THE

ONTARIO WATER RESOURCES

COMMISSION

WATER POLLUTION SURVEY

of the

COMMUNITY OF TIMAGAMI

DISTRICT OF NIPISSING

1967

Report

on a

Water Pollution Survey

of the

COMMUNITY OF TIMAGAMI

Unorganized Township of Strathy

District of Nipissing

December 1967

District Engineers Branch

Division of Sanitary Engineering

INDEX

R E P O R T

THE ONTARIO WATER RESOURCES COMMISSION

INTRODUCTION

A water pollution survey was made of the community of Timagami in August 1967. The purpose of the survey was to locate and record all significant sources of water pollution within the community. Such surveys are performed routinely by the Ontario Water Resources Commission as a basis for evaluating all existing and potential sources of pollution. When sources of pollution are found, corrective action is requested by the Commission. Where water and/or pollution control works appear desirable or expansions to present facilities are necessary, the Commission has a programme to aid in the construction of these works.

The information received from the Timagami and District Chamber of Commerce, Department of Lands and Forests, and the Timiskaming Health Unit is gratefully acknowledged.

I GENERAL

The community of Timagami is situated in the unorganized Township of Strathy in the District of Nipissing and is located approximately 60 miles north of the City of North Bay on Highway No. 11.

The permanent population of Timagami is about 900; however, during the summer season when the tourist influx is at peak level, the population may reach 3,000. The community lies on the eastern

extremity of the northeast arm of Lake Timagami.

The general topography of the land is predominantly irregular bedrock outcroppings. In the low-lying areas, swampy conditions exist. Reportedly, some of the swampy areas had been filled in with crushed rock provided by the Ontario Northland Railway years ago.

As Timagami is one of Ontario's most popular tourist areas, many commercial establishments in the townsite specifically cater to the tourists. A list of these establishments is appended to this report and the locations shown on the map. Also augmenting the economy of the community are two area mining developments. These mines are the Sherman Mine, located northwest of the community, and the Copperfields Mine, located on the Island of Timagami, 17 miles from Timagami. With the influx of mine workers to the area, a new townsite is being developed at Goward, 3 miles north of the community of Timagami to accommodate the expected future population.

II WATER USES

1. Municipal

A portion of the community is served by the Ontario Northland Railway water works. Water is pumped from the northeast arm of Lake Timagami and receives chlorination treatment prior to being directed to an elevated storage tank and the distribution system. The distribution system includes the ONR buildings and 18 commercial and residential establishments which are metered.

2. Private

The remaining dwellings in the community use individual drilled well supplies. Reportedly, some of the wells used by restaurants are contaminated and by order of the local health unit, chlorination facilities have been installed.

3. Recreational

As the Timagami area caters to the many tourists, campers and cottagers, Lake Timagami is used primarily for swimming, fishing and boating.

III POLLUTION CONTROL

1. Sanitary Waste Disposal

There is no municipal sanitary sewage works system in Timagami. Septic-tank and tile-bed systems are predominantly used for the treatment of sewage. Pit privies are also used. Storm sewers and drainage ditches are directed to the northeast arm of Lake Timagami known as Portage Bay.

Some of the islands on Lake Timagami have been developed by cottagers and campers. Although the islands were not inspected at the time of the survey, it is presumed that septic-tank systems are employed for the treatment of domestic wastes.

2. Boat Wastes

Control over sewage discharges from pleasure boats into any water in Ontario is regulated by the Ontario Water Resources Commission. Any pleasure boat that has sleeping accommodations must

be equipped with a marine toilet and an approved device which will store or dispose of human sewage, after June, 1968. Also, boats must be equipped with containers suitable for the storage of sewage of non-human origin.

It is anticipated that with these regulations, dockside pumping and shore-disposal systems will be developed at marinas and government docks.

IV PRESENTATION OF RESULTS

The observations and analytical data on samples taken from drainage systems and Lake Timagami are contained in tables I and II. A description of the significance of the laboratory tests and a summary of water-quality objectives are also appended.

Samples collected from an open ditch draining the most westerly part of the townsite revealed that domestic wastes were gaining access to this small watercourse. Bacteriological examination showed high coliform counts, indicating contamination by wastes of human origin. Chemical analyses revealed that detergents were present also.

A sample collected from a storm sewer outfall located immediately west of Fourth Street also indicated the presence of domestic wastes in the discharge. This storm sewer drains the major portion of town between Highway No. 11 and Fourth Street.

Reportedly this low lying area was once a swampy area and had been partially filled in. Where areas were backfilled,

storm sewers and culverts were placed to provide surface drainage.

At the time of the survey it was noted that a number of tile beds were ponding and leachate was gaining access to this storm sewer system. Also, there are direct discharges of septic-tank effluents to the storm drainage system. The majority of the known malfunctioning septic-tank systems are located on the west side of Highway No. 11.

A swampy area located north of Stevens Road and east of the ONR line receives a number of direct septic-tank discharges. As there are no surface watercourses draining this swamp, it is suspected that the water percolates into the ground and eventually reaches Lake Timagami.

The effect of the introduction of polluting wastes to Portage Bay is shown by the bacteriological examination of samples collected from the bay. Samples collected from three locations, off-shore from the Ontario Northland docks, the ONR water works pump-house, and an island with staff quarters for the Department of Lands and Forest, all indicated a high coliform count, in excess of the Commission's recommended limit of 2,400 coliforms per 100 ml. When coliform counts exceed this limit, the water is considered to be polluted and unfit for swimming purposes.

Chemical analyses for nitrogen compounds in the water collected from the east end of Portage Bay indicated fresh pollution by organic matter, domestic wastes.

It is pointed out that nitrogen and also phosphorus are nutrients found in domestic wastes and contribute to the biological productivity in surface waters. The growth of algae could increase to a point where the algae would eventually clog water intakes and filters, pile up on beaches, create unsightly conditions, and upon death and decay cause unpleasant odours. Limitations in amounts of the nutrients is usually the factor that controls the rate of growth.

At present, the water quality of the northeast arm of Lake Timagami is generally satisfactory except for Portage Bay adjacent to the populated area of Timagami as mentioned previously.

V REFUSE DISPOSAL

The refuse disposal site, operated by the Timagami and District Chamber of Commerce, is located 1 mile north of Timagami and approximately one-half mile east of Highway No. 11. No water pollution problems exist as a result of the operation of the site.

VI DISCUSSION

Due to the small-sized lots and lack of available overburden, it will be virtually impossible to correct the domestic waste-disposal problem on an individual basis. A communal collector and treatment system is the only satisfactory solution. However, the bedrock either extends above or is very near the surface in much of the area, so that sewer construction will be very costly.

Some of the reasons that the new townsite was established

in Goward and not in Timagami were the lack of suitable building lots and the anticipated high cost of servicing. There is a sufficient number of building lots available at Goward to accomodate the residents from Timagami, and the most practical and economical means of solving the pollution problem may be to relocate the residents of Timagami. With the removal of the homes, there may be sufficient area made available to allow the use of septic-tank and field-tile systems for the commercial establishments. This possibility will require investigation by the Timiskaming Health Unit. If this possibility were ruled out, there would be no alternative but to provide the commercial area with a communal collector and treatment system.

A cost-feasibility study will have to be undertaken to determine whether the residents should remain in Timagami, and be provided with municipal services, or relocate in Goward. The Department of Municipal Affairs, having been involved directly with the planning and servicing aspects for the townsite at Goward, and now assisting in the setting up of municipal government for the area, is the logical body to undertake the study.

Further development of islands on Lake Timagami may be allowed with the authorization of the local health unit regarding domestic waste treatment. Site inspections of the islands by the health unit to determine the soil suitability for septic-tank systems prior to construction will aid in the prevention of malfunctioning systems.

If only the commercial area remains in Timagami, the present ONR water works system should, with minor renovations, be satisfactory. Only a portion of the commercial area is now served and the system should be extended to serve the remaining establishments. The municipality should take over the present system when municipal organization takes place. Should the residential area remain, a new water distribution and supply works will be required.

VII SUMMARY AND CONCLUSIONS

A water pollution survey was made of the community of Timagami in August 1967.

Water supply for a portion of the townsite is served by the ONR water works. The remaining residences use individual drilled-well supplies. In many cases, these well supplies are contaminated and owners of some restaurants have been ordered by the Timiskaming Health Unit to install chlorinators.

There is no municipal sanitary sewage works system in the townsite. Septic-tank and tile-bed systems and pit-privies are also used. Many of the septic-tank systems are inadequate and malfunctioning, as soil conditions are not satisfactory for the operation of a tile-bed. Also, the small lot sizes do not provide for an adequate tile-bed area. With the ponding of tile beds and direct discharge of septic-tank effluents to open ditches and storm sewers, private well supplies are contaminated.

With the drainage of the storm sewers and ditches containing domestic sewage to the northeast arm of Lake Timagami, the lake

at the east end of Portage Bay adjacent to the community has become polluted and unsafe for swimming.

VIII RECOMMENDATIONS

1. A cost-feasibility study should be made by the Department of Municipal Affairs to determine if the residents of Timagami should be relocated at Goward in lieu of providing municipal services at Timagami.

2. Depending upon the results of the above study, the following action should be taken:

   (a) If the residential development is to remain in Timagami, a communal sewage collector and treatment system should be provided to serve the residential and commercial development.

   (b) If the residential development is moved to Goward, the land area made available should be checked for its suitability for septic-tank and field-tile systems to serve the commercial area.

   (c) If the land so made available is not suitable, a communal sewage collector and treatment system should be provided to serve the commercial area.

3. With the establishment of municipal organization, the present ONR water works system should be taken over by the municipality and extended or improved as outlined in the report.

4. Site inspections of the islands proposed for residential development should be made by the Timiskaming Health Unit to determine the suitability of the soil for septic-tank systems.

5. The quality of the water in the swimming area in Portage Bay should be monitored on a regular basis by the Timiskaming Health Unit to determine if swimming is permissible.

/elc

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APPENDIX

WATER QUALITY AND EFFLUENT OBJECTIVES

The OWRC objectives for surface waters in Ontario are as follows:

5-day BOD - not greater than 4 ppm
Total Coliform Count - not greater than 2,400 coliforms per 100 ml
Phenolic Equivalents - Average - not greater than 2 ppb
- Maximum - not greater than 5 ppb
pH Range - 6.7 to 8.5

A few pertinent maximum limits of contaminants in storm sewers, sewage treatment plant and industrial effluents are listed below. Adequate protection for surface waters except in certain specific instances influenced by local conditions, should be provided if the following concentrations and pH range are not exceeded.

5-day BOD - not greater than 15 ppm
Suspended Solids - not greater than 15 ppm
Phenols - not greater than 20 ppb
pH - 5.5 to 10.6
Iron - not greater than 17 ppm
Ether Solubles (Oil) - not greater than 15 ppm

GLOSSARY OF TERMS

Bacteriological Examinations - The Most Probable Number Technique is used by the Ontario Department of Health to obtain an approximation of the actual number of coliform organisms present. The Membrane Filter Technique is used by the OWRC to obtain a direct count of coliform organisms. These organisms are the normal inhabitants of the intestines of man and other warm-blooded animals. They are always present in large numbers in untreated sewage and

are, in general, relatively few in number in other stream pollutants.

Biochemical Oxygen Demand (BOD) - The biochemical oxygen demand test indicates the amount of oxygen required for stabilization of the decomposable organic matter found in sewage, sewage effluent polluted waters, or industrial wastes, by aerobic biochemical action.

Solids - The analyses for solids include tests for total suspended and dissolved solids. The total solids is a measure of the solids in solution and in suspension. Suspended solids indicate the measure of undissolved solids of organic or inorganic nature whereas the dissolved solids are a measure of those solids in solution.

Oils and Ether Soluble Materials - These include oils and all other soluble materials such as tarry substances and greases. The presence of these pollutants renders water difficult and sometimes impractical to treat either for industrial or domestic use. Oils make streams unsightly and water unfit for bathing.

Phenolic Compounds - Phenols react with chlorine to produce intensely aromatic compounds. These compounds, even when highly diluted, may give a taste and odour to the water which is variously described as medicinal, chemical or iodoform. Phenols taint fish and are toxic to fish, depending on the concentration. Normal water contains no phenolic compounds.

Alkyl Benzene Sulfonate (ABS) - The alkyl benzene sulfonate portion of the anionic detergents is reported in ppm. The test is generally employed to indicate the presence of domestic wastewater. The

popular use of synthetic detergent for general cleaning purposes have resulted in the incidence of residual ABS in streams. As an objective, the ABS concentration should not exceed 0.5 ppm in water used for domestic purposes.

Nitrogen

Ammonia Nitrogen - or sometimes called free ammonia is the insoluble product in the decomposition of nitrogenous organic matter. It is also formed when nitrates and nitrites are reduced to ammonia either biologically or chemically. Some small amounts of ammonia, too, may be swept out of the atmosphere by rain water.

The following values may be of general significance in appraising free ammonia content: Low 0.015 to 0.03 ppm; moderate 0.03 to 0.10 ppm; high 0.10 or greater.

Total Kjeldahl - is a measure of the total nitrogeneous matter present except that measured as nitrite and nitrate nitrogens. The Total Kjeldahl less the Ammonia Nitrogen measures the organic nitrogen present. Ammonia and organic nitrogen determinations are important in determining the availability of nitrogen for biological utilization. The normal range for Total Kjeldahl would be 0.1 to 0.5 ppm.

Nitrite Nitrogen - Nitrite is usually an intermediate oxidation product of ammonia. The significance of nitrites, therefore, varies with their amount, sources, and relation to other constituents of the sample, notably the relative magnitude of ammonia and nitrate present. Since nitrite is rapidly and easily converted to nitrate, its presence

in concentrations greater than a few thousands of a part per million is generally indicative of active biological processes in the water.

Nitrate Nitrogen - Nitrate is the end product of aerobic decomposition of nitrogenous matter, and its presence carries this significance. Nitrate concentration is of particular interest in relation to the other forms of nitrogen that may be present in the sample. Nitrates occur in the crust of the earth in many places and are a source of its fertility.

The following ranges in concentration may be used as a guide. Low less than 0.1 ppm; moderate 0.1 to 1.0 ppm; high greater than 1.0 ppm.

Hardness - The hardness of water reflects the nature of the geological formations with which it has been in contact. Hard waters are as satisfactory for human consumption as soft waters. Waters with a hardness of 75-100 ppm are considered moderately hard and waters with a hardness of 150-300 ppm are classified as hard.

Alkalinity - The alkalinity of natural waters is caused by three major classes of materials which may be ranked in order of their effect or pH as follows: (1) hydroxides (2) carbonates and (3) biocarbonates and other salts of weak acids. The alkalinity of a water has little sanitary significance but is of importance in water, sewage and industrial waste treatment practices.

Iron - The OWRC Drinking Water Objectives set a limit of 0.3 ppm for iron. This limitation is based on consideration of appearance rather than health.

Chlorides - Chlorides in reasonable concentrations are not harmful to humans. At concentrations above 250 ppm they give a salty taste to the water which is objectionable to many people. For this reason, the OWRC Drinking Water Objectives recommends that chlorides be limited to 250 ppm in supplies intended for public use.

pH - The pH value, for practical purposes, refers to acidity or alkalinity, and is a measure of intensity rather than quantity. The pH scale extends from zero (very acidic) to 14 (very alkaline), with the middle value of 7 corresponding to neutrality at 25°Centigrade. The pH of surface water should be in the range of 6.7 to 8.5.

Colour and Turbidity - Although these tests do not directly measure the safety of the water, they are related to consumer acceptance of the water. At levels in excess of 5 units of colour and 1 unit of turbidity in the raw water consumers acceptance may be conditional upon treatment of the water.

LIST OF BUSINESS ESTABLISHMENTS

1. Shell Service Station
2. Hotel Minawassi
3. Brewer's Retail
4. B.P. Service Station
5. Busby's Housekeeping Cottages
6. Lakeland Airways
7. OPP Headquarters
8. Department of Lands & Forests Office
9. Kenmar Lodge - Cabins
10. Timagami & District Health Centre - Red Cross
11. Homocrest Dairy & W.Pacey residence
12. ONR Station - Timagami
13. Deluxe Snack Bar
14. Esso Service Station
15. Marty Taylor - Marine Sales & Service
16. Peter's Holiday Shop
17. Busy Bee Grill
18. Orient Garden Restaurant
19. Frost's Snack Bar
20. Bank of Nova Scotia
21. Goddard's Hotel
22. Timagami Hardware and W.L. Pacey Insurance
23. Liquor Control Board
24. Post Office
25. Don's General Store
26. Coin Operated Laundry
27. Timagami Trading Co.Ltd. - I.G.A. & Hardware
28. Residence
29. Northland Traders
30. Costante's Shopping Centre
31. Bank
32. Marg's Restaurant
33. Ted's Store of Little Things
34. Barber Shop and Music Centre

TOWNSHIP OF STRATHY, COMMUNITY OF TIMIGAMI

OUTFALL AND SNAKE LAKE SAMPLE RESULTS

TABLE I

SAMPLING POINT No.	DESCRIPTION	DATE	5-DAY BOD (PPM)	SOLIDS TOTAL (PPM)	SOLIDS SUSP. (PPM)	SOLIDS DISS. (PPM)	ANIONIC DETERGENTS AS ABS (PPM)	MPN TOTAL COLIFORM ORGANISMS PER 100 ML	MPN FAECAL COLIFORM ORGANISMS PER 100 ML	PHENOLS IN PPB	ETHER SOLUBLES
TNE-12.60 D	OPEN DITCH AT HEALTH CENTRE.	AUG. 3/67	INSUFFICIENT FLOW FOR SAMPLING								
TNE-12.80 D	DRAINAGE DITCH EAST OF HOMECREST DAIRY.	AUG. 2/67	7.0	300	19	281	0.04	110,000+	24,000		
		AUG. 3/67	3.7	218	7	211	0.1	110,000+	24,000		
TNE-12.80 D2	DRAINAGE DITCH BETWEEN THIRD & FOURTH AVENUES.	AUG. 3/67	1.1	262	27	235	0.3	46,000	230		
TNE-12.80 D3	DRAINAGE DITCH AT SECOND AVENUE.	AUG. 3/67	147	764	102	662	10.0	110,000+	110,000+		
TNE-12.55 W	30-INCH DIAMETER CONCRETE STORM SEWER WEST OF FOURTH STREET.	AUG. 2/67	11	560	42	518	0.48	110,000+	110,000+		
		AUG. 3/67	3.7	218	7	211	0.1	110,000+	110,000+		
TNE-12.55 W2	30-INCH CORRUGATED IRON STORM SEWER AT FOURTH AVENUE & FOURTH STREET.	AUG. 3/67	80.0	628	72	556	12.8	110,000+	110,000+		
TNE-12.55 D	DRAINAGE AT REAR OF MARG'S RESTAURANT.	AUG. 3/67	16.0	640	36	604	0.9	110,000+	110,000+		

TABLE 1 (CONTD)

SAMPLING POINT No.	DESCRIPTION	DATE	5-DAY BOD (PPM)	SOLIDS TOTAL (PPM)	SOLIDS SUSP. (PPM)	SOLIDS DISS. (PPM)	ANIONIC DETERGENTS AS ABS (PPM)	TOTAL COLIFORM ORGANISMS PER 100 ML (MPN)	FAECAL COLIFORM ORGANISMS PER 100 ML	PHENOLS IN PPB	ETHER SOLUBLES
TNE-12.60 T	GODDARD'S HOTEL - SEPTIC TANK EFFLUENT.	AUG. 3/67	130	532	88	444	12.0	-	-		
TNE-12.60 P	3-INCH DIAMETER IRON PIPE FROM ONR RESIDENCE.	AUG. 3/67	235	484	120	364	2.7	-	-		
TNE-12.60 W	STORM SEWER EAST OF GARRETT ESSO DISTRIBUTOR AGENT.	AUG. 3/67	25	602	38	664	0.33	-	-	10	3
S-0.9	SNAKE LAKE AT AT END OF ROAD-WAY CORRIDOR.	AUG. 3/67	1.1	84	1	83	0.01	-	-		
S-1.0	SNAKE LAKE AT TIMAGAMI BOAT LIVERY.	AUG. 3/67	1.0	100	2	98	0.01	-	-		
TNE-12.15 D	CARIBOU CREEK AT HWY. NO. 11.	AUG. 3/67	0.4	94	3	91	0.0	930	93		
TNE-12.17 D	OPEN DITCH AT HWY. NO. 11.	AUG. 3/67	0.2	240	3	237	0.0	1,500	0		

LAKE TIMAGAMI (NORTHEAST ARM) SAMPLE RESULTS

TABLE II

Sampling Point No.	Description	Date	5-Day BOD (ppm)	Solids Total (ppm)	Solids Susp. (ppm)	Solids Diss. (ppm)	Anionic Detergents as ABS (ppm)	Total Coliform Organisms per 100 ml (MPN)	Faecal Coliform Organisms per 100 ml	Phenols in ppb	Nitrogen as N (ppm) Free Ammonia	Nitrogen as N (ppm) Total Kjeldahl	Nitrogen as N (ppm) Nitrite	Nitrogen as N (ppm) Nitrate
TNE-12.60	Offshore from ONR docks Portage Bay.	Aug. 3/67	0.5	46	3	43	0.0	9,300	23		0.2	0.78	0	0.07
TNE-12.55 (N)	Portage Bay adjacent to Fourth St. storm sewer outfall.	Aug. 3/67	0.4	70	1	69	**Interference	430	93		**	3.3	0.0	**
TNE-12.50 (N)	Offshore from Dept. of Lands & Forests dock.	Aug. 3/67						930	0					
TNE-12.50 (S)	Offshore from ONR water works pump-house.	Aug. 3/67	0.5	42	1	41	0.0	24,000	93		0.2	0.66	0.01	0.03
TNE-12.42 (N)	Offshore from White cottage.	Aug. 3/67	0.5	44	1	43	0.0	43	9.1	8	0.13	0.40	0.0	0.00
TNE-12.42 (S)	Offshore from Dept. of Lands & Forests residence.	Aug. 3/67	0.7	28	3	25	0.0	24,000	20		0.20	0.78	0.0	0.02
TNE-12.35 (N)	Offshore from Brown boat-house.	Aug. 3/67						150	0					
TNE-12.20 (N)	Offshore from White boat-house.	Aug. 3/67						230	23					

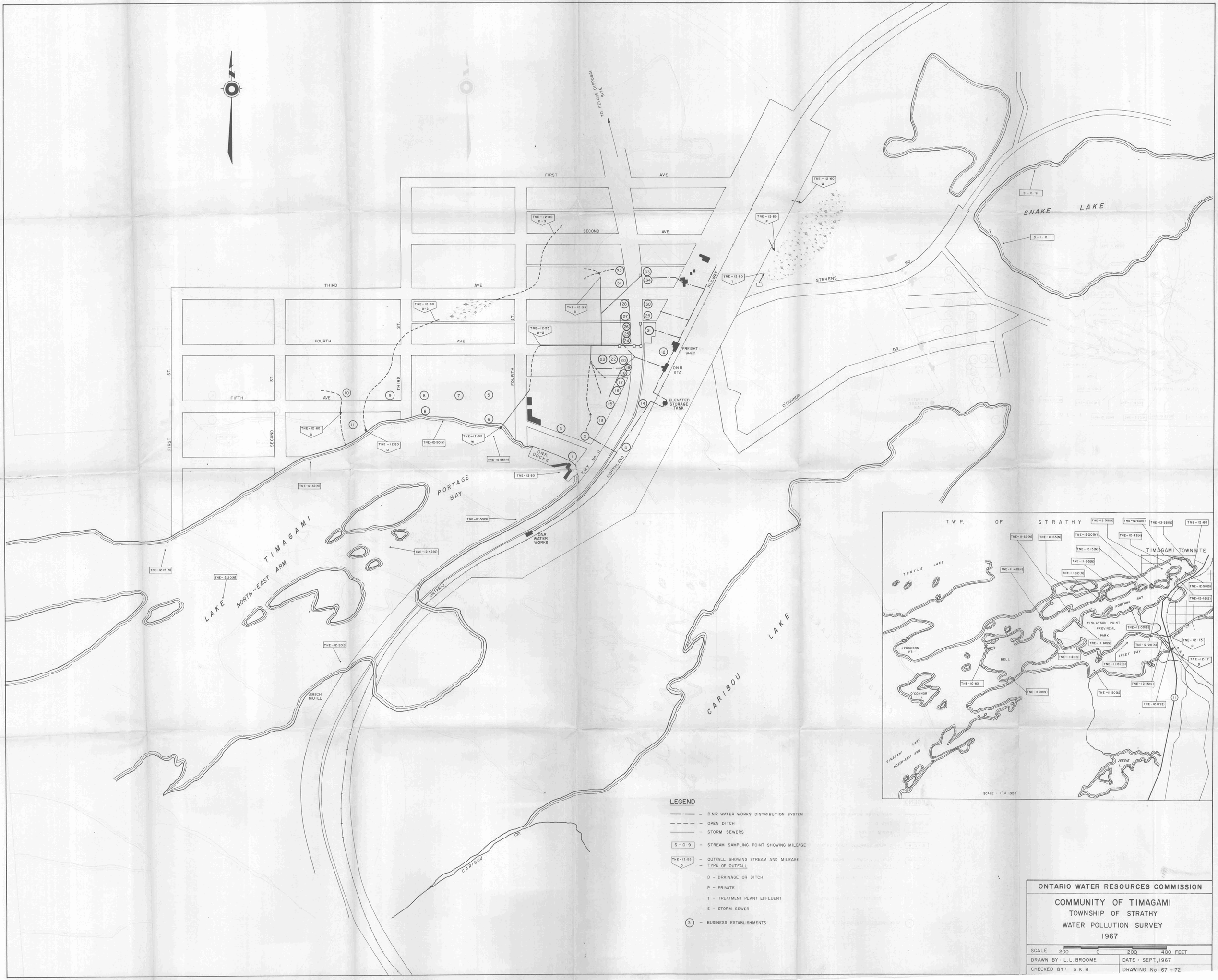
TABLE II (CONTD)

SAMPLING POINT No.	DESCRIPTION	DATE	5-DAY BOD (PPM)	SOLIDS TOTAL (PPM)	SOLIDS SUSP. (PPM)	SOLIDS DISS. (PPM)	ANIONIC DETERGENTS AS ABS (PPM)	MPN TOTAL COLIFORM ORGANISMS PER 100 ML	MPN FAECAL COLIFORM ORGANISMS PER 100 ML	PHENOLS IN PPB	NITROGEN AS N (PPM) FREE AMMONIA	NITROGEN AS N (PPM) TOTAL KJELDAHL	NITRITE	NITRATE
TNE-12.20 (S)	OFFSHORE FROM AMICH MOTEL.	AUG. 3/67	0.4	6	1	5	*SAMPLE EXHAUSTED	2,100	230		2.30	*	0.0	0.02
TNE-12.15 (N)	OFFSHORE FROM BAMBI LODGE.	AUG. 3/67	0.7	64	1	63	0.0	43	23		0.10	0.66	0.0	0.00
TNE-12.00 (S)	FINLAYSON PT. PROVINCIAL PARK - SWIMMING AREA	AUG. 3/67						430	23					
TNE-11.95 (N)	OFFSHORE FROM BROWN LOG CABIN.	AUG. 3/67						43	0					
TNE-11.82 (N)	PORTAGE BAY.	AUG. 3/67	0.3	56	9	45	0.0	43	23		3.61	0.26	0.0	0.02
TNE-11.65 (N)	PORTAGE BAY.	AUG. 3/67	0.6	50	2	48	0.0	7.3	0		0.10	0.52	0.0	0.00
TNE-11.60 (N)	PORTAGE BAY.	AUG. 3/67	0.7	46	2	44	0.1	9.1	0		0.13	0.52	0.0	0.00
TNE-11.60 (S)	FINLAYSON PT. PROVINCIAL PARK - SWIMMING AREA.	AUG. 3/67	0.3	26	2	24	0.0	15	0		0.46	0.78	0.0	0.06
TNE-11.40 (N)	PORTAGE BAY.	AUG. 3/67						7.3	0					
TNE-11.40 (S)	CHANNEL BETWEEN BELL ISLAND AND PROVINCIAL PARK.	AUG. 3/67	0.8	52	1	51	0.0	9.1	0		0.15	0.66	0.0	0.00

TABLE II (CONTD)

SAMPLING POINT No.	DESCRIPTION	DATE	5-DAY BOD (PPM)	SOLIDS TOTAL (PPM)	SOLIDS SUSP. (PPM)	SOLIDS DISS. (PPM)	ANIONIC DETERGENTS AS ABS (PPM)	MPN TOTAL COLIFORM ORGANISMS PER 100 ML	MPN FAECAL COLIFORM ORGANISMS PER 100 ML	PHENOLS IN PPB	NITROGEN AS N (PPM) FREE AMMONIA	NITROGEN AS N (PPM) TOTAL KJELDAHL	NITRITE	NITRATE
TNE-11.00 (S)	SOUTH OF BELL ISLAND.	AUG. 3/67						3.6	3.6					
TNE-10.83	WEST OF BELL ISLAND.	AUG. 3/67	0.5	34	1	33	0.0	3.6	0		0.13	0.52	0.0	0.02
TNE-12.17 (S)	INLET BAY AT DHO CULVERT.	AUG. 3/67						4.3	0					
TNE-12.15 (S)	INLET BAY AT OUTLET OF CARIBOU CREEK.	AUG. 3/67	0.8	58	1	57	0.0	43	23		0.20	0.78	0.0	0.12
TNE-11.82 (S)	INLET BAY OFFSHORE FROM MARINA.	AUG. 3/67	0.7	42	1	41	0.0	93	0	10	0.16	0.78	0.0	0.03
TNE-11.50 (S)	INLET BAY AT OUTLET OF JESSIE LAKE.	AUG. 3/67	0.6	68	1	67	0.0	43	0		0.16	0.66	0.0	0.09

SAMPLING POINT No.	DESCRIPTION	DATE	HARDNESS AS $CaCO_3$ (PPM)	ALKALINITY AS $CaCO_3$ (PPM)	IRON AS Fe (PPM)	CHLORIDE AS Cl (PPM)	PH AT LAB	APPARENT COLOUR UNITS	TURBIDITY UNITS
TNE-12.50 (S)	OFFSHORE FROM ONR WATER WORKS PUMPHOUSE.	AUG. 3/67	34	19	0.10	4	7.8	5	2.6



LEGEND

- O.N.R. WATER WORKS DISTRIBUTION SYSTEM
- OPEN DITCH
- STORM SEWERS
- S-0-9 – STREAM SAMPLING POINT SHOWING MILEAGE
- TNE-12-55 / D – OUTFALL SHOWING STREAM AND MILEAGE – TYPE OF OUTFALL
  - D – DRAINAGE OR DITCH
  - P – PRIVATE
  - T – TREATMENT PLANT EFFLUENT
  - S – STORM SEWER
- (3) – BUSINESS ESTABLISHMENTS

ONTARIO WATER RESOURCES COMMISSION

COMMUNITY OF TIMAGAMI
TOWNSHIP OF STRATHY
WATER POLLUTION SURVEY
1967

SCALE : 200 0 200 400 FEET	
DRAWN BY : L.L. BROOME	DATE : SEPT., 1967
CHECKED BY : G.K.B.	DRAWING No : 67 – 72