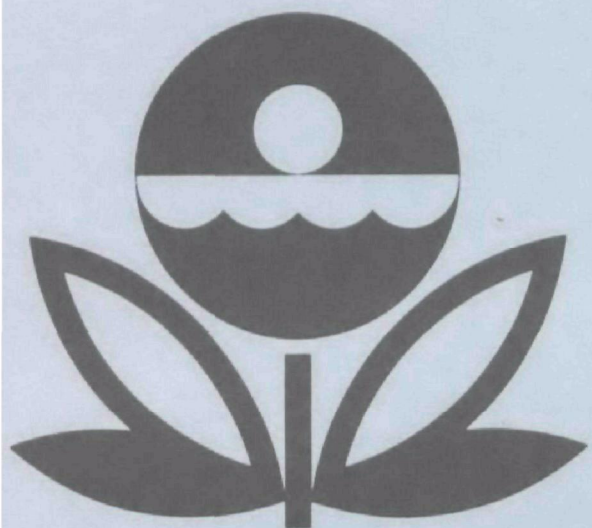


**U.S. ENVIRONMENTAL PROTECTION AGENCY  
NATIONAL EUTROPHICATION SURVEY**

**WORKING PAPER SERIES**



REPORT  
ON  
LOWER ST. REGIS LAKE  
FRANKLIN COUNTY  
NEW YORK  
EPA REGION II  
WORKING PAPER No. 162

**PACIFIC NORTHWEST ENVIRONMENTAL RESEARCH LABORATORY**

**An Associate Laboratory of the**

**NATIONAL ENVIRONMENTAL RESEARCH CENTER - CORVALLIS, OREGON**

**and**

**NATIONAL ENVIRONMENTAL RESEARCH CENTER - LAS VEGAS, NEVADA**

REPORT  
ON  
LOWER ST. REGIS LAKE  
FRANKLIN COUNTY  
NEW YORK  
EPA REGION II  
WORKING PAPER No. 162

WITH THE COOPERATION OF THE  
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION  
AND THE  
NEW YORK NATIONAL GUARD  
DECEMBER, 1974

## CONTENTS

	<u>Page</u>
Foreword	ii
List of New York Study Lakes	iv
Lake and Drainage Area Map	v
<u>Sections</u>	
I. Conclusions	1
II. Lake and Drainage Basin Characteristics	3
III. Lake Water Quality Summary	4
IV. Nutrient Loadings	8
V. Literature Reviewed	13
VI. Appendices	14

## F O R E W O R D

The National Eutrophication Survey was initiated in 1972 in response to an Administration commitment to investigate the nationwide threat of accelerated eutrophication to fresh water lakes and reservoirs.

### OBJECTIVES

The Survey was designed to develop, in conjunction with state environmental agencies, information on nutrient sources, concentrations, and impact on selected freshwater lakes as a basis for formulating comprehensive and coordinated national, regional, and state management practices relating to point-source discharge reduction and non-point source pollution abatement in lake watersheds.

### ANALYTIC APPROACH

The mathematical and statistical procedures selected for the Survey's eutrophication analysis are based on related concepts that:

- a. A generalized representation or model relating sources, concentrations, and impacts can be constructed.
- b. By applying measurements of relevant parameters associated with lake degradation, the generalized model can be transformed into an operational representation of a lake, its drainage basin, and related nutrients.
- c. With such a transformation, an assessment of the potential for eutrophication control can be made.

### LAKE ANALYSIS

In this report, the first stage of evaluation of lake and watershed data collected from the study lake and its drainage basin is documented. The report is formatted to provide state environmental agencies with specific information for basin planning [§303(e)], water quality criteria/standards review [§303(c)], clean lakes [§314(a,b)], and water quality monitoring [§106 and §305(b)] activities mandated by the Federal Water Pollution Control Act Amendments of 1972.

Beyond the single lake analysis, broader based correlations between nutrient concentrations (and loading) and trophic condition are being made to advance the rationale and data base for refinement of nutrient water quality criteria for the Nation's fresh water lakes. Likewise, multivariate evaluations for the relationships between land use, nutrient export, and trophic condition, by lake class or use, are being developed to assist in the formulation of planning guidelines and policies by EPA and to augment plans implementation by the states.

#### ACKNOWLEDGMENT

The staff of the National Eutrophication Survey (Office of Research & Development, U. S. Environmental Protection Agency) expresses sincere appreciation to the New York Department of Environmental Conservation for professional involvement and to the New York National Guard for conducting the tributary sampling phase of the Survey.

Henry L. Diamond, Commissioner of the New York Department of Environmental Conservation, and Leo J. Hetling, Director, and Italo G. Carcich, Senior Sanitary Engineer, Environmental Quality Research, Department of Environmental Conservation, provided invaluable lake documentation and counsel during the Survey.

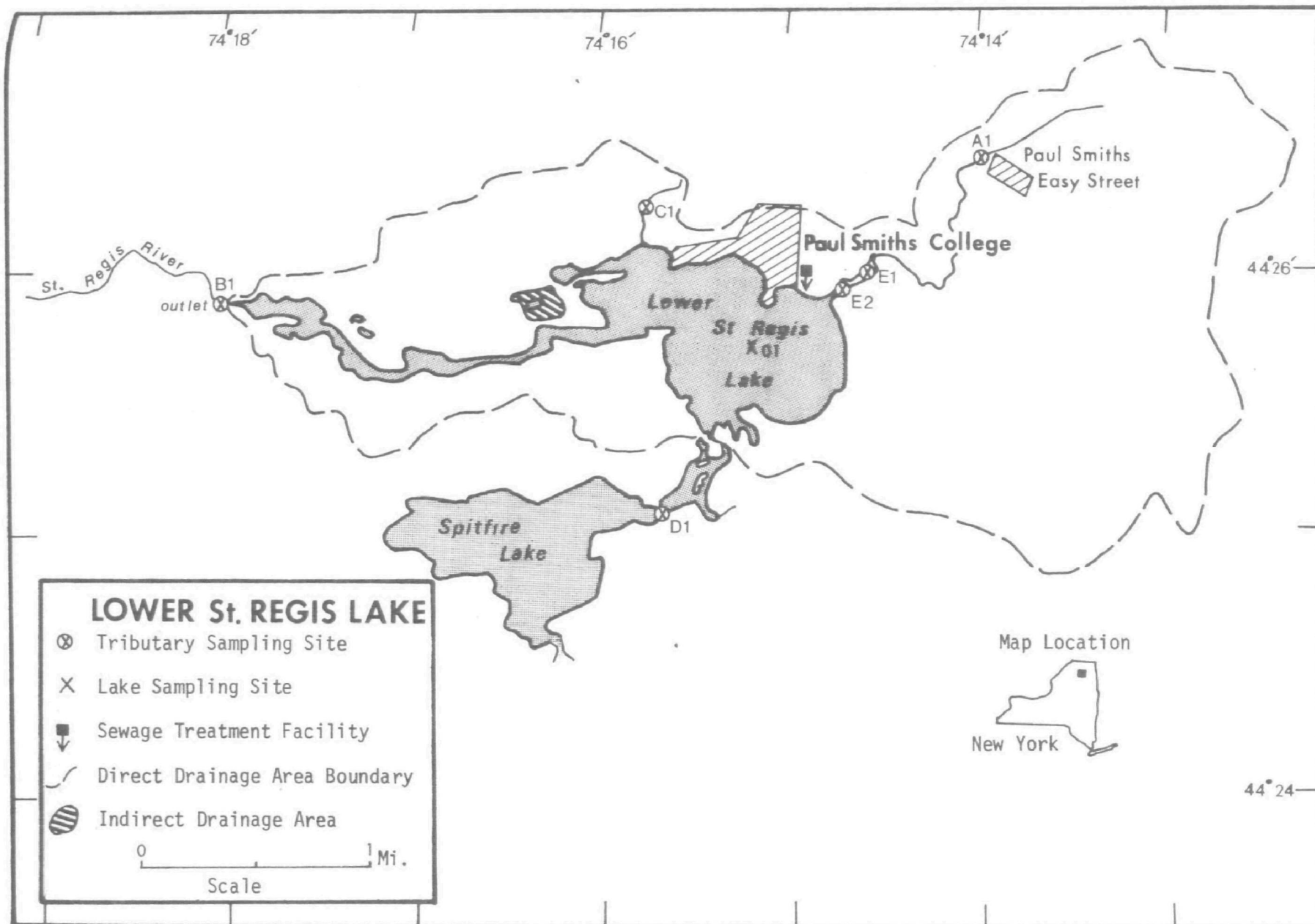
Major General John C. Baker, the Adjutant General of New York, and Project Officer Lieutenant Colonel Fred Peters, who directed the volunteer efforts of the New York National Guardsmen, are also gratefully acknowledged for their assistance to the Survey.

## NATIONAL EUTROPHICATION SURVEY

## STUDY LAKES

STATE OF NEW YORK

<u>LAKE NAME</u>	<u>COUNTY</u>
Allegheny Reservoir	Cattaraugus, NY; McLean, Warren, PA
Black	St. Lawrence
Canadaigua	Ontario
Cannonsville	Delaware
Carry Falls	St. Lawrence
Cassadaga	Chautauqua
Cayuga	Seneca, Tompkins
Champlain	Clinton, Essex, NY; Addison, Chittenden, Franklin, VT
Chautauqua	Chautauqua
Conesus	Livingston
Cross	Cayuga, Onondaga
Goodyear	Otsego
Huntington	Sullivan
Keuka	Ontario
Long	Hamilton
Lower St. Regis	Franklin
Otter	Cayuga
Owasco	Cayuga
Raquette Pond	Franklin
Round	Saratoga
Sacandaga Res.	Fulton, Saratoga
Saratoga	Saratoga
Schroon	Essex, Warren
Seneca	Seneca, Schyler, Yates
Swan	Sullivan
Swinging Bridge Res.	Sullivan



## LOWER ST. REGIS LAKE

STORET NO. 3640

### I. CONCLUSIONS

#### A. Trophic Condition:

Survey data indicate Lower St. Regis Lake is eutrophic. Of the 26 New York lakes sampled in the fall when essentially all were well-mixed, 17 had less mean total phosphorus, 10 had less mean dissolved phosphorus, and eight had less mean inorganic nitrogen. For all data, 21 lakes had less mean chlorophyll a, and 17 had greater Secchi disc transparency.

Near-depletion of dissolved oxygen with depth occurred at station 1 in July, 1972.

#### B. Rate-Limiting Nutrient:

A significant loss of phosphorus occurred in the algal assay sample from the time of collection to the time the assay was begun, and the results are not indicative of lake conditions at the time of sampling.

The lake data indicate phosphorus limitation at all sampling times.

#### C. Nutrient Controllability:

1. Point sources--During the sampling year, Lower St. Regis Lake received a total phosphorus load at a rate about equal to that proposed by Vollenweider (in press) as "permissible"; i.e.,



an oligotrophic rate (see page 12). Of that load, it is calculated that Paul Smith College contributed about 12%.

Personnel of the New York Department of Environmental Conservation advise that chemical phosphorus removal was begun at the College on July 1, 1972, and that 100% removal would be achieved in May, 1974, by means of effluent recharge sand beds (Tofflemire, 1974).

Complete removal of the College phosphorus load should reduce the loading rate to about 3.2 lbs/acre/yr or  $0.36 \text{ g/m}^2/\text{year}$ . This is less than Vollenweider's proposed oligotrophic rate and should result in a significant improvement of the trophic condition of the lake.

2. Non-point sources (see page 12)--During the sampling year, the phosphorus export of the Unnamed Creek (C-1) was similar to exports of unimpacted New York streams studied elsewhere. However, the phosphorus export of Easy Street Creek was nearly three times that of the Unnamed Creek and indicates unknown and unmeasured point sources such as septic tanks.

In all, non-point sources are estimated to have contributed about 86% of the total phosphorus load to the lake during the sampling year.

## II. LAKE AND DRAINAGE BASIN CHARACTERISTICS

### A. Lake Morphometry<sup>†</sup>:

1. Surface area: 461 acres.
2. Mean depth: 16.8 feet.
3. Maximum depth: 36 feet.
4. Volume: 7,736 acre/feet.
5. Mean hydraulic retention time: 110 days.

### B. Tributary and Outlet: (See Appendix A for flow data)

#### 1. Tributaries -

<u>Name</u>	<u>Drainage area*</u>	<u>Mean flow*</u>
Unnamed Creek (C-1)	3.0 mi <sup>2</sup>	4.9 cfs
Easy Street Creek (E-1)	0.8 mi <sup>2</sup>	1.3 cfs
Minor tributaries & immediate drainage -	<u>16.7 mi<sup>2</sup></u>	<u>29.1 cfs</u>
Totals	20.5 mi <sup>2</sup>	35.3 cfs

#### 2. Outlet -

St. Regis River	21.2 mi <sup>2</sup> **	35.3 cfs
-----------------	-------------------------	----------

### C. Precipitation\*\*\*:

1. Year of sampling: 42 inches.
2. Mean annual: 32 inches.

<sup>†</sup> Anonymous, ND.

\* Drainage areas are accurate within  $\pm 5\%$ ; except for small basins ( $\pm 10\%$ ); mean daily flows are accurate within  $\pm 5$  to  $25\%$ ; and normalized mean monthly flows are accurate within  $\pm 15\%$ .

\*\* Includes area of lake.

\*\*\* See Working Paper No. 1, "Survey Methods".

### III. LAKE WATER QUALITY SUMMARY

Lower St. Regis Lake was sampled three times during the open-water season of 1972 by means of a pontoon-equipped Huey helicopter. Each time, samples for physical and chemical parameters were collected from a single station on the lake and from a number of depths (see map, page v). During each visit a single depth-integrated (15 feet to surface) sample was collected for phytoplankton identification and enumeration; and during the last visit, a single five-gallon depth-integrated sample was taken for algal assays. Also each time, a depth-integrated sample was collected for chlorophyll a analysis. The maximum depth sampled was 30 feet.

The results obtained are presented in full in Appendix B, and the data for the fall sampling period, when the lake essentially was well-mixed, are summarized below. Note, however, the Secchi disc summary is based on all values.

For differences in the various parameters at the other sampling times, refer to Appendix B.

## A. Physical and chemical characteristics:

FALL VALUES

(10/10/72)

<u>Parameter</u>	<u>Minimum</u>	<u>Mean</u>	<u>Median</u>	<u>Maximum</u>
Temperature (Cent.)	10.9	11.1	11.1	11.2
Dissolved oxygen (mg/l)	7.6	7.8	7.8	8.0
Conductivity ( $\mu$ mhos)	50	50	50	50
pH (units)	6.8	6.9	6.9	7.0
Alkalinity (mg/l)	10	10	10	12
Total P (mg/l)	0.022	0.060	0.026	0.165
Dissolved P (mg/l)	0.008	0.010	0.010	0.013
NO <sub>2</sub> + NO <sub>3</sub> (mg/l)	0.040	0.050	0.040	0.070
Ammonia (mg/l)	0.170	0.190	0.200	0.220

ALL VALUES

Secchi disc (inches)	35	49	48	64
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## B. Biological characteristics:

## 1. Phytoplankton -

<u>Sampling Date</u>	<u>Dominant Genera</u>	<u>Number per ml</u>
05/20/72	1. Dinobryon	1,458
	2. Flagellates	614
	3. Melosira	193
	4. Polycystis	144
	5. Cyclotella	144
	Other genera	<u>387</u>
	Total	2,940
07/25/72	1. Dinobryon	3,906
	2. Polycystis	579
	3. Chroococcus	271
	4. Melosira	253
	5. Cyclotella	217
	Other genera	<u>506</u>
	Total	5,732
10/10/72	1. Fragilaria	1,205
	2. Anabaena	964
	3. Stephanodiscus	858
	4. Melosira	843
	5. Flagellates	572
	Other genera	<u>1,115</u>
	Total	5,557

2. Chlorophyll a -  
 (Because of instrumentation problems during the 1972 sampling,  
 the following values may be in error by plus or minus 20 percent.)

<u>Sampling Date</u>	<u>Station Number</u>	<u>Chlorophyll <u>a</u> (<math>\mu</math>g/l)</u>
05/20/72	01	3.0
07/25/72	01	3.4
10/10/72	01	17.3

C. Limiting Nutrient Study:

Because of a 77% loss of the phosphorus in the assay sample from the time of collection to the time the assay was begun, the results are not indicative of conditions in the lake at the time of sampling.

The lake data indicate phosphorus limitation at all sampling times. Nitrogen-to-phosphorus ratios were 24 to 1 or greater and phosphorus limitation would be expected.

#### IV. NUTRIENT LOADINGS (See Appendix C for data)

For the determination of nutrient loadings, the New York National Guard collected monthly near-surface grab samples from each of the tributary sites indicated on the map (page v), except for the high runoff month of May when two samples were collected. Sampling was begun in November, 1972, and was completed in October, 1973.

Through an interagency agreement, stream flow estimates for the year of sampling and a "normalized" or average year were provided by the New York District Office of the U.S. Geological Survey for the tributary sites nearest the lake.

In this report, nutrient loads for sampled tributaries were determined by using a modification of a U.S. Geological Survey computer program for calculating stream loadings\*. Nutrient loadings for unsampled "minor tributaries and immediate drainage" ("ZZ" of U.S.G.S.) were estimated by using the nutrient loads, in  $\text{lbs}/\text{mi}^2/\text{year}$ , at station C-1 and multiplying by the ZZ area in  $\text{mi}^2$ .

The phosphorus loading for the Paul Smith College wastewater treatment plant is based on data provided by T. J. Tofflemire (1974) of the New York Department of Environmental Conservation. The nitrogen loading is estimated at 7.5  $\text{lbs}/\text{capita}/\text{year}$ .

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\* See Working Paper No. 1.

## A. Waste Sources:

## 1. Known municipal\* -

<u>Name</u>	<u>Pop. Served</u>	<u>Treatment</u>	<u>Mean Flow (mgd)</u>	<u>Receiving Water</u>
Paul Smith College	1,000	sand beds (P-removal)	0.036	Lower St. Regis Lake

## 2. Known industrial - None

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\* Tofflemire, op. cit.



## B. Annual Total Phosphorus Loading - Average Year:

## 1. Inputs -

<u>Source</u>	<u>lbs P/ yr</u>	<u>% of total</u>
a. Tributaries (non-point load) -		
Unnamed Creek (C-1)	190	11.3
Easy Street Creek (E-1)	130	7.7
b. Minor tributaries and immediate drainage (non-point load) -	1,060	63.1
c. Known municipal -		
Paul Smith College	210	12.5
d. Septic tanks* -	20	1.2
e. Known industrial - None	-	-
f. Direct precipitation** -	<u>70</u>	<u>4.2</u>
Total	1,680	100.0

## 2. Outputs -

Lake outlet - St. Regis River      1,500

## 3. Net annual P accumulation - 180 pounds

\* Based on 30 shoreline dwellings; see Working Paper No. 1.

\*\* See Working Paper No. 1.

## C. Annual Total Nitrogen Loading - Average Year:

## 1. Inputs -

<u>Source</u>	<u>lbs N/ yr</u>	<u>% of total</u>
a. Tributaries (non-point load) -		
Unnamed Creek (C-1)	8,930	12.0
Easy Street Creek (E-1)	3,010	4.0
b. Minor tributaries & immediate drainage (non-point load) -	50,000	67.0
c. Known municipal -		
Paul Smith College	7,500	10.1
d. Septic tanks* -	700	0.9
e. Known industrial - None	-	-
f. Direct precipitation** -	<u>4,440</u>	<u>6.0</u>
Total	74,580	100.0

## 2. Outputs -

Lake outlet - St. Regis River      58,560

## 3. Net annual N accumulation - 16,020 pounds

\* Based on 30 shoreline dwellings; see Working Paper No. 1.

\*\* See Working Paper No. 1.

## D. Mean Annual Non-point Nutrient Export by Subdrainage Area:

<u>Tributary</u>	<u>lbs P/mi<sup>2</sup>/yr</u>	<u>lbs N/mi<sup>2</sup>/yr</u>
Unnamed Creek (C-1)	63	2,976
Easy Street Creek (E-1)	162	3,762

## E. Yearly Loading Rates:

In the following table, the existing phosphorus loading rates are compared to those proposed by Vollenweider (in press). Essentially, his "dangerous" rate is the rate at which the receiving waters would become eutrophic or remain eutrophic; his "permissible" rate is that which would result in the receiving water remaining oligotrophic or becoming oligotrophic if morphometry permitted. A mesotrophic rate would be considered one between "dangerous" and "permissible".

<u>Units</u>	<u>Total Phosphorus</u>		<u>Total Nitrogen</u>	
	<u>Total</u>	<u>Accumulated</u>	<u>Total</u>	<u>Accumulated</u>
lbs/acre/yr	3.6	0.4	162.8	34.8
grams/m <sup>2</sup> /yr	0.41	0.04	18.1	3.9

Vollenweider loading rates for phosphorus  
(g/m<sup>2</sup>/yr) based on mean depth and mean  
hydraulic retention time of Lower St. Regis Lake:

"Dangerous" (eutrophic rate)	0.80
"Permissible" (oligotrophic rate)	0.40

## V. LITERATURE REVIEWED

Anonymous, (no date). Memorandum on Lower St. Regis Lake. Env. Health Ctr., NY State Dept. of Health, Albany.

Anonymous, 1972. "Investigation of Upper Saranac and Lower St. Regis Lake". Spec. Inv. No. 1/72, Env. Health Ctr., NY State Dept. of Health, Albany.

Allen, Susan (Aquatic Biology Unit), 1970. Memo to Dr. G. W. Fuhs concerning survey of Lower St. Regis Lake. Env. Health Ctr., NY State Dept. of Health, Albany.

Tofflemire, Tracy J., 1974. Personal communication (Paul Smith College effluent data and treatment methods). NY Dept. of Env. Cons., Albany.

Vollenweider, Richard A. (in press). Input-output models. Schweiz. A. Hydrol.

## VII. APPENDICES

### APPENDIX A

#### TRIBUTARY FLOW DATA

TRIBUTARY FLOW INFORMATION FOR NEW YORK

11/26/74

LAKE CODE 3640 LOWER ST REGIS LAKE

TOTAL DRAINAGE AREA OF LAKE 21.20

TRIBUTARY	SUB-DRAINAGE AREA	NORMALIZED FLOWS												
		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	MEAN
3640B1	21.20	29.20	26.60	50.80	101.00	52.50	29.20	17.70	14.20	16.30	23.50	32.30	30.40	35.28
3640C1	2.97	4.10	3.72	7.11	14.20	7.35	4.09	2.47	1.99	2.28	3.29	4.52	4.25	4.94
3640E1	0.76	1.05	0.95	1.82	3.63	1.88	1.05	0.63	0.51	0.58	0.84	1.16	1.09	1.27
3640ZZ	17.47	24.10	21.90	41.80	83.40	43.20	24.00	14.50	11.70	13.40	19.40	26.60	25.00	29.06

SUMMARY

TOTAL DRAINAGE AREA OF LAKE = 21.20  
SUM OF SUB-DRAINAGE AREAS = 21.20

TOTAL FLOW IN = 423.57  
TOTAL FLOW OUT = 423.70

MEAN MONTHLY FLOWS AND DAILY FLOWS

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
3640B1	11	72	45.00	4	67.00				
	12	72	80.60	2	76.00				
	1	73	87.90	6	109.00				
	2	73	71.50	3	360.00				
	3	73	108.00	4	89.00	31	53.00		
	4	73	89.80	21	60.00				
	5	73	66.30	7	56.50	19	104.00		
	6	73	53.30	2	70.00				
	7	73	18.60	14	28.00				
	8	73	12.60	19	29.80				
3640C1	9	73	25.40	9	33.70				
	10	73	21.20	13	32.00				
	11	72	6.30	4	1.52				
	12	72	11.30	2	1.72				
	1	73	12.30	6	2.46				
	2	73	10.00	3	8.12				
	3	73	15.20	4	2.00	31	37.40		
	4	73	12.60	21	6.02				
	5	73	9.28	7	4.90	19	20.00		
	6	73	7.47	2	9.20				
	7	73	2.59	14	0.46				
	8	73	1.77	19	0.64				
	9	73	3.55	9	1.12				
	10	73	2.96	13	0.90				

TRIBUTARY FLOW INFORMATION FOR NEW YORK

11/26/74

LAKE CODE 3640 LOWER ST REGIS LAKE

MEAN MONTHLY FLOWS AND DAILY FLOWS

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
3640E1	11	72	1.62	4	1.45				
	12	72	2.89	2	1.64				
	1	73	3.16	6	2.35				
	2	73	2.56	3	7.99				
	3	73	3.88	4	1.97	31	1.67		
	4	73	3.23	21	2.11				
	5	73	2.37	7	1.89	19	5.61		
	6	73	1.92	2	2.69				
	7	73	0.66	14	0.53				
	8	73	0.45	19	0.59				
3640ZZ	9	73	0.91	9	0.72				
	10	73	0.76	13	0.67				
	11	72	37.10	4	34.20				
	12	72	66.20	2	38.80				
	1	73	72.50	6	55.50				
	2	73	58.90	3	184.00				
	3	73	89.10	4	45.40	31	38.30		
	4	73	74.20	21	48.50				
	5	73	54.50	7	43.40	19	129.00		
	6	73	43.80	2	63.60				
	7	73	15.20	14	12.50				
	8	73	10.40	19	13.90				
	9	73	20.90	9	17.10				
	10	73	17.50	13	15.80				

## APPENDIX B

### PHYSICAL and CHEMICAL DATA



STORET RETRIEVAL DATE 74/11/26

364001  
44 25 00.0 074 20 00.0  
LOWER ST REGIS  
36033 NEW YORK

11EPALES  
6

2111202  
0020 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CONDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CAC03 MG/L	00630 NO2&NO3 N-TOTAL MG/L	00610 NH3-N TOTAL MG/L	00665 PHOS-TOT MG/L P	00666 PHOS-DIS MG/L P
72/05/20	11 35	0000	13.9	11.7	64	50	6.40	10K	0.190	0.130	0.022	0.011
	11 35	0011	7.1	9.9		50	6.30	10K	0.260	0.080	0.022	0.011
	11 35	0021	6.0	9.2		50	6.50	10K	0.250	0.210	0.027	0.009
72/07/25	14 50	0000			48	50K	7.80	11	0.060	0.140	0.017	0.007
	14 50	0004	23.0	7.2		50K	7.70	12	0.070	0.150	0.020	0.008
	14 50	0015	16.0	4.0		50K	7.30	13	0.090	0.120	0.011	0.008
	14 50	0022	7.1	0.6		50K	6.90	16	0.100	0.460	0.048	0.012
72/10/10	12 00	0000			35	50K	6.95	11	0.050	0.180	0.022	0.008
	12 00	0004	11.2	8.0		50K	6.90	10K	0.040	0.170	0.023	0.009
	12 00	0015	11.1	7.8		50K	6.90	10K	0.040	0.190	0.029	0.012
	12 00	0030	10.9	7.6		50K	6.80	12	0.070	0.220	0.165	0.013

DATE FROM TO	TIME OF DAY	DEPTH FEET	32217 CHLRPHYL A UG/L
72/05/20	11 35	0000	3.0J
72/07/25	14 50	0000	3.4J
72/10/10	12 00	0000	17.3J

K VALUE KNOWN TO BE LESS  
THAN INDICATED

J VALUE KNOWN TO BE IN ERROR

## APPENDIX C

### TRIBUTARY DATA

STORET RETRIEVAL DATE 74/11/26

3640A1 LS3640A1  
 44 26 00.0 074 15 00.0  
 UNNAMED CREEK  
 36051 15 SARANAC  
 T/LOWER ST REGIS LAKE  
 ST HWY 192 BRDG  
 11EPALES  
 4

2111204  
 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
72/11/04	10 15		0.270	0.210	0.036	0.005K	0.013
72/12/02	07 30		0.336	0.230	0.019	0.005K	0.013
73/01/06	09 30		0.360	0.250	0.016	0.005K	0.010
73/02/03	09 00		0.290	0.180	0.024	0.011	0.015
73/03/04	08 30		0.350	0.100K	0.019	0.005K	0.005K
73/04/21	13 00		0.260	0.360	0.032	0.005K	0.010
73/05/07	09 30		0.250	0.230	0.018	0.005K	0.010
73/05/19	09 30		0.154	1.100	0.036	0.005K	0.010
73/06/02	11 30		0.231	0.210	0.028	0.009	0.010
73/07/14	09 00		0.130	2.400	0.058	0.012	0.035
73/08/19	14 00		0.240	0.440	0.036	0.007	0.010
73/09/09	13 15		0.252	0.675	0.220	0.007	0.015
73/10/13	13 30		0.240	0.630	0.190	0.006	0.015

K VALUE KNOWN TO BE  
 LESS THAN INDICATED

STORET RETRIEVAL DATE 74/11/26

364081 LS364081  
 44 26 00.0 074 18 00.0  
 ST REGIS RIVER  
 36 15 ST REGIS  
 O/LOWER ST REGIS LAKE  
 BRDG NEAR ST REGIS CHURCH  
 11EPALES 2111204  
 4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
72/11/04	12 05		0.074	0.490	0.147	0.005K	0.018
72/12/02	08 30		0.071	0.890	0.132	0.005K	0.022
73/01/06	10 40		0.126	0.380	0.100	0.005K	0.015
73/02/03	11 40		0.210	0.350	0.063	0.007	0.010
73/03/04	09 10		0.250	0.220	0.048	0.011	0.015
73/04/21	13 30		0.198	0.340	0.026	0.005K	0.015
73/05/07	10 05		0.075	0.500	0.009	0.005K	0.020
73/05/19	09 40		0.096	0.720	0.039	0.008	0.015
73/06/02	11 50		0.035	0.610	0.009	0.005K	0.015
73/07/14	09 30		0.014	0.760	0.027	0.006	0.025
73/08/19	13 20		0.010K	1.980	0.099	0.009	0.050
73/09/09	14 00		0.017	1.600	0.360	0.005K	0.025
73/10/13	14 15		0.010K	0.800	0.084	0.005K	0.030

K VALUE KNOWN TO BE  
 LESS THAN INDICATED

STORET RETRIEVAL DATE 74/11/26

3640C1 LS3640C1  
 44 26 30.0 074 16 00.0  
 UNNAMED CREEK  
 36 15 ST REGIS  
 T/LOWER ST REGIS LAKE  
 BRDG W OF PAUL SMITHS COLLEGE  
 11EPALES 2111204  
 4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
72/11/04	12 15		0.039	0.420	0.046	0.005K	0.015
72/12/02	08 00		0.037	0.440	0.060	0.005K	0.017
73/01/06	10 00		0.095	0.750	0.100	0.005K	0.015
73/02/03	10 00		0.115	0.460	0.088	0.007	0.015
73/03/04	10 30		0.110	0.420	0.135	0.008	0.015
73/04/21	14 00		0.020	0.460	0.005K	0.005K	0.015
73/05/07	10 20		0.010K	0.350	0.010	0.005K	0.020
73/05/19	10 10		0.036	2.600	0.086	0.005K	0.015
73/06/02	12 20		0.014	0.630	0.013	0.005K	0.020
73/07/14	10 15		0.048	1.800	0.066	0.006	0.025
73/08/19	13 15		0.010K	0.610	0.034	0.009	0.025
73/09/09	14 20		0.017	0.840	0.250	0.005K	0.025
73/10/13	14 00		0.010K	1.440	0.110	0.005K	0.030

K VALUE KNOWN TO BE  
 LESS THAN INDICATED

STORET RETRIEVAL DATE 74/11/26

3640D1 LS3640D1  
44 25 00.0 074 15 30.0  
UNNAMED STREAM  
36 15 ST REGIS  
T/LOWER ST REGIS LAKE  
ALONG RD OFF ST HWY 10  
11EPALES 2111204  
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
72/11/04	12 55		0.039	0.310	0.042	0.005K	0.015
72/12/02	11 30		0.030	1.230	0.094	0.005K	0.022
73/01/06	10 40		0.082	0.400	0.120	0.005K	0.015
73/02/03	13 00		0.370	0.270	0.088	0.005K	0.005K
73/03/04	11 00		0.154	0.340	0.038	0.005K	0.005K
73/04/21	15 07		0.130	0.880	0.017	0.005K	0.010
73/05/07	11 50		0.058	0.580	0.018	0.005K	0.015
73/05/19	10 45		0.054	1.200	0.035	0.005K	0.015
73/06/02	13 40		0.040	0.540	0.009	0.009	0.010
73/07/14	12 30		0.028	1.540	0.042	0.005K	0.015
73/08/19	12 15		0.010K	0.100K	0.013	0.005K	0.010
73/09/09	15 25		0.010K	0.440	0.115	0.005K	0.010
73/10/13	16 10		0.176	0.480	0.052	0.009	0.015

K VALUE KNOWN TO BE  
LESS THAN INDICATED

STORET RETRIEVAL DATE 74/11/26

3640E1 LS3640E1  
 44 26 00.0 074 15 00.0  
 OSGOOD POND OUTLET  
 36 15 ST REGIS  
 T/LOWER ST REGIS LAKE  
 ST HWY 10 BRDG BELO PAUL SMITH CLG STP  
 11EPALES 2111204  
 4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
72/11/04	11 30		0.221	0.720	0.300	0.017	0.085
72/12/02			0.240	0.540	0.240	0.015	0.050
73/02/03	13 30		0.350	2.400	0.065	0.034	0.050
73/03/04	13 10		0.290	0.600	0.370	0.092	0.115
73/04/21	14 35		0.150	1.700	0.070	0.019	0.075
73/05/07	11 10		0.132	1.050	0.440	0.021	0.055
73/05/19	11 30		0.048	0.370	0.021	0.005K	0.010
73/06/02	12 40		0.120	0.660	0.024	0.006	0.010
73/07/14	11 20		0.190	1.680	0.082	0.008	0.040
73/08/19	12 45		0.180	0.720	0.048	0.009	0.035
73/09/09	15 10		0.189	0.860	0.252	0.008	0.035
73/10/13	15 10		0.168	0.780	0.042	0.008	0.035

K VALUE KNOWN TO BE  
 LESS THAN INDICATED

STORET RETRIEVAL DATE 74/11/26

3640E2 LS3640E2  
44 26 00.0 074 14 30.0  
OSGOOD POND OUTLET  
36 15 SARANAC  
T/LOWER ST REGIS  
RD OFF ST HWY 192 ABOV PAULSMITH CLG STP  
11EPALES 2111204  
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
72/11/04	11 45		0.200	0.280	0.064	0.005K	0.012
72/12/02	09 10		0.252	0.200	0.035	0.005K	0.015
73/02/03	12 20		0.240	0.300	0.040	0.011	0.020
73/03/04	12 20		0.294	0.140	0.046	0.009	0.010
73/04/21	14 20		0.150	2.520	0.064	0.005K	0.010
73/05/07	10 40		0.140	0.210	0.016	0.005K	0.010
73/05/19	10 30		0.058	2.400	0.074	0.005K	0.015
73/06/02	13 10		0.120	0.580	0.008	0.006	0.010
73/07/14	10 40		0.198	2.700	0.115	0.009	0.040
73/08/19	12 30		0.180	0.560	0.023	0.008	0.030
73/09/09	14 15		0.190	1.050	0.092	0.008	0.035
73/10/13	14 45		0.170	0.540	0.058	0.007	0.030

K VALUE KNOWN TO BE  
LESS THAN INDICATED