

10-1966

Biochemical Activity

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Twenty-Fourth Annual Report

PART FOUR

Biochemical Activity in the Androscoggin Pool

1966

Introduction.

The analyses and tests made during the 1966 season were similar to those made during 1965, 1964 and 1963, Data were obtained from water samples taken at North Turner Bridge, Turner Center Bridge, Mile 4.25, Mile 2.5, Gulf Island Dam and Deer Rips Dam. Systematic daily tests were begun on June 17 and concluded September 12. An eleven week period adjusted for approximate time of passage was chosen for comparative study. The data are recorded and summarized in the accompanying tables and figures. Comparisons with recent years are included, however, for the first time in this century, the Androscoggin River water did not contain any sulphite waste liquor.

North Turner Bridge.

This summer during seven weeks, there was insufficient dissolved oxygen to satisfy the five day B.O.D. demand and only a slight excess during three other weeks. There was a much larger B.O.D. entering the Pool than in any season since 1962. The season average surplus of D.O. is due to the excellent conditions of flow during the first two weeks of the study period. The pollution load increase is due to operations at Jay; the Berlin and Rumford loads were similar to those of last year.

NORTH TURNER BRIDGE

Dissolved Oxygen - Biochemical Oxygen Demand

Date	FLOW MT/d	DISSOLVED OXYGEN			B.O.D. 5 day 20°C		
		ppm	T/d	Wk avg T/d	ppm	T/d	Wk avg T/d
June							
7	14.63	4.67	112.21		3.61	52.81	
9	12.69	7.34	93.15		3.66	46.45	
11	23.14	7.69	177.95		4.03	93.25	
14	17.28	8.00	138.24		2.03	35.08	
16	12.64	7.10	89.74	-	3.30	41.71	-
17	13.15	5.95	78.24		3.18	41.82	
18	14.39	7.32	105.35		2.85	41.01	
19*	12.80	6.83	87.42		2.72	34.82	
20	10.80	6.33	68.36	70.98(1)	2.59	27.97	34.49
21	9.48	6.10	60.02		2.66	25.22	
22	8.99	5.35	48.10		3.21	28.86	
23	8.78	5.62	49.34	-	4.75	41.71	-
24	8.53	4.70	40.09		4.77	40.69	
25	8.70	5.12	44.54		4.26	37.06	
26*	10.15	5.71	57.96		3.88	39.38	
27	11.58	6.29	72.84	51.76(2)	3.39	39.26	33.99(2)
28	9.77	6.31	61.65		2.83	27.65	
29	9.77	4.75	46.41		2.60	25.40	
30	8.24	4.71	38.81	-	3.46	28.51	-
July							
1	7.56	3.41	25.78		3.77	28.50	
2	7.10	3.42	24.28		3.56	25.28	
3*	7.34	3.03	22.24		4.94	36.26	
4	5.99	2.63	15.75	24.60(3)	6.31	37.80	32.19(3)
5	6.83	1.80	12.29		4.54	31.01**	
6	7.43	4.81	35.74		2.76	20.51	
7	6.91	5.23	36.14	-	6.65	45.95	-
8	7.59	4.89	37.12		4.34	32.94	
9	7.05	5.03	35.46		5.01	35.32	
10*	6.72	4.73	31.79		4.45	29.90	
11	7.05	4.42	31.16	28.79(4)	3.88	27.35	28.85(4)
12	6.62	3.28	21.71		3.83	25.36	
13	6.70	2.96	19.83		3.48	23.32	
14	6.67	3.67	24.48	-	4.16	27.75	-
15	6.40	3.13	20.03		4.08	26.12	
16	6.59	2.45	16.15		3.60	23.73	
17*	6.05	2.65	16.03		3.98	24.08	
18	5.54	2.85	15.79	19.85(5)	4.36	24.16	24.29(5)
19	5.97	2.62	15.64		3.36	20.06	
20	6.97	3.35	23.35		3.15	21.96	
21	7.26	4.40	31.95	-	4.12	29.91	-
22	6.08	3.39	20.61		3.19	19.40	
23	6.18	2.70	16.69		3.67	22.68	
24	6.59	2.83	18.65	14.73(6)	3.41	22.47	20.96(6)
25	5.51	2.95	16.25		3.15	17.36	
26	5.91	2.59	15.31		3.33	19.68	
27	5.83	2.73	15.92		4.48	26.12	
28	5.81	3.49	20.28	-	3.27	19.00	-

*Sunday calculated: Saturday plus Monday divided by two.

**Average High C.O.D.

NORTH TURNER BRIDGE

Dissolved Oxygen - Biochemical Oxygen Demand

Date	FLOW MT/d	DISSOLVED OXYGEN			B.O.D. 5 day 20°C		Wk avg T/d
		ppm	T/d	Wk avg T/d	ppm	T/d	
July							
29	5.97	3.40	20.30		3.76	22.45	
30	6.37	2.79	17.77		3.22	20.51	
31*	6.18	3.54	21.88		2.97	18.36	
August							
1	6.13	4.28	26.24	21.26(7)	2.73	16.74	17.04(7)
2	5.89	3.55	20.91		1.91	11.25	
3	5.59	3.51	19.62		2.54	14.20	
4	5.64	3.92	22.11-		2.80	15.79	-
5	5.78	3.60	20.81		3.26	18.84	
6	5.40	3.27	17.66		2.80	15.12	
7*	5.16	3.31	17.08		3.11	16.05	
8	5.78	3.35	19.36	18.36(8)	3.42	19.77	18.49(8)
9	5.16	3.15	16.25		3.53	18.22	
10	5.64	2.90	16.36		4.34	24.48	
11	5.70	3.68	20.97	-	2.97	16.93	-
12	5.59	2.40	13.42		4.98	27.84	
13	5.89	3.78	22.26		4.07	23.97	
14*	6.02	3.67	22.09		3.94	23.72	
15	5.72	3.45	19.73	19.42(9)	3.80	21.74	20.25(9)
16	5.70	3.90	22.23		2.65	15.11	
17	5.69	2.60	14.80		2.53	14.40	
18	5.78	3.70	21.38	-	2.59	14.97	-
19	6.56	2.54	16.64		2.59	17.00	
20	6.07	2.68	16.27		2.63	16.96	
21*	5.32	2.35	12.50		2.55	13.57	
22	5.35	2.01	10.75	19.35(10)	2.47	12.22	15.67(10)
23	6.32	3.80	24.02		1.98	12.52	
24	6.80	3.30	22.44		3.08	20.94	
25	7.02	4.68	32.85	-	2.35	16.50	-
26	6.24	3.89	24.28		2.66	16.60	
27	6.13	2.80	17.16		3.26	19.98	
28*	5.43	2.97	16.13		3.09	16.78	
29	5.54	3.14	17.40	17.86(11)	2.92	16.18	16.79(11)
30	5.27	2.62	13.81		2.67	14.07	
31	5.37	3.20	17.18		3.44	18.47	
September							
1	5.40	3.53	19.06	-	2.86	15.44	-
2	5.13	2.94	15.08		3.29	16.88	
3	5.64	1.90	10.72		3.64	20.52	
4*	6.02	2.25	13.54	16.73(12)	3.69	22.21	19.27(12)
5	4.64	2.60	12.06		3.75	17.40	
8	6.05	5.33	32.25		3.20	19.36	

*Sunday calculated: Saturday plus Monday divided by two.

Period Summer	B.O.D. av. T/d	D.O. av. T/d	D.O. Surplus/ av. T/d Deficit-
1966	23.91	27.91	/ 4.00
1965	18.16	11.66	- 6.50
1964	17.49	33.92	/16.43
1963	17.61	30.89	/13.28
1962	33.10	33.60	/ 0.50

Turner Center Bridge. The Benthall deposits in the area between the bridges were very active during the summer and contributed considerable B.O.D. During the eleven week period, in this region, there was an average daily loss of 3,480 lbs. of five day B.O.D. and 23,040 lbs. of dissolved oxygen. This indicates a Benthall load of at least 19,560 lbs. of B.O.D. per day; reaeration during the two day time of passage and D.O. contributed by the Nezinscot River, have not been included.

Period Summer	B.O.D. av. T/d	D.O. av. T/d	D.O. Surplus/ av. T/d Deficit-
1966	22.17	16.39	- 5.78
1965	16.71	8.07	- 8.64
1964	16.99	29.08	/12.09
1963	15.08	25.30	/10.22
1962	27.06	26.40	- 0.66

The losses between these two Pool sampling stations were

Period Summer	B.O.D. Tons/day	D.O. Tons/day
1966	1.74	11.52
1965	1.45	3.59
1964	0.50	2.84
1963	2.53	5.59
1962	5.95	7.20

Mile 4.25 This sampling station is located about three miles south of Turner Center Bridge and at the downstream end of the 'narrows'. Benthall deposits are very active in the area between these two stations, especially in the Mile 4.75 to Mile 6.25. Floating sludge and extensive gas

TURNER CENTER BRIDGE

Dissolved Oxygen - Biochemical Oxygen Demand

Date	FLOW MT/d	DISSOLVED OXYGEN			B.C.D. 5 day 20°C		
		ppm	T/d	Wk avg T/d	ppm	T/d	Wk avg T/d
June							
7	14.63	3.96	57.94		3.19	46.67	
9	12.69	6.22	78.93		2.92	37.06	
11	23.14	5.91	136.76		2.87	66.41	
14	17.28	8.48	146.53		1.99	34.39	
16	12.64	6.81	86.08		3.06	38.68	
17	13.15	5.58	73.38		2.47	32.48	
18	14.39	5.64	81.16	-	2.57	36.98	-
19*	12.80	5.51	70.53		2.44	31.23	
20	10.80	5.38	58.10		2.31	24.95	
21	9.48	5.12	50.38		3.05	28.91	
22	8.99	3.97	35.69	44.88(1)	3.20	28.77	36.05(1)
23	8.78	4.38	38.46		5.06	44.43	
24	8.53	3.63	30.96		5.57	47.51	
25	8.70	3.45	30.02	-	5.35	46.55	-
26*	10.15	3.67	37.25		4.81	48.82	
27	11.58	3.88	44.93		4.26	49.33	
28	9.77	4.64	45.33		3.55	34.68	
29	9.77	3.37	32.93	31.68(2)	2.52	24.62	34.70(2)
30	8.24	3.46	28.51		3.42	28.18	
July							
1	7.56	2.57	19.43		3.72	28.12	
2	7.10	1.88	12.35	-	4.11	29.18	-
3*	7.34	1.13	8.30		5.17	37.95	
4	5.99	0.37	2.22		6.23	37.32	
5	6.83	0.53	3.62		4.33	29.57	
6	7.43	0.00	0.00	8.83(3)	3.65**	27.12	35.33(3)
7	6.91	1.26	8.71		2.97	20.52	
8	7.59	2.51	19.05		6.85	51.99	
9	7.05	2.82	19.88	-	6.08	42.86	-
10*	6.72	2.52	16.93		5.09	34.21	
11	7.05	2.21	15.58		4.09	28.83	
12	6.62	2.15	14.23		3.86	25.55	
13	6.70	1.54	10.32	12.38(4)	3.78	25.33	26.62(4)
14	6.67	1.77	11.81		3.09	20.61	
15	6.40	1.42	9.09		3.67	27.16	
16	6.59	1.32	8.70	-	3.74	24.66	-
17*	6.05	1.90	11.50		3.62	21.90	
18	5.54	2.47	13.68		3.49	19.33	
19	5.97	0.95	5.67		3.47	20.72	
20	6.97	1.38	9.62	12.09(5)	3.56	24.81	20.54(5)
21	7.26	2.86	20.76		2.74	19.89	
22	6.08	2.31	14.05		3.28	19.94	
23	6.18	1.51	9.33	-	2.78	17.18	-
24*	6.59	1.57	10.35		2.73	18.00	
25	5.51	1.63	8.98		2.68	14.77	
26	5.91	1.71	10.11		2.98	17.61	
27	5.83	1.85	10.79	10.12(6)	2.23	13.00	17.25(6)
28	5.81	2.14	12.43		2.59	15.05	
29	5.97	1.72	10.27		3.79	22.63	
30	6.37	1.24	7.90	-	3.09	19.68	-

*Sunday calculated: Saturday plus Monday divided by two.
 **Average High C.O.D.

TURNER CENTER BRIDGE

Dissolved Oxygen - Biochemical Oxygen Demand

Date	Flow MT/d	DISSOLVED OXYGEN			B.O.D. 5 day 20°C		
		ppm	T/d	Wk avg T/d	ppm	T/d	Wk avg T/d
July 31*	6.18	1.78	11.00		2.73	16.87	
August 1	6.13	2.32	14.22		2.37	14.53	
2	5.89	3.55	20.91		2.81	16.55	
3	5.59	3.51	19.62	15.02(7)	2.46	13.75	13.54(7)
4	5.64	2.87	16.19		1.89	10.66	
5	5.78	2.62	15.14		1.94	11.21	
6	5.40	1.49	8.05-		2.08	11.23	-
7*	5.16	1.63	8.41		2.64	13.62	
8	5.78	1.77	10.23		3.19	18.44	
9	5.16	1.03	5.32		3.12	16.10	
10	5.64	1.35	7.61	9.32(8)	4.06	22.90	17.91(8)
11	5.70	2.28	13.00		1.86	10.60	
12	5.59	1.62	9.06		4.49	25.10	
13	5.89	1.97	11.60	-	3.16	18.61	-
14*	6.02	2.00	12.04		3.06	18.42	
15	5.72	2.04	11.67		2.96	16.93	
16	5.70	2.11	12.03		3.21	18.30	
17	5.69	1.43	8.14	10.45(9)	2.56	14.57	15.13(9)
18	5.78	2.50	14.45		1.70	10.83	
19	6.56	1.30	8.53		2.25	14.75	
20	6.07	1.04	6.31	-	1.99	12.11	-
21*	5.32	1.18	6.28		2.16	11.49	
22	5.35	1.31	7.01		2.33	12.47	
23	6.32	0.90	5.69		2.23	14.09	
24	6.80	2.03	13.80	13.40(10)	2.48	16.87	14.11(10)
25	7.02	3.64	25.55		1.99	13.97	
26	6.24	3.21	20.03		2.64	16.47	
27	6.13	2.52	15.45	-	2.19	13.43	-
28*	5.43	2.38	12.92		2.39	12.98	
29	5.54	2.24	12.41		2.59	14.35	
30	5.27	2.14	11.28		1.89	9.86	
31	5.37	2.58	13.86	12.11(11)	2.04	10.96	12.69(11)
September 1	5.40	3.08	16.63		1.79	9.67	
2	5.13	1.96	10.05		2.87	14.72	
3	5.64	1.35	7.61	-	2.89	16.30	-
4*	6.02	1.26	7.59		2.82	16.98	
5	4.64	1.18	5.48		2.74	12.71	
8	6.05	4.36	26.38	12.33(12)	2.73	16.52	19.10(12)
10	5.78	1.71	9.88		5.22	30.17	

*Sunday calculated: Saturday plus Monday divided by two.

production are nearly always observed during the summer. During the eleven week study period, the average net daily loss of B.O.D. between these two stations was insignificant; 700 lbs per day but the average daily net loss of D.O. was 21,640 lbs. The tabulated comparisons with the previous three years are quite significant; the absence of sulphite waste liquor possibly may have contributed to the increased Benthall activity in this area.

Period Summer	B.O.D. Tons/day	D.O. Tons/day	D.O. Surplus/ T/d Deficit -
1966	21.82	5.57	-16.25
1965	12.29	6.86	- 5.43
1964	14.12	16.47	/ 2.35
1963	13.25	15.24	/ 2.01

Mile 2.5

The sector between Mile 4.25 and Mile 2.5 contains the largest amount of Benthall in the entire Pool, but it is slowly becoming less active than in the Pool areas upstream, there was, however, considerable floating sludge and gas production. The average daily net loss of B.O.D. and D.O. between these two stations was 7,700 lbs and 4,940 lbs. respectively. In this area the B.O.D. loss exceeds that of the D.O.

Period Summer	B.O.D. Tons/day	D.O. Tons/day	D.O. T/d Deficit-
1966	17.97	3.89	-14.08
1965	9.54	7.56	- 1.98
1964	11.22	11.01	- 0.21
1963	13.51	12.50	- 1.01

Gulf Island Dam

For reasons stated in the 1965 report B.O.D. determinations were made only twice a week. Both D.O. and B.O.D. results are not considered

MILE 4.25

Dissolved Oxygen - Biochemical Oxygen Demand

Date	FLOW MT/d	DISSOLVED OXYGEN			B.O.D. 5 day 20°C		
		ppm	T/d	Wk avg T/d	ppm	T/d	Wk avg T/d
June							
11	23.14	4.82	111.54		3.45	79.83	
17	13.15	5.99	78.77		2.88	37.87	
18	14.39	5.01	72.09		2.56	36.81	
19*	12.80	4.81	61.57		2.67	34.18	
20	10.80	4.61	49.79		2.77	29.92	
21	9.48	4.53	42.95		3.30	31.28	-
22	8.99	2.47	22.21		4.21	37.85	
23	8.78	1.97	17.30		4.55	39.95	
24	8.53	1.47	12.54	25.34(1)	4.88	41.63	43.12(1)
25	8.70	1.94	16.88		5.58	48.55	
26*	10.15	2.64	26.80		5.02	50.95	
27	11.58	3.34	38.68		4.46	51.65	
28	9.77	2.55	24.91	-	3.32	32.44	-
29	9.77	2.20	21.49		3.78	36.93	
30	8.24	1.48	12.20		4.94	40.71	
July							
1	7.56	0.75	5.67	9.91(2)	6.09	46.04	38.88(2)
2	7.10	0.52	3.69		5.71	40.54	
3*	7.34	0.26	1.91		5.68	41.69	
4	5.99	0.00	0.00		5.64	33.78	
5	6.83	0.09	0.62	-	4.68	31.96	-
6	7.43	0.00	0.00		5.20	38.64	
7	6.91	0.36	2.49		4.98	34.41	
8	7.59	0.71	5.39	2.11(3)	4.75	36.05	35.68(3)
9	7.05	0.38	2.68		5.78	40.75	
10*	6.72	0.30	2.02		5.22	35.08	
11	7.05	0.22	1.55		4.66	32.85	
12	6.62	1.72	11.39	-	2.76	18.27	-
13	6.70	0.58	3.89		3.68	24.66	
14	6.67	0.29	1.93		3.86	25.75	
15	6.40	0.00	0.00	2.96(4)	4.04	25.86	22.96(4)
16	6.59	0.00	0.00		4.46	29.39	
17*	6.05	0.21	1.27		3.59	21.72	
18	5.54	0.41	2.27		2.72	15.07	
19	5.97	0.00	0.00	-	3.80	22.69	-
20	6.97	0.00	0.00		3.63	25.30	
21	7.26	0.21	1.53		2.90	21.06	
22	6.08	0.42	2.55	0.99(5)	2.18	13.26	18.03(5)
23	6.18	0.16	0.99		2.99	18.48	
24*	6.59	0.16	1.05		2.38	15.69	
25	5.51	0.15	0.83		1.77	9.75	
26	5.91	0.15	0.89	-	1.59	9.40	-
27	5.83	0.00	0.00		2.24	13.06	
28	5.81	0.03	0.18		2.86	16.62	
29	5.97	0.06	0.36	0.78(6)	3.47	20.72	15.31(6)

*Sunday calculated: Saturday plus Monday divided by two.

MILE 4.25

Dissolved Oxygen - Biochemical Oxygen Demand

Date	FLOW MT/d	DISSOLVED ppm	OXYGEN T/d	Wk avg T/d	B.O.D. 5 day ppm	20°C T/d	Wk avg T/d
July							
30	6.37	0.00	0.00		3.48	22.17	
31*	6.18	0.18	1.11		2.52	15.57	
August							
1	6.13	0.35	2.15	-	1.57	9.63	-
2	5.89	0.04	0.24		2.15	12.66	
3	5.59	1.03	5.76		1.28	7.16	
4	5.64	1.07	6.04		1.43	8.07	
5	5.78	1.11	6.42	3.30(7)	1.59	9.13	11.32(7)
6	5.40	0.07	0.38		1.59	8.59	
7*	5.16	0.22	1.14		2.56	13.21	
8	5.78	0.36	2.08	-	3.53	20.40	-
9	5.16	0.07	0.36		2.52	13.00	
10	5.64	0.18	1.02		3.22	18.16	
11	5.70	0.18	1.03		3.25	18.53	
12	5.59	0.18	1.01	1.64(8)	3.28	18.34	15.64(8)
13	5.89	0.15	0.88		2.57	15.14	
14*	6.02	0.35	2.11		2.35	14.15	
15	5.72	0.54	5.09	-	2.13	12.18	-
16	5.70	0.64	3.65		2.03	11.57	
17	5.69	0.17	0.97		1.85	10.53	
18	5.78	0.54	3.12		1.90	11.27	
19	6.56	0.90	5.90	2.50(9)	1.95	12.79	11.47(9)
20	6.07	0.00	0.00		1.80	10.93	
21*	5.32	0.24	1.28		2.05	10.91	
22	5.35	0.48	2.57	-	2.30	12.31	-
23	6.32	0.07	0.44		2.19	13.84	
24	6.80	0.62	4.22		2.49	16.93	
25	7.02	1.17	8.21		2.46	17.27	
26	6.24	1.73	10.80	7.25(10)	2.43	15.16	14.52(10)
27	6.13	0.88	5.39		2.39	14.65	
28*	5.43	1.61	8.74		2.24	12.16	
29	5.54	2.34	12.96	-	2.10	11.63	-
30	5.27	0.94	4.96		1.52	8.01	
31	5.37	1.34	7.20		2.74	14.71	
September							
1	5.40	0.77	4.16		2.82	15.23	
2	5.13	0.20	1.03	4.52(11)	2.92	14.98	13.09(11)
3	5.64	1.13	6.37		2.72	15.34	
4*	6.02	0.86	5.18		2.35	14.15	
5	4.64	0.59	2.74	-	1.98	9.19	-

*Sunday calculated: Saturday plus Monday divided by two.

MILE 2.5

Dissolved Oxygen - Biochemical Oxygen Demand

Date	FLOW MT/d	DISSOLVED OXYGEN			B.O.D. 5 day 20°C		
		ppm	T/d	Wk avg T/d	ppm	T/d	Wk avg T/d
June							
11	23.14	4.08	94.41	-	3.32	74.51	-
17	13.15	5.79	76.14		2.21	29.06	
18	14.39	4.81	69.22		2.42	34.80	
19*	12.80	4.95	63.36		2.26	28.93	
20	10.80	5.10	55.08		2.10	22.68	
21	9.48	3.08	29.20	49.02(0)	2.80	26.54	30.76(0)
22	8.99	3.41	30.66		3.99	35.87	
23	8.78	2.22	19.49	-	4.26	37.40	-
24	8.53	1.02	8.70		4.53	38.64	
25	8.70	1.15	10.00		4.83	42.02	
26*	10.15	0.71	7.21		4.82	48.92	
27	11.58	0.27	3.13	7.12(1)	4.81	55.70	40.83(1)
28	9.77	0.23	2.25		3.64	35.56	
29	9.77	0.96	9.38		3.52	34.39	
30	8.24	1.11	9.15	-	3.71	30.57	-
July 1	7.56	1.25	9.45		3.90	29.48	
2	7.10	0.18	1.28		4.34	30.82	
3*	7.34	0.80	5.87		4.28	31.42	
4	5.99	1.42	8.51	3.59(2)	4.22	25.28	32.57(2)
5	6.83	0.00	0.00		5.77	39.41	
6	7.43	0.00	0.00		4.38	32.54	
7	6.91	0.00	0.00	-	5.65	39.04	-
8	7.59	0.00	0.00		6.92	52.52	
9	7.05	1.99	14.03		4.58	32.29	
10*	6.72	1.48	9.95		4.19	28.16	
11	7.05	0.96	6.77	4.39(3)	3.79	26.72	30.06(3)
12	6.62	0.00	0.00		3.49	23.10	
13	6.70	0.00	0.00		3.65	24.46	
14	6.67	0.00	0.00	-	3.47	23.15	-
15	6.40	0.00	0.00		3.29	21.06	
16	6.59	0.00	0.00		4.38	28.86	
17	6.05	0.00	0.00		2.60	15.73	
18	5.54	0.00	0.00	0.21(4)	2.89	16.01	17.71(4)
19	5.97	0.00	0.00		2.31	13.79	
20	6.97	0.12	0.84		1.79	13.73	
21	7.26	0.09	0.65	-	2.05	14.88	-
22	6.08	0.07	0.43		2.31	14.05	
23	6.18	0.00	0.00		2.04	12.61	
24*	6.59	0.00	0.00		2.00	13.18	
25	5.51	0.00	0.00	2.99(5)	1.96	10.80	13.27(5)
26	5.91	0.33	1.95		1.48	8.75	
27	5.83	2.12	12.36		2.51	14.63	
28	5.81	1.06	6.16	-	3.25	18.88	-

*Sunday calculated: Saturday plus Monday divided by two.

MILE 2.50

Dissolved Oxygen - Biochemical Oxygen Demand

Date	FLOW MT/d	DISSOLVED ppm	OXYGEN T/d	Wk avg T/d	B.O.D. 5 day ppm	20°C T/d	Wk avg T/d
July							
29	5.97	0.00	0.00		3.98	23.76	
30	6.37	1.85	11.79		2.88	18.35	
31*	6.18	0.97	6.00		2.00	12.36	
August							
1	6.13	0.08	0.49	2.66(6)	1.11	6.81	9.52(6)
2	5.89	0.00	0.00		2.50	14.73	
3	5.59	0.03	0.17		1.79	10.01	
4	5.64	0.24	0.14	-	1.62	9.14	-
5	5.78	0.44	2.54		1.44	8.32	
6	5.40	0.00	0.00		1.85	9.99	
7*	5.16	0.06	0.31		1.92	9.91	
8	5.78	0.12	0.69	1.30(7)	1.99	11.50	12.54(7)
9	5.16	0.10	0.52		2.28	11.77	
10	5.64	0.12	0.68		3.22	18.16	
11	5.70	0.65	3.71	-	3.18	18.13	-
12	5.59	1.18	6.60		3.15	17.61	
13	5.89	2.79	16.43		2.37	13.96	
14*	6.02	2.16	13.00		2.42	14.57	
15	5.72	1.52	8.69	6.81(8)	2.48	14.19	12.39(8)
16	5.70	0.52	2.96		1.46	8.32	
17	5.69	0.00	0.00		1.66	9.45	
18	5.78	0.00	0.00	-	1.52	8.67	-
19	6.56	0.00	0.00		1.37	8.99	
20	6.07	0.00	0.00		1.99	12.08	
21*	5.32	0.03	0.16		1.90	10.11	
22	5.35	0.07	0.35	0.47(9)	1.81	9.68	9.69(9)
23	6.32	0.07	0.44		1.09	6.89	
24	6.80	0.00	0.00		1.32	8.98	
25	7.02	0.33	2.33	-	1.58	11.09	-
26	6.24	0.66	4.12		1.83	11.42	
27	6.13	0.00	0.00		1.65	10.12	
28*	5.43	0.72	3.91		1.43	7.77	
29	5.54	1.41	7.81	6.18(10)	1.20	6.65	8.59(10)
30	5.27	3.33	17.55		1.27	6.69	
31	5.37	1.08	5.80		1.43	7.68	
September							
1	5.40	0.76	4.10	-	1.81	9.77	-
2	5.13	0.43	2.21		2.20	11.29	
3	5.64	1.12	6.32		2.34	13.19	
4*	6.02	0.56	3.37		1.91	11.50	
5	4.64	0.00	0.00	7.02(11)	1.48	6.87	10.50(11)
6	6.78	2.40	16.27		1.46	9.90	
7	6.62	1.20	7.94		1.90	12.58	
8	6.05	2.15	13.01	-	1.35	8.17	-

*Sunday calculated: Saturday plus Monday divided by two.

95

representative of the water passing this station. The results are tabulated elsewhere in this report.

Deer Rips Dam

During the eleven week period, the average daily five day B.O.D. load was 14.06 tons and for the D.O. 4.17 tons. Thus the river water entering Lewiston had an average daily oxygen deficit of 9.89 tons; the largest deficit for several years. A significant oxygen surplus was present 1963 through 1965. The additional pollution load reaching the Pool is placing a severe demand on the oxygen resources present in this body of water.

Period Summer	B.O.D. Tons/day	D.O. Tons/day	D.O. Surplus/ T/d. Deficit-
1966	14.06	4.17	- 9.89
1965	6.37	9.03	/ 2.66
1964	7.97	16.85	/ 8.88
1963	9.70	11.70	/ 2.00

The season's daily averages for the Pool indicate a minimum Benthic contribution of 13.89 tons of B.O.D. The weekly average losses are tabulated in Table S #2. These figures do not include an allowance for the reaeration which occurs during the passage of the water through the Pool.

Pool Averages 1966

Location	B.O.D. av. T/d	D.O. av. T/d	D.O. Surplus/ av. T/d Deficit-
North Turner Bridge	23.91	27.91	/ 4.00
Turner Center Bridge	22.17	16.39	- 5.78
Mile 4.25	21.82	5.57	-16.25
Mile 2.50	17.97	3.89	-14.08
Deer Rips Dam	14.06	4.17	- 9.89
Average loss through the Pond, T/d	9.85	23.74	

DEER RIPS DAM

Dissolved Oxygen - Biochemical Oxygen Demand

Date	FLOW MT/d	DISSOLVED OXYGEN			B.O.D. 5 day 20°C		
		ppm	T/d	Wk avg T/d	ppm	T/d	Wk avg T/d
June							
7	14.63	1.37	20.04		2.60	38.04	
9	12.69	3.65	46.32		2.82	35.79	
11	23.14	3.18	73.59		2.64	61.09	
14	17.28	6.50	112.32		1.81	31.28	
16	12.64	6.38	80.64		1.86	23.51	
17	13.15	4.72	62.07		1.77	23.28	
18	14.39	5.60	80.58		1.77	25.47	
19*	12.80	4.59	58.75	-	1.84	23.55	-
20	10.80	3.58	38.66		1.90	20.52	
21	9.48	3.28	31.09		2.23	21.14	
22	8.99	3.25	29.22		2.00	18.96	
23	8.78	3.31	29.06	25.03(0)	2.19	19.23	23.66(0)
24	8.53	2.26	19.28		3.45	29.43	
25	8.70	1.72	14.96		3.08	26.80	
26*	10.15	1.27	12.89	-	2.91	29.54	-
27	11.58	0.82	9.50		2.73	31.61	
28	9.77	0.26	2.54		3.41	33.32	
29	9.77	0.32	3.13		3.87	37.81	
30	8.24	0.98	8.08	5.00(1)	2.22	18.30	24.63(1)
July							
1	7.56	0.82	6.20		2.16	16.33	
2	7.10	0.23	1.63		2.48	17.61	
3*	7.34	0.53	3.89	-	2.37	17.40	-
4	5.99	0.82	4.91		2.26	13.54	
5	6.83	0.14	0.96		3.20	21.86	
6	7.43	0.00	0.00		3.48	25.86	
7	6.91	0.24	1.66	1.08(2)	2.40	16.58	24.85(2)
8	7.59	0.00	0.00		3.97	30.13	
9	7.05	0.00	0.00		5.03	35.46	
10*	6.72	0.00	0.00	-	4.54	30.51	-
11	7.05	0.00	0.00		4.05	28.55	
12	6.62	0.00	0.00		4.40	29.13	
13	6.70	0.00	0.00		5.23	35.04	
14	6.67	0.18	1.20	0.19(3)	3.25	21.68	27.64(3)
15	6.40	0.00	0.00		4.37	27.97	
16	6.59	0.00	0.00		4.03	26.56	
17*	6.05	0.02	0.12	-	4.06	24.56	-
18	5.54	0.03	0.17		4.09	22.66	
19	5.97	0.00	0.00		3.36	20.06	
20	6.97	0.00	0.00		2.09	14.57	
21	7.26	1.15	8.35	1.36(4)	0.70	5.08	13.67(4)
22	6.08	0.09	0.55		1.23	7.48	
23	6.18	0.00	0.00		2.08	12.85	
24*	6.59	0.07	0.46	-	1.97	12.98	-
25	5.51	0.13	0.72		1.86	10.25	
26	5.91	0.03	0.18		1.72	10.17	
27	5.83	0.83	4.84		1.94	11.31	
28	5.81	1.28	7.44	2.52(5)	0.97	5.64	10.24(5)
29	5.97	0.53	3.16		1.72	10.27	
30	6.37	0.00	0.00		1.86	11.85	
31*	6.18	0.21	1.30	-	1.97	12.18	-

DEER RIPS DAM

Dissolved Oxygen - Biochemical Oxygen Demand

Date	FLOW MT/d	DISSOLVED ppm	OXYGEN T/d	Wk avg T/d	B.O.D. 5 day ppm	20°C T/d	Wk avg T/d
August							
1	6.13	0.42	2.58		2.08	12.75	
2	5.89	0.00	0.00		2.75	16.20	
3	5.59	0.65	3.63		2.13	11.91	
4	5.04	1.86	10.49	5.30(6)	1.16	6.54	9.29(6)
5	5.78	0.87	5.03		1.10	6.40	
6	5.40	1.54	8.32		0.69	3.73	
7*	5.16	1.36	7.02	-	1.46	7.53	-
8	5.78	0.98	5.66		2.23	12.89	
9	5.16	0.56	2.89		2.66	13.73	
10	5.64	0.19	1.07		3.06	17.26	
11	5.70	1.20	6.84	6.36(7)	0.90	5.13	11.49(7)
12	5.59	0.84	4.70		2.37	13.25	
13	5.89	2.28	13.43		1.63	8.60	
14*	6.02	1.65	9.93	-	1.59	9.57	-
15	5.72	1.02	5.83		1.56	8.92	
16	5.70	0.74	4.22		1.84	10.49	
17	5.69	0.26	1.48		1.59	9.05	
18	5.78	1.38	7.97	2.92(8)	0.88	5.09	9.01(8)
19	6.56	0.00	0.00		1.87	12.27	
20	6.07	0.00	0.00		1.51	9.17	
21*	5.32	0.17	0.90	-	1.52	8.09	-
22	5.35	0.35	1.87		1.54	8.24	
23	6.32	0.30	1.90		1.60	10.11	
24	6.80	1.07	7.28		1.17	7.96	
25	7.02	1.10	7.72	4.55(9)	0.53	0.37	7.55(9)
26	6.24	0.00	0.00		1.49	9.30	
27	6.13	1.10	6.74		1.49	9.14	
28*	5.43	1.17	6.35	-	1.42	7.71	-
29	5.54	1.25	6.92		1.35	7.48	
30	5.27	0.49	2.58		1.03	5.43	
31	5.37	1.20	6.44		1.61	8.65	
September							
1	5.40	1.42	7.67	7.24(10)	0.97	5.24	7.87(10)
2	5.13	0.33	1.70		2.17	11.13	
3	5.64	1.92	10.83		1.53	8.63	
4*	6.02	2.41	14.51	-	1.41	8.50	-
5	4.64	2.91	13.50		1.29	5.98	
6	6.78	1.94	13.15		1.56	10.58	
7	6.62	1.32	8.74		1.59	10.59	
8	6.05	1.95	11.80	9.29(11)	0.90	5.45	8.37(11)
9	5.51	1.12	6.17		1.49	8.21	
10	5.78	0.87	5.03		1.62	9.36	
11	5.31	1.25	6.64	-	1.58	8.39	-

*Sunday calculated: Saturday plus Monday divided by two.

Table S #1

Biochemical Oxygen Demand
Dissolved Oxygen and Oxygen Deficit

WEEKLY SUMMARY
Average Tons per day

Week Number	NORTH TURNER BRIDGE			DEER RIPS DAM**		
	B.O.D. 5 day	D.O.	O.D.-* O.S./	B.O.D. 5 day	D.O.	O.D.-* O.S./
0***				23.66	25.03	- 1.37
1	34.49	70.98	/36.49	24.63	5.00	-19.63
2	33.99	51.76	/17.77	24.85	1.08	-23.77
3	32.19	24.60	- 7.59	27.64	0.19	-27.45
4	28.85	28.79	- 0.06	13.67	1.36	-12.31
5	24.29	19.85	- 4.44	10.24	2.52	- 7.72
6	20.96	14.73	- 6.23	9.29	5.30	- 3.99
7	17.04	21.26	/ 4.22	11.49	6.36	- 5.13
8	18.49	18.36	- 0.13	9.01	2.92	- 6.09
9	20.25	19.42	- 0.83	7.55	4.55	- 3.00
10	15.67	19.35	/ 3.68	7.87	7.24	- 0.63
11	16.79	17.86	/ 1.07	8.37	9.29	/ 0.92
12***	19.27	16.73	- 2.54			
Eleven week average	23.91	27.91	/ 4.00	14.06	4.17	- 9.89

*Oxygen Deficit (-) or Surplus (/) as indicated

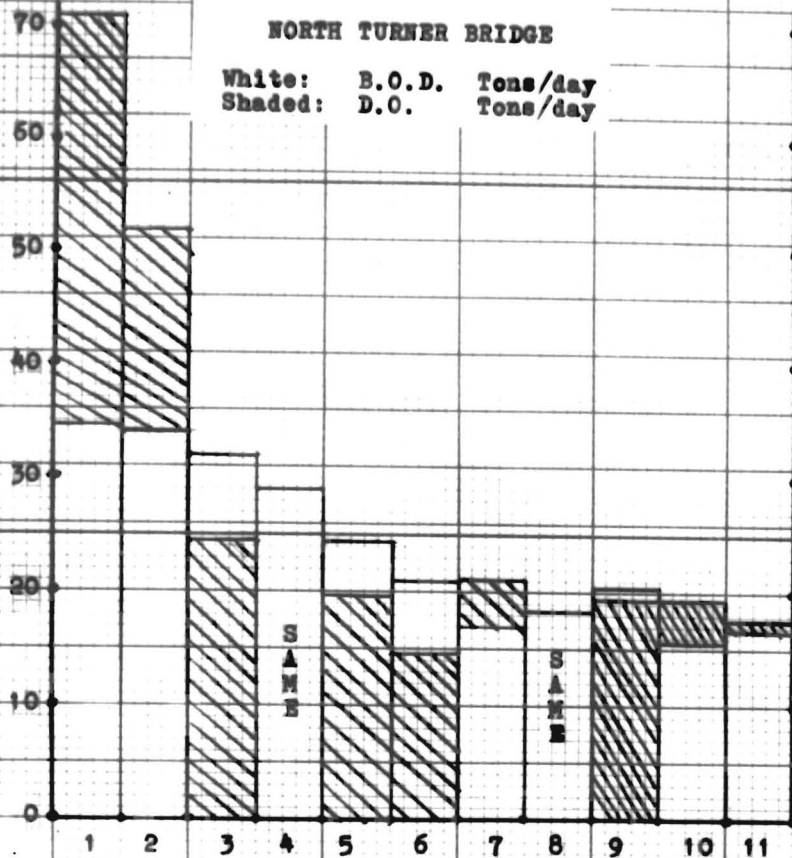
**Compensated for Time of Passage

***Not included in the series average

74

**BIOCHEMICAL OXYGEN DEMAND
(5 day 20 C.)
and
DISSOLVED OXYGEN
NORTH TURNER BRIDGE**

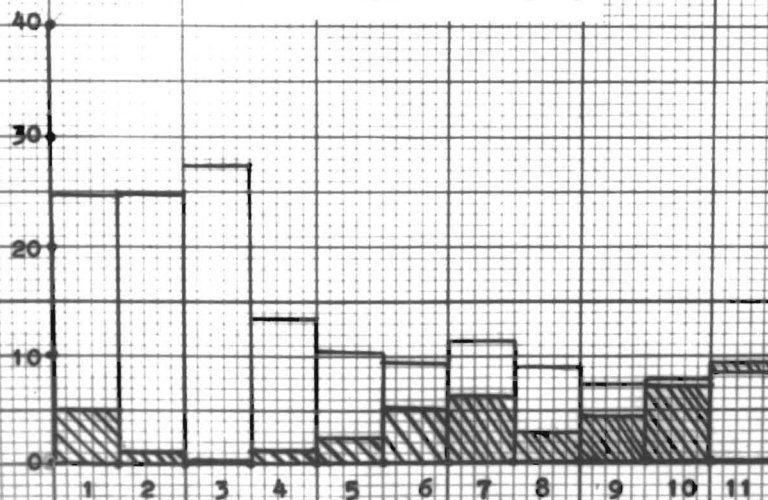
White: B.O.D. Tons/day
Shaded: D.O. Tons/day



Week Number (June - September) 1966

**BIOCHEMICAL OXYGEN DEMAND
(5 day 20 C.)
and
DISSOLVED OXYGEN
DEER RIPS DAM**

White: B.O.D. Tons/day
Shaded: D.O. Tons/day



Week Number (June - September) 1966

Table S #1A

Biochemical Oxygen Demand
Dissolved Oxygen and Oxygen Deficit

WEEKLY SUMMARY
Average Tons per day

Week Number	NORTH TURNER BRIDGE			TURNER CENTER BRIDGE**		
	B.O.D. 5 day	D.O.	O.D.-* O.S./	B.O.D. 5 day	D.O.	O.D.-* O.S./
1	34.49	70.98	/36.49	36.05	44.88	/ 8.83
2	33.99	51.76	/17.77	34.70	31.68	- 3.02
3	32.19	24.60	- 7.59	35.33	8.83	-26.50
4	28.85	28.79	- 0.06	26.62	12.38	-14.24
5	24.29	19.85	- 4.44	20.54	12.09	- 8.45
6	20.96	14.73	- 6.23	17.25	10.12	- 7.13
7	17.04	21.26	/ 4.22	13.54	15.02	/ 1.48
8	18.49	18.36	- 0.13	17.91	9.32	- 8.59
9	20.25	19.42	- 0.83	15.13	10.45	- 4.68
10	15.67	19.35	/ 3.68	14.11	13.40	- 0.71
11	16.79	17.86	/ 1.07	12.69	12.11	- 0.58
12***	19.27	16.73	- 2.54	19.10	12.33	- 6.77
Eleven week average	23.91	27.91	/ 4.00	22.17	16.39	- 5.78

*Oxygen Deficit (-) or Surplus (/) as indicated

**Compensated for Time of Passage

***Not included in the series average

Table S #1B

Biochemical Oxygen Demand
Dissolved Oxygen and Oxygen Deficit

WEEKLY SUMMARY
Average Tons per day

Week Number	TURNER CENTER BRIDGE			DEER RIPS DAM**		
	B.O.D. 5 day	D.O.	O.D.-* O.S. /	B.O.D. 5 day	D.O.	O.D.-* O.S. /
0***				23.66	25.03	- 1.37
1	36.05	44.88	/ 8.83	24.63	5.00	-19.63
2	34.70	31.68	- 3.02	24.85	1.08	-23.77
3	35.33	8.83	-26.50	27.64	0.19	-27.45
4	26.62	12.38	-14.24	13.67	1.36	-12.31
5	20.54	12.09	- 8.45	10.24	2.52	- 7.72
6	17.25	10.12	- 7.13	9.29	5.30	- 3.99
7	13.54	15.02	/ 1.48	11.39	6.36	- 5.13
8	17.91	9.32	- 8.59	9.01	2.92	- 6.09
9	15.13	10.45	- 4.68	7.55	4.55	- 3.00
10	14.11	13.40	- 0.71	7.87	7.24	- 0.63
11	12.69	12.11	- 0.58	8.37	9.29	/ 0.92
Eleven week average	22.17	16.39	- 5.78	14.06	4.17	- 9.89

*Oxygen Deficit (-) or Surplus(/) as indicated

**Compensated for Time of Passage

***Not included in the series average

Table S #1C
Biochemical Oxygen Demand
Dissolved Oxygen and Oxygen Deficit

WEEKLY SUMMARY
Average Tons per day

Week Number	TURNER CENTER BRIDGE			MILE 4.25**		
	B.O.D. 5 day	D.O.	O.D.-* O.S./	B.O.D. 5 day	D.O.	O.D.-* O.S./
1	36.05	44.88	/ 8.83	43.12	25.34	-17.78
2	34.70	31.68	- 3.02	38.88	9.91	-28.97
3	35.33	8.83	-26.50	35.68	2.11	-33.57
4	26.62	12.38	-14.24	22.96	2.96	-20.00
5	20.54	12.09	- 8.45	18.03	0.99	-17.04
6	17.25	10.12	- 7.13	15.31	0.78	-14.53
7	13.54	15.02	/ 1.48	11.32	3.30	- 8.02
8	17.91	9.32	- 8.59	15.64	1.64	-14.00
9	15.13	10.45	- 4.68	11.47	2.50	- 8.97
10	14.11	13.40	- 0.71	14.52	7.25	- 7.27
11	12.69	12.11	- 0.58	13.09	4.52	- 8.57
Eleven Week Average	22.17	16.39	- 5.78	21.82	5.57	-16.25

*Oxygen Deficit (-) or Surplus (/) as indicated
**Compensated for Time of Passage

Table S #1D

Biochemical Oxygen Demand
Dissolved Oxygen and Oxygen Deficit

WEEKLY SUMMARY
Average Tons per day

Week Number	MILE 4.25			MILE 2.50**		
	B.O.D. 5 day	D.O.	O.D.-* O.S./	B.O.D. 5 day	D.O.	O.D.-* O.S./
0***				30.76	49.02	/18.26
1	43.12	25.34	-17.78	40.83	7.12	-33.71
2	38.88	9.91	-28.97	32.57	3.59	-28.98
3	35.68	2.11	-33.57	30.06	4.39	-25.67
4	22.96	2.96	-20.00	17.71	0.21	-17.50
5	18.03	0.99	-17.04	13.27	2.99	-10.28
6	15.31	0.78	-14.53	9.52	2.66	- 6.86
7	11.32	3.30	- 8.02	12.54	1.30	-11.24
8	15.64	1.64	-14.03	12.39	6.81	- 5.58
9	11.47	2.50	- 8.97	9.69	0.47	- 9.22
10	14.52	7.25	- 7.27	8.59	6.18	- 2.41
11	13.09	4.52	-8.57	10.50	7.02	- 3.48
Eleven week average	21.82	5.57	-16.25	17.97	3.89	-14.08

*Oxygen Deficit (-) or Surplus (/) as indicated

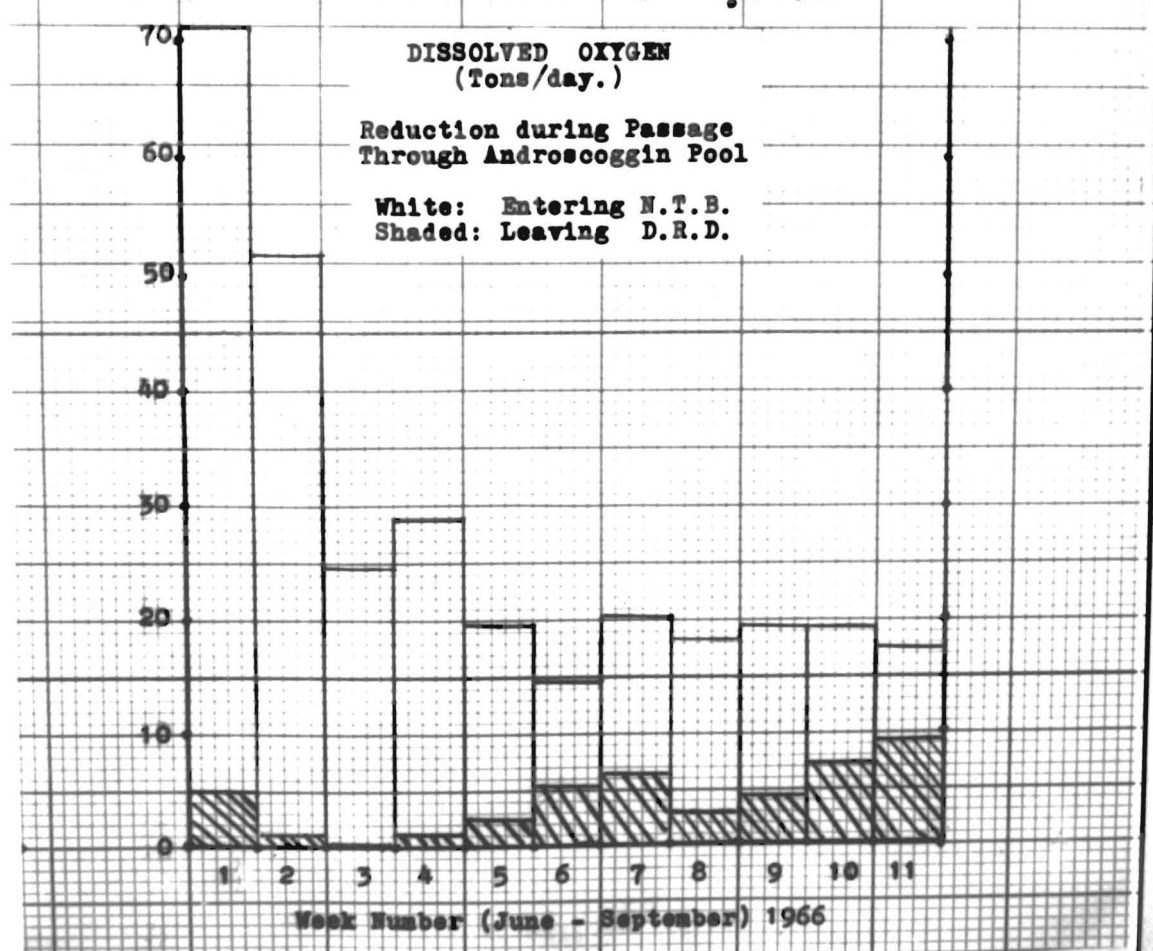
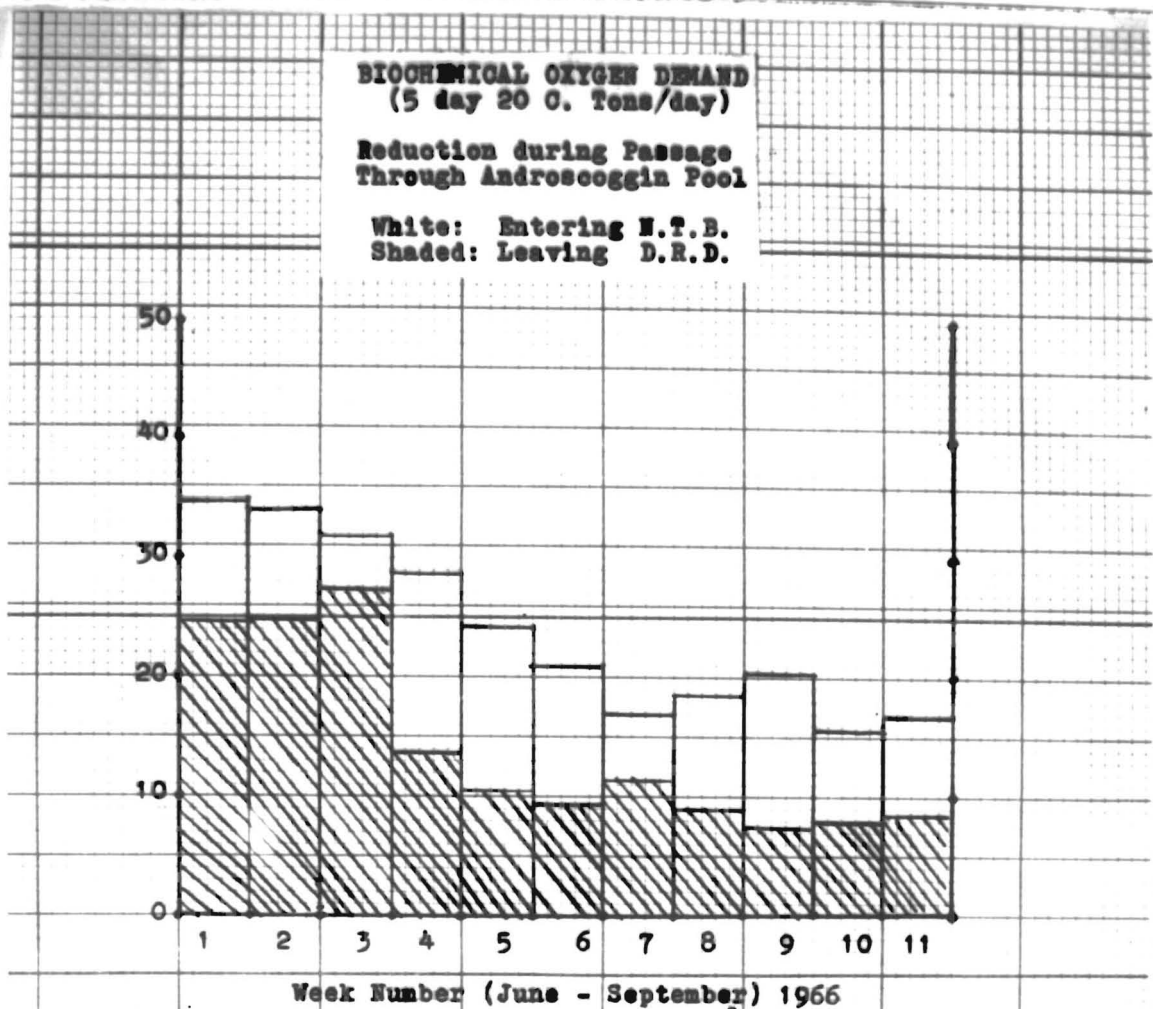
**Compensated for Time of Passage

***Not included in the series average

Table S #2

B.O.D. and D.O. Losses
In Water Passing through the Pool
Average Tons/day

Week Number	B.O.D. (a) loss	D.O. (a) loss
1	9.86	65.98
2	9.14	50.68
3	4.55	24.41
4	15.18	27.43
5	14.05	17.33
6	11.67	9.43
7	5.55	14.90
8	9.48	15.44
9	12.60	14.78
10	7.80	12.11
11	8.42	9.49
Eleven Week aver. N.T.B.-D.R.D.	9.85	23.74



Changes Between Stations

Location	B.O.D. T/d	B.O.D. % Redn.	D.O. T/d	D.O. % Change
N.T.B. - T.C.B.	-1.74	7.3	11.52	-41.3
T.C.B. - 4.25	-0.35	0.16	10.82	-66.0
4.25 - 2.5	-3.85	17.7	1.68	-30.2
2.5 - D.R.D.	-3.91	21.8	0.18	4.6
N.T.B. - D.R.D.	-9.85	41.2	23.74	-85.1

These figures indicate an average daily net loss of 41.2% B.O.D. and 85.1% loss of D.O. (exclusive of reaeration).

Zoogleal film was present from Mile four northwards during most of the summer. It seldom covered the entire water surface area but, the areas were often extensive. Coarse fish were present at the Waterman road landing until about the tenth of July. Blue green algae were observed in very small patches on a few days. The color of the water appears to be a factor in inhibiting their growth.