Upper Thames River Conservation Authority

Clean Up Rural Beaches (CURB) Implementation Program

1995/96 Final Report

Prepared for: Ontario Ministry of Environment and Energy

April 1996

Acknowledgements

The Upper Thames River Conservation Authority's (UTRCA) Clean Up Rural Beaches (CURB) Implementation Program is funded through the Ontario Ministry of Environment and Energy (OMOEE) in cooperation with the UTRCA.

We would like to extend our thanks to the following members of the UTRCA' s local CURB Program Committee for their commitment and dedication throughout the program:

Bob Bedggood	Agricultural Community Representative
Norm Bird	Ontario Ministry of Agriculture Food & Rural Affairs
Murray Blackie	Ontario Ministry of Environment and Energy
Mike Bragg	Oxford County Board of Health
Andrew Graham	Ontario Soil and Crop Improvement Association
Don Hilborn	Ontario Ministry of Agriculture Food & Rural Affairs
Paul Fish	Upper Thames River Conservation Authority
Dave Hayman	Upper Thames River Conservation Authority

Introduction

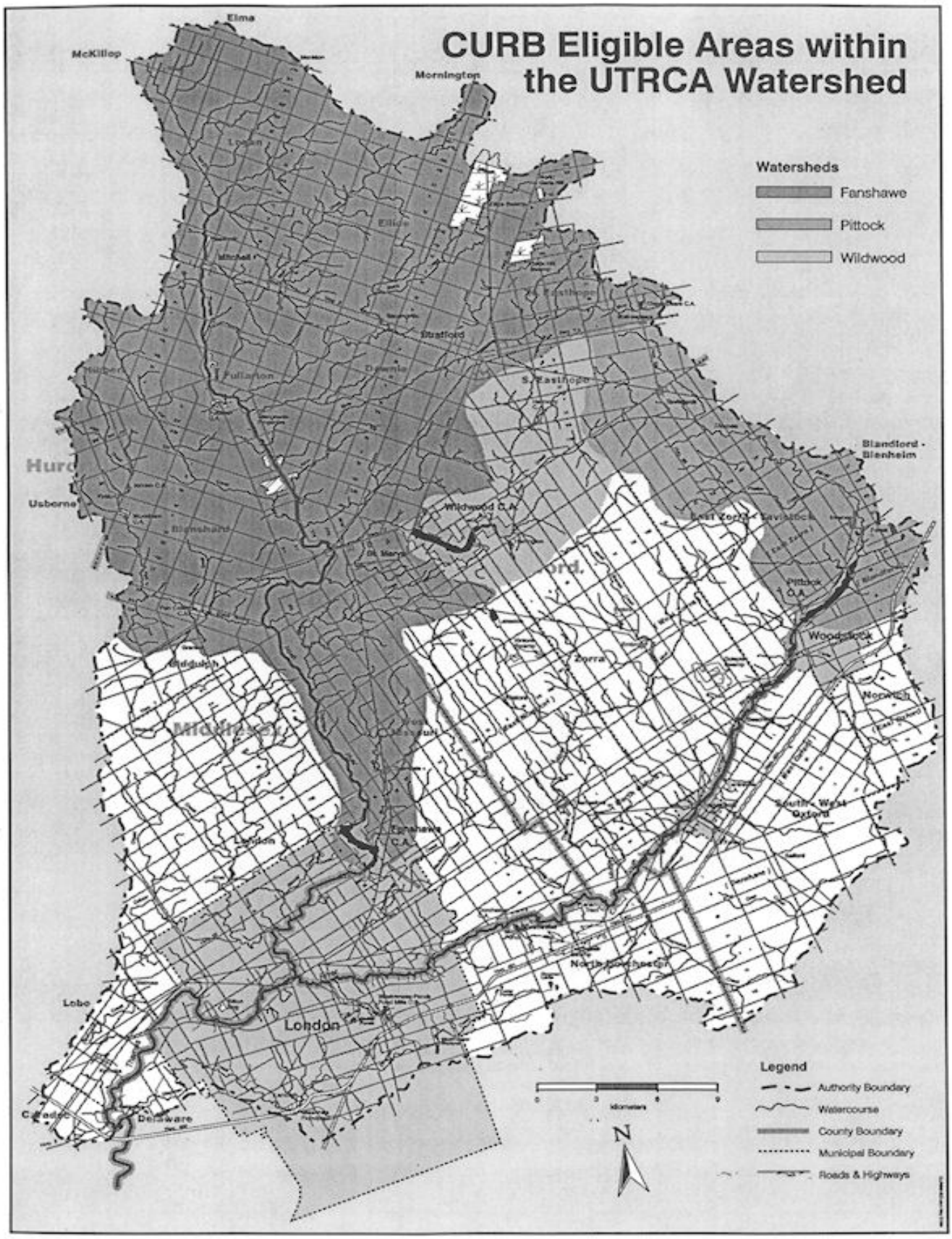
1995 marked the Upper Thames River Conservation Authority's (UTRCA) fifth and final year of involvement in the Clean Up Rural Beaches (CURB) Program. As a result of the Ontario Economic Statement on November 29, 1995, a decision was made by the province to terminate the CURB Program effective March 31, 1996. The program which officially began on September 1, 1991 was to be a 10 year $57 million incentive program aimed at encouraging improved rural water management practices that would reduce the impact of pollution sources at local beaches. As of 1995 thirty Conservation Authorities across the province were involved with the CURB Program. Each Authority was initially eligible to participate for five of the ten years with $5 million being available annually across the province for eligible projects.

Since the UTRCA began implementing the program in September of 1991, 320 projects have been completed granting a total of $1.4 million to watershed landowners. This effort to correct existing environmental problems not only created $4 million in capital work to the local economy but was instrumental in keeping the beach at the Wildwood Reservoir open throughout the swimming season for the last three years. At the Pittock Reservoir there has been a reduction in bacteria concentrations of approximately 75% since the late 1980's. 1995 was also the first year in many that the Pittock Reservoir beach was not closed due to elevated bacteria levels.

Over the course of the program many new and innovative solutions were developed to deal with some of the water quality problems. These included constructing artificial wetlands to treat manure in one instance and household wastewater in another.

CURB Program Implementation

Over the course of the program project inquiries were received from approximately 750 landowners throughout the watershed. This included 125 landowners who fell outside the CURB eligible areas. Of all inquiries over 80% of the project interest was in the area of household septic system improvements and manure storage construction.


CURB Eligible Areas within the UTRCA Watershed
Watersheds
Fanshawe
Pittock
Wildwood
Elma
McKillop
Mornington
Stratford
Blandford - Blenheim
Wildwood C.A.
Pittock C.A.
Woodstock
Zorra
Middlesex
Fanshawe C.A.
London
Lobo
Delaware
Legend
Authority Boundary
Watercourse
County Boundary
Municipal Boundary
Roads & Highways
N

CURB Program Levels of Activity 1995/96

The UTRCA CURB Implementation Committee was given a total grant allocation of $350,000 from the Ministry of Environment and Energy for projects within the eligible areas of the watershed. Seventy-two applications were approved by the committee with a total grant allocation of approximately $388,000. Once again the majority of the projects were in the area of septic system upgrades (30) and manure runoff containment (27). To date 64 projects have been completed at a total grant payment of $341,000. The total capital cost of implementing this work was approximately $983,000.

Project	Number Approved	Number Complete	Grant $ Received	Grant $ Allocated	Total Capital	Estimated Cost
Septic	30	26	$ 49,427	$ 58,475	$135,802	$ 139,163
Access	5	5	$8,294	$ 9,319	$ 11,059	$28,556
Milkhouse	10	8	$ 22,531	$ 26,400	$ 45,471	$52,965
Manure	27	25	$260,835	$293,745	$790,410	$ 993,150
Totals	72	64	$341,085	$387,939	$982,742	$1,213,834

CURB Program Levels of Activity 1991-1996

Since the initiation of the CURB Program in September of 1991, 365 projects were approved by the local steering committee for a total grant allocation of nearly $1.8 million. Of those projects 323 were completed, a completion rate of 88%, and approximately $1.48 million in grant was paid out to landowners. The total capital cost of the completed projects was just over the $4 million dollar mark.

Year	Number Approved	Number Complete	Grant $ Received	Grant $ Allocated	Total Capital	Estimated Cost
1991	20	19	$ 40,250	$ 55,363	$116,612	$122,957
1992	91	76	$352,999	$466,316	$ 955,700	$1,099,546
1993	95	84	$365,792	$453,716	$1,001,070	$1,241,353
1994	87	80	$384,184	$422,725	$1,202,13	$1,221,320
1995	72	64	$341,085	$387,939	$ 982,742	$1,213,834
Totals	365	323	$1,484,310	$1,786,059	$4,258,257	$4,899,010

High Priority Target Achievements

The UTRCA CURB Plan completed in 1989 identified surface water quality impacts affecting the Fanshawe, Wildwood and Pittock Reservoirs. Inputs ranged from faulty household septics, livestock access to streams, sewage plant and industrial discharges, soil erosion and milkhouse washwater discharges.

From this original study it was determined that within the three reservoir watersheds there were approximately 1500 potential high priority remedial projects to be completed with respect to livestock operations. This included 154 livestock access sites, 312 milkhouse washwater discharge sources, 215 manure runoff sites and 815 impacting household septic systems.

With 97 manure storage projects (or 45% of the total identified high priority sites) being completed over the course of the program it would seem that this is where the greatest success occurred. However, not identified as high priority in the original CURB report was the impact from the winter spreading of manure on farms where inadequate manure storage existed. During the implementation phase a number of the 97 manure projects completed was to increase the manure storage on the farm from under 180 days to 240 days or greater.

As for the other project areas 11.5% of the milkhouse washwater, 15% of the livestock access and 20% of the household septic sources identified as high priority were completed. It must be noted that during the course of the implementation phase a number of these identified high priority projects may have been completed as part of another program (ie, Land Stewardship II, Environmental Farm Plan) or by the landowner themselves. Also, there is the possibility that a number of new priority sites may now exist that did not at the time of the study phase.

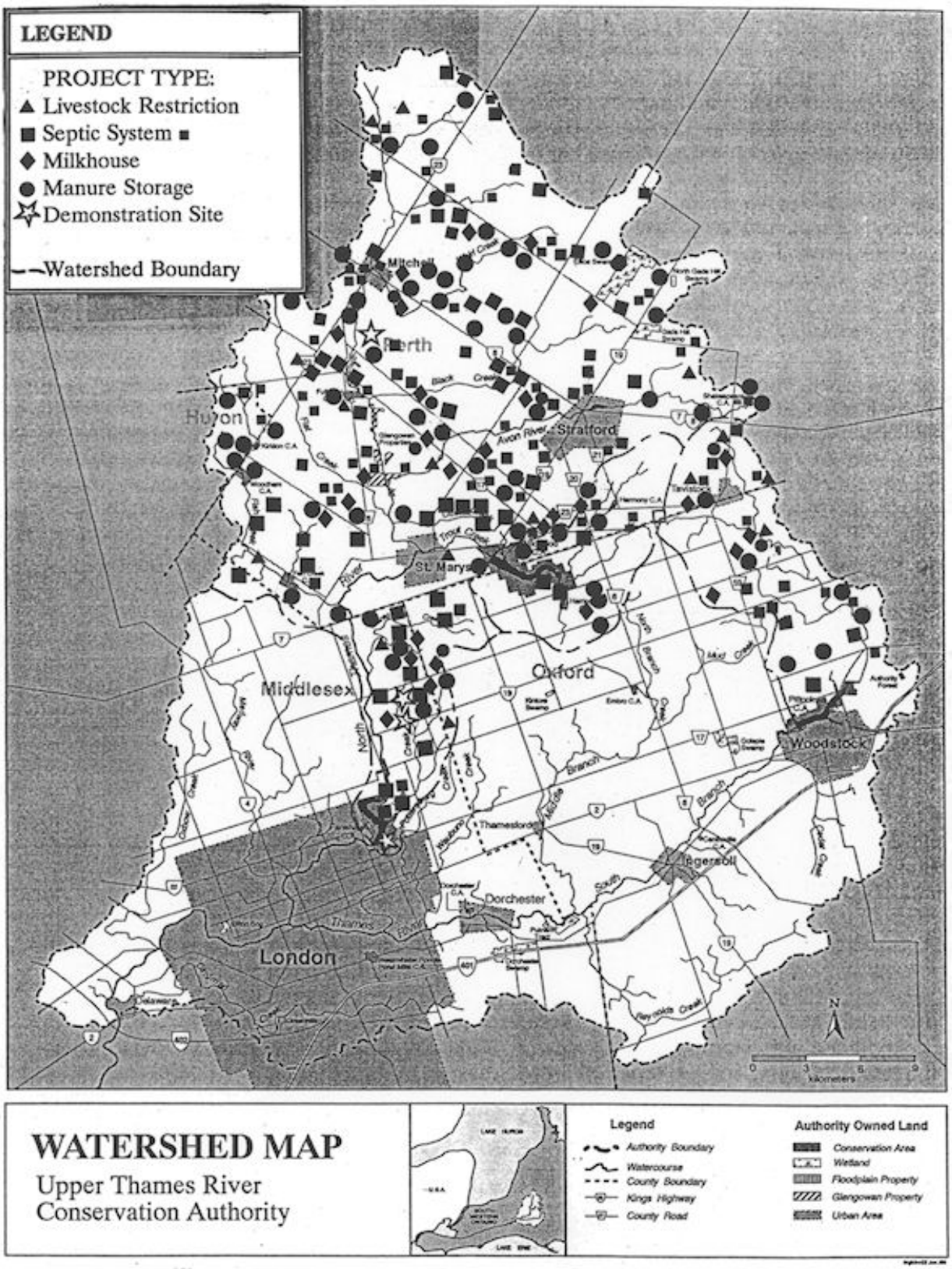


Figure 1: UTRCA Watershed - Approved CURB Project Sites

Water Quality at Public Beaches

Fanshawe Beach - Since the installation of the swimming curtain and ultra violet light disinfection system at Fanshawe Beach in 1988 the swimming area has remained open throughout the summer months. The only closures to occur within the swimming area were a result of poor quality lake water over topping the curtain. Over the past four years water quality levels with respect to bacterial parameters outside of the beach curtain area have remained fairly low. However, algae blooms have continued to plague the lake and would likely have resulted in some beach closure time.

Wildwood Beach - In the early to mid 1980's Wildwood Reservoir was unaffected by water quality problems. However, in 1988 a trend began which would see the beach close for extended periods in the summer over the next four years mostly due to high bacteria counts. Over the past four years the beach has been able to remain open until the Labour Day weekend.

Pittock Beach - The main shore beach at Pittock Reservoir has been closed at some point during the swimming season each year over the past twelve years. The majority of the closures have been due to temporary or long term increases in bacteria levels. There have also been closures due to algae blooms occurring at the beach area. Since the late 1980's a reduction in bacteria concentrations of approximately 75% have been seen. 1995 also marked the first year in many that the beach was not closed due to elevated bacterial levels. However, it was closed as a result of algae for two days.

UTRCA Water Sampling Program

Over the past year water quality sampling was conducted on a bi-weekly basis beginning on June 6 and continuing until September 17. Water quality analysis included both bacterial and chemical parameters.

Wye Creek

A subwatershed of the Wye Creek watershed was selected as a study area to determine

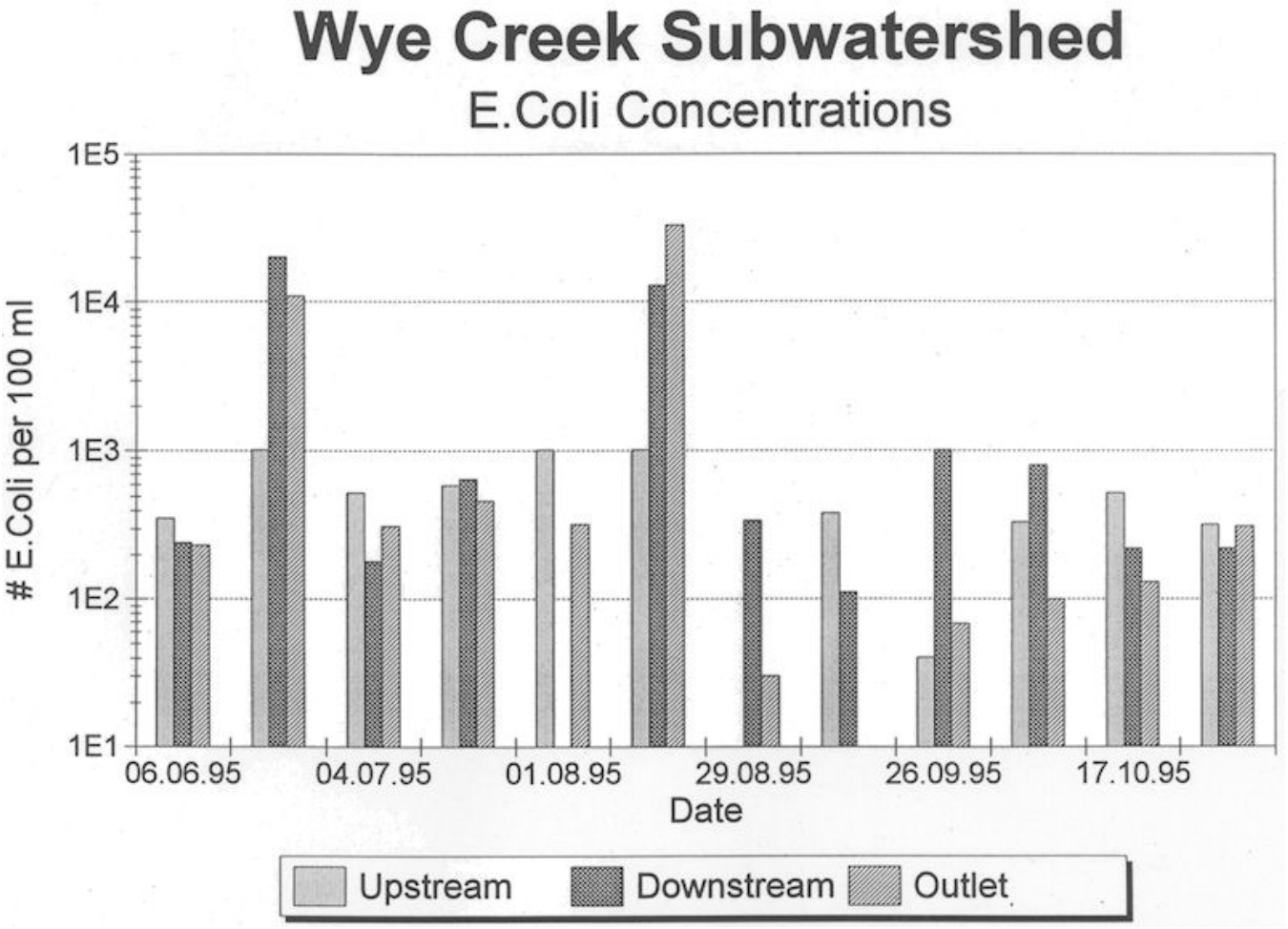
what effect if any remedial projects completed during the CURB implementation phase would have on surface water quality. Within the Wye Creek subwatershed two demonstration projects were completed. These were a roofed covered manure storage facility and a cattle access restriction project. As part of the cattle access restriction demonstration a low flow livestock crossing was constructed. Besides the two demonstration projects several household septic system upgrades, a second livestock restriction and a manure runoff containment project was also completed.

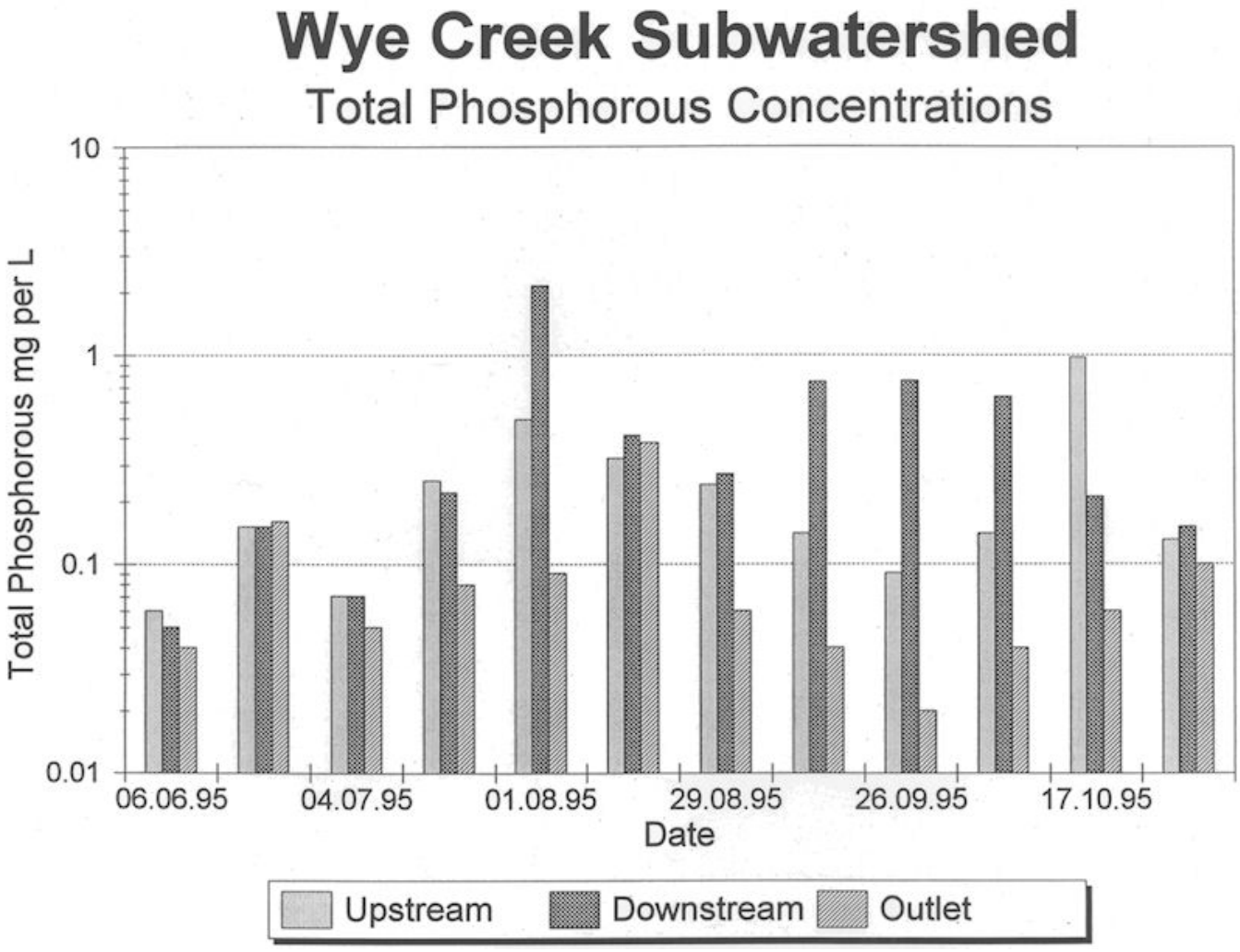
Again in 1995, as in past years a clear reduction in chemical and bacterial results could not be seen between the upstream and outlet monitoring sites within the subwatershed. However, E.coli results at the downstream and outlet sites provided some of the lowest concentrations recorded since sampling began. As for phosphorus concentrations trends were similar to those seen over the past few years.

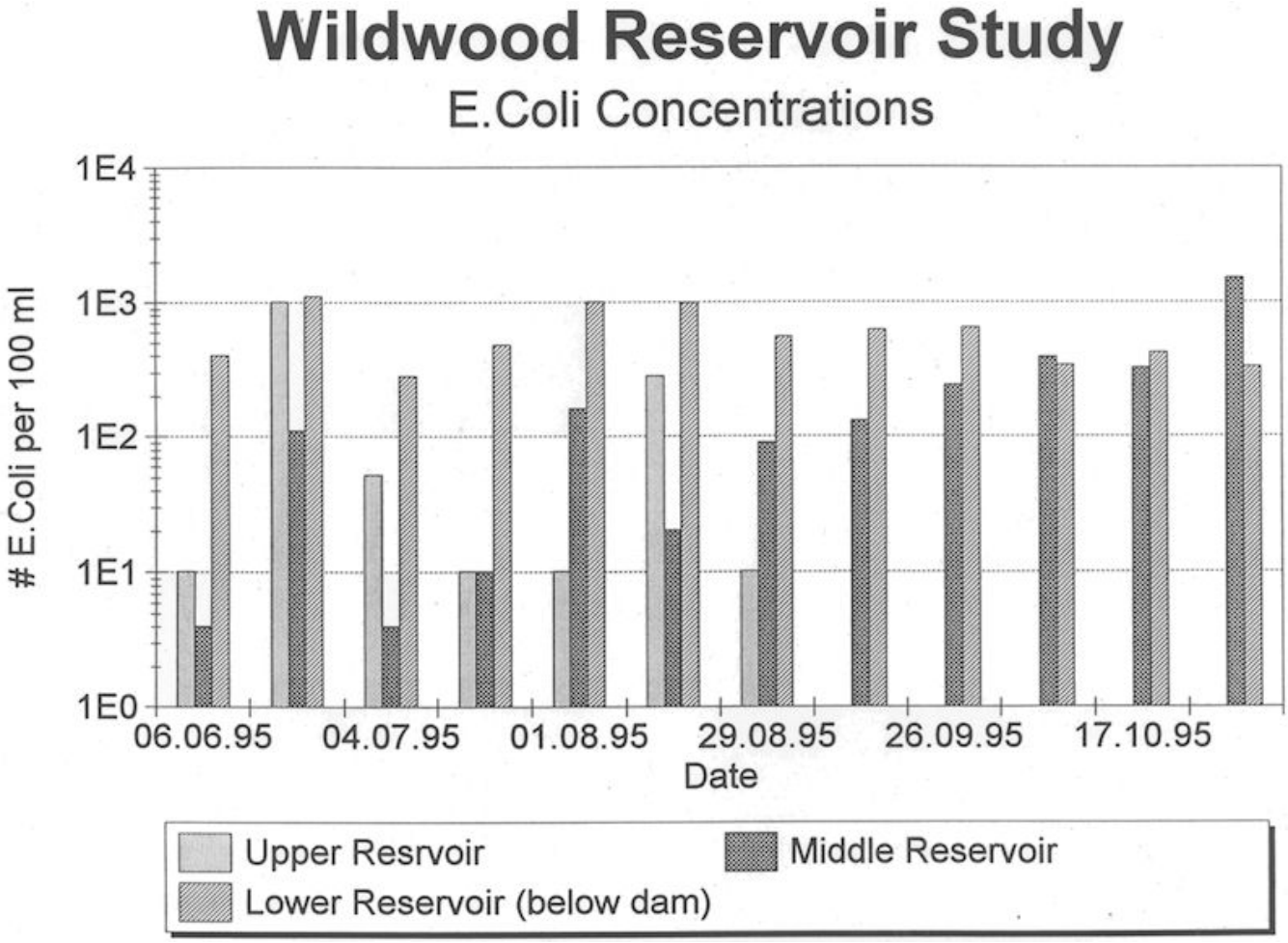
Wildwood Reservoir

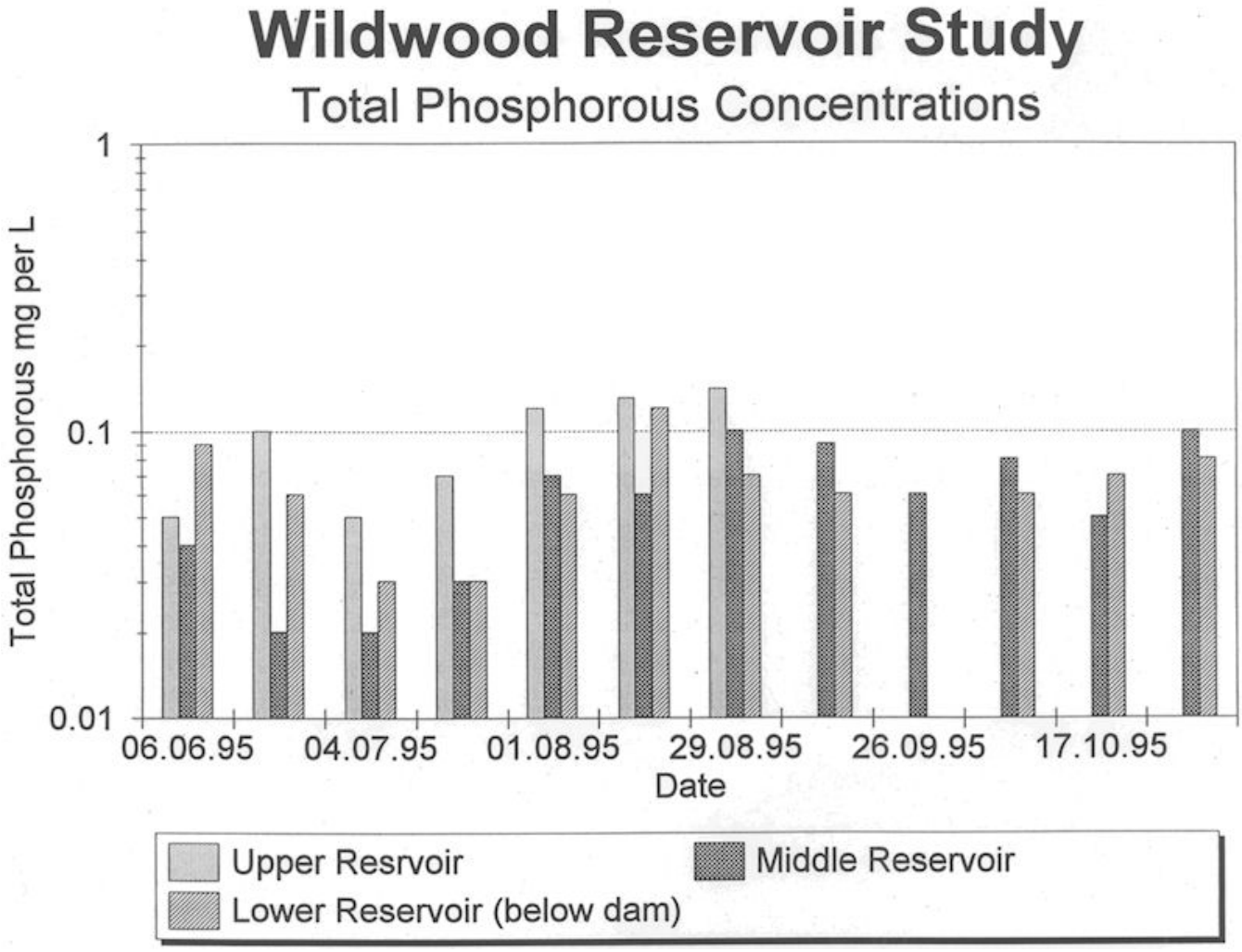
Results from the Wildwood Reservoir water quality monitoring program provided two interesting observations. Based on trends developed by charting results at upper, middle and lower reservoir sites an increase can be seen in E.coli concentrations from the upper reservoir to below the dam. The concentrations move from being below the Ministry of Environment and Energy guideline of 100 counts per 100 ml of water to being above this guideline by the time it outlets below the dam. One possibility for this occurrence may be that sediments located at the bottom of the reservoir near the dam have become bacteria enriched. Since the dam is a bottom draw (to allow the water to outlet the reservoir) some of these sediments may be drawn out with the flow and are resulting in the increased bacterial concentrations at this monitoring site.

When looking at the phosphorous concentrations the opposite seems to occur. Total Phosphorous concentrations at the upper reaches of the reservoir are generally higher than those recorded at the reservoir outlet. One reason for this may be due to the fact that a certain amount of the phosphorous is used up by plant and animal life prior to the water reaching the lower reservoir.


Wye Creek Subwatershed
E.Coli Concentrations
E.Coli per 100 ml
1E5
1E4
1E3
1E2
1E1
06.06.95
04.07.95
01.08.95
29.08.95
26.09.95
17.10.95
Date
Upstream
Downstream
Outlet


Wye Creek Subwatershed
Total Phosphorous Concentrations
Total Phosphorous mg per L
10
1
0.1
0.01
06.06.95
04.07.95
01.08.95
29.08.95
26.09.95
17.10.95
Date
Upstream
Downstream
Outlet


Wildwood Reservoir Study
E.Coli Concentrations
E.Coli per 100 ml
1E4
1E3
1E2
1E1
1E0
06.06.95
04.07.95
01.08.95
29.08.95
26.09.95
17.10.95
Date
Upper Resrvoir
Middle Reservoir
Lower Reservoir (below dam)


Wildwood Reservoir Study
Total Phosphorous Concentrations
Total Phosphorous mg per L
1
0.1
0.01
06.06.95
04.07.95
01.08.95
29.08.95
26.09.95
17.10.95
Date
Upper Resrvoir
Middle Reservoir
Lower Reservoir (below dam)

CURB Extra

The CURB Implementation Program developed to provide financial incentives to rural landowners was much more than just a grant program. During its four and a half years of existence it provided a vehicle for the development of innovative and alternative technology. These technologies included the first ever use of constructed wetlands to treat manure runoff. Solar powered watering systems for livestock was another innovation which was furthered during the CURB Program.

The Rural Beaches Strategy Program (the study phase prior to CURB) identified faulty household septic systems as a major contributor to the surface water quality problems. During the CURB Program several new septic systems were studied to determine their effectiveness. These included systems such as sand filters, peat beds and subsurface flow wetlands. Roofed solid manure storages, which allowed a livestock operation to remain a solid manure operation without having to deal with liquid runoff became fairly common over the course of the program.

CURB staff through their dealings with the rural environment were able to determine the effectiveness of agricultural policies and by-laws. Due to this exposure insight was provided on how these policies could possibly be better used to serve their intended function. A great deal of extension and information was provided through the program. This included factsheets, newsletters, tours, talks, information days, displays and more.

CURB Program Effect

There are four main things that the CURB and Rural Beaches Strategy Programs should be remembered for:

i) **attitude** - these programs provided a great deal of information into what was causing water quality problems throughout the province. It allowed for both the rural and urban sectors of the population to gain a thorough understanding that problems exist on both sides of the fence and that we all have an impact on water quality. In particular it let agriculture see where these problems were and what could be done about them. To the credit of the

agricultural community they responded by accepting their responsibilities and by making great strides in cleaning up the problems.

ii) **partnerships** - these two programs were founded on the principal of partnerships and continued that way till the CURB Program came to a close. Representation from various ministries, municipalities, agricultural groups and boards of health all helped to determine the problems as well as to target the cleanup so that it could be as effective as possible.

iii) **followup** - the CURB Program was the first program of its kind to monitor after implementation to determine what kind of effect the work was having on local water quality.

iv) **innovation** - as mentioned earlier this program explored, and developed new technology that would provide a better and more cost effective means to remediate existing problems.

Future Programs

The Upper Thames River Conservation Authority has a lengthy involvement in surface water quality issues related to the rural and agricultural sector. This involvement has included studies, implementation, demonstrations, developing new technologies and educating the public. This will be done as part of two continuing programs, one dealing specifically with water quality and the other with soil erosion.

The Authority will continue to address water quality and soil erosion issues by providing in-field technical advice and supervision, designing and evaluating projects and researching, developing and transferring progressive technology.

The UTRCA will continue to promote and help in the implementation of Best Management Practices in the watershed, as well as develop and assess innovative and cost effective alternatives.