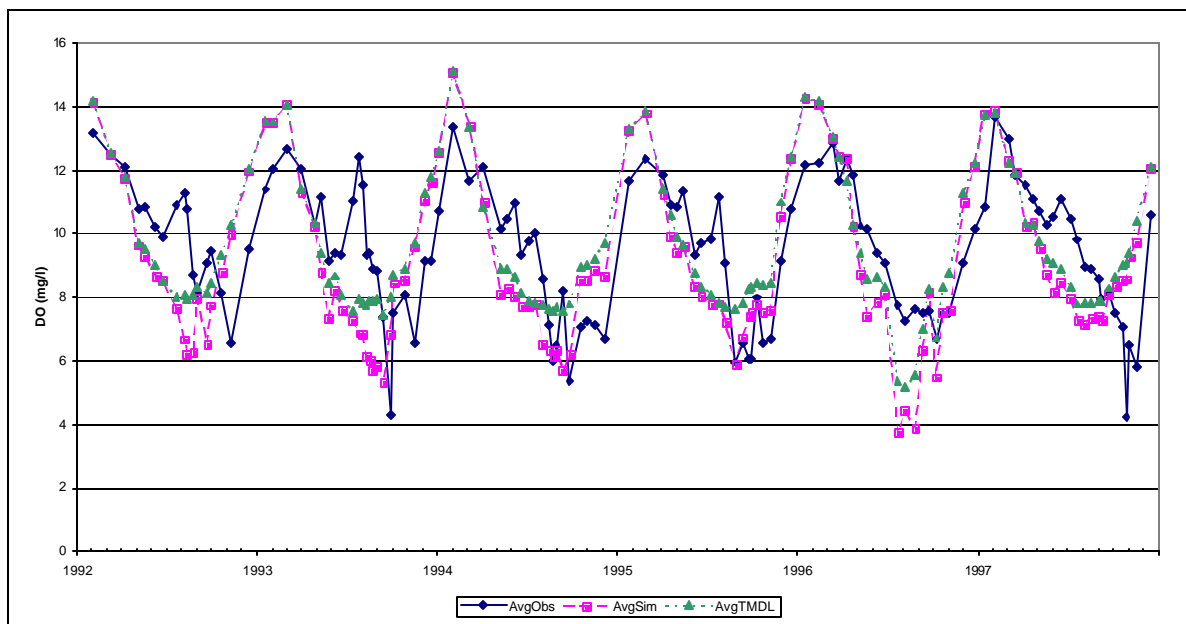


Figure B12: Observed and Simulated Average Surface DO Concentrations, Lower Station, TMDL Scenario, Loch Reservoir

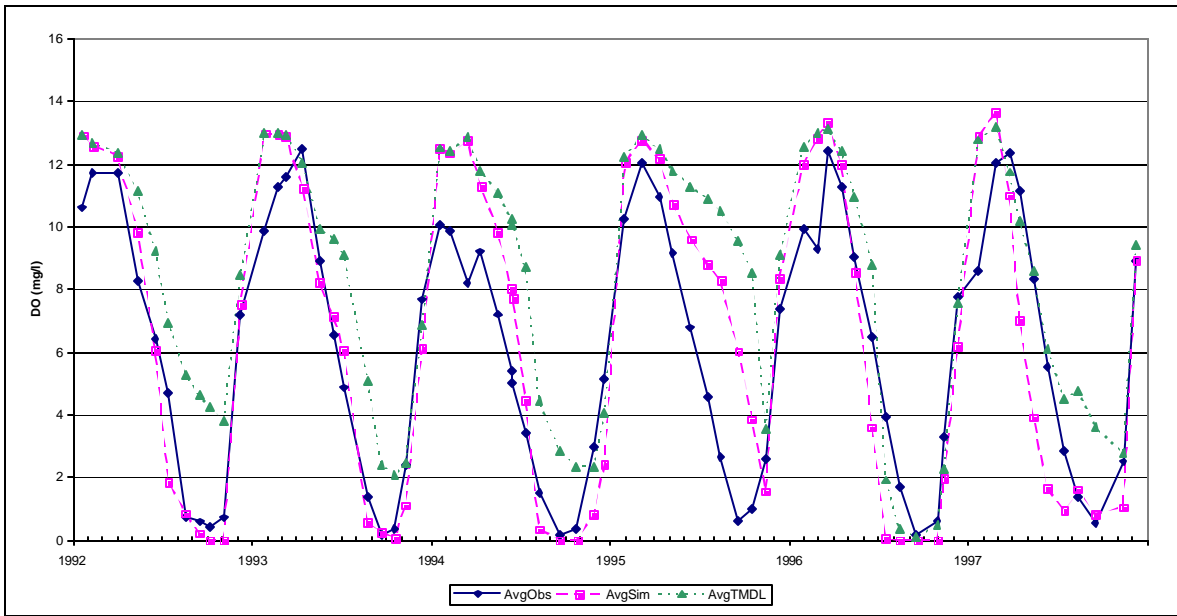


Figure B13: Observed and Simulated Average Bottom DO Concentrations, Lower Stations, TMDL Scenario, Prettyboy Reservoir

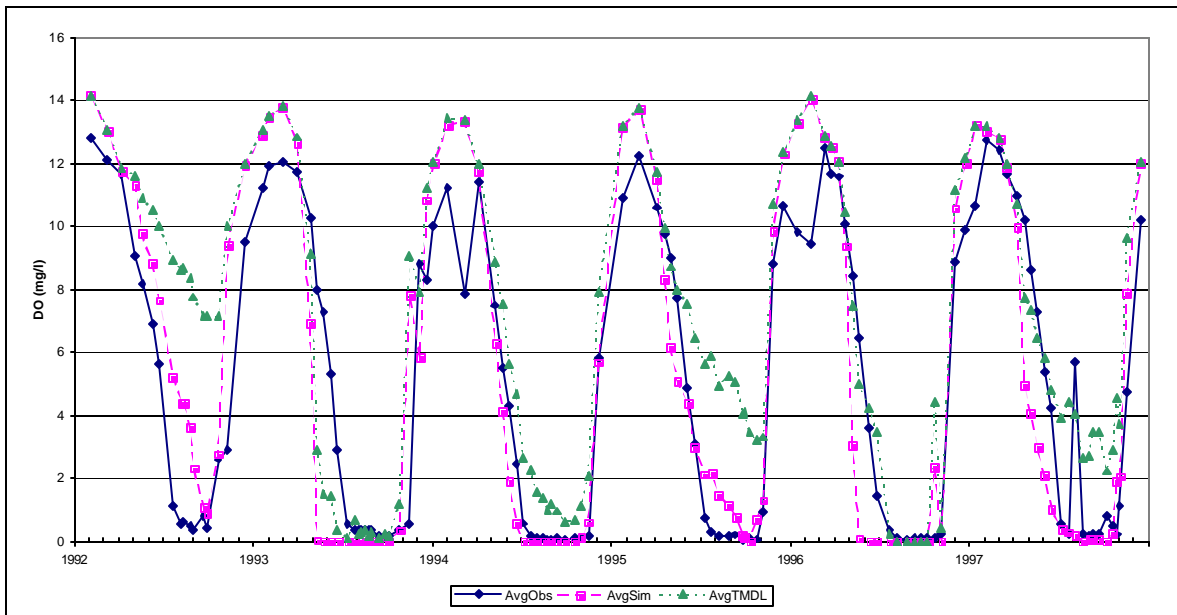


Figure B14: Observed and Simulated Average Bottom DO Concentrations, Lower Station, TMDL Scenario, Loch Raven Reservoir