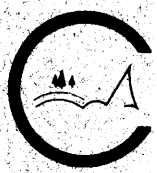
St. Lawrence Beaches Study

FINAL REPORT



RAISIN
REGION
CONSERVATION
AUTHORITY

RAISIN REGION CONSERVATION AUTHORITY

ST. LAWRENCE BEACHES STUDY

FINAL REPORT

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1991 summer students Katherine Baker and Kevin Sills

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the technical steering committee, representing the **Ministry of the Environment**, the **Ministry of Agriculture and Food**, the **Ministry of Natural Resources**, the **Eastern Ontario Health Unit**, the **St. Lawrence Parks Commission**, and the **Raisin Region Conservation Authority.**

the parks staff who collected and recorded data on a daily basis

EXECUTIVE SUMMARY

This final report represents the overall conclusion of a two year study to assess and identify those bacterial sources affecting rural St. Lawrence River beaches within the Raisin Region Conservation Authority watershed. The study encompassed water quality testing programs at affected beaches and along relevant upstream tributaries, a study of goose and gull populations and their impacts at three of the affected parks, as well as a survey of agricultural operations within a specific study zone.

Each park beach was found to have its own combination of bacterial sources. Generally these sources of bacterial pollution, either individually or in combination, include point sources such as sewage treatment plants and stormwater runoff culverts, and non-point sources including agricultural activity, goose and gull feces, and faulty septic systems.

This report concludes with a number of recommended remedial measures intended to eliminate/reduce the sources of bacteria currently/potentially affecting the park beaches studied. The costs of these remedial actions and the strategies for implementation will be included in a separate document, referred to as a **Clean Up Rural Beaches (CURB) Plan.**

TABLE OF CONTENTS

TABLE OF EXHIBITS

1. INTRODUCTION TO THE RURAL BEACHES PROGRAM

1.1 The Rural Beaches Program

In response to rural beach closures in Southern and Eastern Ontario during the early to mid 1980's, the **Ontario Ministry of the Environment** (**MOE**) established the **Rural Beaches Program.** This report is the second and final report of a two year study to address the problem of surface water quality in the vicinity of shoreline beaches within the **Raisin Region Conservation Authority** watershed.

The purpose of the second year of the study was to provide the groundwork for a **Clean Up Rural Beaches** (**CURB**) **Plan.** The **CURB Plan** is a detailed document providing implementations strategies and costs for specific remedial actions to eliminate, reduce, or otherwise control bacterial pollution sources identified in this report.

1.2 Conclusions from the 1990 St. Lawrence Beaches Summary Report

The primary objective of the 1990 study year was to establish a data base which would be used to identify sources of water quality problems within the defined study area. Based on this first year of study, eight conclusions were stated. In brief, these conclusions were:

1. Background levels of fecal coliforms in the St. Lawrence River typically have bacterial densities of less than 10 organisms per 100 mL of water sampled. This background level is below the **Provincial Recreation Water Quality Guideline** of 100 organisms per 100 mL of water.

2. Most beaches seem to be influenced by local sources of bacterial pollution rather than upstream sources. These possible sources of contamination may be storm water runoff, goose and gull feces, local septic systems, and bathing activities.

3. Lancaster and Glengarry Parks are the only beaches which are affected by tributaries, namely Finney Creek and the Raisin River.

4. High fecal coliform and E.coli levels in the vicinity of the Woodlands campground beach may be attributable to bacteria from the Ingleside sewage treatment plant.

5. Several high bacteria counts at or near Alexandria Park may be attributed to septic systems or other unspecified local sources.

6. Nearshore high bacteria counts recorded between Summerstown and Pilon's Point may be the result of faulty residential septic systems.

7. Goose and gull feces have bacterial levels comparable to those of human and animal sewage.

8. Evaluation of the effect of goose and gull feces on beach bacterial contamination was inconclusive because of low water bacterial counts at four beaches which were surveyed for bird dropping densities.

1.3 Objectives for the 1991 St. Lawrence Rural Beaches Study Program

Based on the conclusions of the **1990 St. Lawrence Rural Beaches Summary Report**, the objectives for the 1991 study year were formulated as recommended actions. This final report documents the actions taken, the results of those actions, and recommendations for further actions.

The specific objectives were as follows:

1. Continue the water sampling program in Year 1 of the Rural Beaches Program, to better focus on specific areas where water quality problems have been identified;

2. Where local sources of beach pollution have been identified, conduct a detailed survey of park activities;

3. To assess the correlation of bacteria with other parameters, daily sampling should be conducted at a specific beach;

4. Review the results of a **St. Lawrence Parks Commission** study of their park sewage systems to discover if these systems are contributing to local beach bacterial pollution;

5. Sediment samples should be taken at selected beaches, as well as samples of storm runoff waters, and water samples before and after beach use;

6. Continuation of the goose and gull beach feces count in order to gather data for the purpose of comparison with previous results, and to correlate data with tested beach water bacterial levels;

7. Storm water outfalls should be located and residential sewer systems assessed to determine their impact on Alexandria Park beach;

8. Examine the effects of the Ingleside Sewage Treatment Plant on beach water quality at Woodlands Park through establishment of a systematic testing grid;

9. The Raisin River and Finney Creek were identified as likely bacterial pollution sources at Lancaster and Glengarry Parks. Because of the predominantly agricultural nature of the watershed areas of these tributaries, on-going monitoring along their course should be continued. As well, information concerning farming operations and agricultural practices should be collected within the tributaries watersheds. Specific areas of study include livestock access to watercourses, manure and land management practices, and milkhouse wash water waste disposal;

10. The application of a **Clean Up Rural Beaches (CURB)** model to prioritize agricultural sources;

11. Continuation of a public information program to inform the community about the second phase of the Rural Beaches Program;

12. Contacts with landowners to promote water quality awareness, and remedial measures and technical advice available for alternative waste management solutions;

13. Establish remedial options based on the findings from the two years of study under the Rural Beaches Program. These options would be assessed and recommendations made on the implementation of these measures to improve beach water quality.

All of these objectives have been addressed in this report.

2. STUDY AREA

2.1 Beaches

For the purposes of this study, three geographically separated beach test areas were identified; 1). St. Lawrence River beaches west of Cornwall, 2). St. Lawrence River beaches east of Cornwall and 3). Alexandria Park beach on the Garry River System (see Figure 1).

The greatest number of studied beaches are located west of Cornwall. The six beaches at which weekly water samples were taken include: Crysler Park, Farran Park, Woodlands Parks (day use and camping), Mille Roches Park, and Lakeview Heights Park. Lakeview Heights Park has been closed for the past several years.

Three parks east of Cornwall were tested during the 1991 study. These included Glengarry, Lancaster, and Charlottenburgh Parks. Charlottenburgh Park remained closed during the summers of 1990 and 1991.

The only park and beach not located on the St. Lawrence River, Alexandria Park, is on the Garry River in the northeastern section of the **Raisin Region Conservation Authority** watershed.

2.2 Tributaries

The only two tributaries intensively sampled during the second year of the St. Lawrence Rural Beaches Study were the Raisin River, from MacGillivrays Bridge to its confluence with the St. Lawrence River, and Finney Creek, a major farm drain, from Concession II, Lancaster Township to its confluence with the St. Lawrence River. Both watercourses enter the St. Lawrence River immediately upstream of Lancaster and Glengarry Parks (see Figure 5). The following tributaries sampled during 1990 were not sampled during 1991: Aultsville Creek, Hoople Creek (only one test location), Murray Drain, Fraser Creek, and Donald Maclennan Drain. Previous year test results showed no link between beach bacterial pollution and flows from these tributaries.

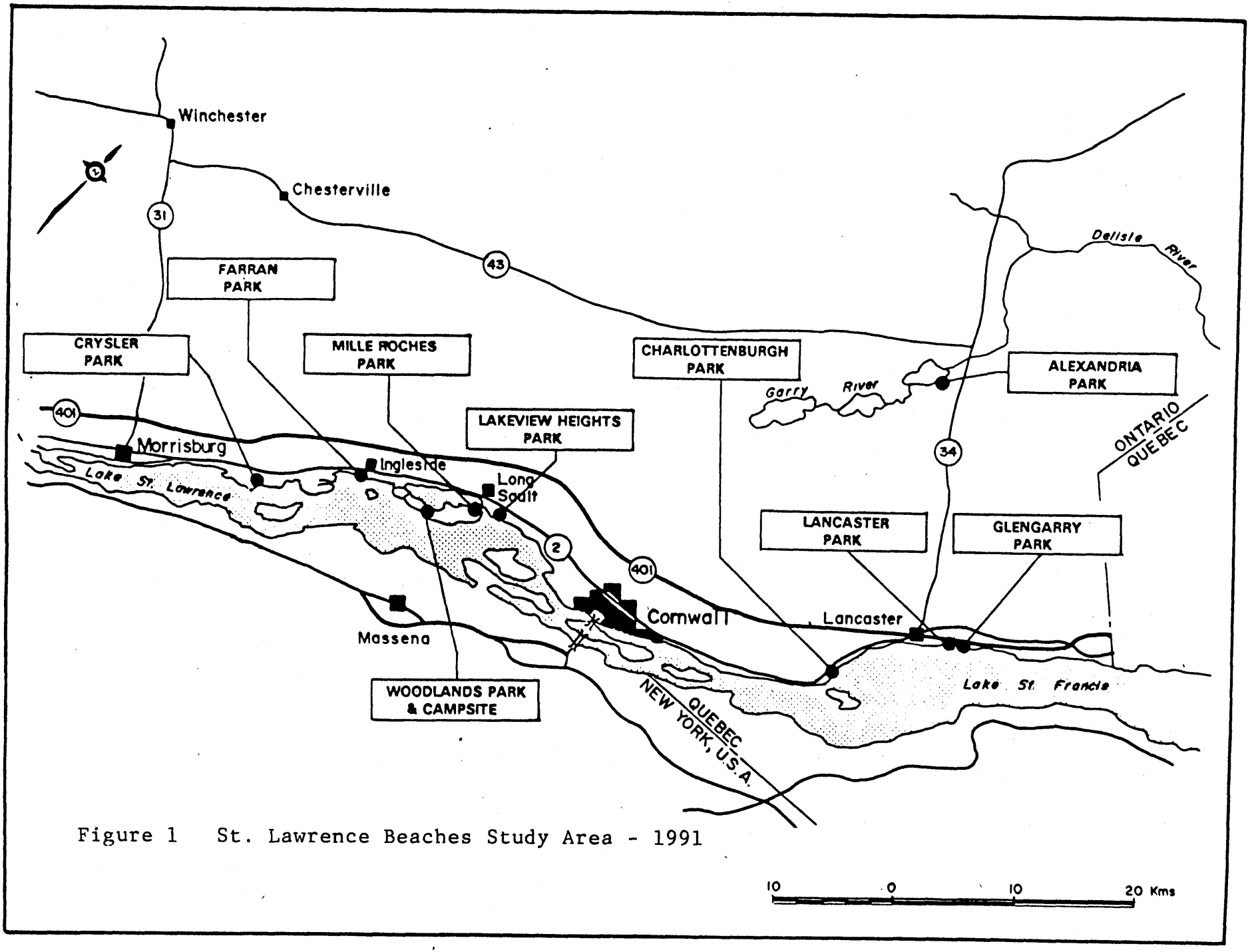

Figure 1 St. Lawrence Beaches Study Area - 1991

3. METHODOLOGY AND PROCEDURES

3.1 Background Data

Meteorological data for the period from May to September 1991, was supplied by **Environment Canada.** Data collected originated from weather stations at Dalhousie Mills, Glen Gordon, Cornwall, and Morrisburg.

Additional beach water bacterial testing results used for comparison purposes was provided by the **Eastern Ontario Health Unit** (**EOHU**) for the current study year.

Site plans of all **St. Lawrence Parks Commission** beaches included in the study were analyzed to determine the following: the placement runoff culverts, sewage systems, washroom facilities, and parking areas in relationship to the beach, and the length of the beach front. As well, the location of sewage treatment plants and stormwater outfalls for all study beaches were noted, especially those discharging immediately upstream of a park beach.

3.2 Water Sampling

The beach water sampling schedule during 1991 study period involved weekly testing at the abovementioned park beaches and tributaries, beginning on May 10 and ending on September 10. Tributaries were sampled at more than one test location, beaches were tested at both nearshore and offshore locations. Testing grids were used to locate bacterial pollution origins both at and upstream of park beaches, except at Crysler Park.

Nearshore and tributary samples collected included testing for bacterial and chemical pollutants, while offshore and grid sample testing involved the collection of bacterial samples exclusively. Figures 2 to 6 show the water sampling stations selected for the 1991 study.

Additional bacterial testing results obtained from the **EOHU** was used in this study for comparison purposes. The water sampling protocol used by the **EOHU** differs from that used by St. Lawrence Beaches Study staff. The **EOHU** sampling is done during periods of high use. When counts at a location exceed the Provincial guideline, additional samples are taken over a period of time. This is done to determine whether or not the high bacterial count is of a momentary or sustained nature. Should counts remain high for a sustained period, closure of the beach may become necessary.

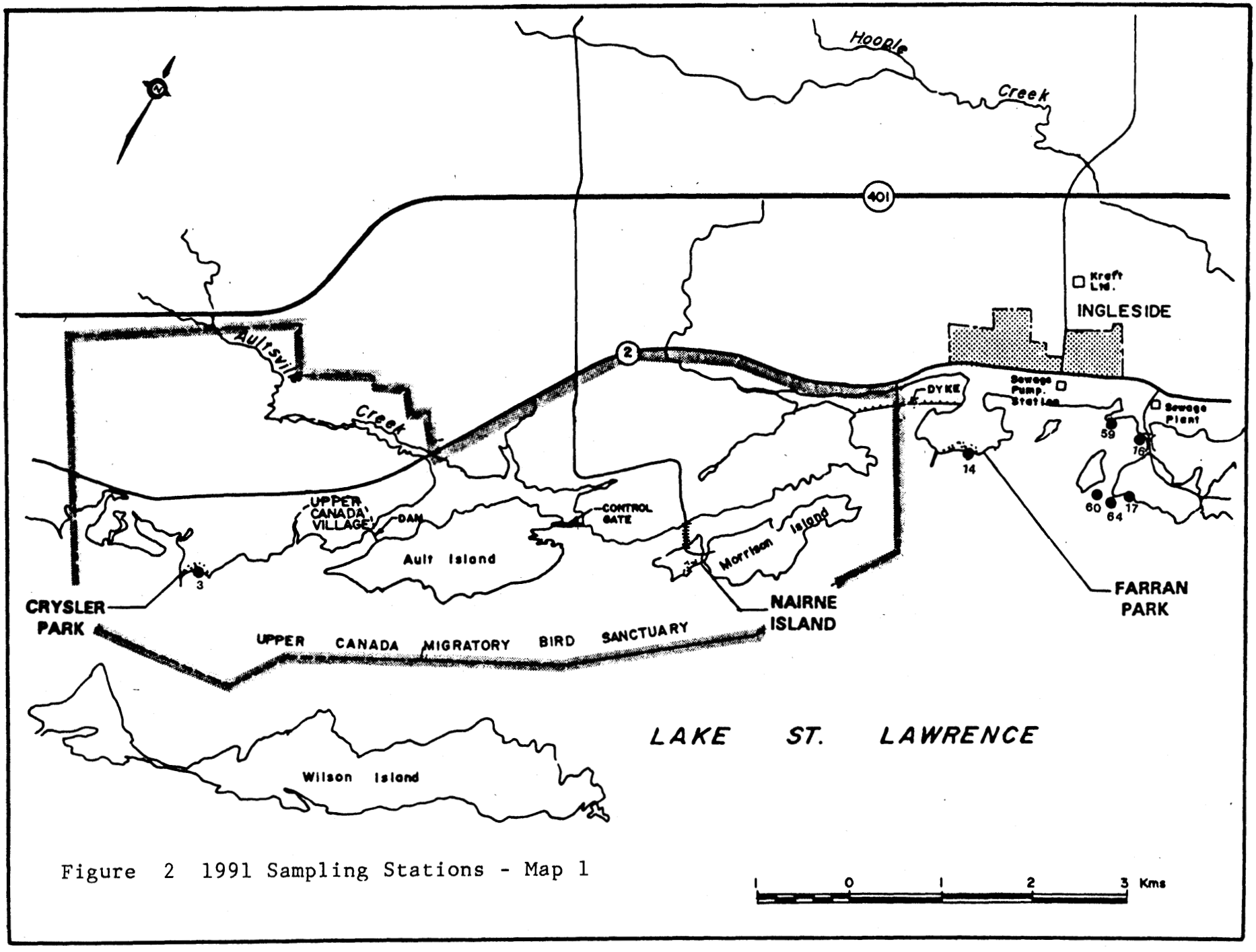

Figure 2 1991 Sampling Stations - Map 1

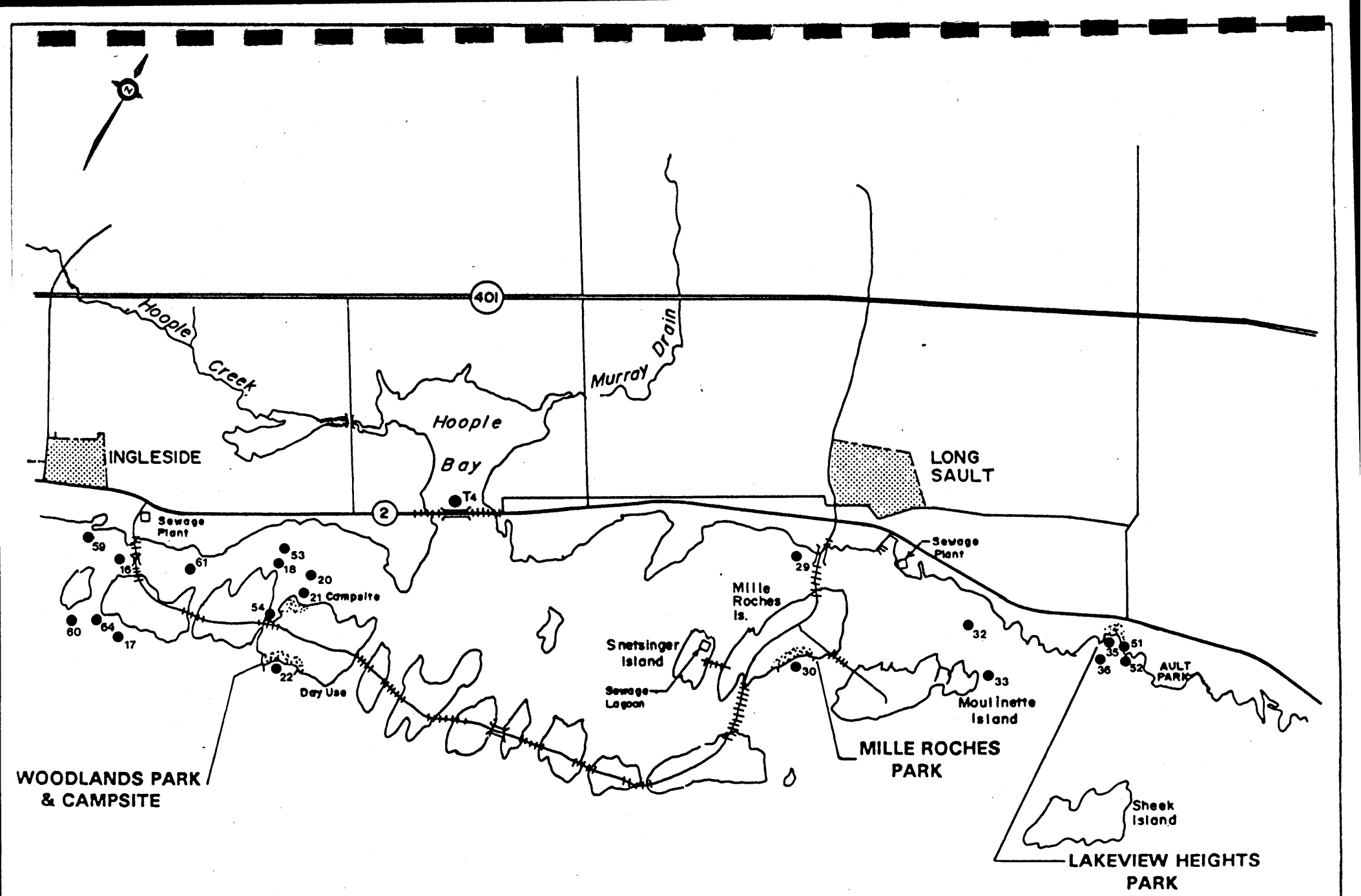

Figure 3 1991 Sampling Stations - Map 2

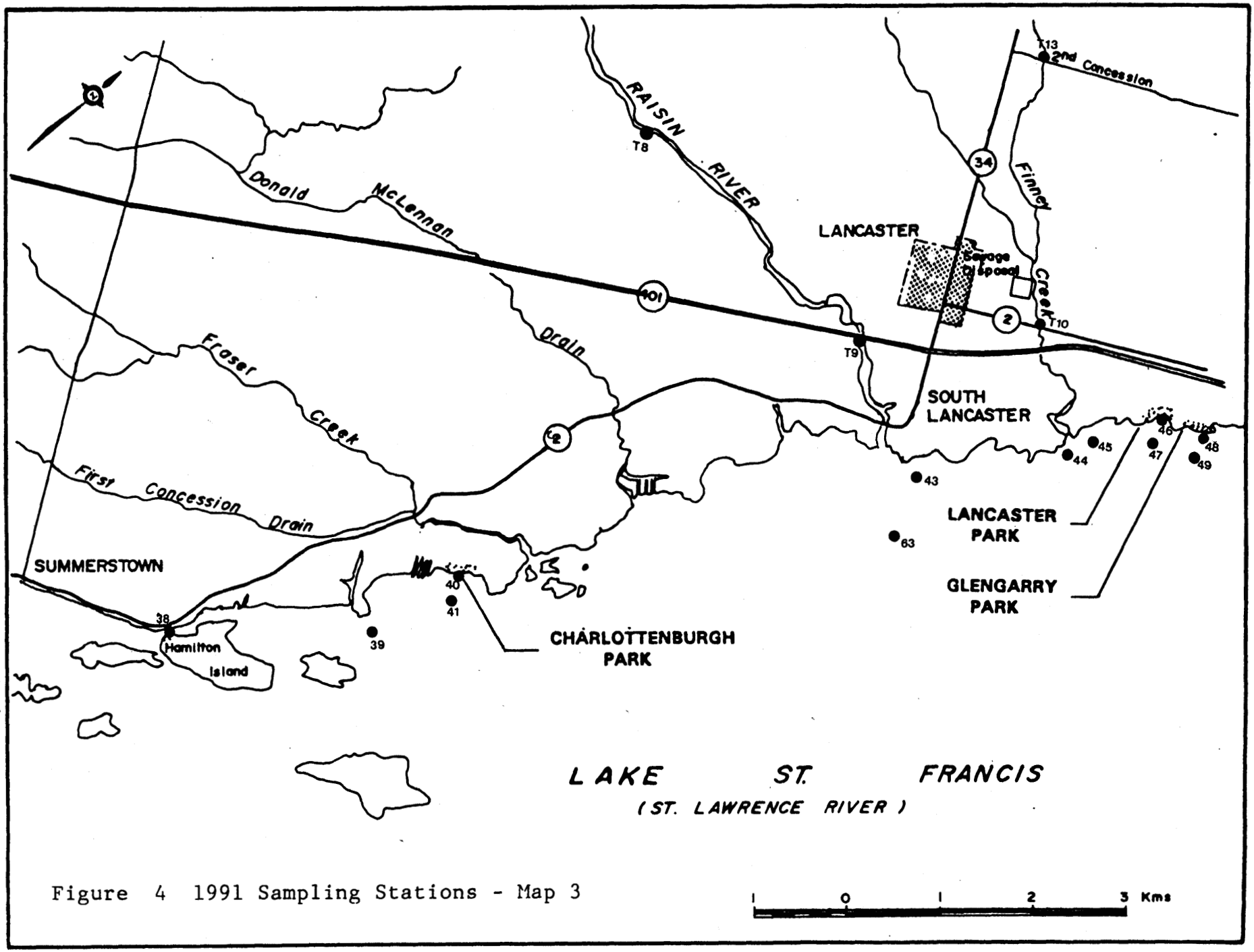

Figure 4 1991 Sampling Stations - Map 3

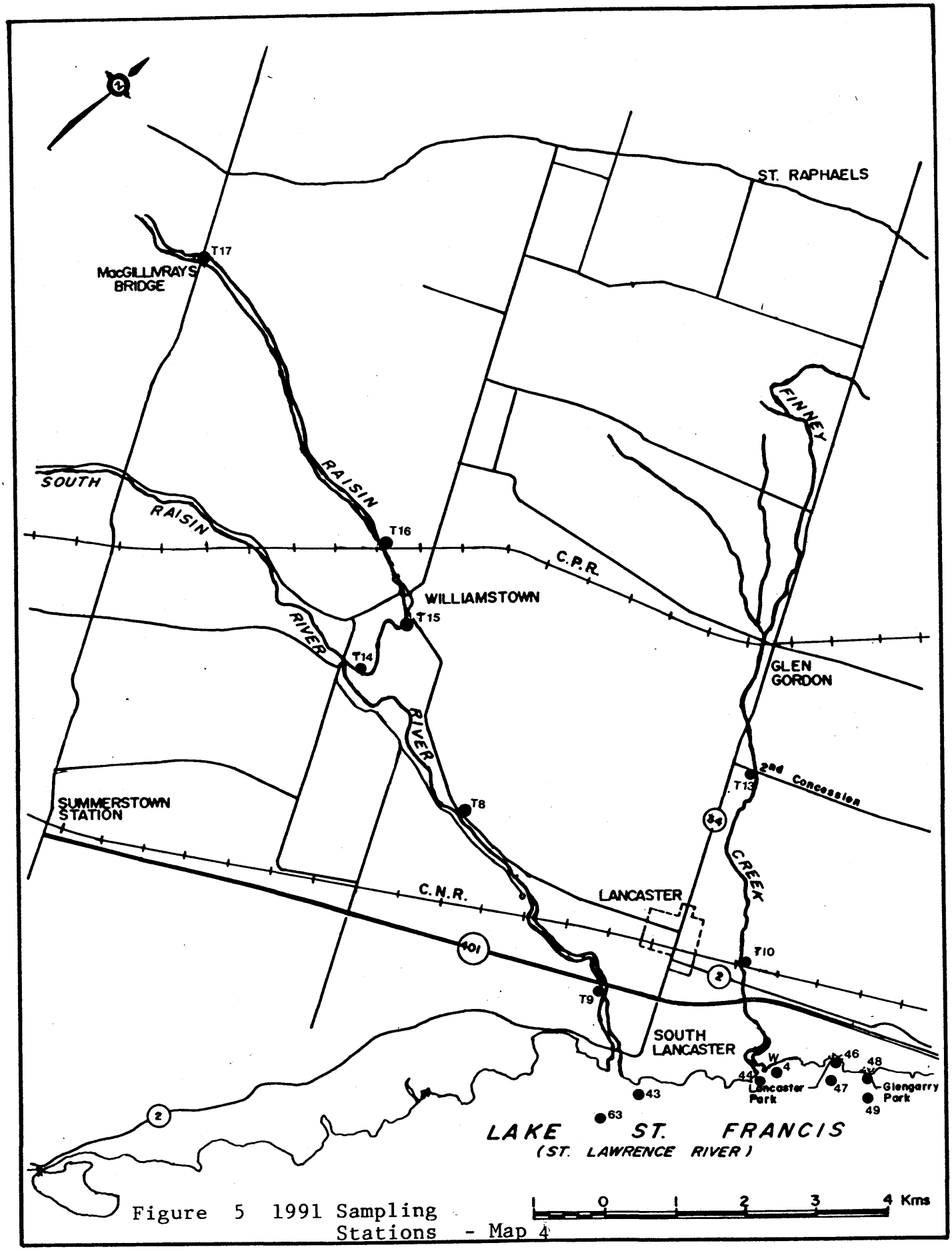

Figure 5 1991 Sampling Stations - Map 4

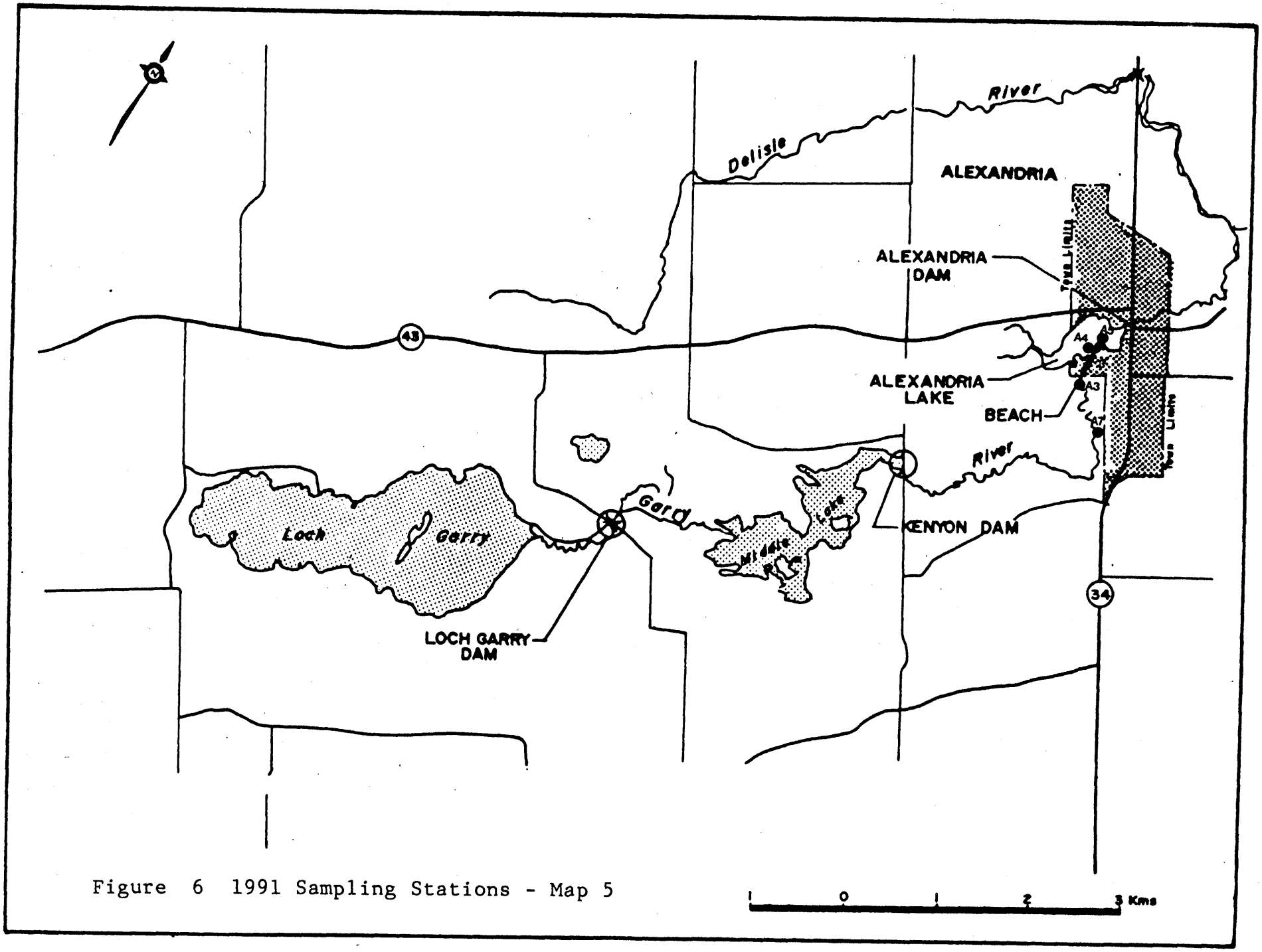

Figure 6 1991 Sampling Stations - Map 5

3.3 Storm Water Runoff Sampling

A storm water sampling component was added to the regular bacterial and chemical water sampling schedule. The purpose of this extra testing was to measure the content of runoff waters draining grass picnic areas via park culverts over beach areas. As well, tributaries were tested for bacterial and chemical parameters to determine pulse sources of pollution.

During the testing period including the months of June, July, August, and early September, only one significant rain event occurred. However, the rainfall was of insufficient quantity and duration to permit sampling water from the culverts.

3.4 Before and After Beach Use Testing

A third extra water sampling program required the collection of bacterial water samples from Crysler, Farran, and Woodlands (day use) beaches, to determine the effects of beach use on bacterial concentrations. Samples were taken at approximately 9:00 and 16:00, for a total of three periods during the summer.

3.5 Sediment Sampling

Sediment samples were collected at beaches in Woodlands (day use and camping), Crysler, and Farran Parks to determine bacterial concentrations. Samples were taken once a month, for a total of four samples per beach during the summer.

Sediment samples were taken on Finney Creek at two sampling locations to determine the bacteria concentrations to correlate with water sampling bacterial counts.

3.6 Geese and Gull Dropping Study

A continuation of the goose and gull dropping density study at Crysler, Farran, and Woodlands (day use) Parks was accomplished. Lakeview Heights Park was not chosen as a repeat sampling study location. Sampling at each beach occurred weekly, from May 14 to September 6 inclusive. Every effort was made by beaches staff to count only fresh feces, to avoid recounting those which were included in previous weekly counts. Feces were counted at several spots on each beach within a 1 or 2 metre square area. Feces on sand beach areas and grass berms were included where appropriate for each park studied.

Recorded observations were plotted on park site plans, and densities were then calculated. The park areas used for density calculations were 22000 m^2 for Woodlands Park (day use), 30000 m^2 for Crysler Park, and 35000 m^2 for Farran Park.

3.7 Park Activities

A daily record of park activities was kept by park staff on request, to determine if any or all of these activities has an impact on beach water bacterial counts. The activity sheets included record columns for rainfall, total attendance, number of bathers, grass cutting, beach sand raking, application of new sand, and washroom lineups.

3.8 Agricultural Operation Survey

The survey of agricultural operations was a major instrument employed to locate rural source bacterial pollution associated with farm practices within the Finney Creek and lower Raisin River watersheds (see Figure 7). A 21 question survey was delivered person to person during the summer and fall of 1991, and covered farm practices such as manure storage and handling, milkhouse wash water disposal, and animal pasturing. A total of 45 farms were surveyed, representing approximately 90% of all farms within the agricultural study area.

3.9 Rural Residential Sewage Systems

A study ofindividual rural area residential sewage systems was not conducted in either 1990 or 1991. Inadequate septic systems may have been or may continue to be a source of bacterial pollution within the beaches study area, particularly in the Lancaster area and along the Raisin River. Due to the geographic size of the area, and the urban nature of the more significant concentrations of individual septic serviced dwellings and commercial establishments, such a study would have required additional resources not currently available.

The Ontario **Ministry of the Environment** completed a study in 1992 of the sewage systems in the hamlet of South Lancaster. The study will form the basis for a plan of remedial measures intended to ameliorate those problems which were identified.

3.10 Related Projects

A public information display to promote and create awareness about the St. Lawrence Rural Beaches Program continued during the 1991 study year by way of a display at the **Cornwall Boat and Sportsman Show**, and through personal contacts and distribution of water quality literature to landowners in conjunction with the Farm Operation Survey.

A study of individual park sewage disposal systems to be conducted by the St. Lawrence Parks during 1991 was delayed because of capital budget priorities. The study is scheduled to be conducted during 1992/1993.

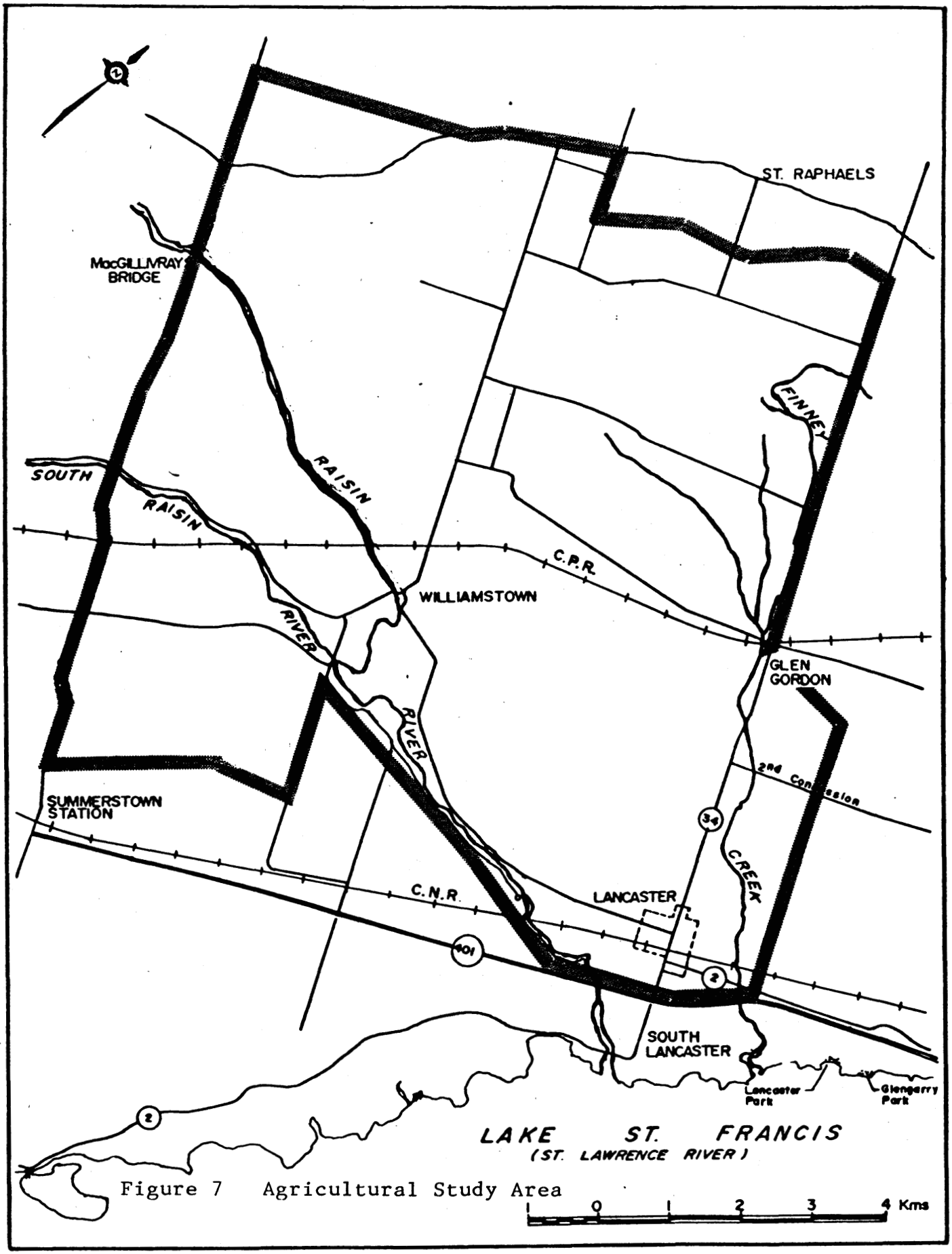

Figure 7 Agricultural Study Area

4. RESULTS

4.1 Background Data

The summer of 1991 had meteorological conditions which could be described as relatively long episodes of warm weather, punctuated by extended rain free periods (see figure 8). The lack of appreciable amounts of precipitation during the summer of 1991 did have an affect on several tributaries, particularly Finney Creek. The lowering of water levels made flow monitoring for the purpose of determining bacterial die-off rates impractical because of ponding.

The overall relationship between bacterial growth and meteorological conditions is complex, and does not lend itself towards definitive correlations between weather conditions and bacteria growth. It is uncertain what role meteorological conditions played during the summers of 1990 and 1991 when no beaches were closed, and the previous two summers when several beach closures occurred.

Site park plans for several **St. Lawrence Parks Commission** beaches showed runoff culverts and land contours which drain upland areas such as parking lots and grassed picnic grounds, diverting waters over the beach area. This situation exists at Woodlands (day use), Farran, and Mille Roche Park beaches. The lack of earthen berms or other structures to deflect upland runoff waters away from beach areas exists at Glengarry and Lakeview Heights Park beaches. Other parks affected include municipally owned Alexandria Park and privately owned Lancaster Park beaches. Additionally, parks affected by upstream sewage treatment plants (STPs) include Woodlands Park (camping) beach, and Lakeview Heights Park beach. Woodlands is downstream of the STP at Ingleside, Lakeview Heights is downstream of the STP at Long Sault.

4.2 Water Sampling

In both study years, Farran Park beach has displayed fecal bacterial levels that are consistent. During the early and middle periods of the swimming season, fecal bacterial levels are relatively low and stable. Towards the beginning of August however, fecal coliform levels rose to or slightly exceeded the provincial guideline of 100 fecal coliforms per 100 mL of water. The **Eastern Ontario Health Unit** follows up high bacterial counts by additional water sampling. Sampling is continued for three consecutive days. The purpose of this sampling is to determine whether high bacterial counts are of a periodic or sustained nature. If bacterial counts remain above the provincial objective during the three day sampling period, the beach will be closed until bacterial counts are below the guideline level.

Fecal bacterial counts above the provincial guideline were recorded on three occasions during the 1991 weekly sampling period at Woodlands Park (day use) beach. All high counts occurred during the latter half of the summer water recreation season (see figure 12).

Of all the beaches tested, Mille Roches Park beach had the highest weekly sampled bacterial counts, exceeding or nearly exceeding the provincial guideline on six occasions. **EOHU** results show exceedance of guideline levels for short periods of time on four occasions (see figure 13). During the 1991 testing period, Lakeview Heights Park beach remained closed because of financial considerations. Fecal coliform counts were within the acceptable limits of 100 fecal coliforms per 100 mL of water (see figure 14). On two testing occasions, fecal coliform counts were approaching the upper limit of acceptability.

Bacteria counts at Charlottenburgh Park during the 1991 study year were relatively low, exceeding the provincial guideline on one occasion and approaching the upper limit on another in mid-summer (see figure 15).

Test results from the 1991 study year showed a few significant bacterial concentrations affecting Glengarry and Lancaster Park beaches (see figures 16 & 17). On two occasions, in July and August, bacterial counts at Glengarry Park exceeded the provincial guideline. **EOHU** testing showed bacterial rates exceeding the guideline for brief periods on four occasions in mid-summer. The guideline was exceeded at Lancaster Park on one occasion in mid-August.

1991 test results showed high fecal coliform counts on two occasions at Alexandria Park beach (see figure 18). **EOHU** testing showed six brief occasions when fecal bacterial counts exceeded the provincial guideline.

Fecal coliform testing results on the Raisin River at six test locations were variable, with fecal coliform levels ranging from acceptable to unacceptable (see figures 19 to 24). Only the test location at MacGillivray's Bridge had results which exceeded the guideline limit on all sampling runs (see figure 19). Analysis of **Provincial Water Quality Network** data collected over several years on the Raisin River showed that bacterial counts historically tend to rise in summer, peak during mid-season, and decline during the fall, reaching their lowest levels in mid-winter. Fecal coliform counts during the mid-summer period frequently exceed the provincial guideline. This fecal bacterial concentration pattern also occurred during the years 1990 and 1991.

Total phosphorus levels on the Raisin River were similar to those of the previous year, with levels ranging from 5 to 13 times the guideline level (see figures 27 to 32).

The test locations on Finney Creek showed high bacterial counts during the greater part of the summer, particularly the test location at Concession II, Lancaster Township. On only 3 occasions during the 1991 sampling program did fecal coliform levels fall to within the acceptable limit (see figure 25). Sampling at this location was suspended from August 27 to September 9 as a result of low flow conditions causing ponding.

The second test location at Highway 2 suffered from low flow conditions during the same period, though ponding did not occur (see figure 26). This may have been a result of the surfacing of groundwater springs. Fecal bacterial counts at this location were within the provincial guideline objective on 8 occasion. High counts tended to coincide with flowing conditions, leading to the conclusion that most of the bacteria originates at upstream locations.

Total phosphorus levels in Finney Creek were between 37 and 50 times the provincial guideline level of 0.03 mg/L (see figures 27 & 28). These levels were the highest detected in any of the tested tributaries. The results were consistent with those measured during the previous year.

4.3 Storm Water Runoff Sampling

Bacterial testing could not be conducted during the summer of 1991 because of insufficient rainfall during the testing period to cause overland runoff.

4.4 Before and After Beach Use Testing

The results of water samples taken prior to and immediately following human beach activity at three of the park beaches is shown in figures 35 to 37. Analysis of sample testing results did not substantiate the assumption that bacterial counts increase with beach usage. No clear pattern of fecal bacterial density occurrence could be determined. On some occasions bacterial counts increased after beach use as was hypothesized. However, on other testing occasions, bacterial counts were actually lower following beach use. From the data collected it is unclear why such variations from the hypothesis occurred. No clear pattern can be determined when results from testing conducted on the same day at all three parks are compared. Sampling did not always occur during periods of heavy park beach use.

4.5 Sediment Sampling

The sediment samples taken from four of the parks beaches show low fecal coliform and E.coli bacterial levels in May (figures 38 to 41). The highest levels of both bacteria were found in August, though bacterial densities varied from beach to beach. The overall highest counts were found at Woodlands campground beach, and the next highest counts recorded at Farran Park Beach. Sediment sampling did not always coincide with periods of heavy park beach use.

TEMPERATURE AND RAINFALL
Cornwall
May 1 - Aug 31, 1991

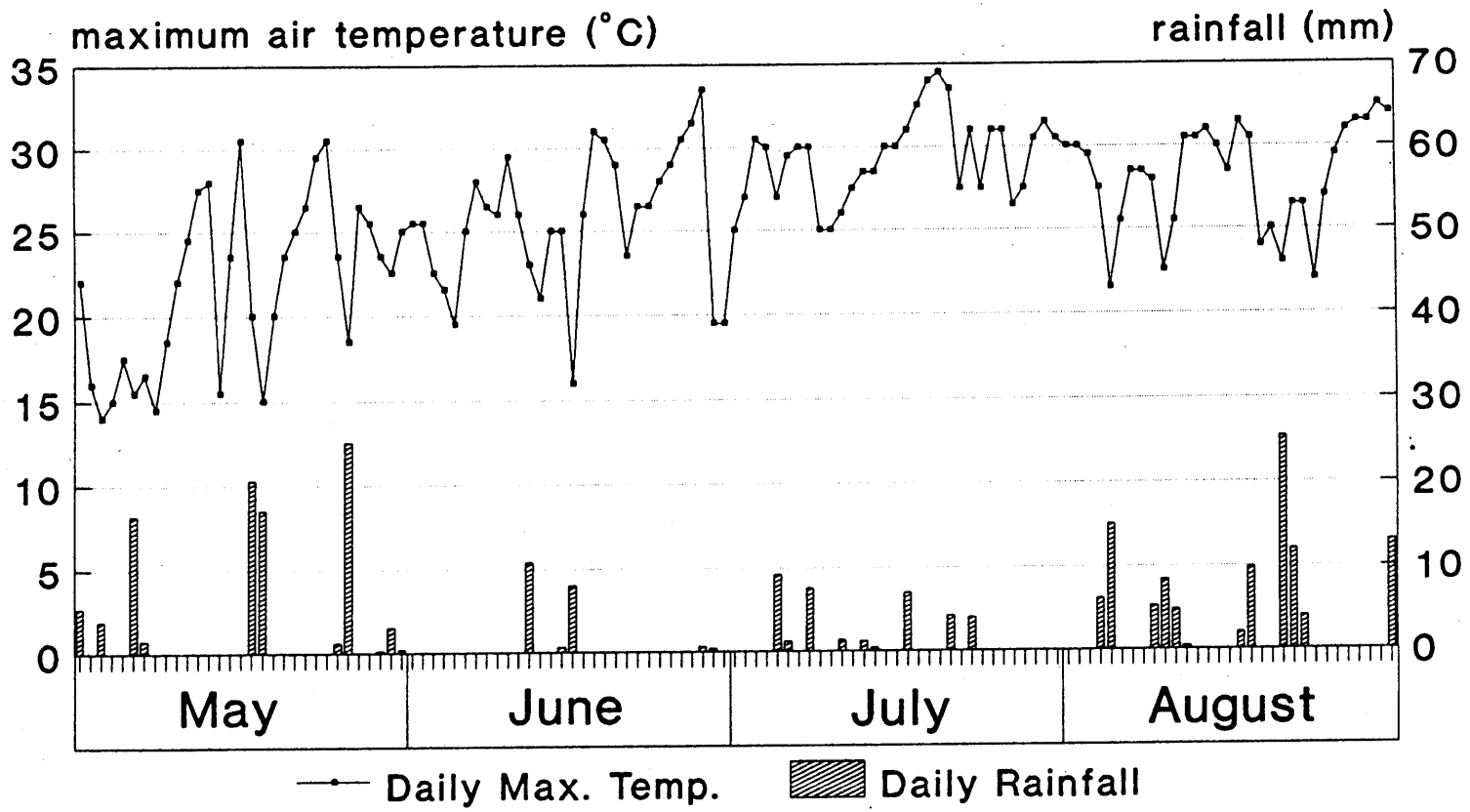

Figure 8

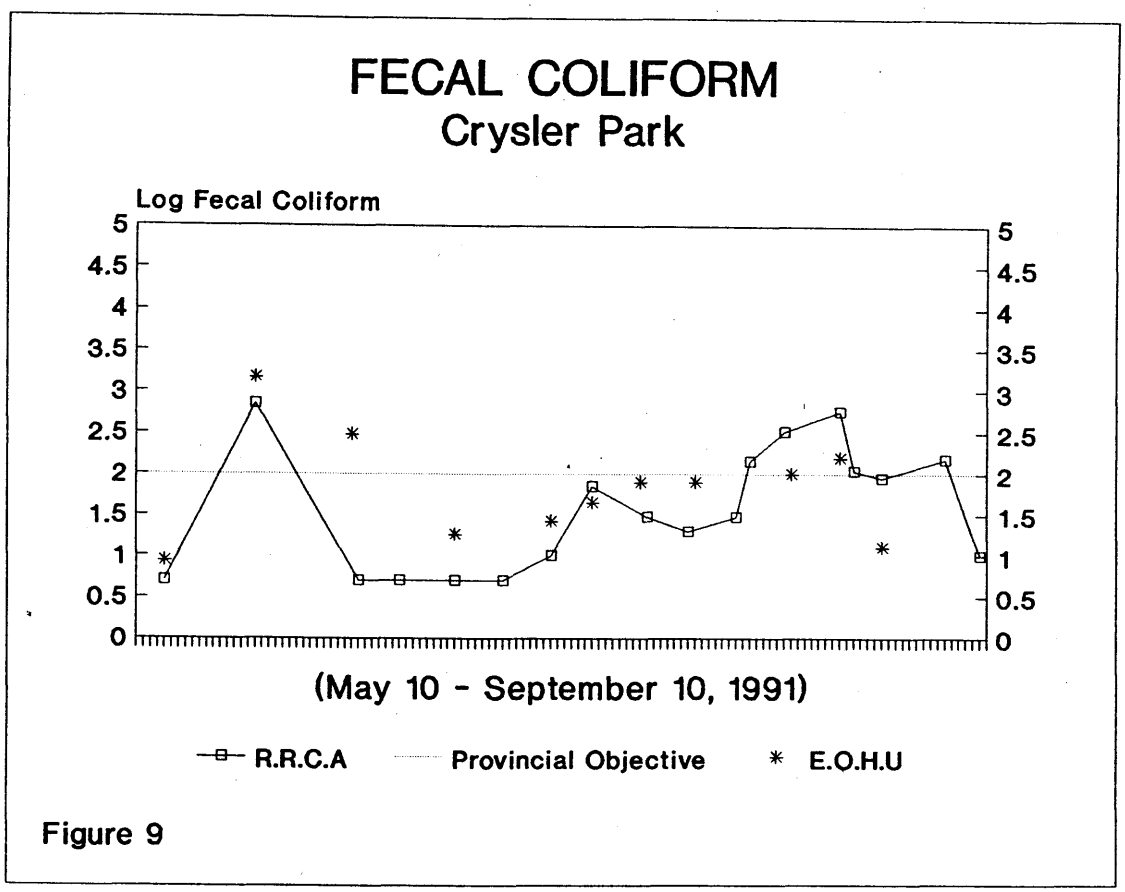

Figure 9

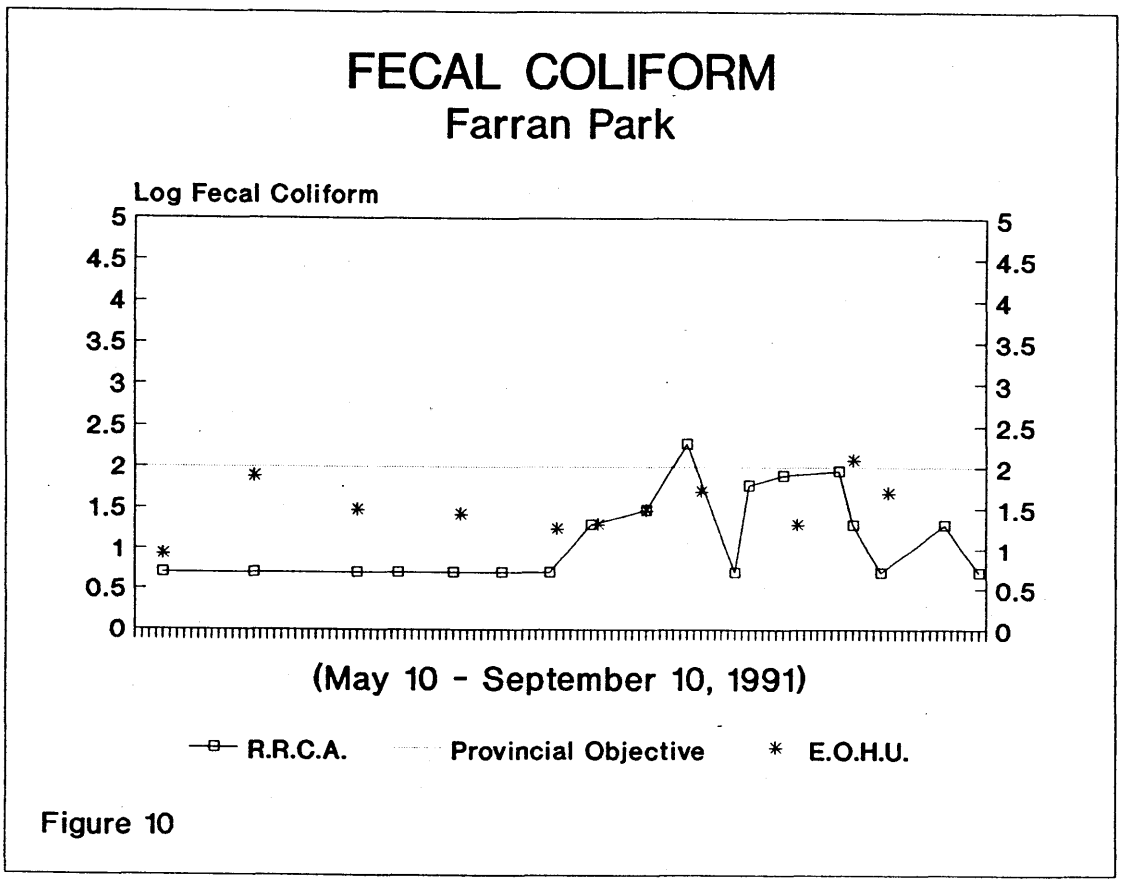

Figure 10

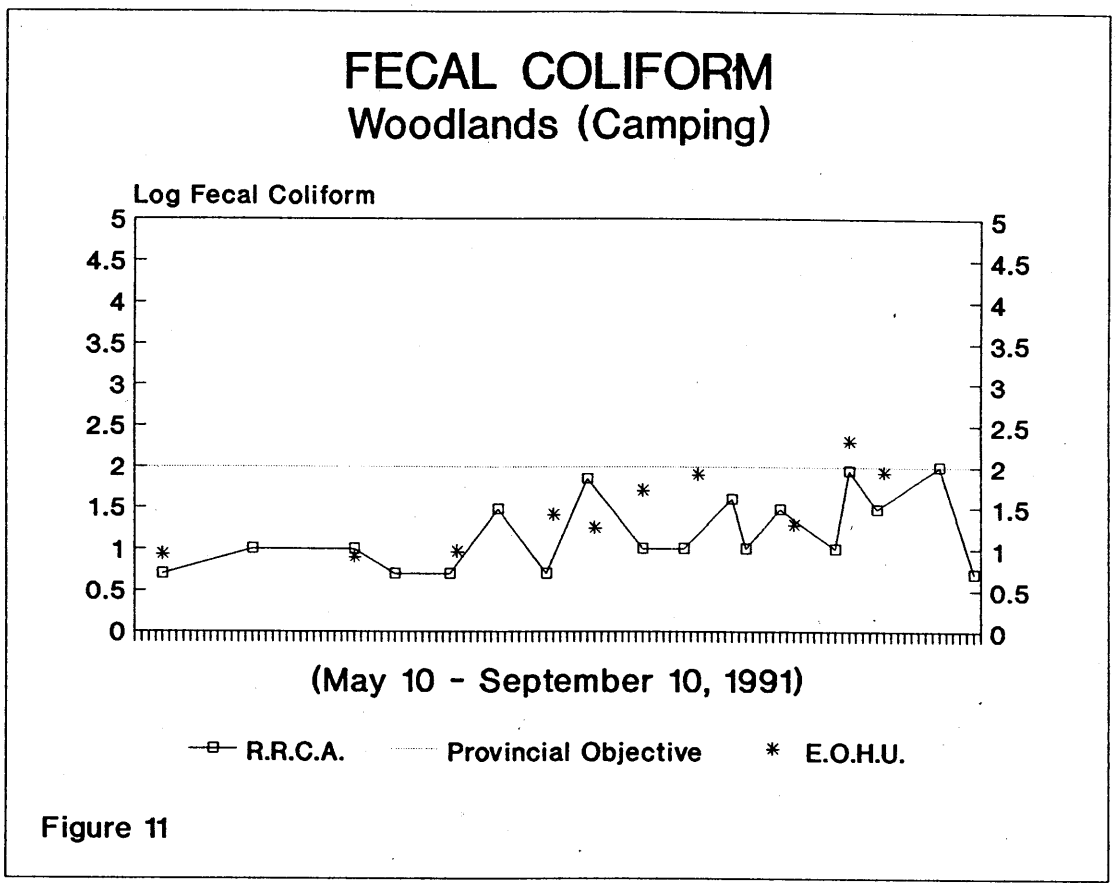

Figure 11

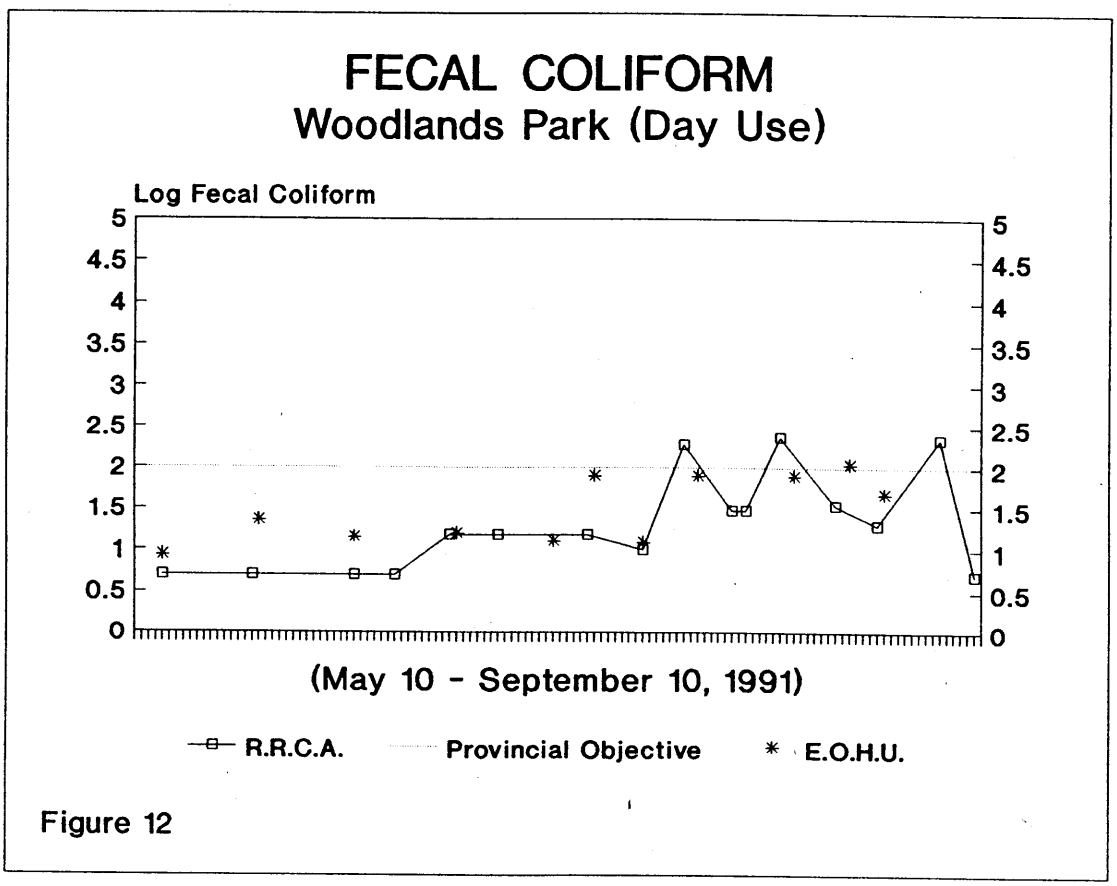

Figure 12

FECAL COLIFORM
Mille Roches Park Beach

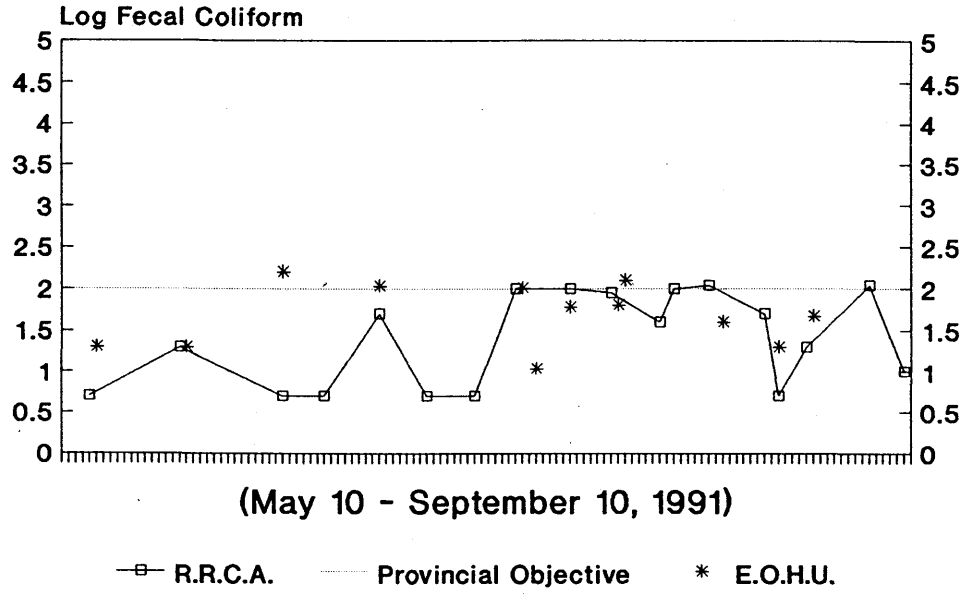

Figure 13

FECAL COLIFORM
Lakeview Heights Park

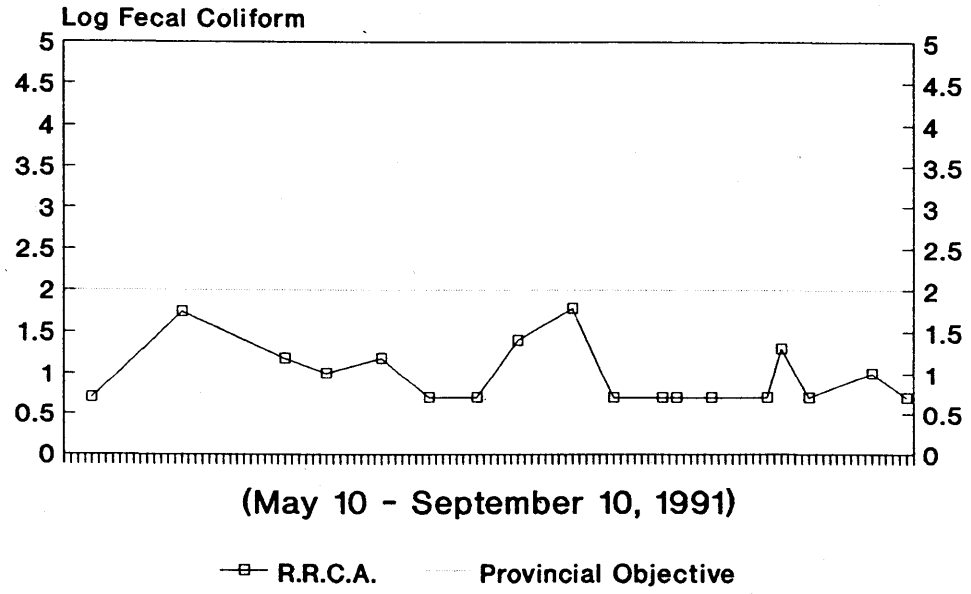

Figure 14

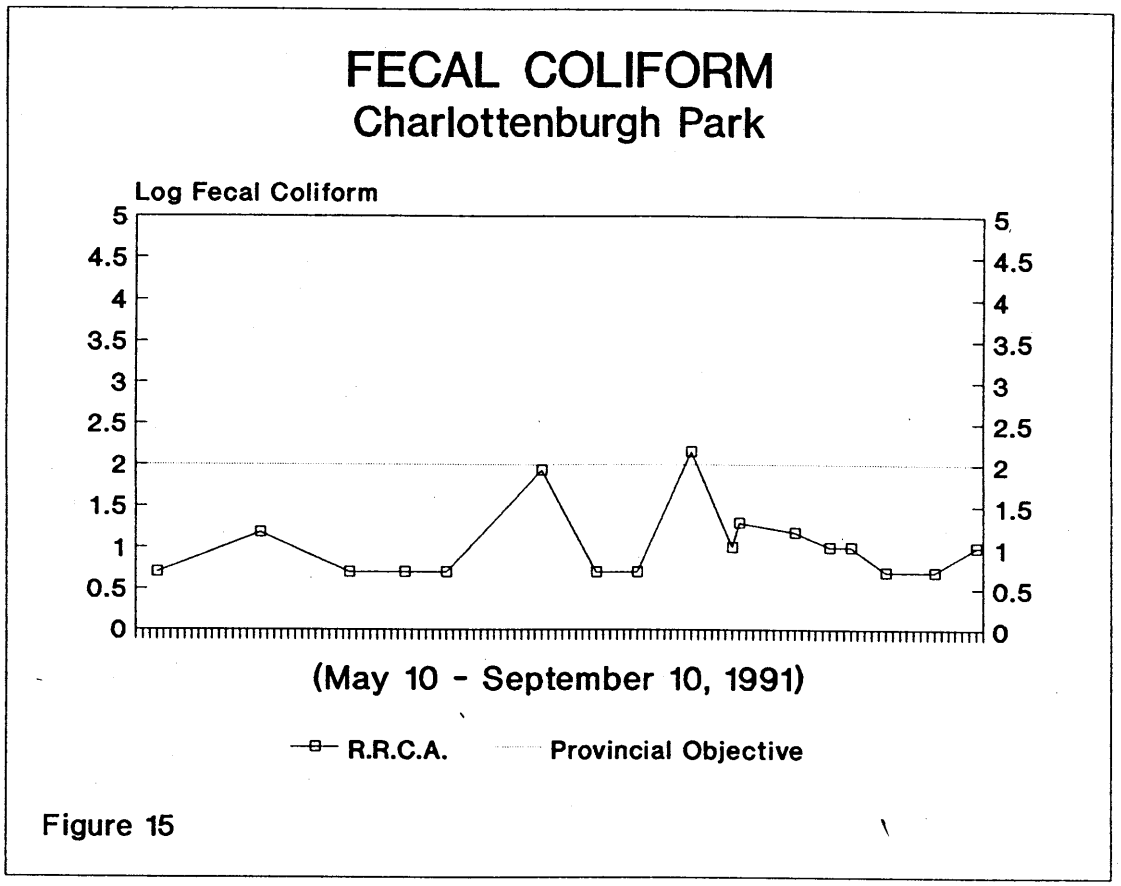

Figure 15

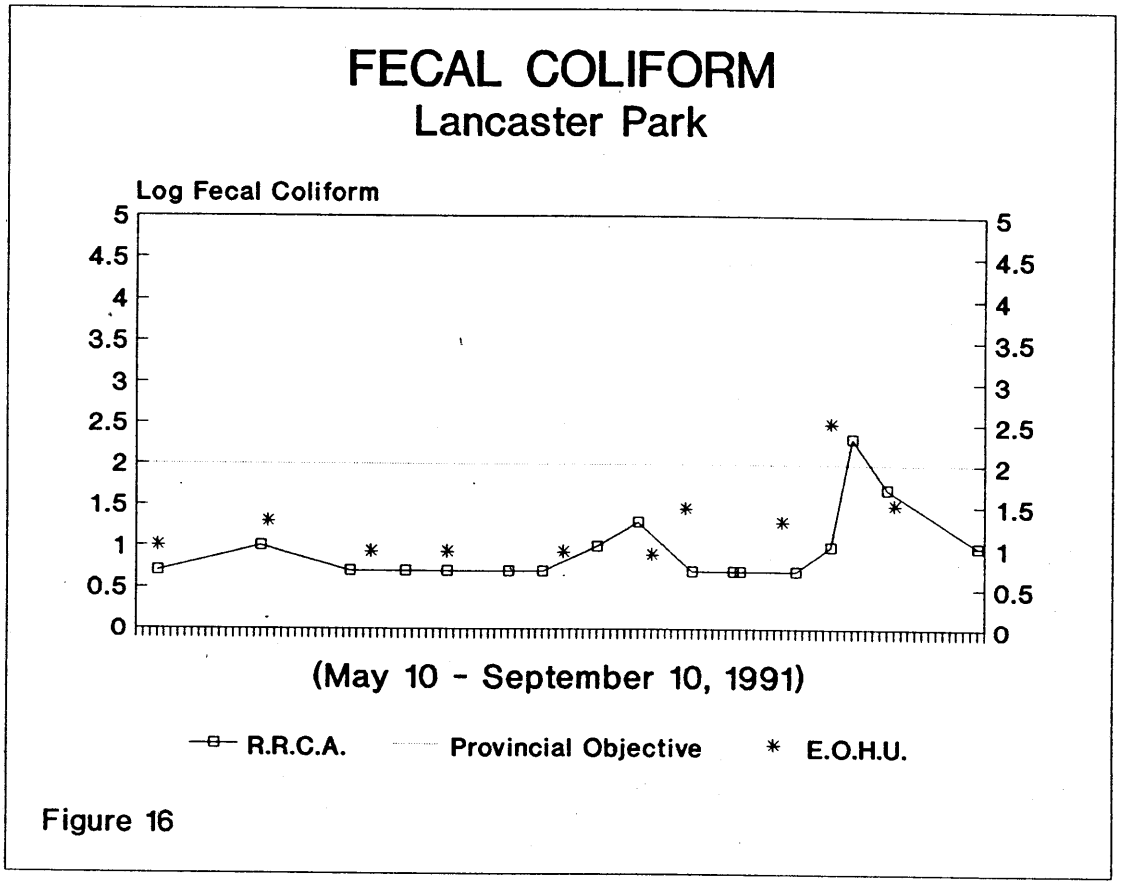

Figure 16

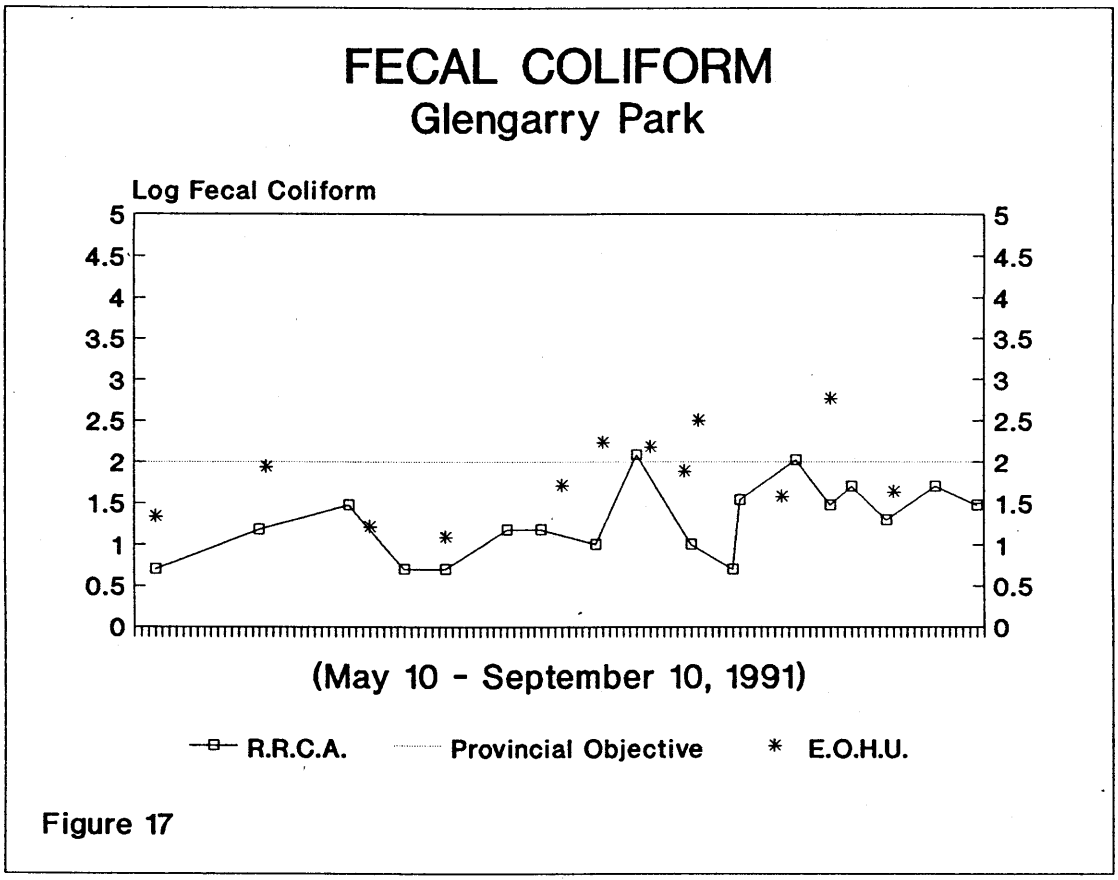

Figure 17

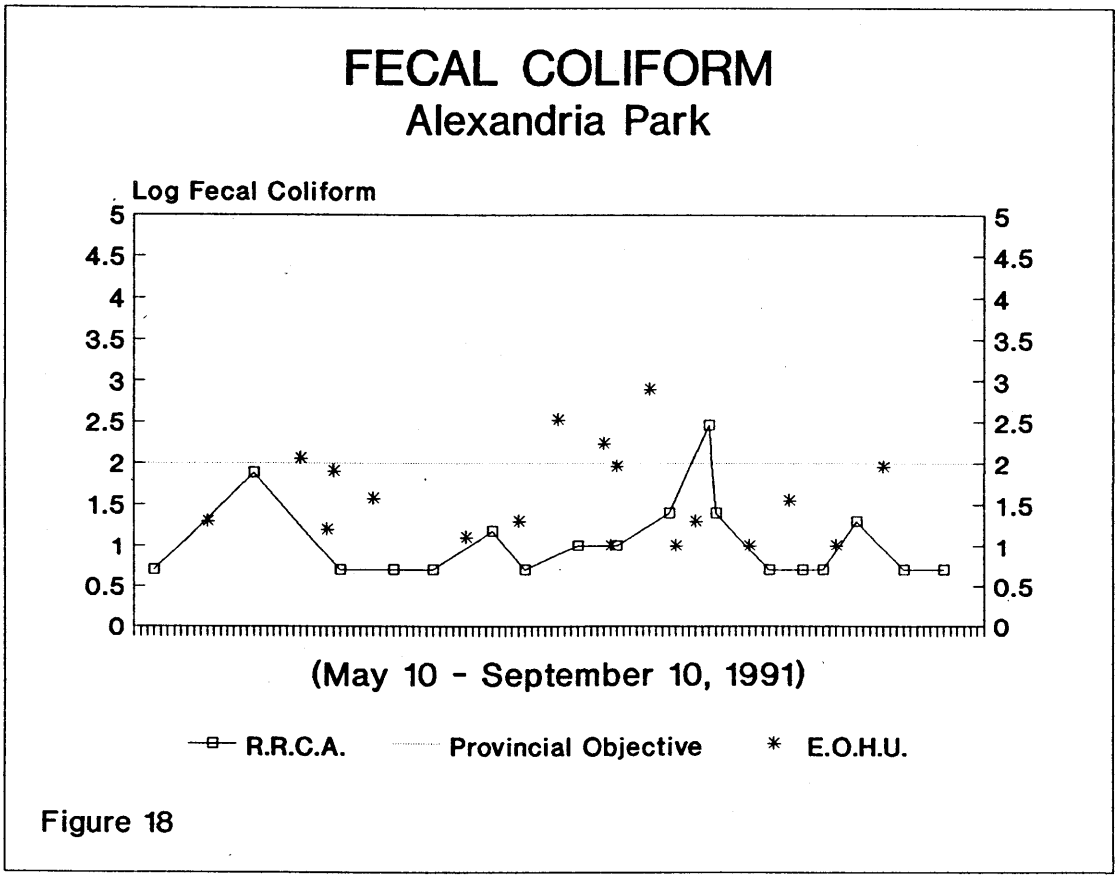

Figure 18

FECAL COLIFORMS
Raisin River at MacGillivray's Bridge

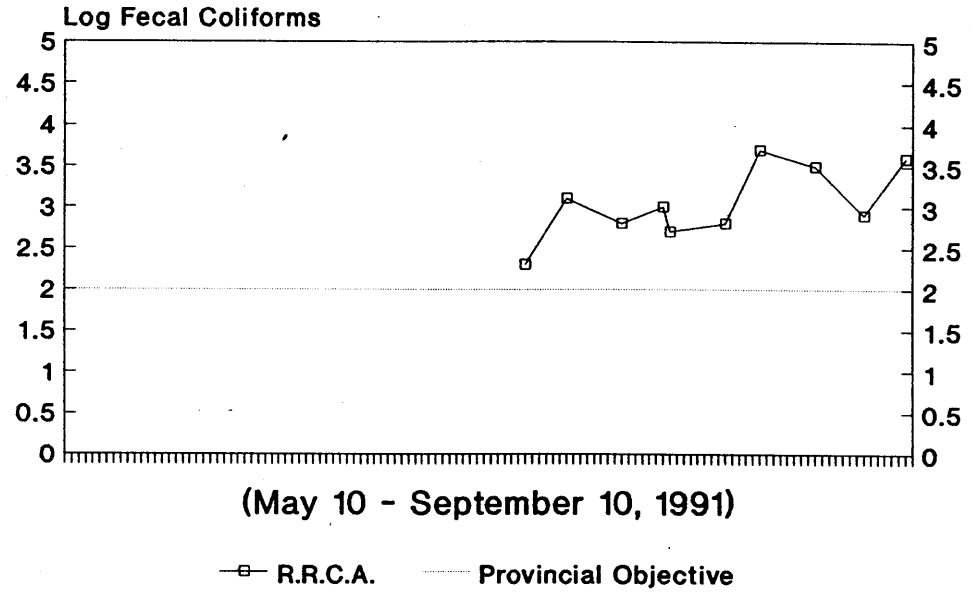

Figure 19

FECAL COLIFORM
Raisin River Upstream of Kraft

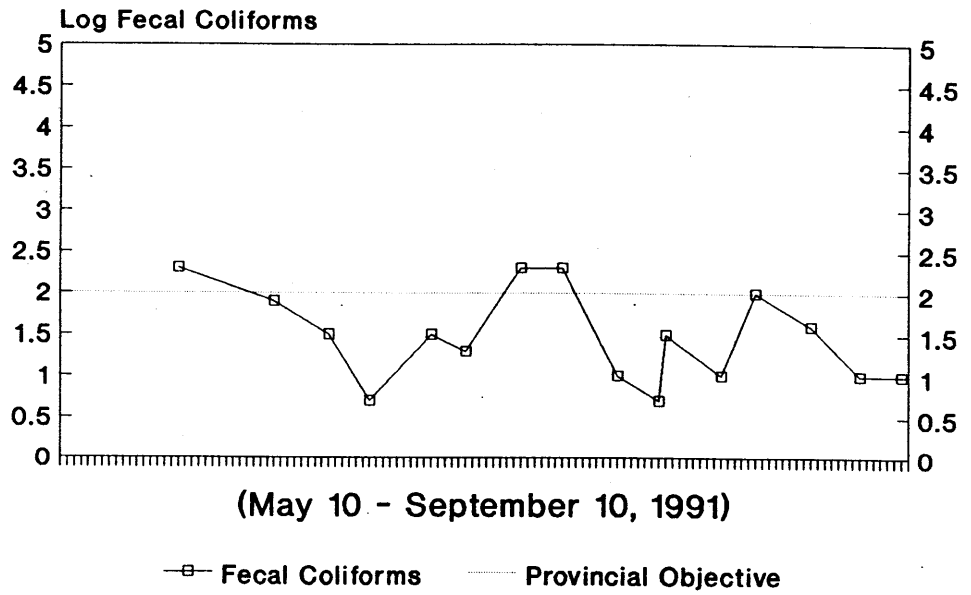

Figure 20

FECAL COLIFORM
Raisin River Upstream of Williamstown

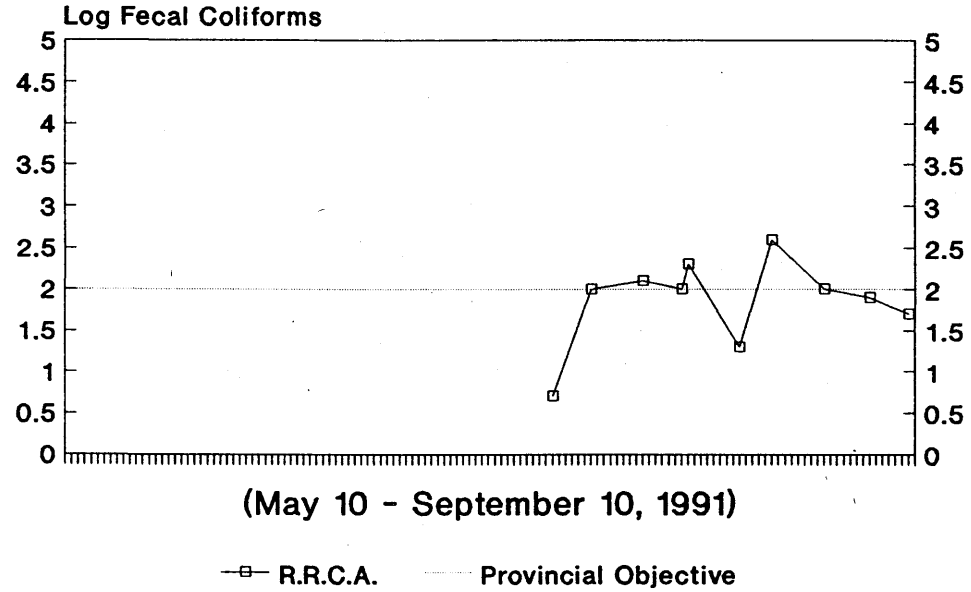

Figure 21

FECAL COLIFORM
Raisin River Downstream of Williamstown

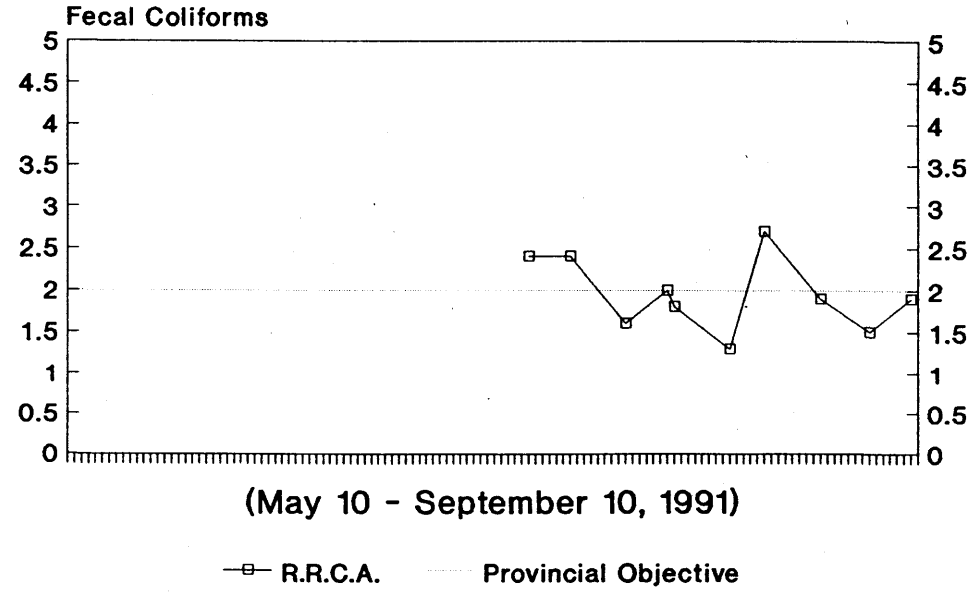

Figure 22

FECAL COLIFORM
Raisin River Bridge W. of Lancaster

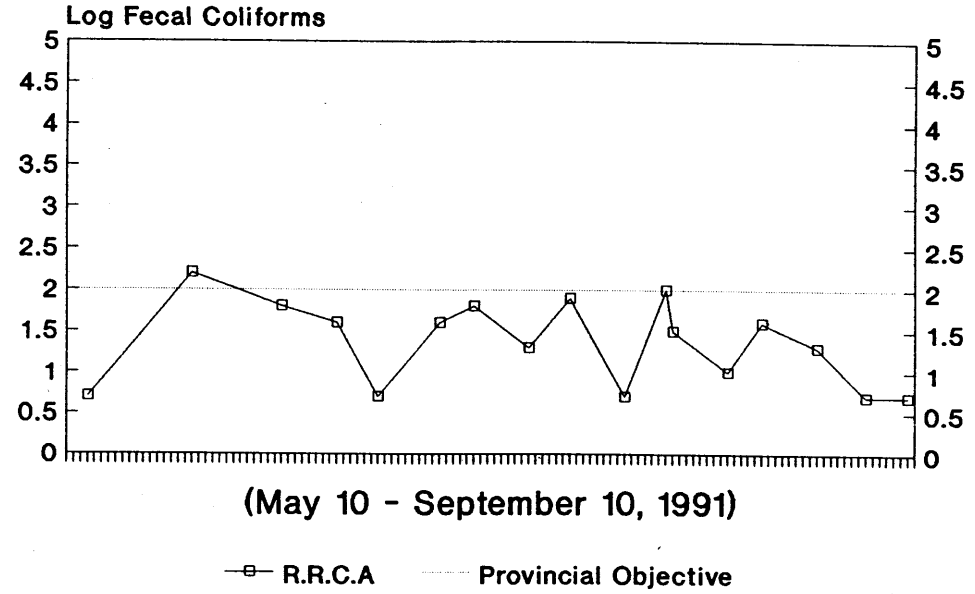

Figure 23

FECAL COLIFORMS
Raisin River at Highway 401

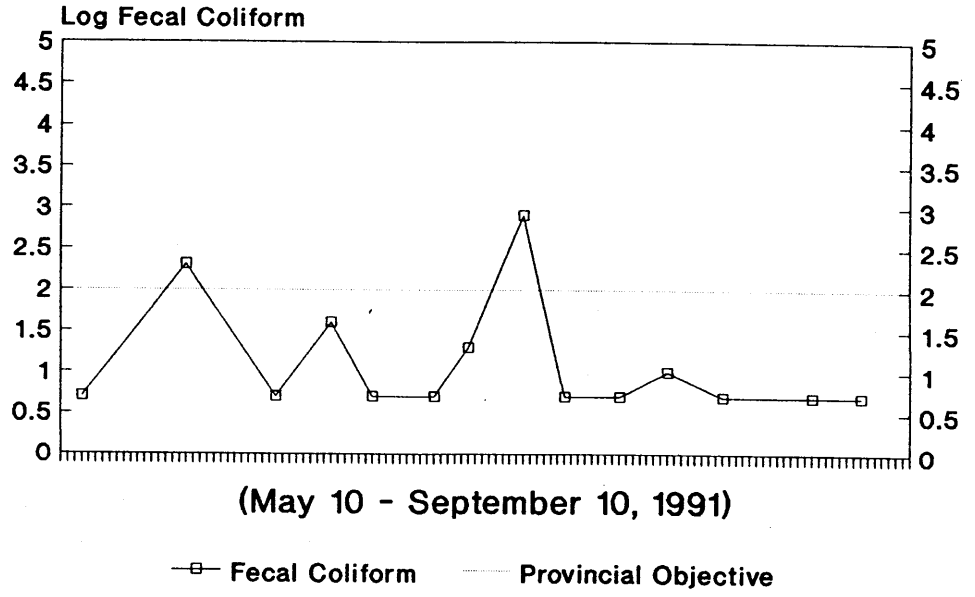

Figure 24

FECAL COLIFORM
Finney Creek at Concession 2

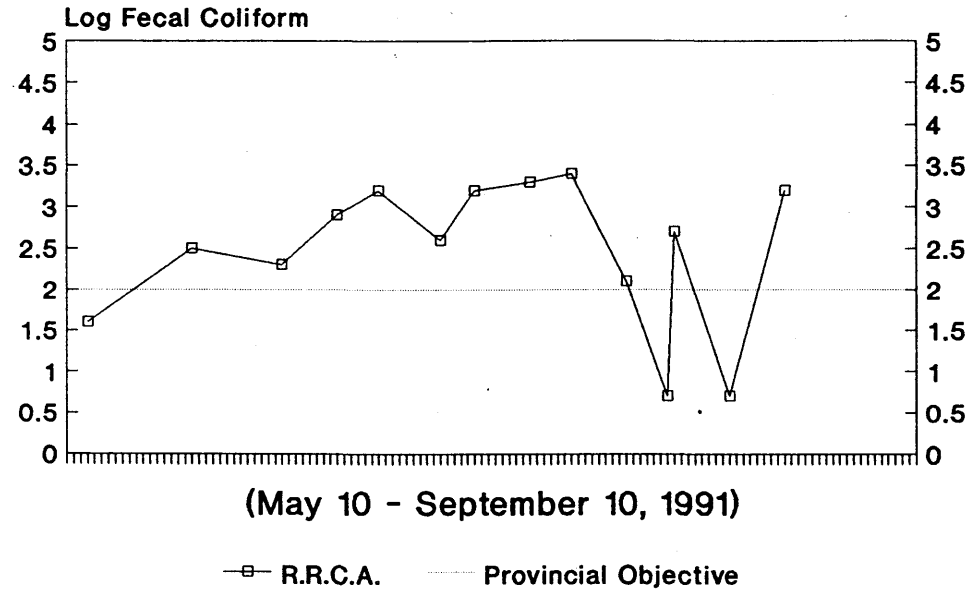

Figure 25

FECAL COLIFORM
Finney Creek at Highway 2

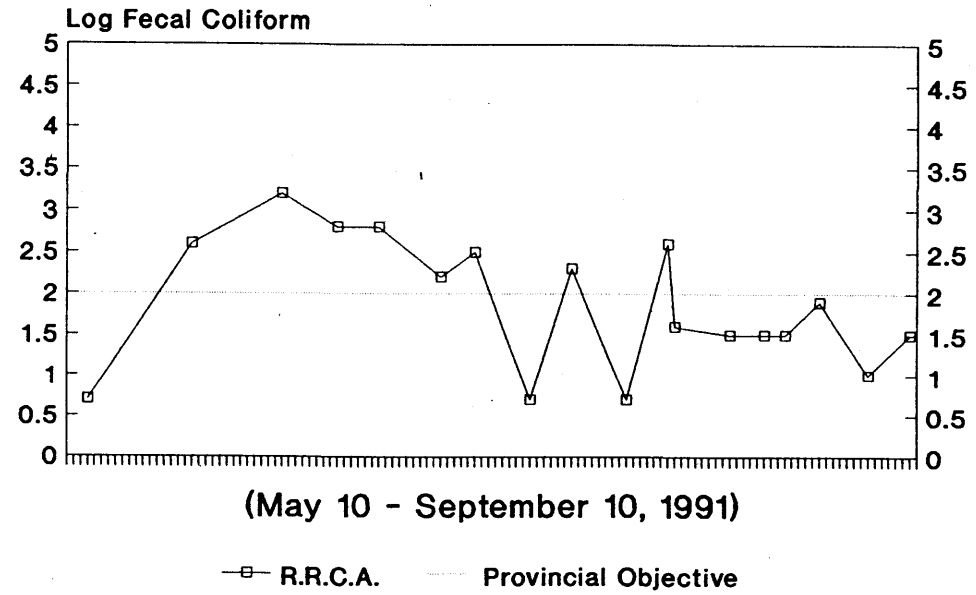

Figure 26

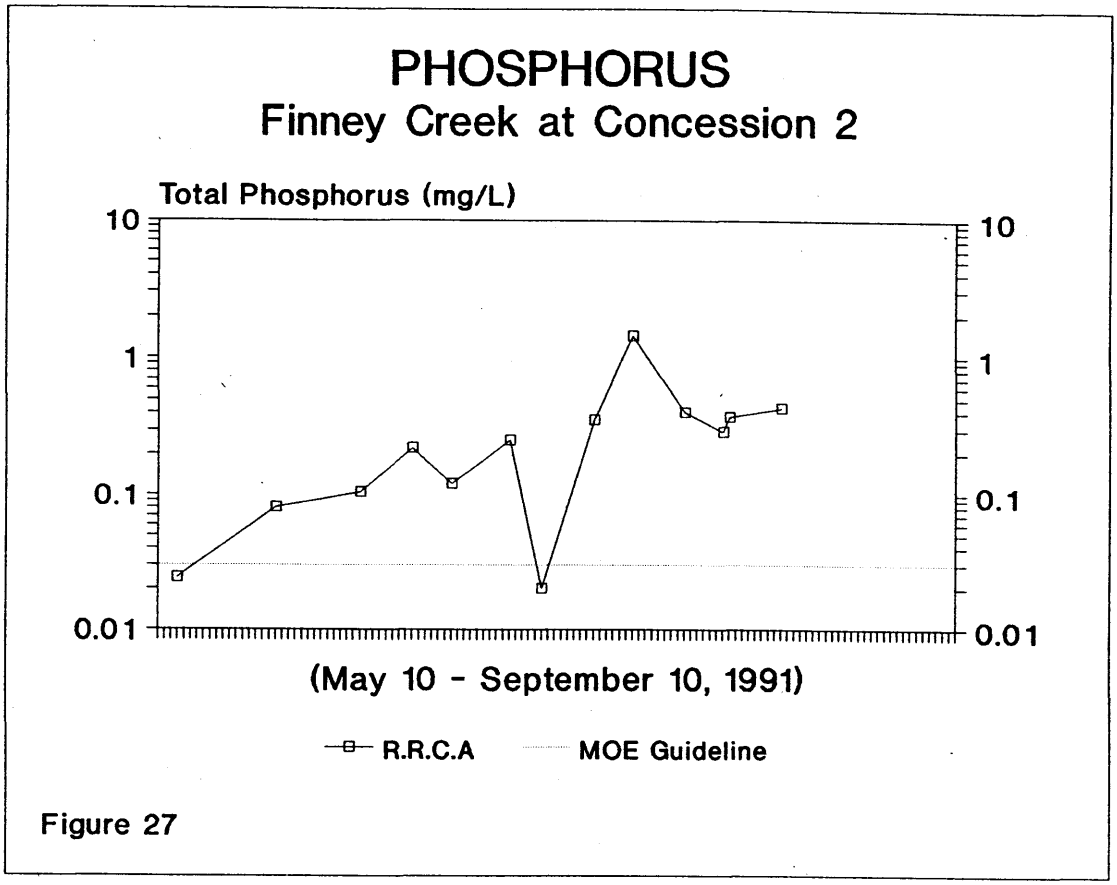

Figure 27

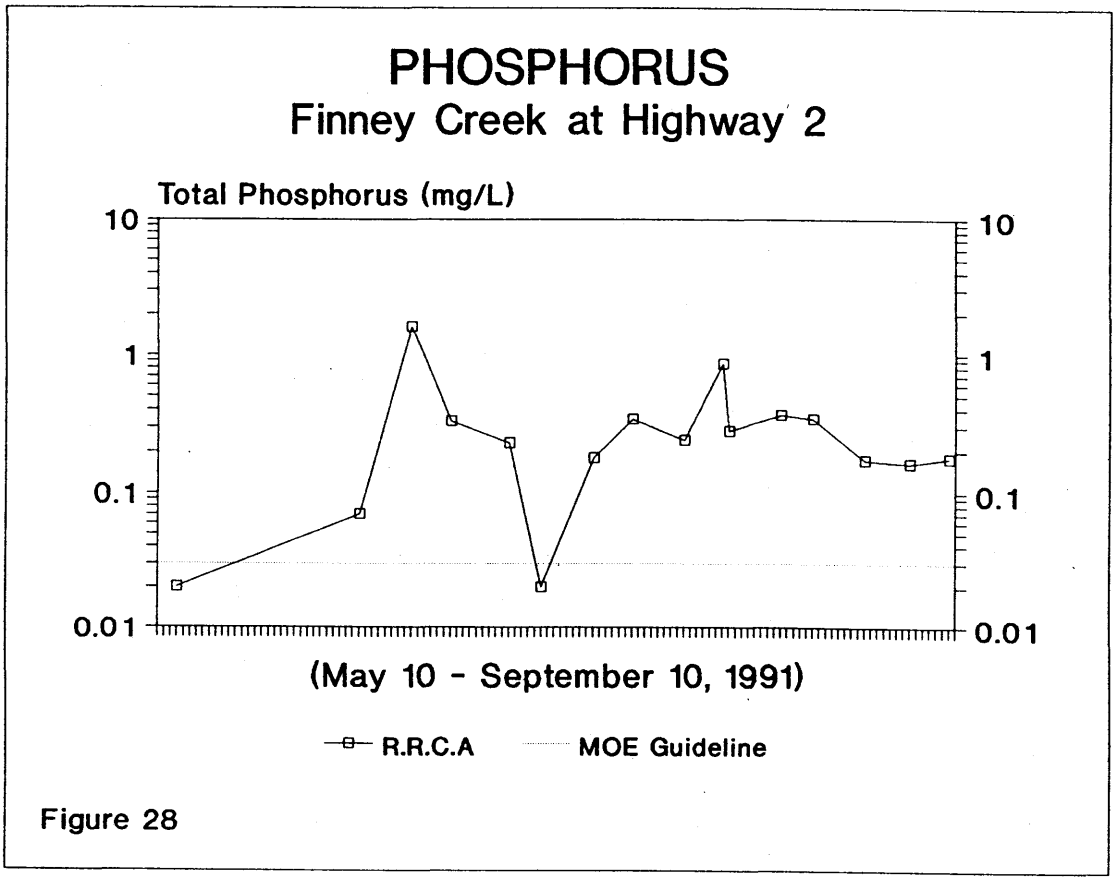

Figure 28

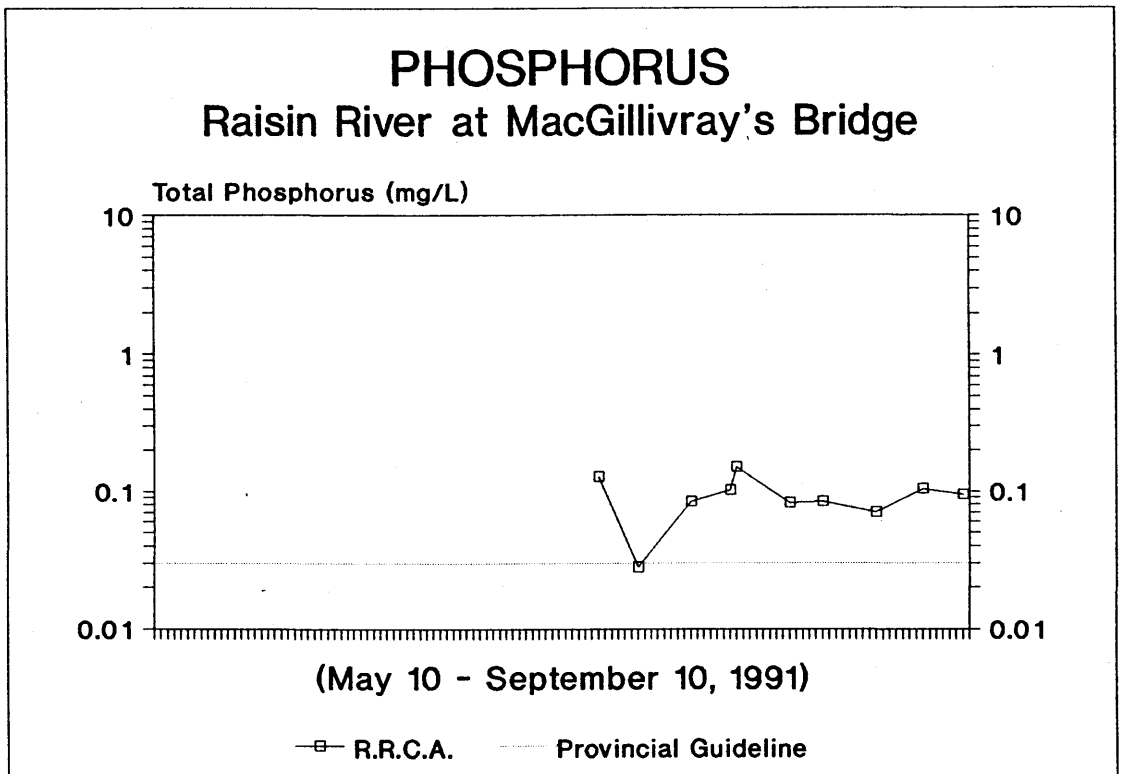

Figure 29

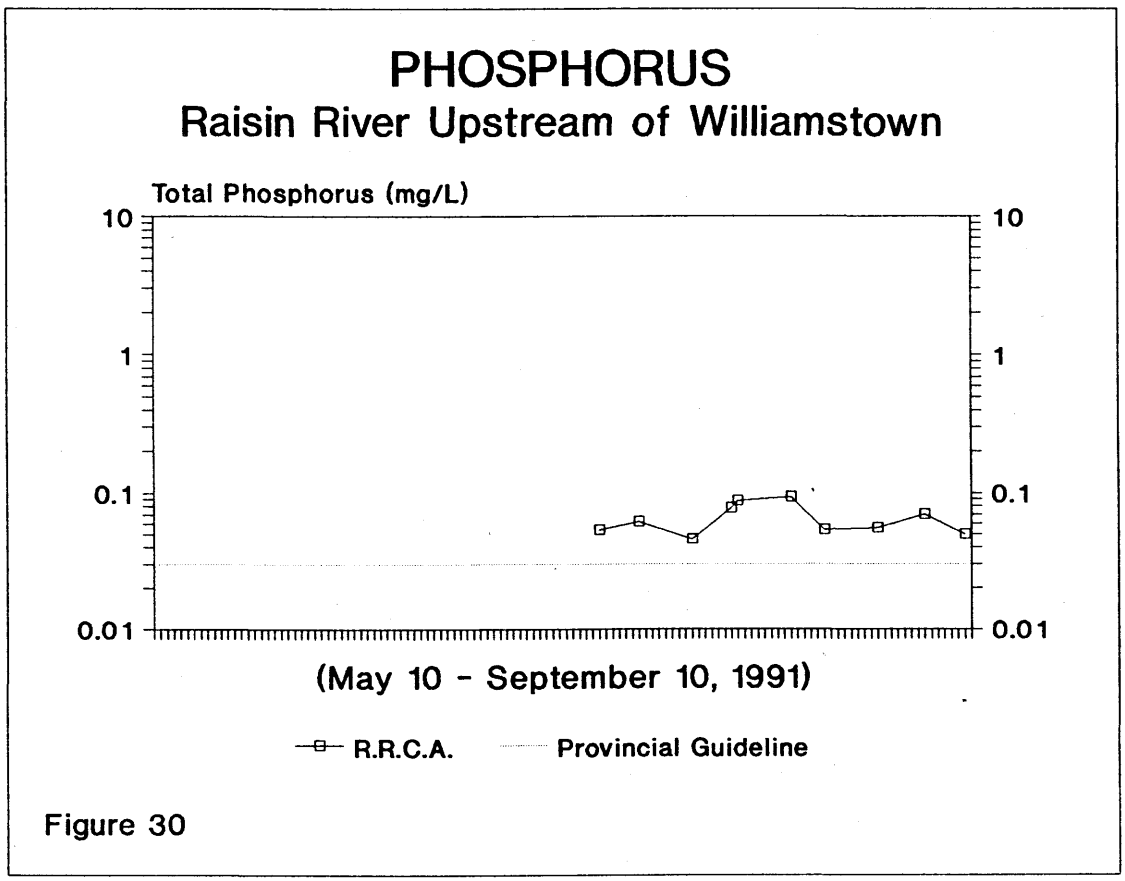

Figure 30

PHOSPHORUS
Raisin River Upstream of Kraft

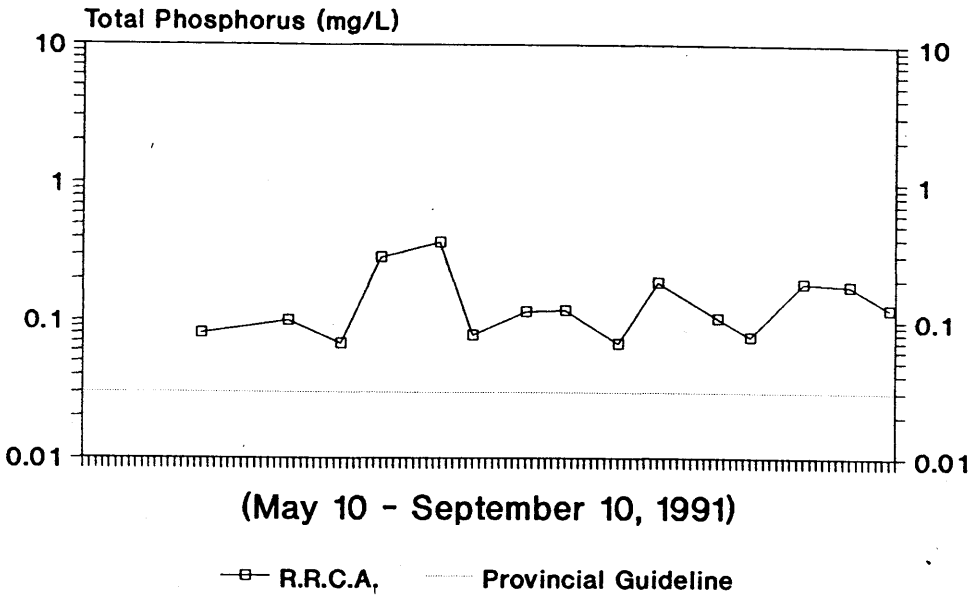

Figure 31

PHOSPHORUS
Raisin River Downstream of Williamstown

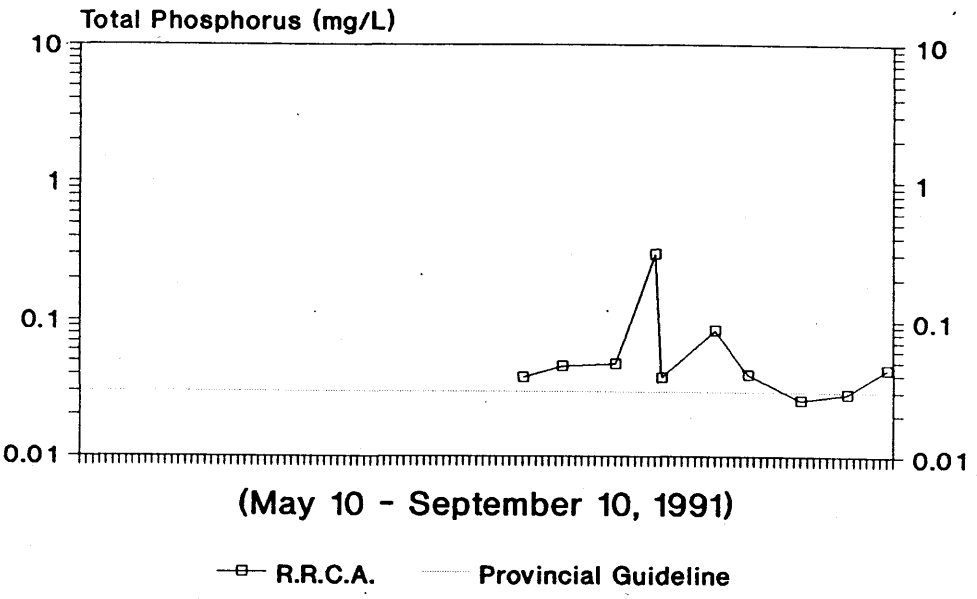

Figure 32

PHOSPHORUS
Raisin River Bridge West of Lancaster

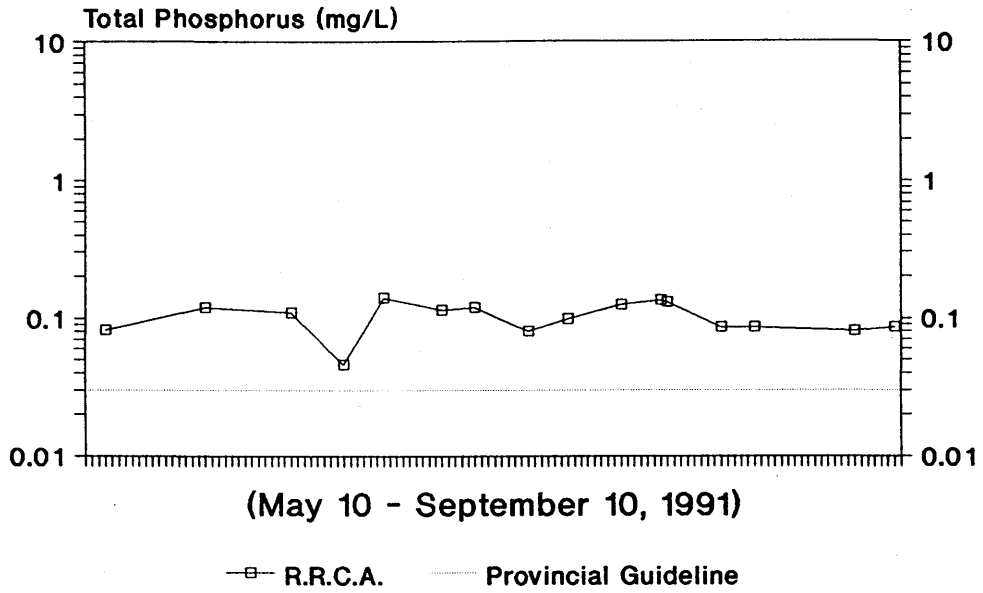

Figure 33

PHOSPHORUS
Raisin River at Highway 401

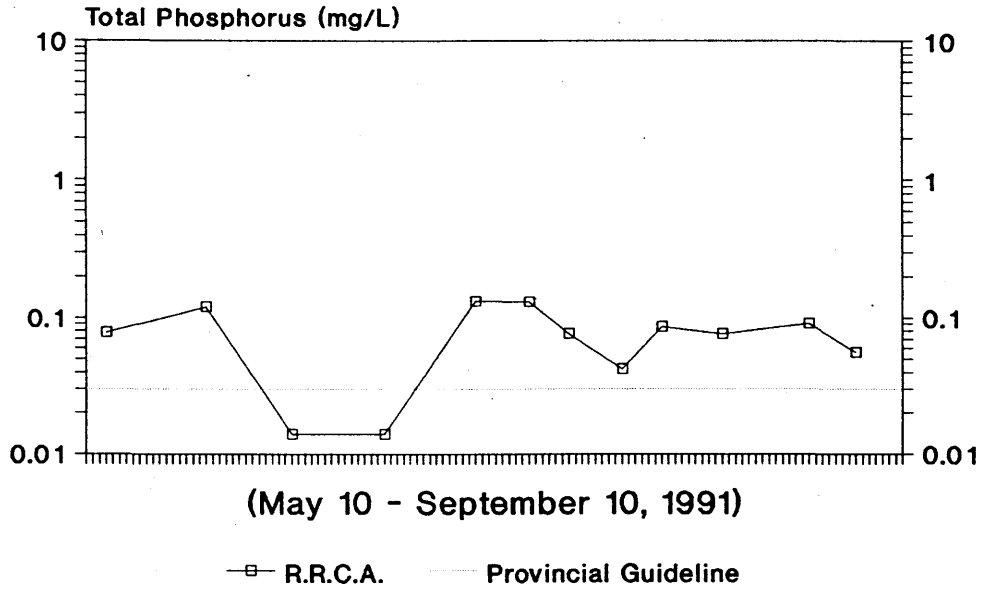

Figure 34

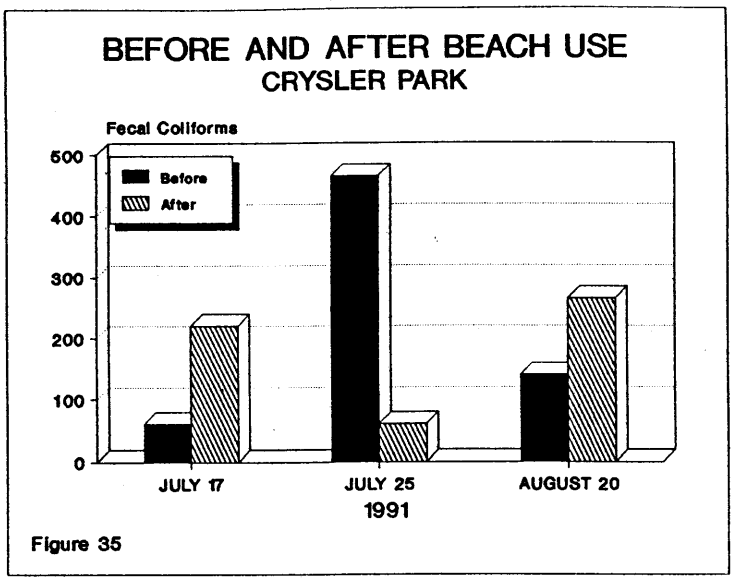

Figure 35

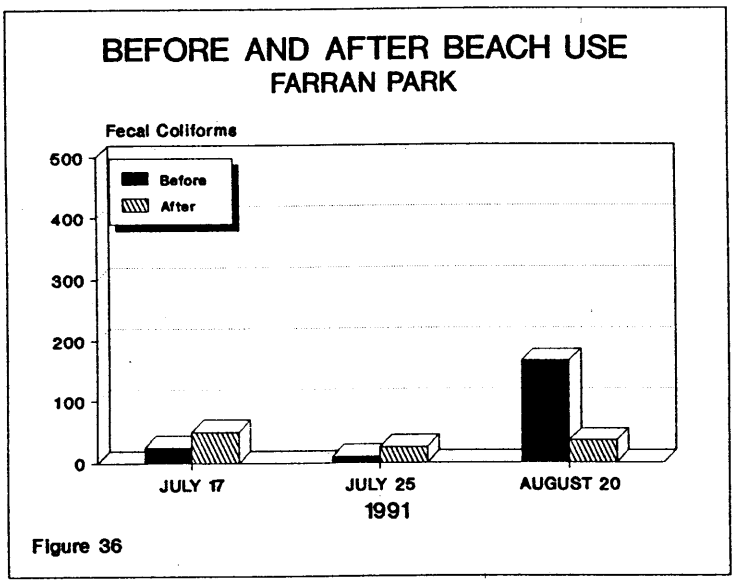

Figure 36

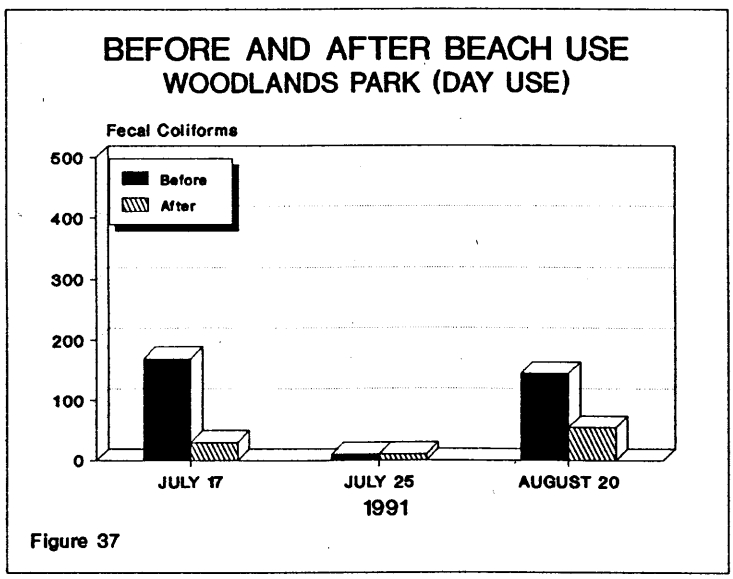

Figure 37

FECAL COLIFORM AND E. COLI DENSITIES IN SEDIMENT FROM WOODLANDS CAMP. BEACH

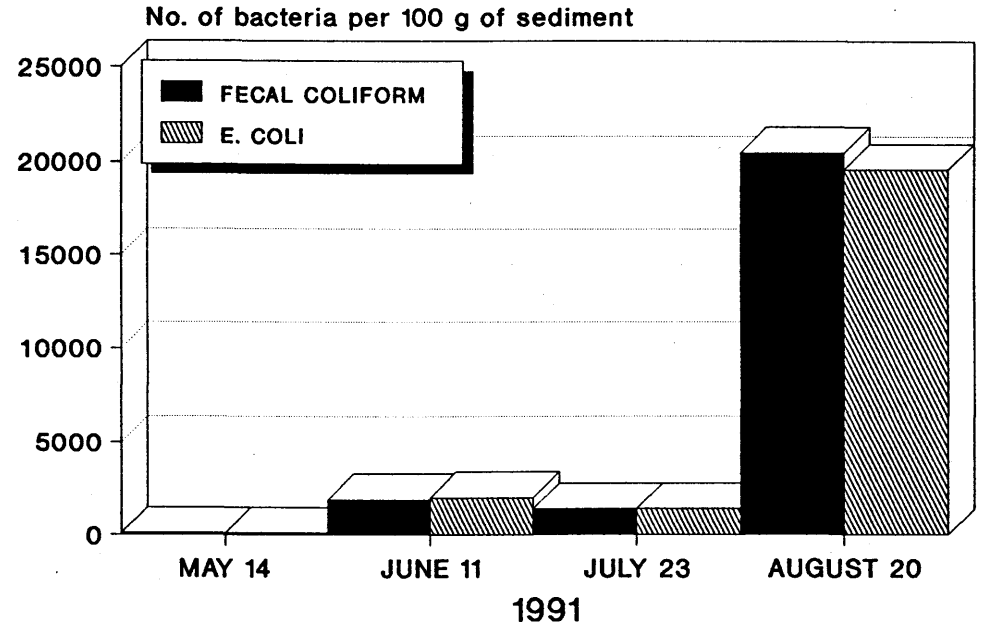

Figure 38

FECAL COLIFORM AND E. COLI DENSITIES IN SEDIMENT FROM WOODLANDS DAY USE BEACH

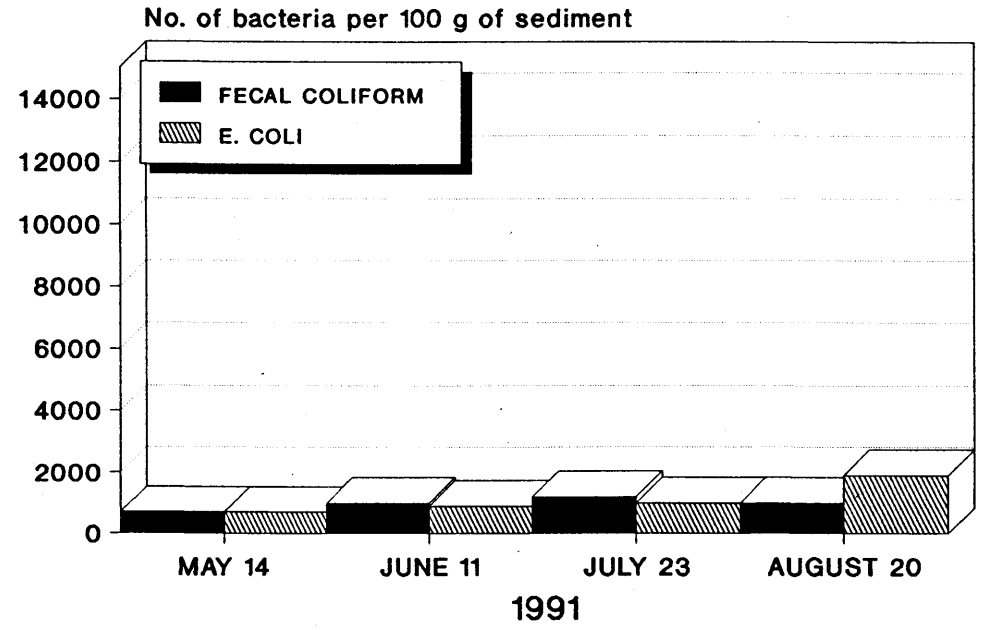

Figure 39

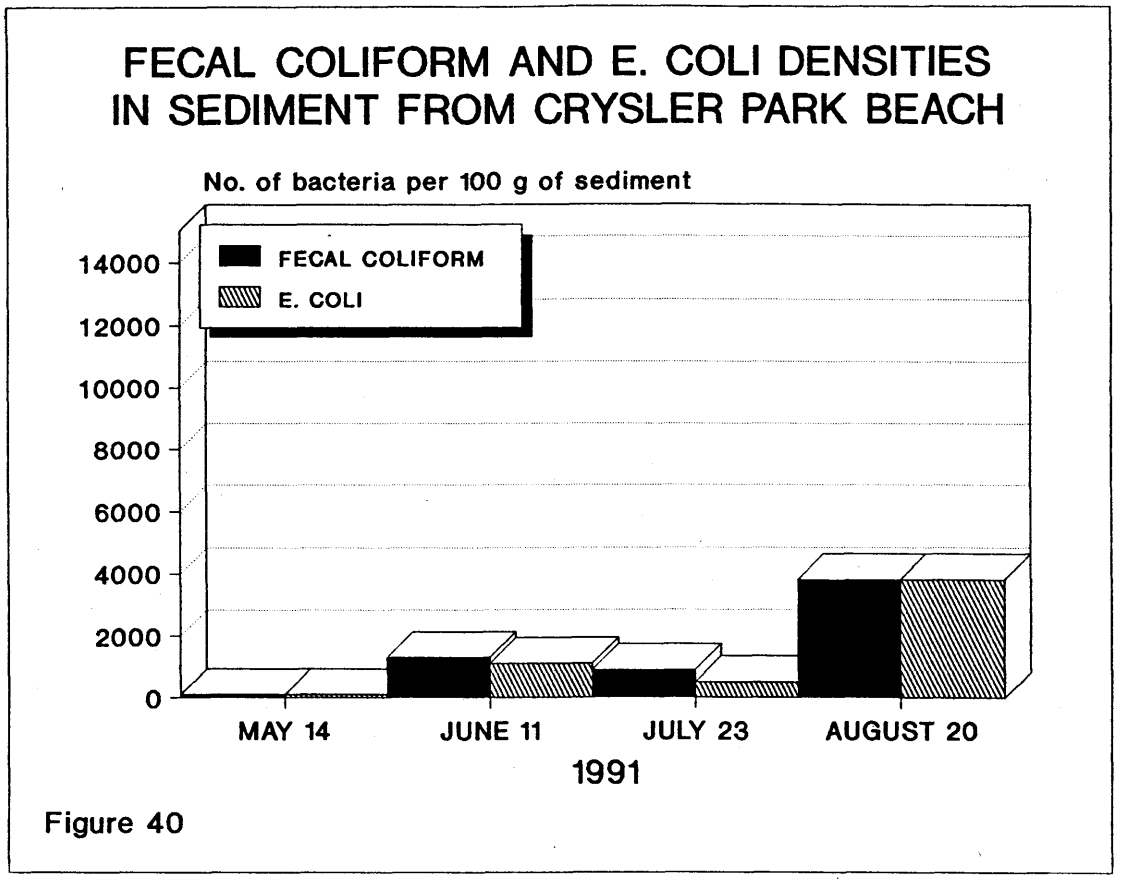

Figure 40

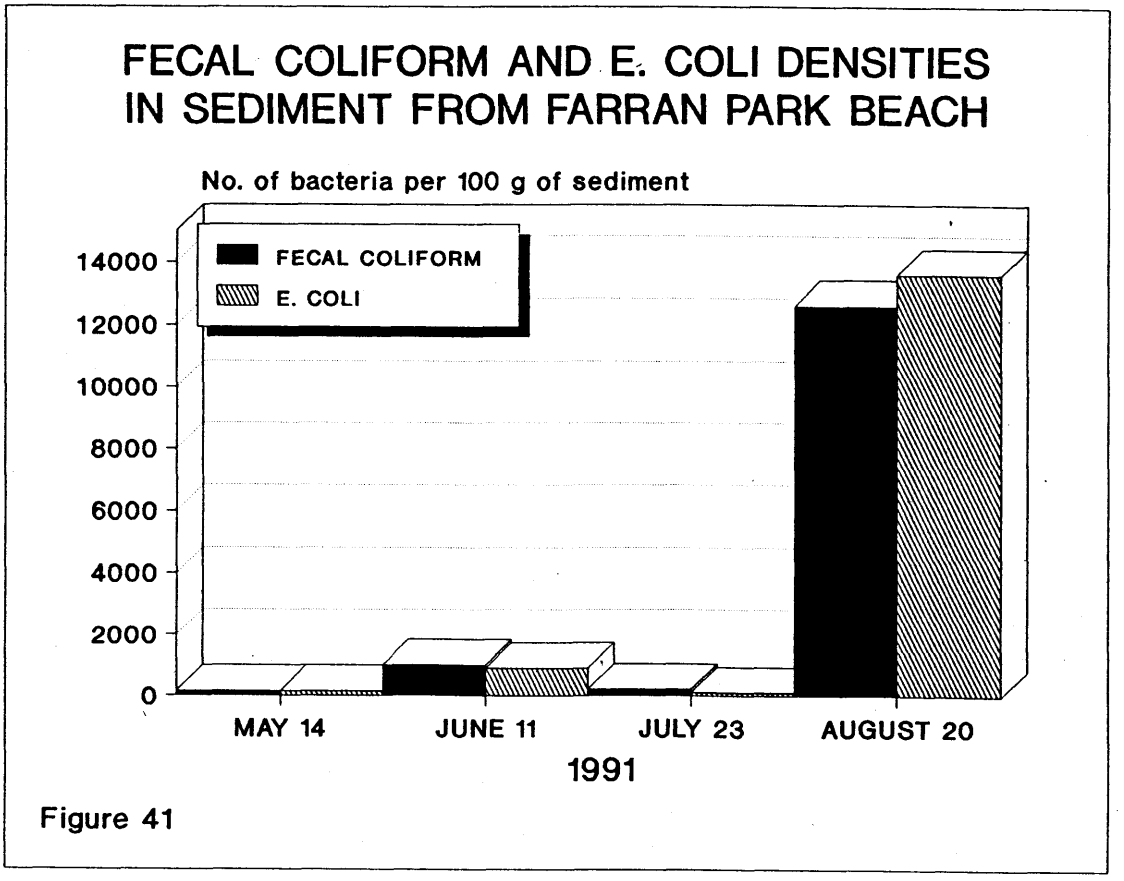

Figure 41

4.6 Geese and Gull Dropping Study

Three park beaches were included in this study, based on results from previous year testing and observations made on park visits. Lakeview Heights Park was not included in the second year of study because of the low incidence of both geese and gull populations the previous year.

Study results show that gull populations were highest in May and June, showing general decline during the remainder of the summer months (see figures 42, 44 to 50). While Crysler and Woodlands (day use) Park beaches showed sharp declines in gull populations between weeks 5 and 6, Farran Park beach showed a rise in gull populations in mid-July and again in early to mid-August.

Geese populations tended to be highest from weeks 1 to 4, and to decline from weeks 5 to 10, rising again from week 10 onwards (see figures 43, 44 to 50). Only at Farran Park beach did populations decline with no geese being present on the final week of testing.

Geese and gull dropping counts are affected by such factors as heavy beach use by park users and park maintenance such as sand raking and grass cutting. Therefore, low counts may not be indicative of actual bird populations.

4.7 Park Activities

Routine beach activities were recorded by park staff at Glengarry, Mille Roches, Woodlands (camping and day use), Farran, and Crysler Parks (see appendix E). Activities at parks which were subject to geese and gull, sediment bacteria, and before and after beach use testing, were of particular interest. In order to draw any conclusions concerning bacterial presence and concentrations as a result of local sources, such information as park attendance, number of beach users, rainfall, grass cutting, beach raking, new sand, and wash room lineups, was of particular importance. For various reasons, much of this vital detailed information was not collected accurately or regularly, especially during the month of August. Therefore, no firm set of relationships between beach activities and fecal bacterial can be formed.

Park grass cutting crews however, did not report any breakouts of park septic beds during the summer of 1991.

GOOSE AND GULL STUDY - 1991

Gull Dropping Densities

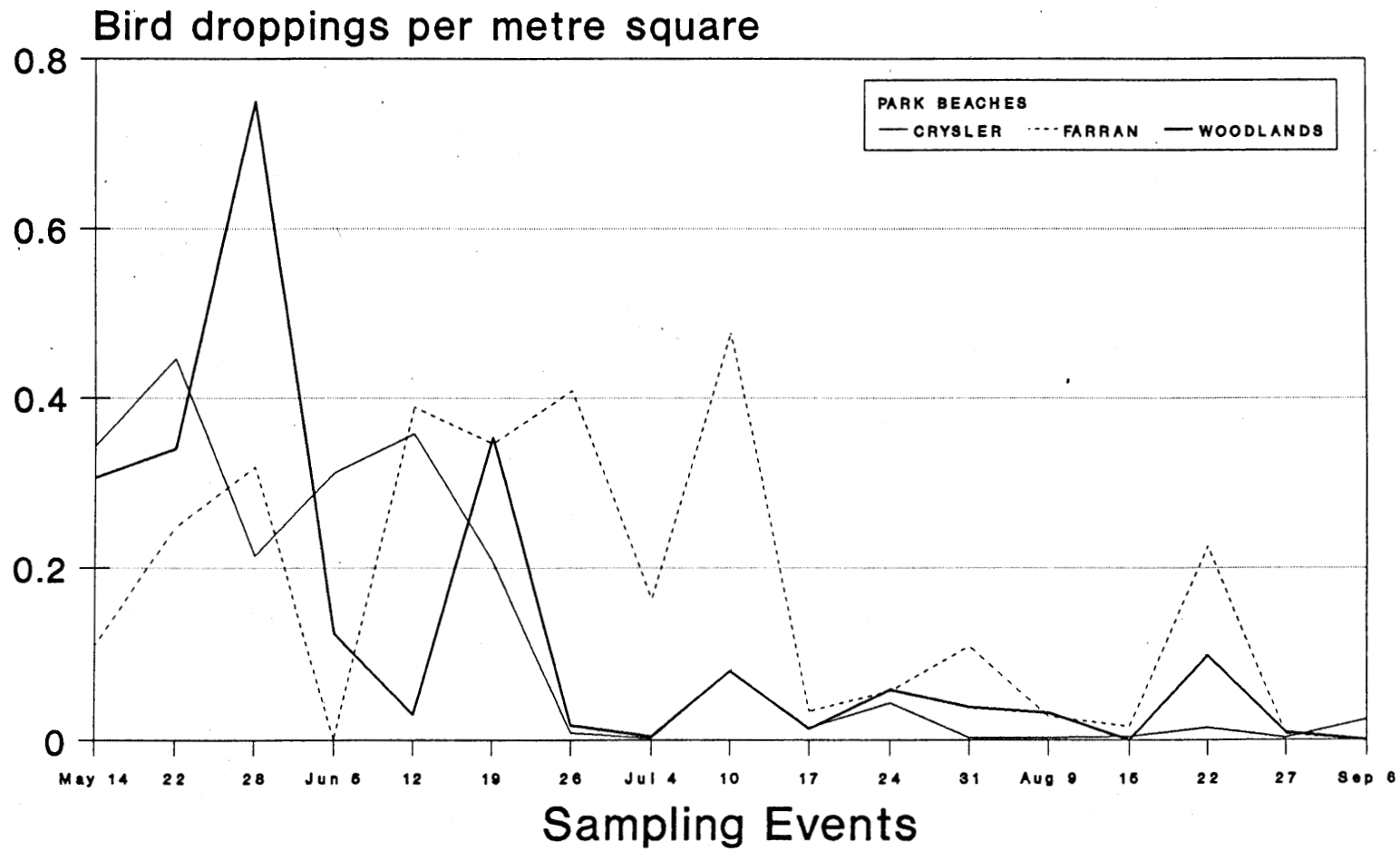

Figure 42

GOOSE AND GULL STUDY - 1991
Goose Dropping Densities

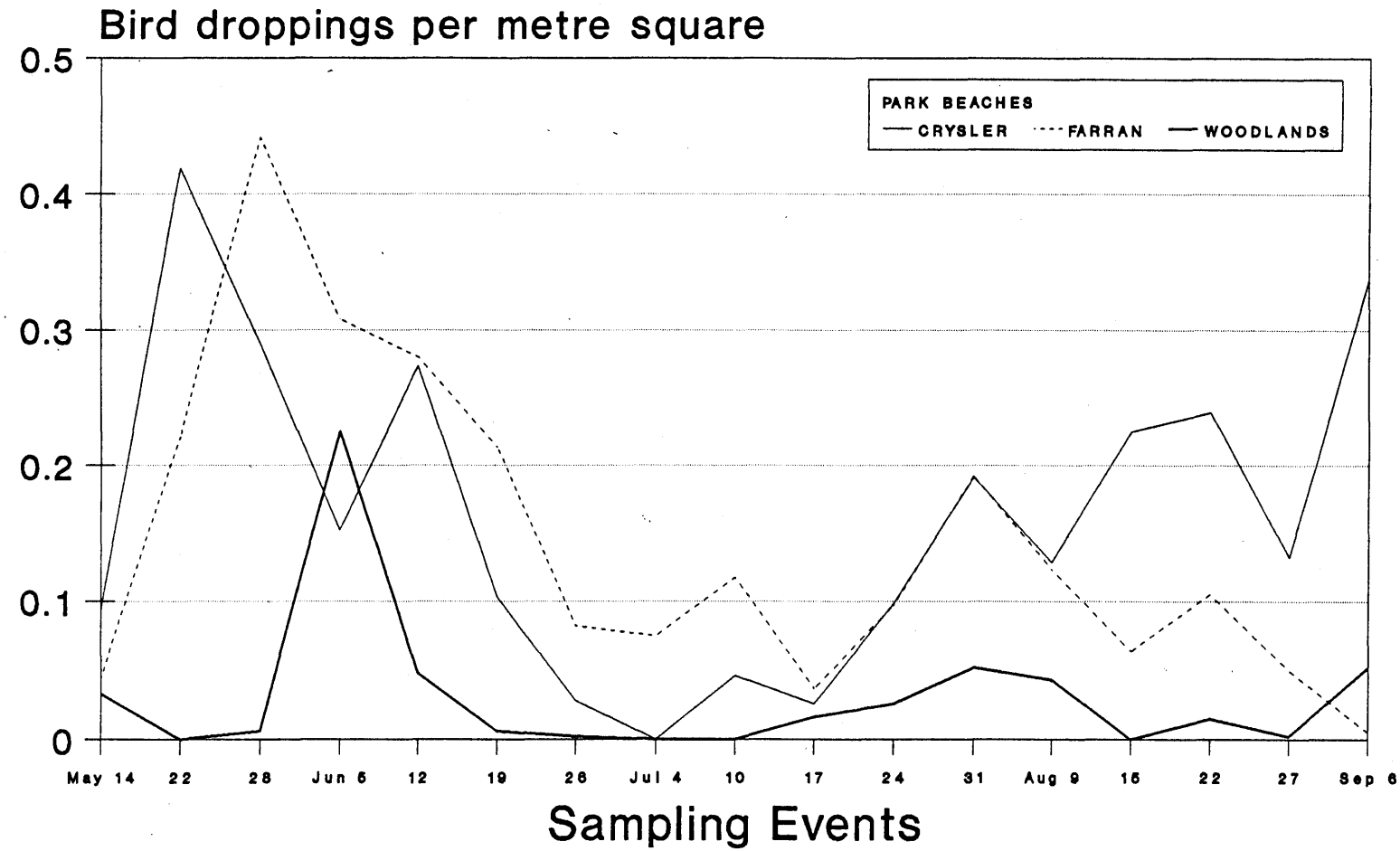

Figure 43

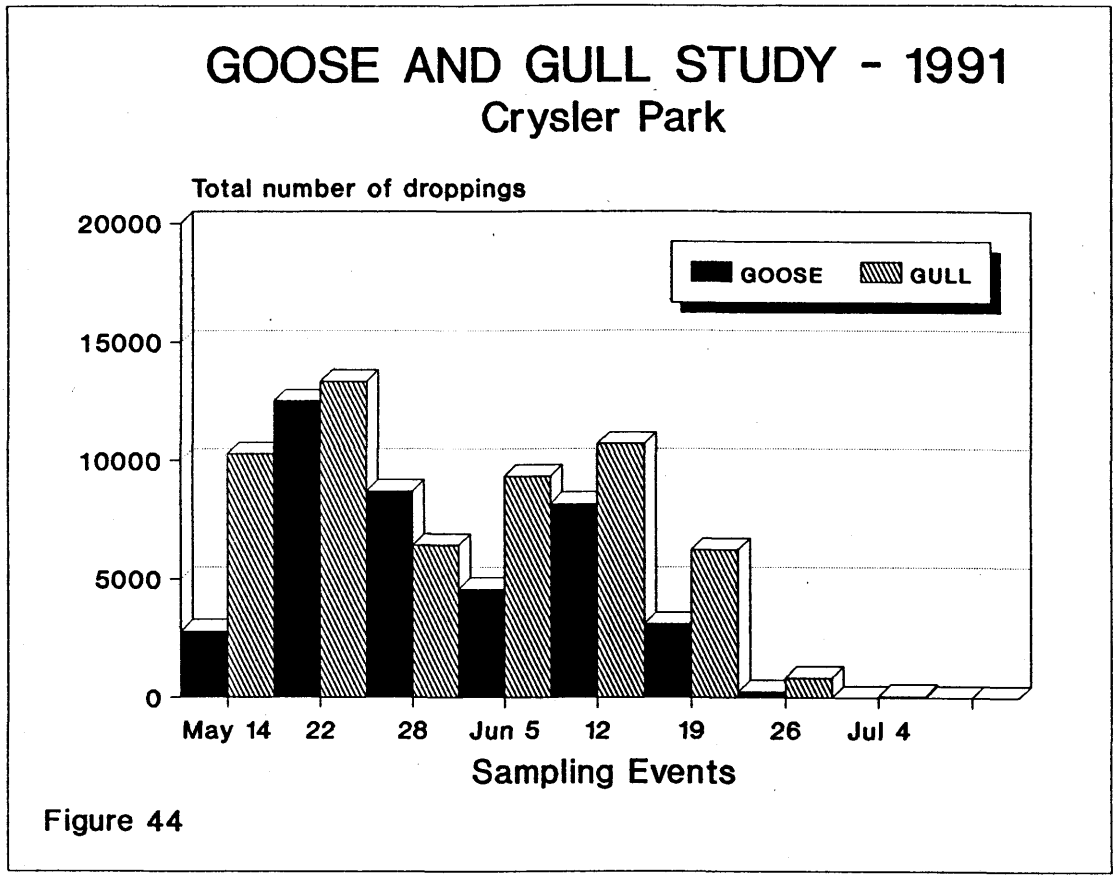

Figure 44

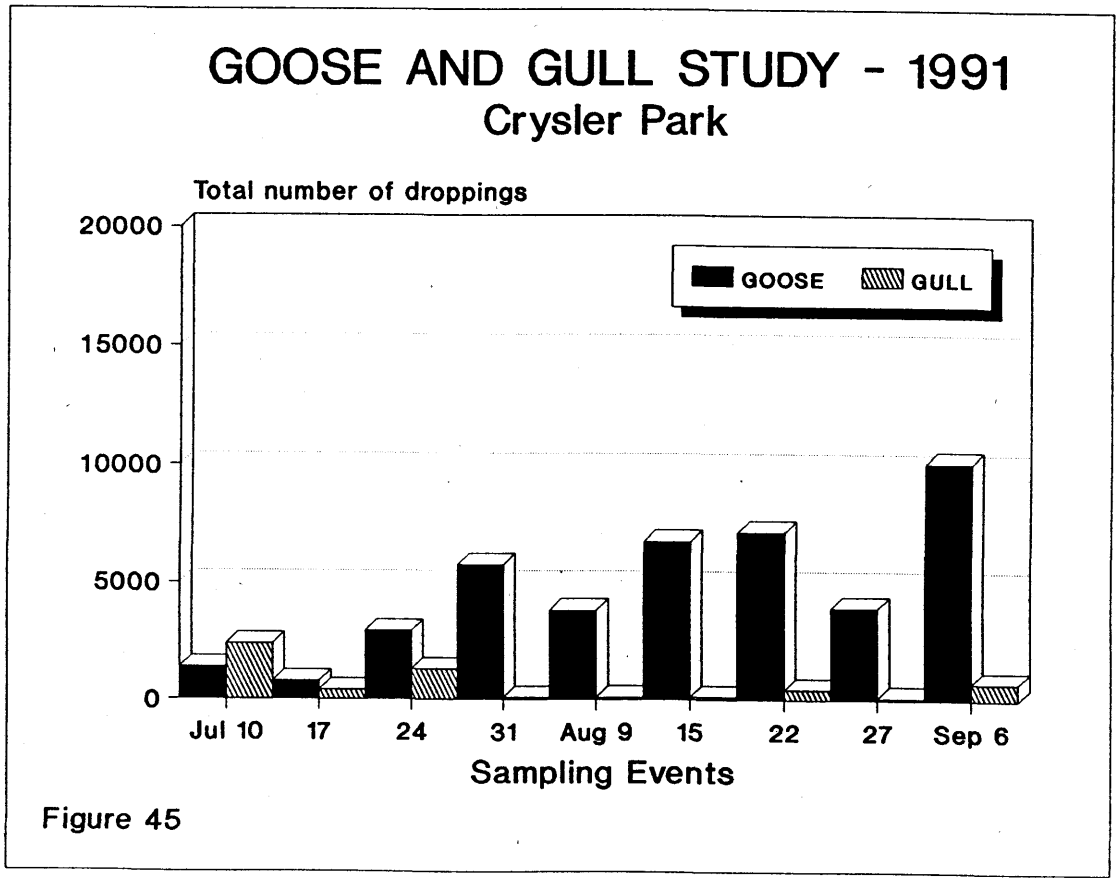

Figure 45

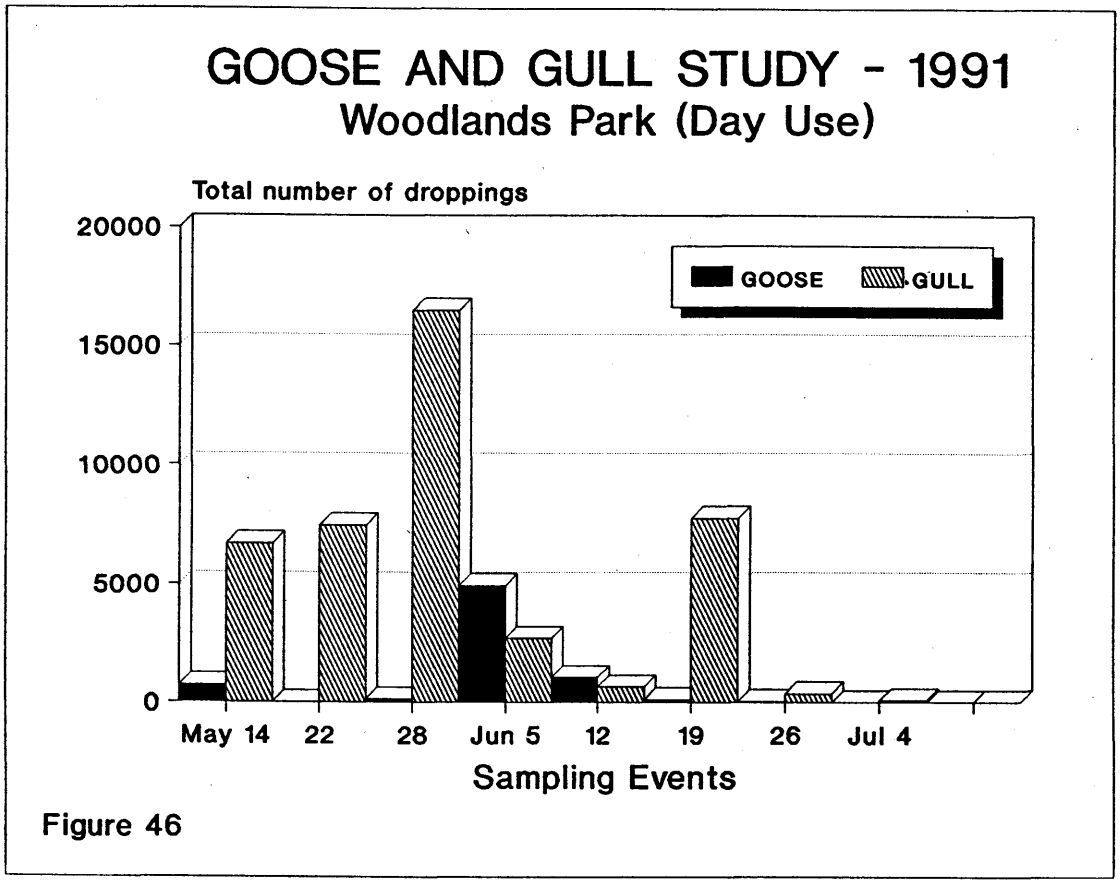

Figure 46

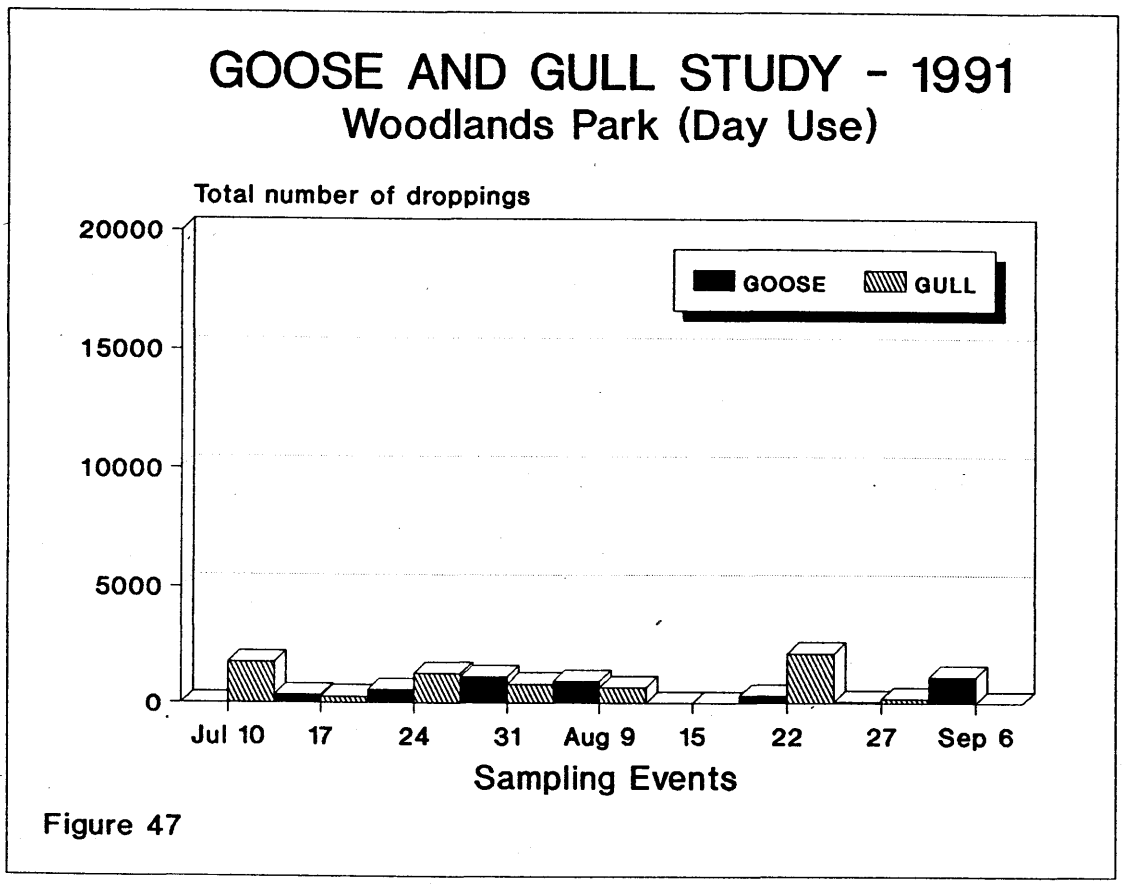

Figure 47

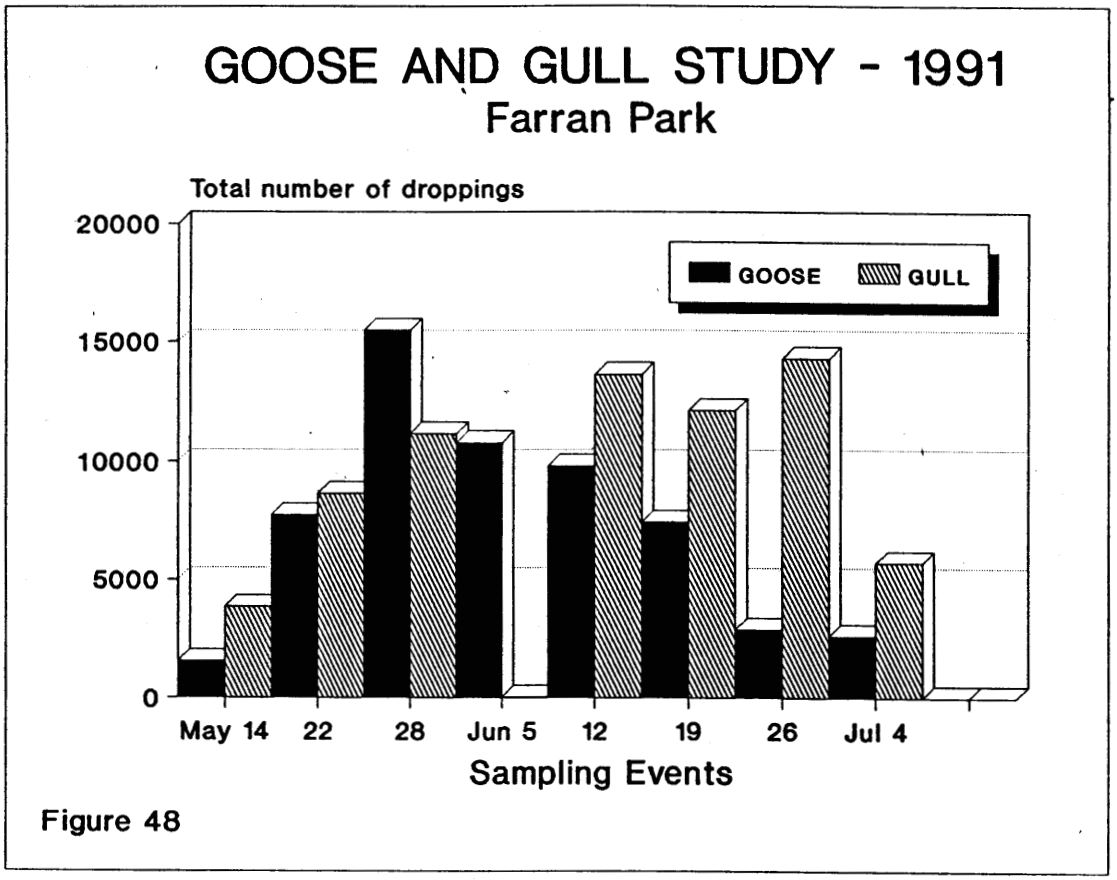

Figure 48

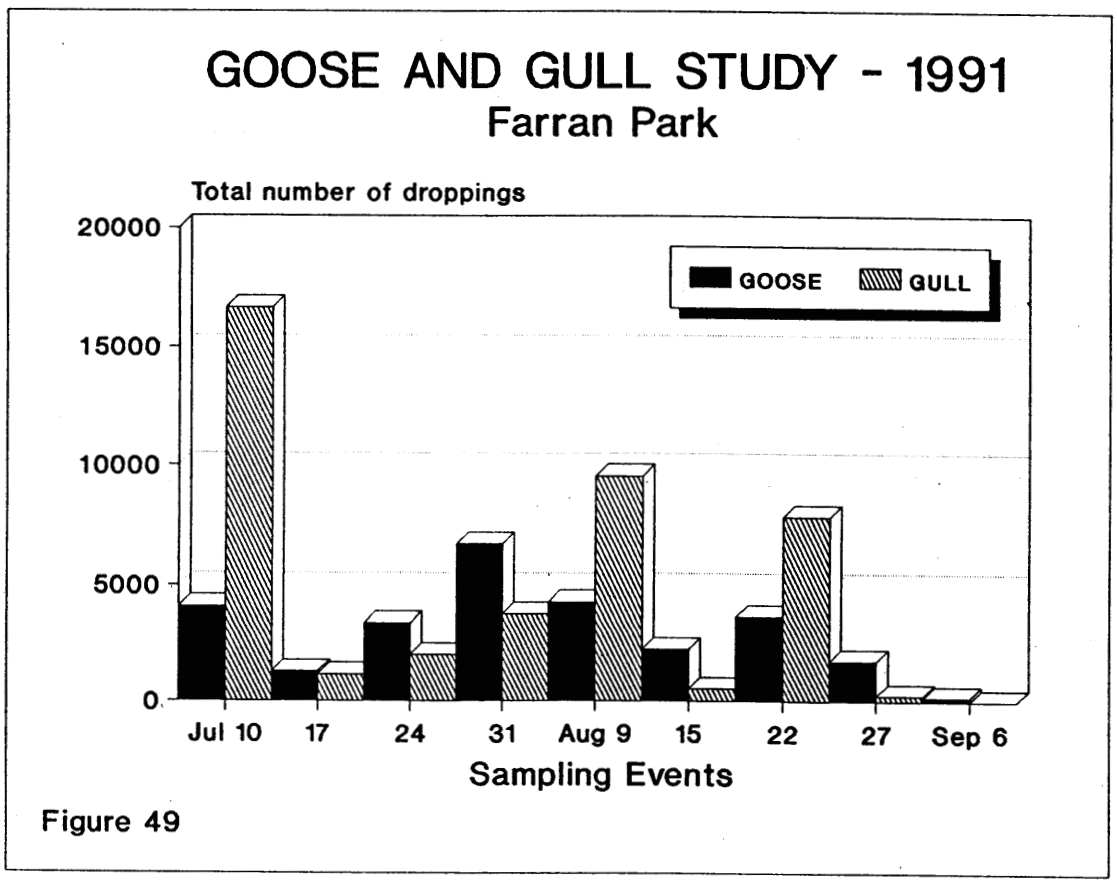

Figure 49

FIGURE 50

GOOSE AND GULL SURVEY - 1991

Notes: CRYSLER PARK - beach raked June 13,26
July 11,25
Aug (missing data)
- grass cut June 6,7,11,12,14,15
July 18,23
Aug (missing data)

FARRAN PARK - beach raked June 4,5,10,23,24,26,27,29,30
July 18,19,23,24,25,26,27,28,29
- grass cut June 3,4,5,10,15,19,20,21,24
July 2,16,17,18,19,24,25,26,27,28,29
- August report not yet received
- goose feces picked and gull feces overturned regularly

WOODLANDS PARK - beach raked June 13,16,29
July 12,19,25
Aug 1,2,9,22,23
- grass cut June 1,5,7,8,9,21,22,26,27,28
July 9,10,12,18,19,20,21
Aug 1,2

4.8 Agricultural Operation Survey

Survey results from 45 farms interviewed in order to monitor farm bacterial sources in the Finney Creek and Raisin River agricultural study area are as follows; 5 farms had inadequate milkhouse waste disposal systems, 19 had inadequate or non-existent measures to prevent livestock access to a watercourse, 30 had inadequate manure storage systems, 34 had unacceptable manure spreading practices. In studies conducted in Ontario, it has been found that improper manure handling and milkhouse wash water disposal practices can lead to elevated bacterial and phosphorus levels in drainage waters.

5. CONCLUSIONS

5.1 Beaches

The study of park sewage systems to be conducted by the **St. Lawrence Parks Commission** during 1991 was rescheduled for 1992/1993 because of changes in capital budget priorities. For the purposes of this report, sewage systems were considered as potential sources of bacterial contamination detected at park beaches, pending the results of the park sewage system study.

5.1.1 Crysler Park

Two suspected sources of bacteria at Crysler Park beach are the feces from geese and gulls, and surface runoff channelled towards the beach swimming area. Geese and gull study results indicate that these bird species are a contributor of bacterial pollution at this beach. A high bacterial count in May coincides with the presence of high goose and gull feces densities. The situation may be compounded by surface runoff waters channelled over the beach from upland areas contaminated with bacteria from bird droppings, food, and other sources.

5.1.2 Farran Park

A possible source of fecal bacteria at this beach is runoff from the grassed and upper beach areas laden with bacteria which drains into the swimming area. The presence of gulls during most of the summer may have also contributed to elevated fecal bacterial counts. However, no direct relationship between bird densities and elevated beach water bacterial counts has been established because true dropping densities may be effected by beach raking and bather activities. The park sewage system immediately uphill of the beach area is also a suspected source of bacteria.

5.1.3 Woodlands Park (day use)

No direct relationship between bacterial counts and goose and gull presence at this beach has been established. The low occurrence of both geese and gulls during late summer when the highest beach water and sediment fecal counts occurred discounts both species of birds as significant bacterial sources.

Potential contributors of fecal bacterial may be runoff waters from the upland areas which are channelled over the beach, as well as an improperly operating park sewage system.

5.1.4 Woodlands Park (camping)

The source of bacterial pollution suspected of affecting this beach is the Ingleside Sewage Treatment Plant. The outfall pipe for this STP was discovered to be fractured during the summer of 1991 at a shallow spot near the Long Sault Parks. Low river levels increased the flow of water near the Woodlands Park (camping) beach, and may have transported discharge bacterial pollutants near the beach area.

The Ingleside Sewage Treatment Plant, built in the 1950's to serve the community of Ingleside, has since been proven to be inadequate in handling the demands placed upon it by increased urban development. Engineering studies concerning the adequacy of this STP are currently underway.

Additionally, stormwater outfalls immediately upstream of the parks may be contributing to some of the bacterial loading. Evidence of this as a possible bacterial occurred in August following a major rain event, when elevated fecal coliform counts at this beach were detected.

5.1.5 Mille Roches Park

The potential sources of bacteria detected in beach samples may be attributable to droppings from food scavenging gulls that are present when crowds are large. As well, stormwater culverts from upland grass and parking areas that direct runoff waters to the beach may also be bacterial contributors. Another possible bacterial source may be bathers themselves. There may also be some bacterial contributions attributable to the park sewage system, because of its close proximity to the swimming area. This possible source will be studied by the **St. Lawrence Parks Commission** during 1992/1993.

5.1.6 Lakeview Heights Park

During the summer of 1989, the last summer during which the park was in operation, the beach was placarded for 77 days. The previous year it was placarded for 48 days. Though bacterial counts in 1990 and 1991 were within the acceptable limit, it is suspected that the cause of previous bacterial pollution originated from the upstream Long Sault Sewage Treatment Plant. Discharged effluent not sufficiently diluted may become trapped in the beach area, which has a lower circulation rate because of its protected inlet location.

Sampling at an alternative beach site within the park boundaries showed no substantial difference in bacterial counts between it and the existing beach area.

5.1.7 Charlottenburgh Park

During the years the park was in operation, several beach closures occurred. Possible sources of bacteria may be faulty upstream cottages septic systems in and around Pilon's Point and Hamilton Island, from gull populations which were observed on the abandoned beach, and from the park's sewage system.

5.1.8 Lancaster Park
5.1.9 Glengarry Park

Localized sources of bacterial pollution at these two beaches may be attributable to runoff waters from upland grassed and parking areas being channelled over the beach, as well as from park sewage systems.

During the 1990 study period, bacterial counts in this area were elevated when the two upstream tributaries, Finney Creek and Raisin River, were flowing. In 1991, Finney Creek had no flow and the Raisin River had very low flows. It is suspected that bacteria detected in these tributaries originated from agricultural operations and inadequate or failing sewage systems along their banks. A further potential upstream source of bacterial pollution, is the community of South Lancaster. While no specific water quality study was conducted under this program, the **Ministry of the Environment** and the **Township of Lancaster** will be considering the recommendations of a recently conducted study to determine the problems associated with sewage disposal in the community.

5.1.10 Alexandria Park

The presence of fecal coliforms may be attributable to the following sources: surface runoff from the grassed area surrounding the beach, failing or inadequate cottage/permanent dwelling septic systems and to a lesser extent, gull feces. Storm water outfalls were considered a contributor of detected bacteria, and will be investigated as a possible source. Also of note is that prior to the 1991 swimming season, a stone groin on the west side of the beach was removed. It was observed that the removal of this structure improved water circulation at the beach.

5.2 Tributaries

5.2.1 Finney Creek

The predominant land use in the Finney Creek watershed is agriculture. The creek and most of its natural and manmade tributaries are classified as municipal drains, intended to drain farm lands including barnyards, cultivated fields, and pastures. Based on water quality and agricultural operation study results, it is concluded that high fecal bacterial counts are as a result of

farming practices, especially those practices which allow the mixing of fecal material with stream waters.

Sources of phosphorus include fertilizers, eroded soils, and detergents (mostly from milkhouse wash water).

5.2.2 Raisin River

Possible bacterial and phosphorus sources in the Raisin River include both agricultural and non-agricultural sources. Agricultural sources include all of those mentioned in Section 5.2.1. Non-agricultural sources include faulty or inadequate private sewage systems, especially within the rural communities of Martintown and Williamstown, as well as for those constructed on or near the banks of the river. Studies conducted for the **Ministry of the Environment** to determine the extent of water quality problems in Martintown, have concluded that a sewage treatment system for the community is required. To date, no studies have been undertaken to determine water quality in Williamstown.

5.2.3 Hoople Creek

No intensive bacterial or chemical water testing program was carried out on this creek during the 1991 testing year. Previous testing concluded that the waters from this tributary have no effect on beaches downstream of its confluence with the St. Lawrence River.

Despite this fact, Hoople Creek has been recognized as having serious water quality problems, largely attributable to area agricultural practices.

6. RECOMMENDED REMEDIAL MEASURES

6.1 Parks

The following recommended remedial measures are not listed in any particular order of priority.

6.1.1 Crysler Park

It is recommended that the following measures be implemented;

1. a program to reduce or otherwise control geese and gull populations as well as geese and gull use of the park area be instituted;

2. works be undertaken to divert upland runoff waters away from or downstream of beach areas;

3. a study be conducted to determine the impact, if any, the existing park sewage disposal system may have on beach water quality;

4. a litter control program involving more frequent garbage collection, and/or covered containers, be put in place to lessen the attractiveness of park areas for gull feeding;

5. a public information program be put into place to encourage park users to not feed the gulls or other bird species within the park beach area.

6.1.2 Farran Park

It is recommended that the following measures be implemented;

1. a program to reduce or otherwise control geese and gull populations as well as geese and gull use of the park area be instituted;

2. the erection of monofilament screens over the beach area to reduce the numbers of gulls from landing on the beach and nearshore swimming areas;

3. a litter control program involving more frequent garbage collection, and/or covered containers, be put in place to lessen the attractiveness of park areas for geese and gull feeding;

4. works be undertaken to divert upland runoff waters away from or downstream of beach areas;

5. a study be conducted to determine the impact, if any, the existing park sewage disposal system may have on beach water quality;

6. a public information program be put into place to encourage park users to not feed the gulls or other bird species within the park beach area.

6.1.3 Woodlands Park (day use)

It is recommended that the following measures be implemented;

1. the erection of monofilament screens over the beach area to reduce the numbers of gulls from landing on the beach and nearshore swimming areas;

2. works be undertaken to divert upland runoff waters away from or downstream of beach areas;

3. a study be conducted to determine the impact, if any, the existing park sewage disposal system may have on beach water quality;

4. a litter control program involving more frequent garbage collection, and/or covered containers, be put in place to lessen the attractiveness of park areas for gull feeding;

5. a public information program be put into place to encourage park users to not feed the gulls or other bird species within the park beach area.

6.1.4 Woodlands Park (camping)

It is recommended that the following measures be implemented;

1. the Ingleside Sewage Treatment Plant be upgraded as soon as possible to avoid the discharge of untreated sewage into the waters upstream of this park;

2. repairs to the STP discharge pipe should be instituted as soon as is possible.

3. a study be conducted to determine the impact, if any, the existing park sewage disposal system may have on beach water quality;

6.1.5 Mille Roches Park

It is recommended that the following measures be implemented;

1. a program to reduce or otherwise control gull populations as well as gull use of the park area be instituted;

2. the erection of monofilament screens over the beach area to reduce the numbers of this species from landing on the beach and nearshore swimming areas;

3. a study be conducted to determine the impact, if any, the existing park sewage disposal system may have on beach water quality;

4. works be undertaken to divert upland runoff waters away from or downstream of beach areas;

5. that a litter control program involving more frequent garbage collection, and/or covered containers, be put in place to lessen the attractiveness of park areas for gull feeding;

6. that a public information program be put into place to encourage park users to not feed the gulls or other bird species within the park beach area.

6.1.6 Lakeview Heights Park

It is recommended that the following measures be implemented;

1. the upgrading of the Long Sault Sewage Treatment Plant as soon as is possible, to reduce the likelihood of untreated bacterial waste overflowing into the river upstream of this park beach;

2. a study be conducted to determine the impact, if any, the existing park sewage disposal system may have on beach water quality;

6.1.7 Charlottenburgh Park

It is recommended that the following measures be implemented;

1. that upstream dwelling owners be encouraged to have their septic systems inspect, and to improve/replace faulty septic systems;

2. a study be conducted to determine the impact, if any, the existing park sewage disposal system may have on beach water quality.

6.1.8 Lancaster Park

It is recommended that the following measures be implemented;

1. that a program be put in place to reduce/eliminate agricultural and non-agricultural bacterial pollution originating from tributaries upstream of the beaches;

2. works be undertaken to divert upland runoff waters away from or downstream of beach areas;

3. a study be conducted to determine the impact, if any, the existing park sewage disposal system may have on beach water quality;

4. that the recommendations of a sewage disposal study of the community of South Lancaster be considered.

6.1.9 Glengarry Park

It is recommended that the following measures be implemented;

1. that a program be put in place to reduce/eliminate agricultural and non-agricultural bacterial pollution originating from tributaries upstream of the beaches;

2. works be undertaken to divert upland runoff waters away from or downstream of beach areas;

3. a study be conducted to determine the impact, if any, the existing park sewage disposal system may have on beach water quality;

4. that the recommendations of a sewage disposal study of the community of South Lancaster be considered.

6.1.10 Alexandria Park

It is recommended that the following measures be implemented;

1. upstream residential septic systems be inspected and improved, as necessary;

2. that a litter control program involving more frequent garbage collection, and/or covered containers, be put in place to lessen the attractiveness of park areas for gull feeding;

3. a study be conducted to determine the impact, if any, the existing park sewage disposal system may have on beach water quality;

4. that a public information program be put into place to encourage park users to not feed the gulls or other bird species within the park beach area.

6.2 Tributaries

6.2.1 Finney Creek

The water quality problems of Finney Creek have the potential to affect the St. Lawrence River beaches of Lancaster and Glengarry Parks.

It is recommended that the following measure be implemented;

1. a plan be formulated to provided remedial funding for measures to reduce bacterial and phosphorus loadings into the watercourses.

6.2.2 Raisin River

The water quality data indicates that bacterial pollution originating along the Raisin River has the potential to effect the downstream St. Lawrence River park beaches of Lancaster and Glengarry.

It is recommended that the following measures be implemented;

1. a plan be formulated to provide remedial funding for measures to reduce bacterial and phosphorus loadings into the watercourse, from both agricultural and non-agricultural sources;

2. a program be considered to provide funding for remedial measures to clean up those areas of the Raisin River and its watershed, which adversely affect surface water quality, but do not effect rural beaches;

3. the conclusions from a water quality study of Martintown be instituted, in order to reduce urban source bacterial pollution affecting the river;

4. a water quality study be conducted for Williamstown to determine the impact of domestic source bacterial waste on surface and groundwater quality.

6.2.3 Hoople Creek

Hoople Creek was found not to affect downstream beaches. However, its serious water quality problems have been noted. The **Rural Beaches Program** will not provide remedial funding for reducing bacterial and phosphorus loadings into the St. Lawrence River.

It is recommended that the following measure be implemented;

1. an alternative program be instituted to fund a clean-up of Hoople Creek and its tributaries.

6.3 Clean Up Rural Beaches (CURB) Plan

This final report is the conclusion of the study phase of the program. Based on the results and conclusions stated in this report, it is recommended that a **Clean Up Rural Beaches (CURB) Plan** be prepared and a proposal be submitted to the **Ministry of the Environment** for entry into the **Rural Beaches CURB Implementation Program.**

The formulation of a Clean Up Rural Beaches (CURB) Plan is the second step in the **Rural Beaches Program.** The Plan outlines the remedial measures to be taken to clean up bacterial pollution detected at rural beaches, the cost of the remedial measures required, sources of remedial funding, and strategies for the implementation of remedial works. The **CURB Plan** is based largely on the conclusions and recommendations derived from the two year study phase.

The emphasis of the **CURB Implementation Program** is on improving agricultural land management practices, particularly those which adversely affect water quality.

The program implementation period for each participating conservation authority is five years in length, commencing with the approval of a locally produced **CURB Plan** by the Ontario **Ministry of the Environment.**

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APPENDIX A

ST. LAWRENCE BEACHES STUDY

1991 WATER QUALITY RESULTS
(Bacterial Analysis)

Station No.	Date Sampled	Fecal Coliform	E. coli	Water Temp.	Remarks
3					CRYSLER PARK BEACH - NEARSHORE
3	14-May-91	LT10	LT10	13	
3	27-May-91	700	440	16	60 gulls, 5 geese on beach
3	11-Jun-91	LT10	20	18	
3	17-Jun-91	LT10	LT10	20	20 gulls on beach; grass cut; rain during previous week
3	25-Jun-91	LT10	LT10	20	120 gulls on beach/in water
3	2-Jul-91	LT10	LT10	21	45 gulls on beach/in water
3	9-Jul-91	10	40	20	25 gulls on beach/in water
3	15-Jul-91	70	60	22	120 gulls, 3 geese on beach
3	23-Jul-91	30	50	24	20 gulls on beach/in water
3	29-Jul-91	20	30	24	50 gulls, 20 geese on beach/in water; seaweed raked
3	5-Aug-91	30	30	24	
3	7-Aug-91	140	80	24	17 geese, 39 gulls on land/in water
3	12-Aug-91	320	430	23	70 gulls on land/in water
3	20-Aug-91	560	490	21	low water level; 5 geese, 20 gulls on beach
3	22-Aug-91	110	130	22	rained previous night; signs of runoff
3	26-Aug-91	90	110	22	30 gulls on raked beach
3	4-Sep-91	150	60	21	20 gulls on beach
3	9-Sep-91	10	LT10	21	
					.....
14					FARRAN PARK BEACH - NEARSHORE
14	14-May-91	LT10	LT10	11	
14	27-May-91	LT10	10	14	50 gulls on beach, 15 gulls on grass
14	11-Jun-91	LT10	20	18	25 gulls, 24 geese on land/in water
14	17-Jun-91	LT10	LT10	20	grass cut
14	25-Jun-91	LT10	LT10	20	east of beach raked, 75 gulls, 22 geese on land/in water
14	2-Jul-91	LT10	LT10	21	40 gulls on land/in water
14	9-Jul-91	LT10	10	20	35 gulls on land/in water
14	15-Jul-91	20	10	22	100 geese in water, 24 gulls on beach
14	23-Jul-91	30	20	24	20 geese in water, 2 gulls on beach
14	29-Jul-91	190	140	25	
14	5-Aug-91	LT10	LT10	24	
14	7-Aug-91	60	30	25	45 gulls on land/in water; 5 bathers in water/on beach
14	12-Aug-91	80	30	24	80 gulls on land/in water
14	20-Aug-91	90	70	22	6 geese on beach; water level lower (receded 2 to 3 feet)
14	22-Aug-91	20	LT10	23	
14	26-Aug-91	LT10	LT10	22	
14	4-Sep-91	20	LT10	22	30 gulls on beach
14	9-Sep-91	LT10	LT10	21	
					.....
16					WEST SIDE OF LONG SAULT PARKWAY BETWEEN MAINLAND AND WEST
16					WOODLANDS ISLAND
16	14-May-91	LT10	LT10	12	
16	27-May-91	100	LT10	17	
16	11-Jun-91	LT10	10	18	
16	17-Jun-91	LT10	LT10	18	
16	25-Jun-91	LT10	LT10	21	
16	2-Jul-91	10	20	23	
16	9-Jul-91	20	LT10	20	
16	15-Jul-91	LT10	10	21	
16	23-Jul-91	LT10	LT10	24	
16	29-Jul-91	LT10	LT10	24	
16	7-Aug-91	LT10	10	25	
16	12-Aug-91	LT10	10	23	
16	20-Aug-91	30	10	21	rough river conditions
16	26-Aug-91	LT10	LT10	22	
16	4-Sep-91	380	110	20	east flow
16	9-Sep-91	270	310	20	strong flow
					.....
17					SOUTH OF WEST WOODLANDS ISLAND
17	14-May-91	LT10	LT10		
17	27-May-91	10	LT10	18	
17	11-Jun-91	LT10	LT10	17	
17	17-Jun-91	LT10	LT10	17	
17	25-Jun-91	LT10	LT10	22	

Station No.	Date Sampled	Fecal Coliform	E. coli	Water Temp.	Remarks
17	2-Jul-91	LT10	LT10	23	
17	9-Jul-91	LT10	10	22	
17	15-Jul-91	20	LT10	24	
17	23-Jul-91	10	LT10	24	
17	29-Jul-91	LT10	LT10	26	
17	7-Aug-91	30	40	25	
17	12-Aug-91	LT10	10	24	
17	20-Aug-91	LT10	LT10	23	
17	26-Aug-91	LT10	10	22	
17	4-Sep-91	70	10	23	
17	9-Sep-91				no sample taken
18					NORTH OF CENTRE WOODLANDS ISLAND
18	14-May-91	LT10	LT10	15	
18	27-May-91	10	20	17	
18	11-Jun-91	LT10	10	17	
18	17-Jun-91	LT10	LT10	17	
18	25-Jun-91	10	LT10	21	
18	2-Jul-91	LT10	10	21	
18	9-Jul-91	LT10	30	21	
18	15-Jul-91	10	10	21	
18	23-Jul-91	60	40	24	
18	29-Jul-91	30	10	25	
18	7-Aug-91	80	30	23	
18	12-Aug-91	50	30	24	
18	20-Aug-91	10	30	21	
18	26-Aug-91	10	10	23	
18	4-Sep-91	30	40	21	
18	9-Sep-91	LT10	LT10	21	land sample - 30 geese on sand/gravel bar
20					BEACH ON NORTH SIDE OF EAST WOODLANDS ISLAND - OFFSHORE
20	14-May-91	LT10	LT10	13	
20	27-May-91	LT10	LT10	17	
20	11-Jun-91	LT10	LT10	19	
20	17-Jun-91	LT10	LT10	19	
20	25-Jun-91	LT10	LT10	21	
20	2-Jul-91	LT10	LT10	22	
20	9-Jul-91	LT10	LT10	21	
20	15-Jul-91	LT10	LT10	23	
20	23-Jul-91	LT10	LT10	25	
20	29-Jul-91	LT10	LT10	25	10 people in water, 2 on beach
20	7-Aug-91	LT10	LT10	24	
20	12-Aug-91	LT10	80	24	
20	20-Aug-91	50	30	21	
20	26-Aug-91				no sample taken - no canoe
20	4-Sep-91				no sample taken - no canoe
20	9-Sep-91				no sample taken
21					BEACH ON NORTH SIDE OF EAST WOODLANDS ISLAND - NEARSHORE
21	14-May-91	LT10	LT10	14	
21	27-May-91	10	LT10	18	
21	11-Jun-91	10	LT10	21	water level higher than previous week
21	17-Jun-91	LT10	LT10	20	
21	25-Jun-91	LT10	10	22	
21	2-Jul-91	30	10	22	
21	9-Jul-91	LT10	10	22	
21	15-Jul-91	70	60	23	
21	23-Jul-91	10	LT10	25	
21	29-Jul-91	10	10	25	
21	5-Aug-91	40	20	23	heavy shower 2 minutes prior to testing
21	7-Aug-91	10	LT10	24	
21	12-Aug-91	30	60	24	
21	20-Aug-91	10	10	22	
21	22-Aug-91	90	90	23	
21	26-Aug-91	30	40	22	3 bathers, 20 gulls on beach/in water
21	4-Sep-91	100	40	22	scum on water

Station No.	Date Sampled	Fecal Coliform	E. coli	Water Temp.	Remarks
21	9-Sep-91	LT10	LT10	21	park closed - 3 gulls on beach
22					BEACH ON SOUTH SIDE OF EAST WOODLANDS ISLAND - NEARSHORE
22	14-May-91	LT10	LT10	11	
22	27-May-91	LT10	25	15	25 gulls on shore
22	11-Jun-91	LT10	LT10	18	15 gulls on shore; new beach sand; EOHU water testing
22	17-Jun-91	LT10	LT10	22	sand raked, 26 gulls, 4 people on land/in water
22	25-Jun-91	15	10	23	
22	2-Jul-91	10	10	23	
22	9-Jul-91	15	40	21	18 gulls, 30 people on beach
22	15-Jul-91	15	25	22	20 gulls on land/in water
22	23-Jul-91	10	15	24	25 gulls on land/in water
22	29-Jul-91	190	170	25	
22	5-Aug-91	30	20	24	no culvert runoff evident
22	7-Aug-91	30	45	24	20 gulls on land/in water
22	12-Aug-91	235	300	24	
22	20-Aug-91	35	60	23	water level lower, beach extended 3 - 3.5 feet
22	26-Aug-91	20	50	22	
22	4-Sep-91	225	130	22	26 geese,30 gulls on beach
22	9-Sep-91	LT10	LT10	21	25 gulls on beach
29					WEST SIDE OF LONG SAULT PARKWAY BETWEEN MAINLAND AND MILLE ROCHES ISLAND
29	14-May-91	LT10	LT10	11	
29	27-May-91	LT10	LT10	17	
29	11-Jun-91	LT10	LT10	20	
29	17-Jun-91	LT10	LT10	20	
29	25-Jun-91	LT10	LT10	24	
29	2-Jul-91	LT10	LT10	24	
29	9-Jul-91	LT10	LT10	24	
29	15-Jul-91	LT10	LT10	23	
29	23-Jul-91	LT10	LT10	25	
29	29-Jul-91	LT10	10	25	
29	7-Aug-91	LT10	LT10	24	
29	12-Aug-91	LT10	20	23	
29	20-Aug-91	LT10	LT10	22	
29	26-Aug-91	LT10	LT10	23	
29	4-Sep-91	LT10	LT10	23	
29	9-Sep-91	30	50	21	sample taken from bridge
30					MILLE ROCHE PARK BEACH - NEARSHORE
30	14-May-91	LT10	LT10	12	
30	27-May-91	20	40	15	
30	11-Jun-91	LT10	LT10	18	
30	17-Jun-91	LT10	LT10	18	5 gulls, 25 geese in water/on land
30	25-Jun-91	50	LT10	21	30 people in water, 20 gulls on beach
30	2-Jul-91	LT10	LT10	23	
30	9-Jul-91	LT10	LT10	21	20 gulls on beach
30	15-Jul-91	100	40	23	15 bathers; 10 gulls in water/on land
30	23-Jul-91	100	40	23	
30	29-Jul-91	90	80	25	
30	5-Aug-91	40	20	24	heavy shower 2 minutes prior to testing; no culvert runoff
30	7-Aug-91	100	20	25	10 bathers, 100 people in park
30	12-Aug-91	110	40	24	
30	20-Aug-91	50	20	23	lower water level; beach extended 2 - 3 feet
30	22-Aug-91	LT10	30	24	
30	26-Aug-91	20	50	23	10 bathers; 15 geese in water
30	4-Sep-91	110	100	21	
30	9-Sep-91	10	LT10	21	50 geese, 20 gulls on beach/in water
32					EAST OF LONG SAULT SEWAGE TREATMENT PLANT
32	14-May-91	LT10	LT10	14	
32	27-May-91	LT10	LT10	18	
32	11-Jun-91	LT10	LT10	19	
32	17-Jun-91	LT10	LT10	18	
32	25-Jun-91	LT10	LT10	23	

Station No.	Date Sampled	Fecal Coliform	E. coli	Water Temp.	Remarks
32	2-Jul-91	LT10	LT10	23	
32	9-Jul-91	LT10	LT10	21	
32	15-Jul-91	LT10	30	23	
32	23-Jul-91	LT10	LT10	24	
32	29-Jul-91	LT10	LT10	25	
32	7-Aug-91	LT10	LT10	24	
32	12-Aug-91	LT10	30	24	
32	20-Aug-91	LT10	LT10	23	
32	26-Aug-91	10	20	21	
32	4-Sep-91	LT10	LT10	22	
32	9-Sep-91				no sample taken
					.....
33					EASTERN POINT OF MOULINETTE ISLAND
33	14-May-91	LT10	LT10	12	
33	27-May-91	10	20	17	
33	11-Jun-91	10	10	19	
33	17-Jun-91	LT10	LT10	18	
33	25-Jun-91	LT10	LT10	23	
33	2-Jul-91	LT10	LT10	23	
33	9-Jul-91	LT10	LT10	22	
33	15-Jul-91	LT10	LT10	24	
33	23-Jul-91	LT10	LT10	24	
33	29-Jul-91	LT10	LT10	25	
33	7-Aug-91	LT10	10	24	
33	12-Aug-91	LT10	LT10	24	
33	20-Aug-91	LT10	LT10	23	
33	26-Aug-91	LT10	LT10	21	
33	4-Sep-91	LT10	LT10	23	
33	9-Sep-91				no sample taken
					.....
35					LAKEVIEW HEIGHTS PARK BEACH - NEARSHORE
35	14-May-91	LT10	LT10	12	
35	27-May-91	55	315	17	grass has been cut
35	11-Jun-91	15	15	21	
35	17-Jun-91	10	LT10	17	
35	25-Jun-91	15	LT10	20	
35	2-Jul-91	LT10	LT10	23	
35	9-Jul-91	LT10	LT10	20	
35	15-Jul-91	25	20	22	
35	23-Jul-91	60	50	24	
35	29-Jul-91	LT10	LT10	26	
35	5-Aug-91	LT10	LT10	23	heavy shower 2 minutes prior to testing
35	7-Aug-91	LT10	LT10	25	
35	12-Aug-91	LT10	20	24	
35	20-Aug-91	LT10	LT10	22	
35	22-Aug-91	20	LT10	25	
35	26-Aug-91	LT10	LT10	21	lower water level
35	4-Sep-91	15	10	20	murky water
35	9-Sep-91	LT10	LT10	21	
					.....
36					LAKEVIEW HEIGHTS PARK BEACH - OFFSHORE
36	14-May-91	LT10	LT10	12	
36	27-May-91	LT10	LT10	15	
36	11-Jun-91	LT10	LT10	18	
36	17-Jun-91	10	LT10	17	
36	25-Jun-91	LT10	LT10	21	
36	2-Jul-91	LT10	LT10	23	
36	9-Jul-91	LT10	LT10	21	
36	15-Jul-91	LT10	LT10	23	
36	23-Jul-91	LT10	LT10	24	
36	29-Jul-91	20	LT10	25	
36	7-Aug-91	LT10	LT10	24	
36	12-Aug-91	20	30	24	
36	20-Aug-91	LT10	10	23	
36	26-Aug-91	20	LT10	23	10 bathers; 20 geese in water
36	4-Sep-91	10	40	22	

Station No.	Date Sampled	Fecal Coliform	E. coli	Water Temp.	Remarks
36	9-Sep-91				no sample taken
38					HAMILTON ISLAND BRIDGE
38	13-May-91	LT10	10	12	
38	28-May-91	LT10	LT10	15	
38	10-Jun-91	LT10	30	16	
38	18-Jun-91	LT10	LT10	19	
38	24-Jun-91	LT10	LT10	22	
38	3-Jul-91	LT10	10	21	
38	8-Jul-91	20	10	22	
38	16-Jul-91	LT10	LT10	23	
38	22-Jul-91	10	LT10	25	
38	30-Jul-91	LT10	20	26	
38	6-Aug-91	10	10	23	
38	14-Aug-91	20	20	26	
38	19-Aug-91	150	70	23	
38	27-Aug-91	30	70	24	
38	3-Sep-91	LT10	10	21	strong flow
38	9-Sep-91	130	50		no temp. recorded
39					PILON'S POINT
39	13-May-91	20	20	12	
39	28-May-91	30	30	15	
39	10-Jun-91	LT10	10	39	
39	18-Jun-91	LT10	LT10	18	
39	24-Jun-91	LT10	LT10	22	
39	3-Jul-91	LT10	LT10	21	
39	8-Jul-91	20	LT10	21	
39	16-Jul-91				no sample taken - rough channel conditions
39	22-Jul-91	20	10	25	sample taken from land - rough channel conditions
39	30-Jul-91	LT10	20	25	
39	6-Aug-91	LT10	10	23	
39	14-Aug-91	LT10	10	26	
39	19-Aug-91				no sample taken - rough channel conditions
39	27-Aug-91	LT10	LT10	23	
39	3-Sep-91	70	90	22	
39	9-Sep-91				no sample taken
40					CHARLOTTENBURGH PARK BEACH - NEARSHORE
40	13-May-91	LT10	LT10	13	
40	28-May-91	15	LT10	15	
40	10-Jun-91	LT10	LT10	17	
40	18-Jun-91	LT10	LT10	21	
40	24-Jun-91	LT10	LT10	23	
40	3-Jul-91				no sample taken - boat mechanical failure
40	8-Jul-91	85	20	24	samples from this date forward taken by land
40	16-Jul-91	LT10	LT10	25	
40	22-Jul-91	LT10	LT10	26	
40	30-Jul-91	140	LT10	25	
40	5-Aug-91	10	40	24	
40	6-Aug-91	20	35	23	
40	14-Aug-91	15	LT10	26	
40	19-Aug-91	10	LT10	22	
40	22-Aug-91	10	LT10	24	
40	27-Aug-91	LT10	10	23	30 gulls on beach and picnic tables
40	3-Sep-91	LT10	55	22	
40	9-Sep-91	10	10	21	20 gulls on beach/in water
41					CHARLOTTENBURGH PARK BEACH - OFFSHORE
41	13-May-91	LT10	LT10	12	
41	28-May-91	LT10	LT10	15	
41	10-Jun-91	LT10	LT10	17	
41	18-Jun-91	LT10	LT10	19	
41	24-Jun-91	LT10	LT10	21	
41	3-Jul-91				no sample taken - boat mechanical failure
41	8-Jul-91	LT10	LT10	23	

Station No.	Date Sampled	Fecal Coliform	E. coli	Water Temp.	Remarks
41	22-Jul-91	LT10	LT10	25	
41	30-Jul-91	LT10	LT10	26	
41	6-Aug-91	LT10	LT10	25	
41	14-Aug-91				no sample taken - rough channel conditions
41	19-Aug-91				no sample taken - rough channel conditions
41	27-Aug-91	LT10	LT10	24	
41	3-Sep-91	LT10	LT10	22	
41	9-Sep-91				no sample taken
42					SOUTH LANCASTER, ON THE EAST SIDE OF THE PUBLIC WHARF
43	13-May-91	LT10	10	16	
43	28-May-91	470	340	19	water dirty brown colour
43	10-Jun-91	LT10	LT10	18	
43	18-Jun-91	LT10	LT10	22	
43	24-Jun-91	LT10	LT10	24	
43	3-Jul-91	LT10	LT10	24	Some samples were not done on July 3 due to boat problems
43	8-Jul-91	LT10	LT10	23	
43	16-Jul-91	LT10	LT10	18	
43	22-Jul-91	LT10	LT10	25	
43	30-Jul-91	LT10	LT10	27	
43	6-Aug-91	LT10	LT10	23	
43	14-Aug-91	LT10	LT10	27	
43	19-Aug-91	LT10	20	22	
43	27-Aug-91	LT10	LT10	25	
43	3-Sep-91	20	LT10	21	
43	9-Sep-91				no sample taken
44					UPSTREAM OF FINNEY CREEK OUTLET - OFFSHORE
44	13-May-91	LT10	LT10	14	
44	28-May-91	80	90	17	
44	10-Jun-91	LT10	LT10	18	
44	18-Jun-91	LT10	LT10	24	
44	24-Jun-91	LT10	LT10	25	
44	3-Jul-91				no sample taken - boat mechanical failure
44	8-Jul-91	LT10	LT10	25	
44	16-Jul-91	LT10	LT10	25	
44	22-Jul-91	LT10	LT10	27	
44	30-Jul-91	LT10	LT10	26	
44	6-Aug-91	LT10	LT10	24	
44	14-Aug-91	LT10	LT10		
44	19-Aug-91				no sample taken - rough channel conditions
44	27-Aug-91				no sample taken - rough channel conditions
44	3-Sep-91				no sample taken - rough channel conditions
44	9-Sep-91				no sample taken
45					DOWNSTREAM OF FINNEY CREEK OUTLET - OFFSHORE
45	13-May-91	LT10	LT10	15	
45	28-May-91	90	70	19	
45	10-Jun-91	LT10	10	19	
45	18-Jun-91	LT10	LT10	23	
45	24-Jun-91	LT10	LT10	24	
45	3-Jul-91				no sample taken - boat mechanical failure
45	8-Jul-91	LT10	LT10	25	
45	16-Jul-91	LT10	LT10	25	
45	22-Jul-91	LT10	LT10	26	
45	30-Jul-91	LT10	10	26	
45	6-Aug-91	30	10	24	
45	14-Aug-91	LT10	LT10	27	
45	19-Aug-91				no sample taken - rough channel conditions
45	27-Aug-91				no sample taken - rough channel conditions
45	3-Sep-91				no sample taken - rough channel conditions
45	9-Sep-91				no sample taken
46					LANCASTER PARK BEACH - NEARSHORE
46	13-May-91	LT10	LT10	16	
46	28-May-91	10	10	15	new sand on beach

Station No.	Date Sampled	Fecal Coliform	E. coli	Water Temp.	Remarks
46	10-Jun-91	LT10	10	21	
46	18-Jun-91	LT10	LT10	22	20 gulls on beach
46	24-Jun-91	LT10	LT10	23	7 bathers
46	3-Jul-91	LT10	LT10	22	3 gulls on land/in water
46	8-Jul-91	LT10	LT10	25	
46	16-Jul-91	10	20	23	3 bathers
46	22-Jul-91	20	40	26	
46	30-Jul-91	LT10	LT10	25	15 gulls on beach; 2 bathers
46	5-Aug-91	LT10	LT10	22	
46	6-Aug-91	LT10	LT10	23	
46	14-Aug-91	LT10	LT10	25	
46	19-Aug-91	10	LT10	23	
46	22-Aug-91	210	170	20	
46	27-Aug-91	50	70	23	
46	3-Sep-91	40	50	21	heavy weed growth
46	9-Sep-91	10	40	20	
					.....
47					LANCASTER PARK BEACH - OFFSHORE
47	13-May-91	LT10	LT10	16	
47	28-May-91	10	30	17	
47	10-Jun-91	LT10	LT10	19	
47	18-Jun-91	LT10	LT10	22	
47	24-Jun-91	LT10	LT10	24	
47	8-Jul-91	10	LT10	24	
47	16-Jul-91	LT10	LT10	25	
47	22-Jul-91	20	30	26	
47	30-Jul-91	LT10	LT10	27	25 people on beach
47	6-Aug-91	LT10	LT10	23	
47	14-Aug-91	LT10	10	25	
47	19-Aug-91				no sample taken - rough channel conditions
47	27-Aug-91	LT10	10		no temperature recorded
47	3-Sep-91	LT10	LT10	21	
47	9-Sep-91				no sample taken
					.....
48					GLENGARRY PARK BEACH - NEARSHORE
48	13-May-91	LT10	LT10	14	
48	28-May-91	15	10	17	
48	10-Jun-91	30	20	19	
48	18-Jun-91	LT10	LT10	23	
48	24-Jun-91	LT10	LT10	23	35 gulls on land/in water
48	3-Jul-91	15	LT10	22	15 gulls on land/in water
48	8-Jul-91	15	25	24	25 gulls on land/in water
48	16-Jul-91	10	70	25	11 gulls on land/in water
48	22-Jul-91	120	75	26	
48	30-Jul-91	10	30	27	
48	5-Aug-91	LT10	LT10	23	
48	6-Aug-91	35	35	24	1 bather
48	14-Aug-91	105	100		
48	19-Aug-91	30	20	22	9 gulls, 1 dead gull on beach
48	22-Aug-91	50	90	21	7 gulls on beach; 3 bathers
48	27-Aug-91	20	10	22	
48	3-Sep-91	50	60	21	
48	9-Sep-91	25	55	21	
					.....
49					GLENGARRY PARK BEACH - OFFSHORE
49	13-May-91	LT10	LT10	15	
49	28-May-91	LT10	LT10	17	
49	10-Jun-91	10	10	19	
49	18-Jun-91	LT10	LT10	21	
49	24-Jun-91	LT10	LT10	24	
49	3-Jul-91				no sample taken - boat mechanical failure
49	8-Jul-91	LT10	LT10	24	
49	16-Jul-91	LT10	LT10	25	
49	22-Jul-91	30	50	26	heavy beach use
49	30-Jul-91	LT10	LT10	27	65 people on beach
49	6-Aug-91	LT10	LT10	24	

Station No.	Date Sampled	Fecal Coliform	E. coli	Water Temp.	Remarks
49	14-Aug-91	LT10	10	25	20 bathers
49	19-Aug-91				no sample taken - rough channel conditions
49	27-Aug-91	LT10	LT10	24	
49	3-Sep-91	LT10	10	22	
49	9-Sep-91				no sample taken
51					LAKEVIEW HEIGHTS PARK - EAST OF BEACH
51	14-May-91	LT10	LT10	12	
51	27-May-91	10	10	15	
51	11-Jun-91	LT10	LT10	19	
51	17-Jun-91	10	LT10	17	
51	25-Jun-91	LT10	LT10	21	6 geese, large number of droppings
51	2-Jul-91	LT10	LT10	23	
51	9-Jul-91	LT10	10	20	1 gull on beach
51	15-Jul-91	20	LT10	21	
51	23-Jul-91				no sample taken
51	29-Jul-91	LT10	10	27	
51	7-Aug-91	LT10	50	25	
51	12-Aug-91	LT10	50	23	
51	20-Aug-91	LT10	LT10	22	water level lower by 2 - 3 feet; few weeds in water
51	26-Aug-91	LT10	10	21	low water level
51	9-Sep-91	LT10	LT10	21	
52					LAKEVIEW HEIGHTS PARK - SOUTHERN POINT
52	14-May-91	LT10	LT10	11	
52	27-May-91	LT10	10	15	
52	11-Jun-91	LT10	LT10	16	
52	17-Jun-91	LT10	LT10	17	
52	25-Jun-91	LT10	LT10	20	
52	2-Jul-91	LT10	LT10	23	
52	9-Jul-91	LT10	LT10	21	
52	15-Jul-91	LT10	10	21	
52	23-Jul-91	LT10	LT10	24	
52	29-Jul-91	LT10	LT10	26	15 geese on grass
52	7-Aug-91	LT10	LT10	24	
52	12-Aug-91	10	10	24	
52	20-Aug-91	LT10	LT10	22	
52	26-Aug-91	LT10	LT10	21	low water level
52	9-Sep-91	LT10	LT10	20	20 geese in water
53					NORTH OF CENTRAL WOODLANDS ISLAND - NEARSHORE
53	14-May-91	LT10	LT10	15	
53	27-May-91	10	10	17	water level higher
53	11-Jun-91	LT10	LT10	21	
53	17-Jun-91	LT10	LT10	18	
53	25-Jun-91	LT10	40	20	
53	2-Jul-91	20	LT10	21	
53	9-Jul-91	LT10	20	20	
53	15-Jul-91	LT10	20	22	
53	23-Jul-91	70	20	24	
53	29-Jul-91	20	110	25	
53	7-Aug-91	80	LT10	24	
53	12-Aug-91	80	30	24	
53	20-Aug-91	20	30	20	water stirred up from east wind, murky
53	26-Aug-91				no sample taken - no canoe
53	9-Sep-91				no sample taken
54					CULVERT BETWEEN CENTRE AND EAST WOODLANDS ISLANDS
54	14-May-91	LT10	LT10	12	
54	27-May-91	10	30	17	
54	11-Jun-91	LT10	20	20	
54	17-Jun-91	50	30	20	2 dead carp in water
54	25-Jun-91	LT10	30	22	
54	2-Jul-91	10	LT10		
54	9-Jul-91	10	10	21	
54	15-Jul-91	80	40	22	

Station No.	Date Sampled	Fecal Coliform	E. coli	Water Temp.	Remarks
54	23-Jul-91	20	LT10	25	
54	29-Jul-91	10	LT10	25	
54	7-Aug-91	10	LT10	24	
54	12-Aug-91	100	150	24	
54	20-Aug-91	330	270	20	thick brown on surface, no flow
54	26-Aug-91	110	140	22	no flow
54	4-Sep-91	2600	1080	22	no flow - beaver dammed, scum on water
54	9-Sep-91				no sample taken
					.....
59					INGLESIDE - NEARSHORE, UPSTREAM FROM SEWAGE TREATMENT PLANT
59					OUTLET PIPE
59	14-May-91	LT10	LT10	12	
59	27-May-91	LT10	20	15	
59	17-Jun-91	LT10	LT10	20	
59	25-Jun-91	LT10	20	21	
59	9-Jul-91	LT10	10	20	
59	11-Jul-91				no sample taken
59	15-Jul-91	10	LT10	21	
59	23-Jul-91	10	LT10	24	
59	29-Jul-91	LT10	20	24	
59	7-Aug-91	LT10	LT10	24	
59	12-Aug-91	60	190	23	
59	20-Aug-91	10	LT10	22	water level lower, 2 - 3 feet
59	26-Aug-91	160	60	22	
59	4-Sep-91	10	10	22	
59	9-Sep-91	LT10	10	22	
					.....
60					INGLESIDE - OFFSHORE, UPSTREAM FROM SEWAGE TREATMENT PLANT
60					OUTLET PIPE
60	14-May-91	LT10	LT10	11	
60	27-May-91	LT10	LT10	14	
60	11-Jun-91	LT10	LT10	17	
60	17-Jun-91	10	LT10	15	
60	25-Jun-91	LT10	LT10	22	
60	2-Jul-91	10	20	22	
60	9-Jul-91	LT10	LT10	22	
60	15-Jul-91	170	110	23	
60	23-Jul-91	LT10	LT10	24	
60	29-Jul-91	LT10	LT10	25	
60	7-Aug-91	LT10	LT10	25	
60	12-Aug-91	LT10	LT10	24	
60	20-Aug-91	60	10	23	
60	26-Aug-91	LT10	LT10	23	
60	4-Sep-91	LT10	LT10	23	
60	9-Sep-91				no sample taken
					.....
61					NORTH OF EAST WOODLANDS ISLAND
61	11-Jun-91	LT10	L1T0	22	
61	17-Jun-91	LT10	20	17	
61	25-Jun-91	LT10	10	20	
61	2-Jul-91	LT10	20	21	
61	9-Jul-91	LT10	20	21	
61	15-Jul-91	30	LT10	22	
61	23-Jul-91	LT10	10	24	
61	29-Jul-91	40	LT10	24	
61	7-Aug-91	40	LT10	24	
61	12-Aug-91	100	80	24	
61	20-Aug-91	40	40	23	
61	26-Aug-91				no sample taken - no canoe
61	4-Sep-91				no sample taken - no canoe
61	9-Sep-91				no sample taken
					.....
62					DOWNSTREAM OF LONG SAULT SEWAGE TREATMENT PLANT,
62					AT YACHT CLUB
62	14-May-91	LT10	LT10	14	
62	27-May-91	10	LT10	18	

Station No.	Date Sampled	Fecal Coliform	E. coli	Water Temp.	Remarks
62	11-Jun-91	LTT10	LT10	19	
62	17-Jun-91	10	LT10	18	
62	25-Jun-91	LT10	LT10	24	
62	2-Jul-91	10	LT10		
62	9-Jul-91	LT10	LT10	21	
62	15-Jul-91	190	120	25	
62	23-Jul-91	LT10	LT10	25	
62	29-Jul-91	LT10	LT10	26	
62	7-Aug-91	10	LT10	24	
62	12-Aug-91	10	10	24	
62	20-Aug-91	LT10	LT10	23	
62	26-Aug-91	10	10	22	
62	4-Sep-91	LT10	LT10	23	
62	9-Sep-91				no sample taken
					.....
63					RAISIN RIVER NEAR CAIRN
63	18-Jun-91	LT10	LT10	20	
63	24-Jun-91	LT10	LT10	22	
63	3-Jul-91	LT10	LT10	23	
63	8-Jul-91	10	LT10	22	
63	16-Jul-91	LT10	LT10	18	
63	22-Jul-91	LT10	LT10	24	
63	30-Jul-91	LT10	LT10	26	
63	6-Aug-91	LT10	LT10	23	
63	14-Aug-91	LT10	LT10	26	
63	19-Aug-91				no sample taken - rough channel conditions
63	27-Aug-91	LT10	LT10	23	
63	3-Sep-91	LT10	LT10	22	
63	9-Sep-91				no sample taken
					.....
64					MaCLAREN PARK BEACH - WEST WOODLANDS ISLAND
64	29-Jul-91	10	10	25	
64	5-Aug-91	LT10	10	24	
64	7-Aug-91	LT10	20	24	3 gulls on beach
64	12-Aug-91	160	90	23	beach raked
64	20-Aug-91	50	LT10	23	2 bathers
64	22-Aug-91	10	LT10	23	20 gulls on beach
64	26-Aug-91	60	50	22	3 bathers
64	4-Sep-91	70	50	22	40 gulls on beach
64	9-Sep-91	LT10	10	21	10 gulls on beach
					.....
T4					HOOPLE BAY AT HIGHWAY TWO
T4	14-May-91	LT10	LT10	13	
T4	27-May-91	LT10	10	19	
T4	11-Jun-91	LT10	LT10	21	
T4	17-Jun-91	60	150	23	
T4	25-Jun-91	LT10	LT10	23	
T4	2-Jul-91	LT10	LT10	24	
T4	9-Jul-91	LT10	LT10	23	
T4	15-Jul-91	10	LT10	24	
T4	23-Jul-91	LT10	LT10	25	
T4	29-Jul-91	LT10	LT10	24	
T4	5-Aug-91	10	LT10	23	
T4	7-Aug-91	LT10	LT10	24	
T4	12-Aug-91	20	50	24	
T4	20-Aug-91	LT10	LT10	22	inflow
T4	22-Aug-91	10	LT10	23	
T4	26-Aug-91	LT10	LT10	23	
T4	4-Sep-91	10	20	22	rough water, windy
T4	9-Sep-91	10	LT10	22	
					.....
T8					RAISIN RIVER AT FIRST BRIDGE DOWNSTREAM OF WILLIAMSTOWN
T8	13-May-91	10	10	21	
T8	28-May-91	150	180	21	
T8	10-Jun-91	70	60	22	
T8	18-Jun-91	40	20	24	

Station No.	Date Sampled	Fecal Coliform	E. coli	Water Temp.	Remarks
T8	24-Jun-91	LT10	20	25	
T8	3-Jul-91	40	20	24	
T8	8-Jul-91	60	60	26	
T8	16-Jul-91	20	30	21	
T8	22-Jul-91	70	30	25	
T8	30-Jul-91	LT10	20	26	
T8	5-Aug-91	100	90		no temperature recorded
T8	6-Aug-91	30	110	24	
T8	14-Aug-91	10	10	26	
T8	19-Aug-91	40	70	24	
T8	27-Aug-91	20	20	23	
T8	3-Sep-91	LT10	10	23	no flow
T8	9-Sep-91	LT10	20	21	
					.....
T9					RAISIN RIVER AT HIGHWAY 401
T9	13-May-91	LT10	10	19	
T9	28-May-91	190	100	22	
T9	10-Jun-91	LT10	10	23	
T9	18-Jun-91	40	30	25	
T9	24-Jun-91	LT10	10	27	
T9	3-Jul-91	LT10	LT10	26	
T9	8-Jul-91	20	10	26	
T9	16-Jul-91	800	630	26	
T9	22-Jul-91	LT10	LT10	27	
T9	30-Jul-91	LT10	LT10	27	
T9	6-Aug-91	10	10	25	
T9	14-Aug-91	LT10	10	22	
T9	19-Aug-91				no sample taken - rough channel conditions
T9	27-Aug-91	LT10	10	25	
T9	3-Sep-91	LT10	10	24	slow flow
T9	9-Sep-91				no sample taken
					.....
T10					FINNEY CREEK AT HIGHWAY TWO
T10	13-May-91	LT10	20	20	
T10	28-May-91	420	860	24	
T10	10-Jun-91	1500	2200	23	
T10	18-Jun-91	670	660	22	
T10	24-Jun-91	620	360	20	
T10	3-Jul-91	170	380	19	no flow
T10	8-Jul-91	330	360	23	
T10	16-Jul-91	LT10	LT10	26	
T10	22-Jul-91	190	140	22	
T10	30-Jul-91	LT10	10	21	
T10	5-Aug-91	420	310	21	
T10	6-Aug-91	40	30	24	
T10	14-Aug-91	30	20	22	
T10	19-Aug-91	30	20	22	
T10	22-Aug-91	30	20	23	
T10	27-Aug-91	70	20	20	no flow
T10	3-Sep-91	10	10	19	no flow
T10	9-Sep-91	30	10	19	no flow
					.....
T13					FINNEY CREEK AT SECOND CONCESSION LANCASTER
T13	13-May-91	40	LT10	22	
T13	28-May-91	330	450	19	
T13	10-Jun-91	200	160	22	
T13	18-Jun-91	880	850	19	
T13	24-Jun-91	1600	670	19	
T13	3-Jul-91	430	560	20	
T13	8-Jul-91	GT1500	GT1500	23	
T13	16-Jul-91	1900	1210	23	muskrats stirred up creek bottom
T13	22-Jul-91	2400	1430	20	
T13	30-Jul-91	120	110	19	
T13	5-Aug-91	LT10	LT10	21	
T13	6-Aug-91	500	400	23	
T13	14-Aug-91	LT10	40	0	

Station No.	Date Sampled	Fecal Coliform	E. coli	Water Temp.	Remarks
T13	19-Aug-91				no sample taken - no flow
T13	22-Aug-91	GT1500	1380	18	
T13	27-Aug-91				no sample taken - no flow
T13	3-Sep-91				no sample taken - no flow
T13	9-Sep-91				no sample taken - no flow
T14					RAISIN RIVER, DOWNSTREAM OF KRAFT PLANT
T14	28-May-91	220	140	21	
T14	10-Jun-91	80	110	23	
T14	18-Jun-91	30	60	22	
T14	24-Jun-91	LT10	LT10	24	
T14	3-Jul-91	30	20	24	
T14	8-Jul-91	20	20	25	
T14	16-Jul-91	210	20	23	
T14	22-Jul-91	210	50	24	
T14	30-Jul-91	10	10	25	
T14	5-Aug-91	LT10	10	23	
T14	6-Aug-91	30	10	22	
T14	14-Aug-91	10	10	25	
T14	19-Aug-91	110	40	25	
T14	27-Aug-91	40	90	23	
T14	3-Sep-91	10	LT10	21	no flow
T14	9-Sep-91	10	20	19	
T15					RAISIN RIVER DOWNSTREAM OF WILLIAMSTOWN
T15	16-Jul-91	270	280	26	
T15	22-Jul-91	260	140	25	
T15	30-Jul-91	40	90	25	
T15	5-Aug-91	90	120	23	
T15	6-Aug-91	70	60	22	
T15	14-Aug-91	20	20	25	
T15	19-Aug-91	540	290	25	
T15	27-Aug-91	80	120	24	
T15	3-Sep-91	30	30	22	
T15	9-Sep-91	80	20	19	
T16					RAISIN RIVER UPSTREAM OF WILLIAMSTOWN
T16	16-Jul-91	LT10	LT10	26	
T16	22-Jul-91	100	150	26	
T16	30-Jul-91	120	80	27	
T16	5-Aug-91	110	610	24	
T16	6-Aug-91	180	210	23	
T16	14-Aug-91	20	20	25	
T16	19-Aug-91	410	290	25	no flow
T16	27-Aug-91	90	40	24	
T16	3-Sep-91	70	40	22	
T16	9-Sep-91	50	60	21	
T17					RAISIN RIVER AT MACGILLIVRAY'S BRIDGE
T17	16-Jul-91	190	230	26	
T17	22-Jul-91	1190	1050	26	
T17	30-Jul-91	590	490	27	
T17	5-Aug-91	1000	1140	24	
T17	6-Aug-91	490	370	22	
T17	14-Aug-91	600	540	26	
T17	19-Aug-91	4600	1130	26	no flow
T17	27-Aug-91	3400	1560	24	
T17	3-Sep-91	850	550	21	no flow
T17	9-Sep-91	4,000	1730	21	slow flow
A3					GARRY RIVER - UPSTREAM OF ALEXANDRIA LAKE
A3	13-May-91	10	10	21	
A3	28-May-91	50	60	23	
A3	10-Jun-91	LT10	LT10	23	
A3	18-Jun-91	30	40	20	
A3	24-Jun-91	LT10	30	22	

Station No.	Date Sampled	Fecal Coliform	E. coli	Water Temp.	Remarks
A3	3-Jul-91	60	60	22	
A3	8-Jul-91	40	110	26	
A3	16-Jul-91	50	50	25	
A3	22-Jul-91	20	30	24	
A3	30-Jul-91	20	170	24	
A3	6-Aug-91	50	110	20	
A3	14-Aug-91	40	90	24	
A3	19-Aug-91	120	70	24	
A3	27-Aug-91	40	30	24	no flow
A3	3-Sep-91	90	100	19	
A3	9-Sep-91	40	90	22	
					.....
A4					ALEXANDRIA LAKE WEST OF BEACH
A4	13-May-91	LT10	10	23	
A4	28-May-91	110	90	23	
A4	10-Jun-91	40	20	24	MOE sampling at same time
A4	18-Jun-91	LT10	20	23	
A4	24-Jun-91	10	10	25	
A4	3-Jul-91	LT10	LT10	24	
A4	8-Jul-91	20	20	26	
A4	16-Jul-91	LT10	100	24	
A4	22-Jul-91	LT10	LT10	26	
A4	30-Jul-91	LT10	LT10	25	
A4	6-Aug-91	10	10	22	
A4	14-Aug-91	LT10	20	24	
A4	19-Aug-91	20	20	24	
A4	27-Aug-91	90	20	24	
A4	3-Sep-91	LT10	20	21	
A4	9-Sep-91	20	10	21	
					.....
A5					ALEAXANDRIA PARK BEACH - NEARSHORE
A5	13-May-91	LT10	15	21	
A5	28-May-91	75	25	22	10 gulls on isle.
A5	10-Jun-91	LT10	10	23	30 gulls on isle.
A5	18-Jun-91	LT10	LT10	24	3 gulls on beach
A5	24-Jun-91	LT10	10	25	
A5	3-Jul-91	15	25	25	36 people in water
A5	8-Jul-91	LT10	LT10	25	
A5	16-Jul-91	10	15	25	
A5	22-Jul-91	10	15	26	
A5	30-Jul-91	25	50	25	20 gulls on beach
A5	5-Aug-91	290	440	23	
A5	6-Aug-91	25	35	22	
A5	14-Aug-91	LT10	15	25	
A5	19-Aug-91	LT10	LT10	25	5 gulls on beach
A5	22-Aug-91	LT10	LT10	20	1 gull on beach
A5	27-Aug-91	20	10	22	3 gulls on beach
A5	3-Sep-91	LT10	10	21	
A5	9-Sep-91	LT10	LT10	21	
					.....
A7					GARRY RIVER - G.T.L. ROAD
A7	13-May-91	LT10	20	21	
A7	28-May-91	50	90	23	
A7	10-Jun-91	LT10	80	26	
A7	18-Jun-91	100	60	20	
A7	24-Jun-91	90	90	23	no flow
A7	3-Jul-91	60	100	23	
A7	8-Jul-91	90	90	26	
A7	16-Jul-91	70	230	25	
A7	22-Jul-91	20	40	24	
A7	30-Jul-91	10	40	23	
A7	6-Aug-91	100	30	21	18 gulls, 30 people on beach
A7	14-Aug-91	50	40	24	
A7	19-Aug-91	20	50	24	
A7	27-Aug-91	100	120	24	
A7	3-Sep-91	20	30	19	

Station No.	Date Sampled	Fecal Coliform	E. coli	Water Temp.	Remarks
A7	9-Sep-91	30	10	21	

APPENDIX B

ST. LAWRENCE BEACHES STUDY

7-Feb-92

1991 WATER QUALITY RESULTS
(Chemical Analysis)

Station No.	Date Sampled	Ammonia	Nitrite	Nitrate	TKN	Total Phos.	Soluble Phos.	Conduct.	pH	Turbid.	Chloride
3	14-May-91	.01	.004	.26	.29	.004	LT.002	311	8.2	1.0	21.6
3	27-May-91	.03	.006	.25	.12	.060	.004	301	8.1	0.8	21.4
3	11-Jun-91	.01	.006	.21	.28	.024	.002	307	8.2	1.5	22.3
3	17-Jun-91	.02	.006	.23	.23	.006	LT.002	304	8.1	1.0	22.9
3	25-Jun-91	.03	.008	.15	.31	.012	.004	307	8.1	1.5	23.2
3	2-Jul-91	.01	.006	.13	.53	.086	.002	310	8.2	3.3	23.5
3	9-Jul-91	.02	.008	.17	.27	.004	LT.002	318	8.2	1.4	22.8
3	15-Jul-91	.03	.006	.13	.39	.012	LT.002	311	8.1	0.78	23.4
3	23-Jul-91	.02	.006	.09	.36	.016	.004	292	7.9	1.3	23.1
3	29-Jul-91	.02	.006	.07	.23	.009	LT.002	303	8.2	0.82	23.1
3	5-Aug-91	.02	.006	.07	.34	.016	.002	291	8.2	1.5	23.6
3	7-Aug-91	.03	.006	.07	.47	.018	.002	305	8.1	0.9	22.8
3	12-Aug-91	.02	.012	.11	.29	.020	.002	304	8.3	1.6	37.0
3	20-Aug-91	.02	.008	.032	.38	.022	.004	301	8.4	2.6	23.3
3	26-Aug-91	LT.01	.004	.06	.33	.016	.002	301	8.4	1.9	23.6
3	4-Sep-91	.04	.006	.05	.27	.015	LT.002	306	8.2	1.1	22.8
3	9-Sep-91	.01	.004	.04	.30	.014	LT.002	295	8.4	2.3	23.7
14	14-May-91	.01	.004	.28	.32	.006	.006	307	8.1	0.94	
14	27-May-91	NO	SAMPLE	TAKEN							
14	11-Jun-91	.01	.006	.21	.35	.042	LT.002	306	8.1	1.5	22.3
14	17-Jun-91	.01	.004	.24	.27	.004	LT.002	302	8.1	0.8	22.5
14	25-Jun-91	.02	.012	.19	.32	.012	.002	311	8.1	1.8	23.0
14	2-Jul-91	.01	.006	.17	.37	.034	LT.002	310	8.1	1.1	23.3
14	9-Jul-91	.02	.006	.19	.23	.002	LT.002	318	8.2	1.2	22.7
14	15-Jul-91	.01	.006	.19	.35	.012	LT.002	313	8.0	0.8	23.7
14	23-Jul-91	.01	.006	.15	.32	.006	.002	293	8.0	0.8	23.2
14	29-Jul-91	.02	.006	.13	.27	.012	LT.002	306	8.1	0.86	23.1
14	5-Aug-91	.01	.006	.11	.30	.039	.006	293	8.2	1.3	23.3
14	7-Aug-91	.02	.006	.11	.22	.020	LT.002	303	8.1	0.8	23.0
14	12-Aug-91	.04	.010	.13	.21	.012	LT.002	303	8.2	0.84	23.7
14	20-Aug-91	.02	.006	.09	.30	.004	.002	303	8.3	1.9	23.4
14	26-Aug-91	.02	.004	.1	.30	.014	LT.002	304	8.4	1.0	23.5
14	4-Sep-91	.05	.006	.09	.28	.012	LT.002	307	8.2	1.3	23.0
14	9-Sep-91	.02	.006	.13	.37	.027	LT.002	303	8.2	1.9	23.4
21	14-May-91	.02	.006	.25	.47	.022	.002	312	8.1	6.0	
21	27-May-91	.11	.006	.19	.42	.100	.006	300	8.2	6.4	21.1
21	11-Jun-91	.07	.008	.17	.46	.038	.004	307	8.0	5.0	22.2
21	17-Jun-91	.03	.004	.16	.26	.028	.002	305	8.1	3.5	22.5
21	25-Jun-91	.03	.006	.17	.25	.018	.002	313	8.1	2.2	22.9
21	2-Jul-91	.03	.006	.03	.37	.032	.006	306	8.3	3.7	23.6
21	9-Jul-91	.06	.006	.09	.33	.006	LT.002	316	8.2	5.0	22.7
21	15-Jul-91	.06	.006	.09	.29	.016	.004	315	7.9	2.4	23.2
21	23-Jul-91	.02	.006	.15	.35	.012	.007	294	8.1	1.2	23.1
21	29-Jul-91	.04	.006	.07	.24	.020	.002	309	8.0	2.4	23.6
21	5-Aug-91	.02	.006	.09	.30	.017	.002	292	8.2	1.6	23.4
21	7-Aug-91	.02	.006	.05	.41	.026	.004	303	8.2	3.7	22.7
21	12-Aug-91	LT.01	.006	.05	.33	.022	.002	301	8.5	2.5	24.6
21	20-Aug-91	.02	.004	LT.02	.39	.021	.006	300	8.5	6.0	23.3
21	26-Aug-91	.01	.004	LT.02	.34	.022	.004	283	8.8	2.5	23.7
21	4-Sep-91	.04	.004	LT.02	.31	.024	.004	290	8.5	5.0	22.9
21	9-Sep-91	LT.01	LT.002	LT.02	.73	.088	.004	262	8.6	12.0	23.4
22	14-May-91	.31	.004	.26	.31	.014	LT.002	309	8.1	1.0	
22	27-May-91	.02	.004	.28	.12	.008	LT.002	300	8.2	0.6	21.4
22	11-Jun-91	LT.01	.004	.20	.30	.012	LT.002	304	8.1	1.4	22.4
22	17-Jun-91	.03	.004	.16	.26	.028	.002	305	8.1	3.5	22.5
22	25-Jun-91	.03	.006	.17	.25	.018	.002	313	8.1	2.2	22.9
22	2-Jul-91	.01	.006	.15	.29	.016	LT.002	309	8.3	1.2	22.7
22	9-Jul-91	.04	.008	.19	.24	.004	LT.002	319	8.2	1.5	22.9
22	15-Jul-91	.04	.006	.17	.42	.016	LT.002	313	7.9	1.2	23.6
22	23-Jul-91	.02	.006	.15	.35	.012	.007	294	8.1	1.2	23.1
22	29-Jul-91	.04	.006	.07	.24	.020	.002	309	8.0	2.4	23.2

Station No.	Date Sampled	Ammonia	Nitrite	Nitrate	TKN	Total Phos.	Soluble Phos.	Conduct.	pH	Turbid.	Chloride
22	5-Aug-91	.03	.006	.05	.29	.034	.004	291	8.2	3.0	23.3
22	7-Aug-91	.02	.006	.05	.41	.026	.004	303	8.2	3.7	22.7
22	12-Aug-91	LT.01	.006	.05	.33	.022	.002	301	8.5	2.5	24.6
22	20-Aug-91	.02	.004	LT.02	.39	.021	.006	300	8.5	6.0	23.3
22	26-Aug-91	.01	.004	LT.02	.34	.022	.004	283	8.8	2.5	23.7
22	4-Sep-91	.04	.004	LT.02	.31	.024	.004	290	8.5	5.0	22.9
22	9-Sep-91	.03	.006	.11	.40	.035	.004	303	8.2	2.6	23.4
30	14-May-91	.01	.004	.26	.30	.004	LT.002	309	8.2	0.8	
30	27-May-91	.03	.006	.27	.10	.008	LT.002	300	8.3	0.5	21.4
30	11-Jun-91	LT.01	.004	.24	.44	.012	LT.002	306	8.2	1.0	22.3
30	17-Jun-91	.02	.004	.24	.27	.012	LT.002	302	8.2	1.1	22.7
30	25-Jun-91	.02	.008	.19	.26	.018	.002	314	8.1	2.0	23.1
30	2-Jul-91	.01	.006	.17	.29	.012	LT.002	311	8.2	1.2	22.8
30	9-Jul-91	.06	.010	.19	.32	.005	LT.002	317	8.1	1.8	22.7
30	15-Jul-91	.03	.006	.17	.44	.016	LT.002	312	8.0	1.8	23.3
30	23-Jul-91	.03	.006	.15	.38	.016	.004	294	8.0	1.4	23.1
30	29-Jul-91	.02	.006	.11	.26	.024	.002	303	8.1	2.1	23.5
30	5-Aug-91	.01	.006	.11	.34	.021	.002	294	8.2	1.4	23.3
30	7-Aug-91	.01	.006	.11	.30	.017	LT.002	304	8.1	1.6	22.9
30	12-Aug-91	LT.01	.006	.07	.26	.012	LT.002	300	8.3	0.8	24.3
30	20-Aug-91	.02	.008	.07	.27	.007	.002	303	8.5	1.7	23.6
30	26-Aug-91	.01	.004	.06	.24	.020	.004	301	8.5	1.6	23.6
30	4-Sep-91	.04	.006	.05	.33	.020	LT.002	305	8.3	2.5	23.2
30	9-Sep-91	LT.01	.004	.08	.35	.018	.002	302	8.3	1.9	23.4
35	14-May-91	.02	.006	.27	.33	LT.002	LT.002	309	8.2	11.0	
35	27-May-91	.02	.006	.27	.20	.020	LT.002	301	8.2	0.6	21.8
35	11-Jun-91	.01	.004	.20	.72	.012	LT.002	308	8.1	1.4	22.1
35	17-Jun-91	.03	.004	.24	.24	.008	LT.002	305	8.1	1.1	22.5
35	25-Jun-91	.02	.014	.19	.23	.010	LT.002	312	8.2	1.2	23.0
35	2-Jul-91	.01	.006	.17	.22	.022	LT.002	310	8.2	1.5	22.8
35	9-Jul-91	.05	.006	.15	.30	.010	.004	317	8.3	1.1	22.8
35	15-Jul-91	.03	.006	.17	.34	.006	LT.002	312	8.1	0.6	23.2
35	23-Jul-91	.02	.006	.07	.37	.016	.004	290	8.0	1.2	22.8
35	29-Jul-91	.01	.006	.11	.16	.008	LT.002	305	8.3	0.61	23.5
35	5-Aug-91	.02	.006	.07	.56	.054	.004	290	8.3	3.4	23.6
35	7-Aug-91	.02	.008	.09	.32	.014	LT.002	304	8.1	1.0	23.1
35	12-Aug-91	.02	.006	.09	.39	.034	LT.002	301	8.3	1.4	24.6
35	20-Aug-91	.01	.006	.07	.25	.009	LT.002	303	8.4	1.5	23.6
35	26-Aug-91	.01	.004	.08	.72	.150	.004	304	8.4	9.8	23.7
35	4-Sep-91	.05	.004	.06	.05	.050	LT.002	306	8.1	3.4	23.1
35	9-Sep-91	.02	.004	.10	.35	.014	.002	299	8.4	1.0	23.5
40	13-May-91	.05	.008	.27	.35	.002	LT.002	306	8.1	0.8	22.0
40	28-May-91	.04	.006	.25	.50	LT.04	.002	302	8.1	0.8	
40	10-Jun-91	.02	.004	.20	.23	.014	LT.002	320	8.2	0.09	22.2
40	18-Jun-91	.09	.008	.21	.27	.008	LT.002	306	8.1	0.7	22.5
40	24-Jun-91	.03	.014	.09	.28	.006	LT.002	296	8.5	0.9	8.5
40	3-Jul-91	NO	SAMPLE	TAKEN							
40	8-Jul-91	.07	.006	.05	.39	.026	.002	304	8.1	0.87	23.0
40	16-Jul-91	.01	.006	LT.02	.59	.072	LT.002	303	8.1	2.4	24.2
40	22-Jul-91	.02	.004	LT.02	.59	.008	LT.002	301	8.2	0.5	23.2
40	30-Jul-91	.02	.004	LT.02	.27	.008	LT.002	292	8.1	0.67	23.1
40	5-Aug-91	.03	LT.002	LT.02	.34	.026	.002	287	8.1	1.3	23.4
40	6-Aug-91	.01	LT.002	.04	.28	.006	.002	291	8.2	0.62	23.3
40	14-Aug-91	LT.01	.002	LT.02	.30	.007	.002	293	8.4	0.76	23.5
40	19-Aug-91	.04	.004	LT.02	.31	.004	LT.002	297	8.1	0.9	23.9
40	27-Aug-91	.02	LT.002	LT.02	.24	.010	.002	299	8.1	0.7	24.0
40	3-Sep-91	.03	.004	LT.02	.31	.012	LT.002	302	8.2	0.9	23.4
40	9-Sep-91	.02	.004	LT.02	.02	.010	.002	297	8.2	1.4	23.6
46	13-May-91	.04	.008	.25	.40	.010	.002	316	8.1	1.3	22.3
46	28-May-91	.03	.004	.26	.40	LT.04	LT.002	300	8.2	0.62	
46	10-Jun-91	.05	.004	.10	.31	.018	LT.002	325	8.5	1.4	22.6
46	18-Jun-91	.09	.008	.132	.30	.014	.004	309	8.4	1.2	23.2

Station No.	Date Sampled	Ammonia	Nitrite	Nitrate	TKN	Total Phos.	Soluble Phos.	Conduct.	pH	Turbid.	Chloride
46	24-Jun-91	.02	.016	LT.02	.28	.006	LT0.002	285	8.7	1.3	8.7
46	3-Jul-91	.02	LT.02	LT.012	.23	.016	.002	284	8.4	0.8	22.7
46	8-Jul-91	.06	.002	LT.02	.35	.016	.006	302	8.2	0.71	23.2
46	16-Jul-91	.01	LT.002	LT.02	.24	.008	.002	296	8.1	0.6	24.0
46	22-Jul-91	.02	.002	LT.02	.36	.006	LT.002	297	8.2	0.48	23.2
46	30-Jul-91	.04	.004	LT.02	.30	.022	LT.002	286	8.1	0.68	23.5
46	5-Aug-91	.04	LT.002	LT.02	.69	.054	.008	284	8.0	0.63	24.0
46	6-Aug-91	.02	.002	LT.02	.37	.010	LT.002	285	8.0	0.78	23.9
46	14-Aug-91	LT.01	LT.002	LT.02	.29	.008	.002	305	8.1	1.0	23.8
46	19-Aug-91	.16	.004	LT.02	.29	.004	LT.002	305	8.0	0.7	24.3
46	27-Aug-91	.03	LT.002	LT.02	.32	.014	.002	304	8.2	0.7	24.5
46	3-Sep-91	.02	.002	LT.02	.40	.032	.002	308	7.9	1.8	23.6
46	9-Sep-91	.03	.002	LT.02	.39	.014	.002	300	8.1	1.1	24.1
48	13-May-91	.03	.006	.294	.34	LT.002	LT.002	305	8.1	0.8	22.3
48	28-May-91	.05	.006	.25	.50	LT.04	.002	296	8.1	0.63	
48	10-Jun-91	.03	.004	.16	.28	.014	LT.002	318	8.3	1.0	22.3
48	18-Jun-91	.02	.008	.172	.28	.010	.002	306	8.3	0.8	22.7
48	24-Jun-91	.02	.012	.05	.34	.012	LT.002	288	8.7	1.7	22.9
48	3-Jul-91	.01	LT.02	LT.02	.30	.012	LT.002	296	8.5	1.0	22.9
48	8-Jul-91	.03	.004	.02	.35	.012	LT.002	300	8.4	0.66	23.0
48	16-Jul-91	.01	.004	LT.02	.40	.020	LT.002	305	8.1	1.0	23.7
48	22-Jul-91	.03	.004	LT.02	.38	.010	.010	296	8.3	1.4	22.9
48	30-Jul-91	.02	LT.002	LT.02	.24	.006	LT.002	290	8.4	0.55	23.3
48	5-Aug-91	.01	.002	LY.02	.27	.016	.002	281	8.1	0.62	24.0
48	6-Aug-91	.01	.002	LT.02	.25	.010	LT.002	284	8.3	0.66	23.7
48	14-Aug-91	LT.01	.002	LT.02	.27	.080	.048	302	8.3	0.8	23.7
48	19-Aug-91	LT.01	LT.002	LT.02	.28	.004	LT.002	305	8.1	0.8	24.0
48	27-Aug-91	.01	LT.002	LT.02	.27	.010	.002	299	8.4	1.2	24.1
48	3-Sep-91	.03	.002	LT.02	.28	.016	.002	303	8.3	0.9	23.3
48	9-Sep-91	.01	.002	LT.02	.36	.018	.002	298	8.2	1.4	23.8
51	14-May-91	NO	SAMPLE	TAKEN							
51	27-May-91	.02	.006	.27	.20	.020	LT.002	300	8.2	0.6	21.8
51	11-Jun-91	.05	.022	.12	.72	.038	.004	308	8.1	1.4	22.1
51	17-Jun-91	.03	.004	.24	.22	.008	LT.002	305	8.1	0.9	22.6
51	25-Jun-91	.01	.008	.19	32	.012	.002	312	8.2	1.5	23.0
51	2-Jul-91	.01	.006	.17	.40	.032	LT.002	306	8.3	3.1	22.7
51	9-Jul-91	.02	.006	.15	.24	.004	LT.002	317	8.2	1.1	22.7
51	15-Jul-91	.02	.006	.15	.37	.012	LT.002	312	8.1	1.2	23.8
51	23-Jul-91	.03	.006	.13	.35	.010	.002	293	8.1	0.9	23.0
51	29-Jul-91	LT.01	.006	.09	.25	.010	LT.002	299	8.4	0.66	23.4
51	7-Aug-91	.02	.004	.08	.41	.049	LT.002	304	8.2	3.2	23.1
51	12-Aug-91	.02	.006	.09	.36	.003	LT.002	302	8.3	1.7	24.5
51	20-Aug-91	.01	.006	.07	.25	.010	LT.002	303	8.4	1.4	23.7
51	26-Aug-91	NO	SAMPLE	TAKEN							
51	4-Sep-91	.03	.004	.06	.37	.026	.002	304	8.2	3.4	23.1
51	9-Sep-91	.01	.004	.10	.34	.016	.002	299	8.5	1.6	23.5
64	5-Aug-91	.01	.006	.09	.20	.016	.002	292	8.2	1.8	23.9
64	7-Aug-91	.02	.006	.09	.31	.018	LT.002	304	8.1	0.9	23.1
64	12-Aug-91	.02	.006	.11	.28	.018	LT.002	302	8.2	0.8	24.4
64	20-Aug-91	.01	.006	.09	.32	.022	LT.002	302	8.4	2.0	8.4
64	26-Aug-91	LT.01	.004	.08	LT.01	.022	.002	303	8.4	1.2	23.7
64	4-Sep-91	.02	.006	.09	.29	.016	LT.002	306	8.2	1.6	23.3
64	9-Sep-91	.01	.004	.14	.40	.064	.002	306	8.2	1.2	23.2
T4	14-May-91	.03	.008	.052	.87	.190	.030	356	8.3	44.0	
T4	27-May-91	.07	.012	.15	.80	.080	.014	316	8.0	98.0	21.4
T4	11-Jun-91	.05	.022	.12	.72	.102	.014	341	7.9	15.0	23.3
T4	17-Jun-91	.06	.006	.114	.44	.046	.006	317	8.1	6.7	23.1
T4	25-Jun-91	LT.01	.006	LT.02	.80	.124	.024	361	7.9	21.0	24.9
T4	2-Jul-91	.03	.004	.02	.65	.108	.030	351	8.2	13.0	24.9
T4	9-Jul-91	.04	.002	.04	.24	.084	LT.002	364	8.1	15.0	25.3
T4	15-Jul-91	.03	.002	LT.02	.62	.060	.022	353	8.1	6.4	25.9
T4	23-Jul-91	.03	.006	.03	.51	.062	.014	322	8.0	4.2	24.8

Station No.	Date Sampled	Ammonia	Nitrite	Nitrate	TKN	Total Phos.	Soluble Phos.	Conduct.	pH	Turbid.	Chloride
T4	29-Jul-91	LT.01	.006	LT.02	.36	.030	.006	332	8.1	3.0	24.4
T4	5-Aug-91	.06	.006	.03	.42	.060	.010	313	8.0	0.42	24.9
T4	7-Aug-91	.05	.004	LT.02	.53	.098	.022	345	7.9	8.1	25.6
T4	12-Aug-91	LT.01	.002	LT.02	.63	.108	.016	353	8.2	7.8	28.3
T4	20-Aug-91	LT.01	.002	LT.02	.43	.042	.006	315	8.3	7.1	24.7
T4	26-Aug-91	LT.01	LT.002	LT.02	.41	.036	.004	304	8.5	3.3	24.2
T4	4-Sep-91	.07	.004	LT.02	.67	.106	.018	334	8.2	2.0	26.6
T4	9-Sep-91	LT.01	.002	LT.02	.60	.074	.010	318	8.4	10.0	26.0
T8	13-May-91	LT.01	.012	.188	.86	.082	.054	423	8.1	5.1	19.7
T8	28-May-91	.05	.02	.48	1.10	.120	.060	450	8.0	7.5	
T8	10-Jun-91	.10	.022	.24	1.00	.110	.040	482	8.2	5.3	20.1
T8	18-Jun-91	.01	.008	LT.02	.52	.046	.018	481	8.1	4.3	23.1
T8	24-Jun-91	.03	.004	LT.02	1.05	.140	.078	480	8.2	5.0	23.4
T8	3-Jul-91	LT.01	LT.02	LT.02	.74	.114	.078	542	8.1	3.7	31.9
T8	8-Jul-91	.07	.008	LT.02	.80	.120	.074	519	8.1	2.4	33.8
T8	16-Jul-91	.01	.004	LT.02	.71	.080	.048	495	8.0	1.4	30.9
T8	22-Jul-91	.02	.004	LT.02	.78	.098	.034	486	8.0	1.5	31.0
T8	30-Jul-91	LT.01	.002	LT.02	.75	.125	.062	486	8.1	2.1	32.3
T8	5-Aug-91	.03	.002	LT.02	.70	.135	.072	466	7.9	5.0	34.1
T8	6-Aug-91	.03	.004	LT.02	.65	.130	.078	466	8.0	5.0	33.7
T8	14-Aug-91	LT.01	.002	LT.02	.60	.086	.022	473	8.1	2.7	36.7
T8	19-Aug-91	LT.01	.002	LT.02	.66	.086	LT.002	479	8.0	6.2	37.6
T8	27-Aug-91	LT.01	LT.002	LT.02			.036				20.8
T8	3-Sep-91	.04	.006	LT.02	.67	.080	.036	496	8.0	6.6	40.1
T8	9-Sep-91	.01	.004	LT.02	.73	.086	.032	491	7.9	6.0	41.9
T9	13-May-91	.02	.012	.208	.95	.078	.048	421	8.2	7.5	18.5
T9	28-May-91	.03	.014	.166	1.10	.120	.040	444	7.9	6.0	
T9	10-Jun-91	.03	.004	.160	.28	.014	LT.002	318	8.3	1.0	22.3
T9	18-Jun-91	NO	SAMPLE	TAKEN							
T9	24-Jun-91	.04	.006	LT.02	1.20	.014	.022	442	8.4	8.0	23.9
T9	8-Jul-91	.14	.004	LT.02	1.30	.132	.078	470	8.1	3.2	26.2
T9	16-Jul-91	LT.01	.002	LT.02	1.00	.130	.058	484	8.0	3.4	29.5
T9	22-Jul-91	LT.01	.002	LT.02	.78	.076	.030	455	8.1	2.6	28.6
T9	30-Jul-91	LT.01	.002	LT.02	.37	.042	.020	418	8.2	3.5	27.9
T9	6-Aug-91	LT.01	.002	LT.02	.69	.086	.026	400	8.1	5.0	28.8
T9	14-Aug-91	LT.01	.002	LT.02	.65	.076	.010	446	8.2	4.5	31.0
T9	19-Aug-91	NO	SAMPLE	TAKEN							
T9	27-Aug-91	LT.01	.002	LT.02	.60	.090	.030	459	8.3	7.2	33.4
T9	3-Sep-91	.03	.008	LT.02	.90	.056	.012	434	8.0	4.9	32.1
T10	13-May-91	.02	.044	.596	.63	.020	.016	553	8.3	2.7	28.4
T10	10-Jun-91	.03	.006	LT.02	.64	.070	.028	463	7.8	7.0	30.5
T10	18-Jun-91	2.00	.024	LT.02	3.10	1.600	1.420	1049	7.7	11.0	161.9
T10	24-Jun-91	.05	.010	LT.02	1.35	.330	.240	471	7.8	15.0	37.0
T10	3-Jul-91	LT.01	.002	LT.02	.91	.230	.190	496	8.0	5.4	46.3
T10	8-Jul-91	LT.01	.02	LT.02	1.14	LT.020	.240	496	7.6	3.6	50.8
T10	16-Jul-91	.04	.006	LT.02	.90	.180	.156	594	8.1	1.1	76.3
T10	22-Jul-91	.01	.006	.03	1.50	.340	.160	668	7.5	1.8	93.3
T10	30-Jul-91	.10	.006	LT.02	.95	.240	.142	674	7.5	4.2	101.7
T10	5-Aug-91	.30	.014	LT.02	3.00	.860	.166	563	7.3	84.0	64.9
T10	6-Aug-91	.18	.008	.04	1.15	.280	.166	673	7.8	3.7	104.0
T10	14-Aug-91	.08	.006	LT.02	1.20	.365	.046	710	7.6	5.7	103.7
T10	19-Aug-91	.10	LT.01	LT.1	1.40	.345	.110	726	7.6	17.0	105.2
T10	27-Aug-91	.12	.008	.03	1.00	.174	.094	1188	7.8	7.0	223.6
T10	3-Sep-91	.17	.010	.03	1.0	.165	.090	1184	7.8	5.1	219.4
T10	9-Sep-91	.10	.010	.03	1.5	.180	.078	1097	8.0	6.6	212.0
T13	13-May-91	.11	.044	.576	.56	.024	.052	520	8.5	1.6	26.9
T13	28-May-91	.04	.09	2.01	.90	.080	.060	531	8.6	2.3	
T13	10-Jun-91	.01	.002	LT.02	.57	.104	.058	470	8.2	6.5	22.9
T13	18-Jun-91	.05	.012	LT.02	.75	.220	.170	506	8.0	7.0	21.8
T13	24-Jun-91	.02	.006	LT.02	.65	.120	.094	407	7.7	12.0	18.1
T13	3-Jul-91	.06	.008	LT.02	.82	.250	.190	411	7.9	17.0	37.0
T13	8-Jul-91	LT.01	.08	LT.02	1.22	LT.020	.200	464	7.7	46.0	43.1

Station No.	Date Sampled	Ammonia	Nitrite	Nitrate	TKN	Total Phos.	Soluble Phos.	Conduct.	pH	Turbid.	Chloride
T13	16-Jul-91	.08	.016	LT.02	1.50	.350	.178	444	7.9	4.3	44.3
T13	22-Jul-91	.12	.026	LT.02	5.30	1.420	.120	481	7.4	1.4	48.7
T13	30-Jul-91	.06	.014	LT.02	1.80	.400	.090	510	7.5	50.0	60.0
T13	5-Aug-91	.21	.008	.03	1.10	.290	.186	673	7.7	3.1	104.8
T13	6-Aug-91	.13	.008	LT.02	1.25	.370	.054	616	7.8	45.0	60.1
T13	14-Aug-91	.02	.004	LT.02	2.00	.430	.018	591	7.5	3.3	53.6
T13	19-Aug-91	NO	SAMPLE	TAKEN							
T13	27-Aug-91	NO	SAMPLE	TAKEN							
T13	3-Sep-91	NO	SAMPLE	TAKEN							
T14	28-May-91	.05	.038	1.16	1.10	.080	.022	498	7.9	6.0	
T14	10-Jun-91	.12	.012	.048	1.05	.100	.010	472	8.2	8.4	17.8
T14	18-Jun-91	.01	.010	.05	.83	.068	.020	480	8.0	4.2	21.8
T14	24-Jun-91	.16	.014	LT.02	.85	.290	.070	519	7.9	42.0	30.4
T14	3-Jul-91	.01	.004	LT.02	1.20	.370	.050	482	7.9	51.0	32.0
T14	8-Jul-91	.07	.03	LT.02	.86	.078	.036	452	7.9	6.44	25.5
T14	16-Jul-91	LT.01	.004	LT.02	1.0	.116	.026	488	7.8	4.7	30.5
T14	22-Jul-91	LT.01	.004	LT.02	.82	.118	.024	481	7.7	4.7	36.0
T14	30-Jul-91	LT.01	.004	LT.02	.57	.068	.034	488	7.8	3.9	39.0
T14	5-Aug-91	.03	.004	LT.02	1.40	.190	.032	474	7.7	23.0	44.0
T14	6-Aug-91	.03	.006	LT.02			.042	480	7.8	27.0	45.5
T14	14-Aug-91	LT.01	.002	LT.02	.59	.104	.042	464	7.8	6.9	37.1
T14	19-Aug-91	LT.01	.004	LT.02	.67	.076	.180	484	7.8	7.4	41.3
T14	27-Aug-91	.02	.004	LT.02	1.00	.188	.026	495	7.9	16.0	40.8
T14	3-Sep-91	.02	.004	LT.02	.90	.180	.030	580	7.8	7.2	60.7
T14	9-Sep-91	.01	.002	LT.02	.87	.122	.020	559	8.0	7.6	55.4
T15	16-Jul-91	.01	.006	LT.02	.80	.038	.018	476	8.3	1.9	10.7
T15	22-Jul-91	LT.01	.006	LT.02	.85	.046	.006	484	7.9	1.2	18.9
T15	30-Jul-91	LT.01	.004	LT.02	.72	.048	.012	500	8.0	2.5	22.0
T15	5-Aug-91	.04	.004	LT.02	1.30	.300	.012	473	8.0	1.1	24.4
T15	6-Aug-91	.01	.004	LT.02	.73	.038	.014	476	8.1	2.1	24.4
T15	14-Aug-91	LT.01	.004	LT.02	.86	.085	.016	486	8.1	7.3	22.0
T15	19-Aug-91	.02	.004	LT.02	.77	.04	.016	478	8.1	2.5	21.8
T15	27-Aug-91	LT.01	.002	LT.02	.60	.026	.006	465	8.2	1.7	21.6
515	3-Sep-91	.03	.004	LT.02	.65	.029	.010	472	8.1	1.3	23.7
T15	9-Sep-91	.01	.002	LT.02	.72	.044	.006	469	8.0	3.3	25.2
T16	16-Jul-91	.03	.004	LT.02	.77	.054	.018	476	8.0	3.2	17.1
T16	22-Jul-91	LT.01	.004	LT.02	.94	.062	.004	474	8.0	4.1	16.0
T16	30-Jul-91	LT.1	.004	LT.02	.74	.046	.010	483	8.1	2.8	17.4
T16	5-Aug-91	.03	.002	LT.02	.75	.078	.020	461	7.9	6.1	17.9
T16	6-Aug-91	.03	.004	LT.02	.87	.088	.034	464	8.0	7.0	17.9
T16	14-Aug-91	LT.01	.004	LT.02	.80	.093	.016	474	7.9	7.6	18.6
T16	19-Aug-91	.02	.004	LT.02	.80	.054	.02	463	8.1	7.5	18.6
T16	27-Aug-91	LT.03	.002	LT.02	.78	.056	.018	452	8.2	5.5	18.0
T16	3-Sep-91	.05	.004	LT.02	.84	.070	.026	457	8.0	9.2	18.4
T16	9-Sep-91	.01	.002	LT.02	.74	.050	.020	450	8.0	6.4	19.0
T17	16-Jul-91	LT.01	.004	LT.02	1.15	.128	.046	490	8.0	7.1	32.2
T17	22-Jul-91	.02	.006	0.39	1.50	.028	.006	488	8.1	5.7	16.7
T17	30-Jul-91	LT.1	.004	LT.02	.89	.084	.034	495	7.9	5.2	17.2
T17	5-Aug-91	.01	.002	LT.02	.80	.102	.030	464	8.1	9.1	17.9
T17	6-Aug-91	LT.01	.004	LT.02	1.40	.150	.040	467	8.0	13.0	18.1
T17	14-Aug-91	LT.01	.006	LT.02	1.20	.082	.020	475	8.2	7.7	17.7
T17	19-Aug-91	.03	.006	LT.02	.80	.084	.028	474	8.2	14.0	18.8
T17	27-Aug-91	.03	.004	LT.02	.90	.070	.028	467	8.3	12.0	18.2
T17	3-Sep-91	.01	.006	LT.02	.80	.104	.026				
T17	9-Sep-91	.02	.004	LT.02	1.0	.094	.020	459	8.1	8.2	18.3
A5	13-May-91	.05	.006	LT.02	.60	.006	.004	220	7.9	0.9	9.7
A5	28-May-91	.02	.006	.014	1.00	.040	.006	230	7.7	1.2	
A5	10-Jun-91	.02	.002	LT.02	.72	.038	.004	249	7.9	2.1	8.1
A5	18-Jun-91	.04	.004	LT.02	.83	.032	.004	242	7.7	1.6	8.5
A5	24-Jun-91	.03	.004	LT.02	.63	.032	.002	240	7.9	1.8	8.9
A5	3-Jul-91	.01	.002	LT.02	.73	.042	.008	244	8.1	1.7	8.7

Station No.	Date Sampled	Ammonia	Nitrite	Nitrate	TKN	Total Phos.	Soluble Phos.	Conduct.	pH	Turbid.	Chloride
A5	8-Jul-91	.05	.002	LT.02	.88	.032	LT.002	243	8.0	1.4	8.4
A5	16-Jul-91	.03	.004	LT.02	.92	.032	.002	251	7.8	1.5	10.3
A5	22-Jul-91	.02	.004	LT.02	.92	.026	.004	242	8.0	1.6	8.3
A5	30-Jul-91	.02	.002	LT.02	.92	.028	.004	246	8.1	1.7	9.1
A5	5-Aug-91	.05	.004	LT.02	1.10	.039	.006	237	7.9	2.1	9.3
A5	6-Aug-91	.03	.004	LT.02			.006	237	7.9	2.4	9.7
A5	14-Aug-91	LT.01	.002	LT.02	.87	.024	.012	244	7.9	1.6	8.6
A5	19-Aug-91	.04	.004	LT.02	1.00	.030	.004	243	8.0	2.0	9.9
A5	27-Aug-91	.02	.002	LT.02	.85	.034	.004	248	8.0	1.8	9.7
A5	3-Sep-91	.02	.002	LT.02	.60	.046	.006	240	8.0	2.7	10.7
A5	9-Sep-91	.03	.002	LT.02	1.20	.034	.006	238	8.1	2.2	10.6

APPENDIX C

ST. LAWRENCE BEACHES STUDY - 1991

Park	Date	Total Droppings		Density (#/m2)	
		GOOSE	GULL	GOOSE	GULL
CRYSLER	14-May-91	2782	10285	.093	.340
CRYSLER	22-May-91	12555	13367	.419	.405
CRYSLER	28-May-91	8700	6424	.290	.214
CRYSLER	5-Jun-91	4571	9328	.152	.311
CRYSLER	12-Jun-91	8180	10719	.273	.351
CRYSLER	19-Jun-91	3097	6238	.103	.208
CRYSLER	26-Jun-91	833	239	.028	.008
CRYSLER	4-Jul-91	0	65	0.000	.002
CRYSLER	10-Jul-91	1388	2396	.046	.080
CRYSLER	17-Jul-91	788	414	.026	.014
CRYSLER	24-Jul-91	4921	1302	.164	.043
CRYSLER	31-Jul-91	5744	76	.191	.003
CRYSLER	9-Aug-91	3833	96	.128	.003
FARRAN	14-May-91	3851	1547	.110	.040
FARRAN	22-May-91	8654	7748	.247	.221
FARRAN	28-May-91	15487	11146	.442	.318
FARRAN	5-Jun-91	10781	26	.308	0.000
FARRAN	12-Jun-91	9810	13626	.280	.389
FARRAN	19-Jun-91	7464	12119	.213	.346
FARRAN	26-Jun-91	2877	14300	.082	.409
FARRAN	4-Jul-91	2613	5721	.075	.163
FARRAN	10-Jul-91	4111	16656	.117	.476
FARRAN	17-Jul-91	1281	1155	.037	.033
FARRAN	24-Jul-91	3407	2000	.097	.057
FARRAN	31-Jul-91	6720	3804	.109	.108
FARRAN	9-Aug-91	4297	955	.123	.027
WOODLANDS	14-May-91	723	6716	.030	.310
WOODLANDS	22-May-91	1	7476	0.000	.340
WOODLANDS	28-May-91	130	16496	.006	.750
WOODLANDS	5-Jun-91	4952	2722	.225	.124
WOODLANDS	12-Jun-91	1052	648	.048	.029
WOODLANDS	19-Jun-91	123	7773	.006	.353
WOODLANDS	26-Jun-91	40	327	.002	.017
WOODLANDS	4-Jul-91	0	90	0.000	.004
WOODLANDS	10-Jul-91	5	1763	0.000	.080
WOODLANDS	17-Jul-91	350	288	.016	.013
WOODLANDS	24-Jul-91	573	273	.026	.012
WOODLANDS	31-Jul-91	1140	831	.052	.038
WOODLANDS	9-Aug-91	950	676	.043	.031

APPENDIX D

			BEFORE USE			AFTER USE		
STATION	LOCATION	DATE	FECAL COLIFORMS	FECAL STREP.	E. COLI	FECAL COLIFORMS	FECAL STREP.	E. COLI
30	CRYSLER - AV	17-Jul-91	60			220		
30	CRYSLER(E)	17-Jul-91	80	180	70	350	810	480
30	CRYSLER(W)	17-Jul-91	40	130	40	90	110	150
20	FARRAN - AVG	17-Jul-91	25			50		
20	FARRAN(E)	17-Jul-91	30	30	40	60	250	90
20	FARRAN(W)	17-Jul-91	20	20	30	40	70	LT10
10	WOODLANDS -	17-Jul-91	170			30		
10	WOODLANDS(E)	17-Jul-91	170	170	150	10	90	40
10	WOODLANDS(W)	17-Jul-91	170	130	230	50	140	40
30	CRYSLER - AV	25-Jul-91	465			60		
30	CRYSLER(E)	25-Jul-91	880	1490	190	70	1150	270
30	CRYSLER(W)	25-Jul-91	50	1130	180	50	750	210
20	FARRAN - AVG	25-Jul-91	10			25		
20	FARRAN(E)	25-Jul-91	10	30	10	40	20	50
20	FARRAN(W)	25-Jul-91	LT10	10	LT10	LT10	10	10
10	WOODLANDS -	25-Jul-91	10			10		
10	WOODLANDS(E)	25-Jul-91	LT10	LT10	10	LT10	10	LT10
10	WOODLANDS(W)	25-Jul-91	LT10	10	10	LT10	LT10	LT10
30	CRYSLER - AV	20-Aug-91	140			265		
30	CRYSLER(E)	20-Aug-91	240	50	100	190	50	190
30	CRYSLER(W)	20-Aug-91	40	20	10	340	80	140
20	FARRAN - AVG	20-Aug-91	165			35		
20	FARRAN(E)	20-Aug-91	120	10	50	40	30	60
20	FARRAN(W)	20-Aug-91	210	10	160	30	LT10	20
10	WOODLANDS -	20-Aug-91	145			55		
10	WOODLANDS(E)	20-Aug-91	130	70	110	50	30	50
10	WOODLANDS(W)	20-Aug-91	160	60	130	60	30	40

APPENDIX E

PARK	DATE	RAINFALL	NUMBER OF BATHERS	TOTAL ATTENDANCE	GRASS CUTTING	SAND RAKING	NEW SAND	WASHROOM LINE-UP
Crysler	1-Jun-91	0	0	0	N	N	N	N
Crysler	2-Jun-91	0	18	104	N	N	N	N
Crysler	3-Jun-91	0	0	0	N	N	N	N
Crysler	4-Jun-91	0	0	0	N	N	N	N
Crysler	5-Jun-91	0	0	56	N	N	N	N
Crysler	6-Jun-91	4	0	225	N	N	N	N
Crysler	7-Jun-91	4	0	200	Y	N	N	N
Crysler	8-Jun-91	0	0	125	Y	N	N	N
Crysler	9-Jun-91	1	23	33	N	N	N	N
Crysler	10-Jun-91	0	110	234	N	N	N	N
Crysler	11-Jun-91	0	0	0	N	N	N	N
Crysler	12-Jun-91	3	0	0	Y	N	N	N
Crysler	13-Jun-91	0	0	0	N	N	N	N
Crysler	14-Jun-91	5	0	0	Y	Y	N	N
Crysler	15-Jun-91	0	0	38	Y	N	N	N
Crysler	16-Jun-91	1	44	5	N	N	N	N
Crysler	17-Jun-91	10	0	0	N	N	N	N
Crysler	18-Jun-91	0	0	200	N	N	N	N
Crysler	19-Jun-91	0	5	100	N	N	N	N
Crysler	20-Jun-91	0	20	500	N	N	N	N
Crysler	21-Jun-91	0	0	135	N	N	N	N
Crysler	22-Jun-91	0	3	300	N	N	N	N
Crysler	23-Jun-91	0	60	165	N	N	N	N
Crysler	24-Jun-91	0	200	260	N	N	N	N
Crysler	25-Jun-91	0	15	100	N	N	N	N
Crysler	26-Jun-91	0	25	150	N	N	N	N
Crysler	27-Jun-91	0	75	200	N	N	N	N
Crysler	28-Jun-91	0	11	120	N	Y	N	N
Crysler	29-Jun-91	0	105	110	N	N	N	N
Crysler	30-Jun-91	0	230	300	N	N	N	N
Crysler	1-Jul-91	0	110	100	N	N	N	N
Crysler	2-Jul-91	0	15	17	N	N	N	N
Crysler	3-Jul-91	0	18	24	N	N	N	N
Crysler	4-Jul-91	0	25	30	N	N	N	N
Crysler	5-Jul-91	15	0	4	N	N	N	N
Crysler	6-Jul-91	2	0	4	N	N	N	N
Crysler	7-Jul-91	0	100	269	N	N	N	N
Crysler	8-Jul-91	9	0	3	N	N	N	N
Crysler	9-Jul-91	0	0	15	N	N	N	N
Crysler	10-Jul-91	0	0		N	N	N	N
Crysler	11-Jul-91	0	10	15	N	Y	N	N
Crysler	12-Jul-91	0	21	25	N	N	N	N
Crysler	13-Jul-91	2	225	850	N	N	N	Y
Crysler	14-Jul-91	0	300	450	N	N	N	Y
Crysler	15-Jul-91	0	300	450	N	N	N	Y
Crysler	16-Jul-91	0	80	100	N	N	N	N
Crysler	17-Jul-91	0	80	40	N	N	N	N
Crysler	18-Jul-91	10	60	40	Y	N	N	N
Crysler	19-Jul-91	0	125	100	N	N	N	N
Crysler	20-Jul-91	0	300	212	N	N	N	N
Crysler	21-Jul-91	9	20	25	N	N	N	N
Crysler	22-Jul-91	0	25	20	N	N	N	N
Crysler	23-Jul-91	10	5	15	Y	N	N	N
Crysler	24-Jul-91	0	50	25	N	N	N	N
Crysler	25-Jul-91	0	20	39	N	Y	N	N
Crysler	26-Jul-91	0	30	20	N	N	N	N
Crysler	27-Jul-91	0	50	40	N	N	N	N
Crysler	28-Jul-91	0	800	541	N	N	N	Y
Crysler	29-Jul-91	0	10	12	N	N	N	N
Crysler	30-Jul-91	0	8	10	N	N	N	N
Crysler	31-Jul-91	9	0	5	N	N	N	N
Crysler	1-Aug-91	0	20	15	N	Y	N	N
Crysler	2-Aug-91	0	15	30	N	N	N	N
Crysler	3-Aug-91	0	100	102	N	N	N	N
Crysler	4-Aug-91	14	20	60	N	N	N	N

PARK	DATE	RAINFALL	NUMBER OF BATHERS	TOTAL ATTENDANCE	GRASS CUTTING	SAND RAKING	NEW SAND	WASHROOM LINE-UP
Crysler	5-Aug-91	10	0	0	N	N	N	N
Crysler	6-Aug-91	0		80				
Crysler	7-Aug-91	0		80				
Crysler	8-Aug-91	0		80				
Crysler	9-Aug-91	16		80				
Crysler	10-Aug-91	1		80				
Crysler	11-Aug-91	2		80				
Crysler	12-Aug-91	0		129				
Crysler	13-Aug-91	0		129				
Crysler	14-Aug-91	0		129				
Crysler	15-Aug-91	0		129				
Crysler	16-Aug-91	17		129				
Crysler	17-Aug-91	7		129				
Crysler	18-Aug-91	0		129				
Crysler	19-Aug-91	0		80				
Crysler	20-Aug-91	2		80				
Crysler	21-Aug-91	18		80				
Crysler	22-Aug-91	0		80				
Crysler	23-Aug-91	0		80				
Crysler	24-Aug-91	0		80				
Crysler	25-Aug-91	0		80				
Crysler	26-Aug-91	0		78				
Crysler	27-Aug-91	0		78				
Crysler	28-Aug-91	3		78				
Crysler	29-Aug-91	0		78				
Crysler	30-Aug-91	9		78				
Crysler	31-Aug-91	0		78				
Farran	1-Jun-91	0	0	45	N	N	N	N
Farran	2-Jun-91	0	0	40	N	N	N	N
Farran	3-Jun-91	0	0	25	Y	N	N	N
Farran	4-Jun-91	0	0	25	Y	Y	N	N
Farran	5-Jun-91	3	0	25	Y	Y	N	N
Farran	6-Jun-91	0	100	200	N	Y	N	Y
Farran	7-Jun-91	0	2	29	N	N	N	N
Farran	8-Jun-91	0	4	50	N	N	N	N
Farran	9-Jun-91	0	10	65	N	N	N	N
Farran	10-Jun-91	0	20	60	Y	Y	N	N
Farran	11-Jun-91	0	0	35	N	N	N	N
Farran	12-Jun-91	0	0	35	N	N	N	N
Farran	13-Jun-91	0	0	35	N	N	N	N
Farran	14-Jun-91	13	0	35	N	N	N	N
Farran	15-Jun-91	0	0	34	Y	N	N	N
Farran	16-Jun-91	0	0	67	N	N	N	N
Farran	17-Jun-91	1	0	74	N	N	N	N
Farran	18-Jun-91	7	0	30	N	N	N	N
Farran	19-Jun-91	0	0	30	Y	N	N	N
Farran	20-Jun-91	0	0	36	Y	N	N	N
Farran	21-Jun-91	0	0	36	Y	N	N	N
Farran	22-Jun-91	0	0	36	N	N	N	N
Farran	23-Jun-91	0	2	76	N	Y	N	N
Farran	24-Jun-91	0	50	53	Y	Y	N	N
Farran	25-Jun-91	2	100	40	N	N	N	N
Farran	26-Jun-91	0	0	30	N	Y	N	N
Farran	27-Jun-91	0	25	45	N	Y	N	N
Farran	28-Jun-91	0	15	60	N	N	N	N
Farran	29-Jun-91	0	30	65	N	Y	N	N
Farran	30-Jun-91	0	100	700	N	Y	N	Y
Farran	1-Jul-91	0	100	75	N	N	N	Y
Farran	2-Jul-91	0	20	37	Y	N	N	N
Farran	3-Jul-91	0	15	37	N	N	N	N
Farran	4-Jul-91	0	15	37	N	N	N	N
Farran	5-Jul-91	8	0	37	N	N	N	N
Farran	6-Jul-91	1	15	65	N	N	N	N
Farran	7-Jul-91	0	60	39	N	N	N	N
Farran	8-Jul-91	3	0	39	N	N	N	N
Farran	9-Jul-91	5	0	39	N	N	N	N

PARK	DATE	RAINFALL	NUMBER OF BATHERS	TOTAL ATTENDANCE	GRASS CUTTING	SAND RAKING	NEW SAND	WASHROOM LINE-UP
Farran	10-Jul-91	0	10	55	N	N	N	N
Farran	11-Jul-91	1	75	45	N	N	N	N
Farran	12-Jul-91	2	75	100	N	N	N	N
Farran	13-Jul-91	4	98	90	N	N	N	N
Farran	14-Jul-91	0	200	118	N	N	N	N
Farran	15-Jul-91	0	75	118	N	N	N	N
Farran	16-Jul-91	0	75	85	Y	N	N	N
Farran	17-Jul-91	0	75	85	Y	N	N	N
Farran	18-Jul-91	8	50	54	Y	Y	N	N
Farran	19-Jul-91	0	89	97	Y	Y	N	N
Farran	20-Jul-91	1	78	101	N	N	N	N
Farran	21-Jul-91	6	0	51	N	N	N	N
Farran	22-Jul-91	0	85	75	N	N	N	N
Farran	23-Jul-91	5	25	70	N	Y	N	N
Farran	24-Jul-91	0	54	81	Y	Y	N	N
Farran	25-Jul-91	0	20	85	Y	Y	N	N
Farran	26-Jul-91	0	54	97	Y	Y	N	Y
Farran	27-Jul-91	0	250	125	Y	Y	N	Y
Farran	28-Jul-91	0	300	130	Y	Y	N	Y
Farran	29-Jul-91	0	100	100	Y	Y	N	Y
Farran	30-Jul-91	0	75	69	N	N	N	N
Farran	31-Jul-91	11						
Farran	1-Aug-91	1	26	88	Y	Y	N	N
Farran	2-Aug-91	0	51	102	Y		N	N
Farran	3-Aug-91	0	85	117	Y	Y	N	N
Farran	4-Aug-91	0	9	121	N	Y	N	Y
Farran	5-Aug-91	5		46	N	N	N	N
Farran	6-Aug-91	18		42	N	N	N	N
Farran	7-Aug-91	0	10	47	Y	Y	N	N
Farran	8-Aug-91	0	23	64	Y	Y	N	N
Farran	9-Aug-91	4	50	70	N	N	N	N
Farran	10-Aug-91	1	20	75	N	N	N	N
Farran	11-Aug-91	2	15	80	N	N	N	N
Farran	12-Aug-91	2	10	50	N	N	N	N
Farran	13-Aug-91	1	8	49	Y	Y	N	N
Farran	14-Aug-91	0	17	52	Y	N	N	N
Farran	15-Aug-91	0	21	53	Y	N	N	N
Farran	16-Aug-91	0	30	58	Y	N	N	N
Farran	17-Aug-91	1		26	N	N	N	N
Farran	18-Aug-91	0	4	28	N	N	N	N
Farran	19-Aug-91	0	0	0	Y	N	N	N
Farran	20-Aug-91	0	0	0	Y	N	N	N
Farran	21-Aug-91	0	5	20	Y	N	N	N
Farran	22-Aug-91				Y	N	N	N
Farran	23-Aug-91				N	N	N	N
Farran	24-Aug-91				N	N	N	N
Farran	25-Aug-91				N	N	N	N
Farran	26-Aug-91				Y	N	N	N
Farran	27-Aug-91				N	N	N	N
Farran	28-Aug-91				Y	N	N	N
Farran	29-Aug-91				Y	N	N	N
Farran	30-Aug-91				N	N	N	N
Farran	31-Aug-91				N	N	N	N
Glengarry	1-Jun-91	1	0	25	N	N	N	N
Glengarry	2-Jun-91	0	0	225	Y	N	N	N
Glengarry	3-Jun-91	0	0	50	Y	N	N	N
Glengarry	4-Jun-91	0	0	50	Y	N	N	N
Glengarry	5-Jun-91	0	0	50	Y	N	N	N
Glengarry	6-Jun-91	0	150	900	Y	N	N	N
Glengarry	7-Jun-91	0	0	50	Y	N	N	N
Glengarry	8-Jun-91	0	0	50	Y	N	N	N
Glengarry	9-Jun-91	0	0	300	Y	N	N	N
Glengarry	10-Jun-91	0	0	600	Y	N	N	N
Glengarry	11-Jun-91	0	0	700	N	N	N	N
Glengarry	12-Jun-91	0	0	70	N	N	N	N
Glengarry	13-Jun-91	0	0	50	Y	N	N	N

PARK	DATE	RAINFALL	NUMBER OF BATHERS	TOTAL ATTENDANCE	GRASS CUTTING	SAND RAKING	NEW SAND	WASHROOM LINE-UP
Glengarry	14-Jun-91	2	0	27	Y	N	N	N
Glengarry	15-Jun-91	0	0	50	Y	N	N	N
Glengarry	16-Jun-91	0	0	350	Y	N	N	N
Glengarry	17-Jun-91	2	0	200	N	N	N	N
Glengarry	18-Jun-91	13	0	40	N	N	N	N
Glengarry	19-Jun-91	0	10	30	Y	N	N	N
Glengarry	20-Jun-91	0	10	40	Y	N	N	N
Glengarry	21-Jun-91	0	20	80	Y	N	N	N
Glengarry	22-Jun-91	0	20	100	Y	N	N	N
Glengarry	23-Jun-91	0	225	720	N	N	N	N
Glengarry	24-Jun-91	0	300	1000	N	N	N	N
Glengarry	25-Jun-91	0	100	900	N	N	N	N
Glengarry	26-Jun-91	0	150	300	N	N	N	N
Glengarry	27-Jun-91	0	40	80	Y	N	N	N
Glengarry	28-Jun-91	0	40	70	Y	N	N	N
Glengarry	29-Jun-91	3	40	400	Y	N	N	N
Glengarry	30-Jun-91	0	50	450	Y	N	N	N
Glengarry	1-Jul-91	0	200	1000	N	N	N	N
Glengarry	2-Jul-91	0	75	300	N	N	N	N
Glengarry	3-Jul-91	0	120	250	Y	N	N	N
Glengarry	4-Jul-91	0	50	150	Y	N	N	N
Glengarry	5-Jul-91	11	0	150	N	N	N	N
Glengarry	6-Jul-91	7	30	800	N	N	N	N
Glengarry	7-Jul-91	4	600	1000	N	N	N	N
Glengarry	8-Jul-91	2	0	100	N	N	N	N
Glengarry	9-Jul-91	4	0	100	Y	N	N	N
Glengarry	10-Jul-91	1	20	150	Y	N	N	N
Glengarry	11-Jul-91	0	40	200	Y	Y	N	N
Glengarry	12-Jul-91	0	150	270	N	N	N	N
Glengarry	13-Jul-91	0	165	395	N	N	N	N
Glengarry	14-Jul-91	0	1000	2000	N	N	N	Y
Glengarry	15-Jul-91	0	200	400	N	N	N	N
Glengarry	16-Jul-91	0	300	500	N	N	N	N
Glengarry	17-Jul-91	0	300	550	Y	N	N	N
Glengarry	18-Jul-91	6	200	450	Y	N	N	N
Glengarry	19-Jul-91	0	300	700	N	Y	N	N
Glengarry	20-Jul-91	0	700	1600	N	N	N	N
Glengarry	21-Jul-91	0	150	1200	N	N	N	N
Glengarry	22-Jul-91	0	200	500	N	N	N	N
Glengarry	23-Jul-91	13	125	300	Y	N	N	N
Glengarry	24-Jul-91	0	200	500	Y	N	N	N
Glengarry	25-Jul-91	0	300	550	Y	N	N	N
Glengarry	26-Jul-91	0	300	550	Y	Y	N	N
Glengarry	27-Jul-91	0	90	600	Y	Y	N	N
Glengarry	28-Jul-91	0	1000	2000	N	N	N	Y
Glengarry	29-Jul-91	0	150	300	N	N	N	N
Glengarry	30-Jul-91	0	160	300	N	N	N	N
Glengarry	31-Jul-91	9	150	400		Y	N	N
Glengarry	1-Aug-91	0	100	300	Y	N	N	N
Glengarry	2-Aug-91	0	125	350	N	N	N	N
Glengarry	3-Aug-91	0	400	800	N	Y	N	N
Glengarry	4-Aug-91	4	500	800	N	N	N	N
Glengarry	5-Aug-91	0	20	200	N	N	N	N
Glengarry	6-Aug-91	1	15	175	N	N	N	N
Glengarry	7-Aug-91	0	50	180	Y	N	N	N
Glengarry	8-Aug-91	0	30	250	Y	N	N	N
Glengarry	9-Aug-91	0	10	200	N	Y	N	N
Glengarry	10-Aug-91	11	25	250	N	N	N	N
Glengarry	11-Aug-91	1	50	250	N	N	N	N
Glengarry	12-Aug-91	3	76	150	N	N	N	N
Glengarry	13-Aug-91	0	75	150	N	N	N	N
Glengarry	14-Aug-91	0	85	150	Y	N	N	N
Glengarry	15-Aug-91	0	125	160	Y	N	N	N
Glengarry	16-Aug-91	0	125	180	N	Y	N	N
Glengarry	17-Aug-91	1	200	400	N	N	N	N
Glengarry	18-Aug-91	7	200	500	N	N	N	N

PARK	DATE	RAINFALL	NUMBER OF BATHERS	TOTAL ATTENDANCE	GRASS CUTTING	SAND RAKING	NEW SAND	WASHROOM LINE-UP
Glengarry	19-Aug-91	0	20	100	N	N	N	N
Glengarry	20-Aug-91	0	20	100	N	N	N	N
Glengarry	21-Aug-91	22	0	85	Y	N	N	N
Glengarry	22-Aug-91	13	20	50	Y	N	N	N
Glengarry	23-Aug-91	0	20	100	Y	N	N	N
Glengarry	24-Aug-91	0	100	300	Y	N	N	N
Glengarry	25-Aug-91	0	300	500	N	N	N	N
Glengarry	26-Aug-91	0	20	50	N	N	N	N
Glengarry	27-Aug-91	0	40	60	N	N	N	N
Glengarry	28-Aug-91	0	30	50	Y	N	N	N
Glengarry	29-Aug-91	0	25	60	Y	N	N	N
Glengarry	30-Aug-91	0	50	100	N	N	N	N
Glengarry	31-Aug-91	15	10	200	N	N	N	N
Mille Roches	1-Jun-91	0	4070		Y	N	N	N
Mille Roches	2-Jun-91	0	80		N	N	N	N
Mille Roches	3-Jun-91	0	0		N	N	N	N
Mille Roches	4-Jun-91	0	0		Y	N	N	N
Mille Roches	5-Jun-91	0	15		Y	N	N	N
Mille Roches	6-Jun-91	1	175		N	N	N	Y
Mille Roches	7-Jun-91	0	35		Y	N	N	N
Mille Roches	8-Jun-91	0	75		Y	N	N	N
Mille Roches	9-Jun-91	0	90		N	N	N	N
Mille Roches	10-Jun-91	0	10		N	N	N	Y
Mille Roches	11-Jun-91	0	5		Y	N	N	N
Mille Roches	12-Jun-91	0	0		Y	N	N	N
Mille Roches	13-Jun-91	0	5		Y	N	N	N
Mille Roches	14-Jun-91	13	20		Y	N	N	N
Mille Roches	15-Jun-91	0	20		N	Y	N	N
Mille Roches	16-Jun-91	0	0		N	N	N	N
Mille Roches	17-Jun-91	5	0		N	N	N	N
Mille Roches	18-Jun-91	5	50		Y	N	N	N
Mille Roches	19-Jun-91	5	70		Y	N	N	N
Mille Roches	20-Jun-91	0	125		Y	N	N	N
Mille Roches	21-Jun-91	0	100		Y	N	N	N
Mille Roches	22-Jun-91	0	50		N	N	N	N
Mille Roches	23-Jun-91	0	40		N	N	N	N
Mille Roches	24-Jun-91	0	250		N	N	N	Y
Mille Roches	25-Jun-91	0	250		N	N	N	Y
Mille Roches	26-Jun-91	0	50		Y	N	N	N
Mille Roches	27-Jun-91	0	50		Y	N	N	N
Mille Roches	28-Jun-91	0	50		Y	Y	N	N
Mille Roches	29-Jun-91	0	30		N	N	N	N
Mille Roches	30-Jun-91	0	20		N	N	N	N
Mille Roches	1-Jul-91	0	200		N	N	N	Y
Mille Roches	2-Jul-91	0	35		Y	N	N	N
Mille Roches	3-Jul-91	0	40		Y	N	N	N
Mille Roches	4-Jul-91	0	50		Y	Y	N	N
Mille Roches	5-Jul-91	5	10		Y	Y	N	N
Mille Roches	6-Jul-91	1	40		Y	N	N	N
Mille Roches	7-Jul-91	0	200		N	N	N	Y
Mille Roches	8-Jul-91	8	10		N	N	N	N
Mille Roches	9-Jul-91	3	30		Y	N	N	N
Mille Roches	10-Jul-91	0	20		Y	N	N	N
Mille Roches	11-Jul-91	0	20		Y	Y	N	N
Mille Roches	12-Jul-91	0	50		Y	N	N	N
Mille Roches	13-Jul-91	0	40		Y	N	N	N
Mille Roches	14-Jul-91	0	250		N	N	N	Y
Mille Roches	15-Jul-91	0	75		Y	N	N	N
Mille Roches	16-Jul-91	0	100		Y	N	N	N
Mille Roches	17-Jul-91	0	80		Y	N	N	N
Mille Roches	18-Jul-91	7	100		Y	Y	N	N
Mille Roches	19-Jul-91	1	175		Y	N	N	N
Mille Roches	20-Jul-91	0	200		N	N	N	Y
Mille Roches	21-Jul-91	5	225		N	N	N	Y
Mille Roches	22-Jul-91	0	125		Y	N	N	N
Mille Roches	23-Jul-91	5	100		Y	N	N	N

PARK	DATE	RAINFALL	NUMBER OF BATHERS	TOTAL ATTENDANCE	GRASS CUTTING	SAND RAKING	NEW SAND	WASHROOM LINE-UP
Mille Roches	24-Jul-91	1	40		Y	N	N	N
Mille Roches	25-Jul-91	0	100		Y	Y	N	N
Mille Roches	26-Jul-91	0	50		N	N	N	N
Mille Roches	27-Jul-91	0	100		N	N	N	Y
Mille Roches	28-Jul-91	0	200		N	N	N	Y
Mille Roches	29-Jul-91	0	25		N	N	N	N
Mille Roches	30-Jul-91	0	50		N	N	N	N
Mille Roches	31-Jul-91	14	20		Y	N	N	N
Mille Roches	1-Aug-91	1	40		Y	Y	N	N
Mille Roches	2-Aug-91	0	50		N	N	N	Y
Mille Roches	3-Aug-91	0	175		N	N	N	Y
Mille Roches	4-Aug-91	0	30		N	N	N	N
Mille Roches	5-Aug-91	21	10		Y	N	N	N
Mille Roches	6-Aug-91	1	40		Y	N	N	N
Mille Roches	7-Aug-91	0	50		Y	N	N	N
Mille Roches	8-Aug-91	0	20		Y	N	N	N
Mille Roches	9-Aug-91	0	10		N	N	N	N
Mille Roches	10-Aug-91	12	1		N	N	N	N
Mille Roches	11-Aug-91	8	30		N	N	N	N
Mille Roches	12-Aug-91	4	40		N	N	N	N
Mille Roches	13-Aug-91	0	40		N	N	N	N
Mille Roches	14-Aug-91	0	30		Y	N	N	N
Mille Roches	15-Aug-91	0	20		Y	Y	N	N
Mille Roches	16-Aug-91	0	40		N	Y	N	N
Mille Roches	17-Aug-91	5	25		N	N	N	N
Mille Roches	18-Aug-91	6	20		N	N	N	N
Mille Roches	19-Aug-91	3	0		Y	N	N	N
Mille Roches	20-Aug-91	0	15		Y	N	N	N
Mille Roches	21-Aug-91	15	0		N	N	N	N
Mille Roches	22-Aug-91	15	10		N	N	N	N
Mille Roches	23-Aug-91	3	25		N	Y	N	N
Mille Roches	24-Aug-91	0	30		N	N	N	N
Mille Roches	25-Aug-91	0	100		N	N	N	N
Mille Roches	26-Aug-91	0	10		N	N	N	N
Mille Roches	27-Aug-91	0	15		N	N	N	N
Mille Roches	28-Aug-91	0	10		N	N	N	N
Mille Roches	29-Aug-91	0	10		N	N	N	N
Mille Roches	30-Aug-91	0	25		N	N	N	N
Mille Roches	31-Aug-91	18			N	N	N	N
Woodlands	1-Jun-91	0	15	200	Y	N	N	N
Woodlands	2-Jun-91	0	20	250	N	N	N	N
Woodlands	3-Jun-91	0	5	100	N	N	N	N
Woodlands	4-Jun-91	0	20	200	N	N	N	N
Woodlands	5-Jun-91	0	15	50	Y	N	N	N
Woodlands	6-Jun-91	0	1000	3000	N	N	N	Y
Woodlands	7-Jun-91	0	10	75	Y	N	N	N
Woodlands	8-Jun-91	0	25	80	Y	N	N	N
Woodlands	9-Jun-91	0	30	400	Y	N	N	N
Woodlands	10-Jun-91	0	100	1000	N	N	N	N
Woodlands	11-Jun-91	0	0	20	N	N	N	N
Woodlands	12-Jun-91	0	0	75	N	N	N	N
Woodlands	13-Jun-91	0	0	0	N	Y	N	N
Woodlands	14-Jun-91	28	0	0	N	N	N	N
Woodlands	15-Jun-91	0	0	0	N	N	N	N
Woodlands	16-Jun-91	0	6	200	N	Y	N	N
Woodlands	17-Jun-91	5	0	10	N	N	N	N
Woodlands	18-Jun-91	3	0	10	N	N	N	N
Woodlands	19-Jun-91	0	10	60	N	N	N	N
Woodlands	20-Jun-91	0	15	80	N	N	N	N
Woodlands	21-Jun-91	0	90	250	Y	N	N	N
Woodlands	22-Jun-91	0	20	100	Y	N	N	N
Woodlands	23-Jun-91	0	200	1000	N	N	N	N
Woodlands	24-Jun-91	0	1000	4000	N	N	N	Y
Woodlands	25-Jun-91	0	500	2000	N	N	N	N
Woodlands	26-Jun-91	0	0	30	Y	N	N	N
Woodlands	27-Jun-91	0	0	50	Y	N	N	N

PARK	DATE	RAINFALL	NUMBER OF BATHERS	TOTAL ATTENDANCE	GRASS CUTTING	SAND RAKING	NEW SAND	WASHROOM LINE-UP
Woodlands	28-Jun-91	0	10	150	Y	N	N	N
Woodlands	29-Jun-91	0	50	400	N	Y	N	N
Woodlands	30-Jun-91	0	500	2000	N	N	N	Y
Woodlands	1-Jul-91	0	1500	3000	N	N	N	Y
Woodlands	2-Jul-91	0	500	500	N	N	N	N
Woodlands	3-Jul-91	0			N	N	N	N
Woodlands	4-Jul-91	1	50	250	N	N	N	N
Woodlands	5-Jul-91	6	10	30	N	N	N	N
Woodlands	6-Jul-91	2	1000	2500	N	N	N	Y
Woodlands	7-Jul-91	0	1000	4000	N	N	N	Y
Woodlands	8-Jul-91	15	65	150	N	N	N	N
Woodlands	9-Jul-91	0	85	225	Y	N	N	N
Woodlands	10-Jul-91	0	75	240	Y	N	N	N
Woodlands	11-Jul-91	0	90	300	N	N	N	N
Woodlands	12-Jul-91	0	50	400	Y	Y	N	N
Woodlands	13-Jul-91	0	200	2500	N	N	N	N
Woodlands	14-Jul-91	1	100	400	N	N	N	N
Woodlands	15-Jul-91	0	150	800	N	N	N	N
Woodlands	16-Jul-91	0	100	350	N	N	N	N
Woodlands	17-Jul-91	0	0	0	N	N	N	N
Woodlands	18-Jul-91	13	50	175	Y	N	N	N
Woodlands	19-Jul-91	0	40	150	Y	Y	N	N
Woodlands	20-Jul-91	0	600	2500	Y	N	N	N
Woodlands	21-Jul-91	0	500	2000	Y	N	N	N
Woodlands	22-Jul-91	0	100	150	Y	N	N	N
Woodlands	23-Jul-91	6	100	100	Y	N	N	N
Woodlands	24-Jul-91	0	200	800	N	N	N	N
Woodlands	25-Jul-91	0	200	1500	Y	Y	N	N
Woodlands	26-Jul-91	0	100	900	N	N	N	N
Woodlands	27-Jul-91	0	800	2500	N	N	N	Y
Woodlands	28-Jul-91	0	300	3000	N	N	N	Y
Woodlands	29-Jul-91	0	400	1050	Y	N	N	N
Woodlands	30-Jul-91	0	300	150	Y	N	N	N
Woodlands	31-Jul-91	14	75	150	Y	N	N	N
Woodlands	1-Aug-91	1	75	150	Y	Y	N	N
Woodlands	2-Aug-91	0	28	200	Y	Y	N	N
Woodlands	3-Aug-91	0	1000	3000	N	N	N	Y
Woodlands	4-Aug-91	0	500	3000	N	N	N	Y
Woodlands	5-Aug-91	3	2	8	N	N	N	N
Woodlands	6-Aug-91	3	4	15	N	N	N	N
Woodlands	7-Aug-91	0	6	40	N	N	N	N
Woodlands	8-Aug-91	0	30	150		N	N	N
Woodlands	9-Aug-91	0	40	80	N	Y	N	N
Woodlands	10-Aug-91	10	40	1500	N	N	N	Y
Woodlands	11-Aug-91	3	35	1000	N	N	N	Y
Woodlands	12-Aug-91	2	75	500	N	N	N	N
Woodlands	13-Aug-91	0	100	800	N	N	N	N
Woodlands	14-Aug-91	0	75	100	N	N	N	N
Woodlands	15-Aug-91	0	50	110	N	N	N	N
Woodlands	16-Aug-91	0	25	120	N	N	N	N
Woodlands	17-Aug-91	8	75	1500	N	N	N	N
Woodlands	18-Aug-91	12	35	1000	N	N	N	N
Woodlands	19-Aug-91	7	0	10	N	N	N	N
Woodlands	20-Aug-91	0	20	75	N	N	N	N
Woodlands	21-Aug-91	13	15	80	N	N	N	N
Woodlands	22-Aug-91	0	20	30	N	Y	N	N
Woodlands	23-Aug-91	0	25	40	N	Y	N	N
Woodlands	24-Aug-91	14	75	800	N	N	N	N
Woodlands	25-Aug-91	0	100	900	N	N	N	N
Woodlands	26-Aug-91	0	10	50	N	N	N	N
Woodlands	27-Aug-91	0	10	60	N	N	N	N
Woodlands	28-Aug-91	0	12	100	N	N	N	N
Woodlands	29-Aug-91	0	10	25	N	N	N	N
Woodlands	30-Aug-91	16	0	50	N	N	N	N
Woodlands	31-Aug-91	0	150	800	N	N	N	N