

April 14, 2004

Dr. K. Helena Jaczek
Commissioner of Health Services
And Medical Officer of Health
The Regional Municipality of York
17250 Yonge Street
Newmarket, ON L3Y 6Z1

RE: **WEST NILE VIRUS 2003 UPDATE
AND 2004 ACTION PLAN (5.7)**

Dear Dr. Jaczek:

This will confirm that at the meeting of Council held on April 13, 2004, Clause 4 of Report No. 19, was approved as follows:

"That the staff report titled "West Nile Virus 2003 Update and 2004 Action Plan", dated April 5, 2004, be received;

And that the Town of Markham continue to support the Region of York, Health Services Department in their activities with respect to control of the West Nile Virus in 2004, in promoting education and reducing, where appropriate, standing water on public property;

And that the Town of Markham continue to work in partnership with the Region of York in 2004 to communicate and distribute information about the West Nile Virus;

And that staff be authorized to continue working with the Region of York Health Services Department by participating in the meetings of the West Nile Virus Control Committee;

And that the Town of Markham website include a link to the Region of York Health Services Department;

And that the Town of Markham Internet and Intranet sites be updated, when appropriate, with current, factual information about the West Nile Virus and how the general public can protect themselves from exposure;

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And that staff erect bird and bat houses in appropriate locations in an effort to naturally reduce mosquito populations;

And further that, Council approve funding in the amount of \$95,000, to cover the cost of:

- One 150-day employee dedicated to surveillance activities, database production, communications and reduction of standing water on Town property, from April to September 2004, at a cost of \$25,000 (including fringe benefits) and overhead.
- \$50,000 be established: to contract a high-pressure flusher truck as an enhanced approach to reducing mosquito breeding in those areas without catchbasins; to erect bat boxes at appropriate Town-owned properties, and; to pilot fathead minnows and solar-powered windmill aerators in all storm water management ponds within Markham.
- One 150-day By-Law Enforcement Officer dedicated to enforcement of the Standing Water By-Law, from April to September 2004, at a cost of \$20,000 (including fringe benefits and overhead).

And that staff seek to gain reimbursement from the Region of York for the cost of the high-pressure flusher truck;

And that staff approach the flusher truck contractor to request that Town of Markham signage/logo be displayed on the truck when being operated for Town purposes;

And further that details of the 2004 Communications Strategy be provided to Members of Council and staff, in addition to statistics on the activities of the flusher truck during 2003 at the next Finance & Administrative Committee meeting."

Yours sincerely,



Sheila Birrell
Town Clerk

Copy to: Stuart Taylor, Director, Strategic Services
 Victoria McGrath, Manager, Environmental Leadership
 James Allen, Chief Information Officer
 Bill Wiles, Manager, By-law Enforcement & Licensing
 Judy Kee, Committee Clerk



REPORT TO Finance and Administrative Committee

TO: Mayor and Members of Council

FROM: Stuart Taylor, Director, Strategic Services

PREPARED BY: Victoria McGrath, Manager Environmental Leadership

DATE OF MEETING: 2004-Apr-5

SUBJECT: West Nile Virus 2003 Update and 2004 Action Plan

RECOMMENDATION:

THAT the staff report titled "West Nile Virus 2003 Update and 2004 Action Plan", dated April 5, 2004, be received;

AND THAT the Town of Markham continue to support the Region of York, Health Services Department in their activities with respect to control of the West Nile Virus in 2004, in promoting education and reducing, where appropriate, standing water on public property;

AND THAT the Town of Markham continue to work in partnership with the Region of York in 2004 to communicate and distribute information about the West Nile Virus;

AND THAT staff be authorized to continue working with the Region of York Health Services Department by participating in the meetings of the West Nile Virus Control Committee;

AND THAT the Town of Markham website include a link to the Region of York Health Services Department;

AND THAT the Town of Markham Internet and Intranet sites be updated, when appropriate, with current, factual information about the West Nile Virus and how the general public can protect themselves from exposure;

AND THAT staff erect bird and bat houses in appropriate locations in an effort to naturally reduce mosquito populations;

AND FURTHER THAT, Council approve funding in the amount of \$95,000, to cover the cost of:

- One 150-day employee dedicated to surveillance activities, database production, communications and reduction of standing water on Town property, from April to September 2004, at a cost of \$25,000 (including fringe benefits) and overhead.

- \$50,000 be established: to contract a high-pressure flusher truck as an enhanced approach to reducing mosquito breeding in those areas without catchbasins; to erect bat boxes at appropriate Town-owned properties, and; to pilot fathead minnows and solar-powered windmill aerators in SWMPs within Markham.
- One 150-day By-Law Enforcement Officer dedicated to enforcement of the Standing Water By-Law, from April to September 2004, at a cost of \$20,000 (including fringe benefits and overhead).

PURPOSE:

The purpose of this report is to outline how staff provided support to York Region Health Services Department in their activities with respect to control of the West Nile Virus in 2003 and to present how the Town of Markham can continue to support the Region in 2004. In addition, the report outlines actions the Town of Markham should initiate to protect against the West Nile Virus as best we can.

BACKGROUND:

On May 13, 2003, Council approved a staff report outlining how Markham could support York Region's Health Services Department in their activities with respect to control of the West Nile Virus. As a result, a Standing Water By-Law was enacted; staff were hired to oversee the West Nile Virus control program on private and public lands, including education and outreach initiatives and source reduction and surveillance activities; a link to York Region's Health Services Department was established on Markham's internet and intranet, and; regular updates were provided to keep the public and staff aware of new information related to West Nile Virus in the community.

Under the *Health Protection and Promotion Act*, responsibility for Health Services falls to the Regional Municipality of York. The Region of York, Health Services Department, Public Health Branch leads health-related initiatives, including the West Nile Virus and has assumed responsibility for the major activities relating to the control of the West Nile Virus.

West Nile Virus Overview

The West Nile Virus (WNV) is a mosquito-borne virus that can cause flu-like symptoms and, rarely, encephalitis (inflammation of the brain or membrane protecting the brain) in humans. The WNV is spread to humans by the bite of an infected mosquito. The virus is spread through endemic means, where an infected mosquito passes the WNV to its young and by a mosquito biting an infected bird and then biting its next victim. Wild birds are the main host for the virus. Dead crows can be an indicator that the virus has reached the area because they are the most susceptible. It has also been discovered that WNV is fatal among squirrels.

West Nile Virus and Human Illness

The chance of humans becoming seriously ill from WNV is very small. This is because most humans are able to overcome any infection from WNV by the normal response of their immune system.

According to the U.S. Centers for Disease Control and Prevention, only one in 150 infected, or, less than one per cent, will progress to the most severe symptoms. Most people with WNV infection will have no symptoms or only mild flu-like symptoms.

Provincial Leadership

On March 22, 2003, the Ontario Ministry of Health and Long Term Care released a seven-point action plan to combat WNV, including a public education campaign. The Ministry's approach included:

- Expanded laboratory services to keep testing in Ontario
- Enhanced surveillance
- Extensive public education campaign
- Mosquito control activities
- Establishing a new, early warning system
- Conducting a pilot study to determine human exposure to WNV
- Funding on-going research to discover the best way to fight the WNV

The Ministry also proposed ongoing research, community consultation and consultation with national and international stakeholders to enable the province to have the latest information on mosquito control techniques, surveillance methods and results, and successful education approaches.

In addition, the Ministry of the Environment ensured consistency in the pesticide programs implemented by regional health units by coordinating application licenses within the province.

Other provincial initiatives included a "Fight the Bite" prevention campaign, posters, media print ads and brochures distributed to Ontario residents.

York Region Targeted the Culex Species of Mosquito

Although there are several species of mosquito known to carry WNV, York Region Health Services Department primarily targeted the *Culex* species in its control program in 2003. *Culex* is the most common species of pest mosquito in urban and suburban settings. This species typically lays eggs:

- In tin cans, buckets, discarded tires and other artificial containers that hold stagnant water;
- In untended bird baths, clogged rain gutters and plastic wading pools that hold stagnant water;
- In storm drains and catch basins in urban areas, and;
- In septic seepage and other foul water sources above or below ground level.

It is important to understand the habitat of this species because it increases the public's understanding that the spread of WNV is contained mostly within the urban environment.

The *Culex* species lives in the suburban and urban environment where there are ready sources of standing, stagnant water. Catch basins provide a perfect environment for the *Culex* mosquito species to breed. The species that live in natural areas, such as ravines, wetlands, woodlands and

floodplains are plentiful but not typically of the *Culex* species and, therefore, need not be considered a threat.

The York Region Health Services Department recommends a multi-jurisdictional approach to dealing with the West Nile Virus:

Surveillance Activities

- Report dead birds found on municipal property to York Region Health Services
- Direct calls regarding dead birds to Health Connection
- Assist Health Services in identifying mosquito breeding sites (e.g. catch basins)

Source Reduction

- Maintain inventory of mosquito breeding sites
- Work toward eliminating potential mosquito breeding sites on municipal property (e.g. improve drainage in ditches, catch basin maintenance)
- Enact a Standing Water By-Law
- Initiate enforcement of municipal by-laws (e.g. Property Standard) and/or implement strategies to eliminate mosquito breeding sites on municipal property

Vector Control

- Reduce mosquito breeding grounds on Municipal property

Communication/Education

- Assist in the distribution of communications developed by the Health Services Department
- Educate Municipal workers on risks of WNV, source reduction strategies and personal protection
- Actively participate in the meetings of the WNV Control Committee, made up of the nine area municipalities in York Region

Update on York Region Activities

Staff at the York Region Health Services Department provided an update on the 2003 WNV Control Activities at Regional Council January 22, 2004, (See Appendix A). This report outlined the steps that had been taken to control WNV in York Region in 2003 which included using pesticides to kill mosquitoes at the larval stage. These pesticides included:

- **Methoprene**

Methoprene is used as a larvicide because it artificially stunts the insects' development, making it impossible for larval insects to mature to the adult stages and, thereby, preventing them from multiplying. Methoprene lasts for thirty days in the environment it is deposited.

- **Bacillus Thuringiensis Israelensis (BTI)**

BTI is an invertebrate growth-inhibiting bacterium that is eaten by the mosquito larvae and causes them to die prior to achieving adulthood. Due to its dissipation rate of three or four

days, the larvicide BTI was only applied to standing water if complaints were received and larvae was present.

In addition to larviciding, York Region held public information sessions related to the possible use of malathion as an adulticide. The Medical Officer of Health, under the *Health Protection and Promotion Act*, O. Reg. 199/03, may make a determination, based on local risk assessment about whether action, including the use of adulticides, is required to reduce the risk of WNV. The Medical Officer of Health indicated that the use of adulticides may be necessary if an outbreak of WNV occurred in humans. This did not occur and adulticiding was not undertaken in 2003.

2003 Review of WNV control in Markham

The following actions were implemented in 2003 to control WNV in Markham and support York Region Health Services Department:

1. Supporting the Region of York Health Services

The Town of Markham supported the Region of York Health Services Department control the WNV by participating in the following:

- Assisted with surveillance activities, including: reporting dead birds found on municipal property; directing calls regarding dead birds to the York Region Health Services Department or the Health Connection line; Assisting York Region Health Services in identifying mosquito breeding sites where action has been taken to reduce or eliminate standing water (e.g. roadside ditches).

2. Increased Customer Service related to West Nile Virus control

The 150-day employee was responsible for the following coordination around public property:

- Responding to customer requests for site investigation
- Improving awareness and education of staff and residents
- Maintaining a database of action requests
- Continuous surveillance of potential "hot spots"
- Liaising with the Region of York on the WNV Control Committee and
- Coordinating street flushing or other control requirements, which may include contacting the Region of York or their contractor

Other efforts included:

- Monitoring Storm Water Management Ponds (SWMPs) for mosquito larvae on a bi-weekly basis, mapping SWMPs for the Region, issuing work orders if refuse was found or found to be holding water. A total of thirty-six SWMPs were monitored over the summer with evidence of mosquito larvae in twelve SWMPs at some point over the summer. Two SWMPs, at Lemsford Drive and on Carlton

Road between Kennedy and McCowan, consistently showed evidence of mosquito larvae and could be excellent candidates for either a fathead minnow pilot or a solar powered windmill aerator pilot subject to coordination with Operations staff.

- Maintaining a database where members of the community have called in with concerns and provide surveillance of these locations over the spring and summer in an attempt to reduce or eliminate standing water, where appropriate. Approximately 167 calls were received with concerns related to standing water on public property. Each complaint generated an inspection and action based on the inspection that ranged from repairing the area to adding the location to the flusher truck's list. Forty-two of these calls related to rear yard catchbasins with twenty-five of the forty-two resulting in Operations staff placing screening over the catchbasin to reduce the potential for mosquito breeding. The screening was subsequently removed in the fall to eliminate the potential for blockage during the spring snow melt.
- Working toward eliminating potential mosquito breeding sites on municipal property by improving drainage in ditches and filling depressions where standing water may develop and working with railway companies to eliminate standing water on their lands.
- Investigating appropriate locations to erect bird and bat houses across the Town to reduce the mosquito population. The following locations may be appropriate and bat boxes could be installed in 2004 further to discussions with facility staff:

ID	Location	Area
1	Pamona Valley Tennis Club	Thornhill
2	Thornhill Village Library	Thornhill
3	German Mills Community Centre	Thornhill
4	Heintzman House	Thornhill
5	Royal Orchard Bridge over Bayview	Thornhill
6	Beaupre Park	Thornhill
7	Unionville Library	Unionville
8	Too good Pond Pavillion	Unionville
9	Crosby Arena	Unionville
10	Markham Rugby Club on Austin	Unionville
11	Parks Building @ Calvert & MaCrill	Unionville
12	Milne Park Pavillion	Markham
13	Markham Library	Markham
14	Rougebank Community Center	Markham
15	Springdale Park	Markham

3. Flusher Truck

The Region of York identified open, standing water as an excellent breeding site for *Culex* mosquitoes. In an effort to provide an enhanced approach to WNV control in Markham, a flusher truck, utilizing a high-pressure water flush on Markham streets with no catchbasins effectively disturbed standing water in ditches during periods when there was no significant rainfall, thereby reducing the threat of mosquito breeding. The flusher truck was used on a total of twelve days over the months of June, July, August and September. Some of the roads covered by the flusher truck included Miller Avenue, Babcombe Drive, Thomas Reid Road, Personna Boulevard, and Cachet Parkway. The total cost of using the flusher truck over the summer was \$9975.36.

4. Public Education Information

Communications were developed that aimed to improve awareness and education of staff and residents including links on the Markham internet and intranet featuring regular updates, frequently asked questions and links to the Region and the Province. The two key objectives of the communication included: educating staff and residents on the importance of eliminating *culex* mosquito breeding grounds around standing water, including flushing water in pools, swales, birdbaths, old tires, flower pots and rain barrels every five to seven days, and; ensuring the public understand the relatively low risk posed by the virus and how to mitigate the risk.

5. Standing Water By-law Enacted

Markham enacted a Standing Water By-Law in May 2003 requiring that a yard shall be free of:

- Depressions capable of holding standing water for more than five days
- Debris of any kind capable of holding standing water
- Excavations on the property capable of holding standing water for more than five days
- A swimming pool, hot tub, wading pool or artificial pond unless it is maintained in good repair and working condition

In 2003, the By-Law Enforcement & Licensing Division was allocated funding to hire a 150-day contract position to enforce the Standing Water By-law on private lands within the Town. A Provincial Offences Officer was hired to fill the position and the individual responded to over one hundred calls from residents concerned about standing water and the associated health risk with the West Nile Virus. The Officer also fielded numerous general inquiries from the public providing information and advice.

The Officer responded to each of the property related calls by completing a site inspection, contacting the property owner/ tenant, and following up with the caller. Each case required the Officer would make several visits to the property, first to assess the situation and then make follow up calls until the matter was resolved. A number of calls were referred to By-Laws through Ward and Regional Councillors. In the latter part of 2003, calls were received

through the Contact Centre and forwarded to By-laws through the CARE system for process tracking and action.

Results of the 2003 program were positive. The Officer found the majority of property owners unaware of the health risk and very cooperative once they were advised of the action necessary. Citizens were thankful for the service when the Officer called callers back to advise of the Town's response and action. There were situations where compliance was not achieved. In these matters the Officer issued an "Order to Comply" setting specific remedies and timelines. At five locations, residents failed to comply with the Order to remove standing water from swimming pools. As a result, the Town hired a third party contractor to remove the standing water from the pools, invoicing the cost back onto the property owner.

For 2004, By-Laws anticipates an equal number of calls and anticipates having to deal with similar numbers of unused pools where staff will have to proactively enforce the By-Law. Providing this service requires a dedicated resource. The division requests funding for a 150-day contract position at a cost of \$20,000.00 in order to provide a program this year.

WNV control program in Markham in 2004

In addition to continuing the work undertaken in 2003, the WNV control program in 2004 will include the following:

- Erecting twenty bat houses at appropriate locations on Town-owned facilities, to be coordinated by staff
- Installing solar-powered windmills in two SWMPs that were known to have mosquito larvae, as identified by York Region, in 2003, and monitoring their effectiveness. Solar-powered windmills are currently being used in the City of Vaughan to constantly recharge and disturb the water in those SWMPs.
- Introducing fathead minnows into two SWMPs that were known to have mosquito larvae, as identified by York Region, in 2003, and monitoring the effectiveness. Fathead minnows are natural mosquito predators and are being promoted by the Ministry of Natural Resources.
- Providing more directional flushing by the flusher truck to ensure more substantial and thorough agitation of standing water, particularly in driveway culverts

CONCLUSION

York Region Health Services continues to lead control of WNV in 2004

The Region of York, Health Services Department, Public Health Branch will maintain the lead role in the control of the WNV and will actively promote protection and source reduction through education and outreach. The Town of Markham can support the Region of York, Health Services Department in education, outreach and surveillance activities related to WNV within the community.

Promoting public education and outreach to the community on WNV control and what the public can do to protect themselves is the best first step towards supporting the Region. By providing current and continuously updated information on the Town's website, the community page in the

local paper and distributing the flyer provided by the Region, the Town can work with the community to provide a message that reduces fear and promotes a preventative approach.

This report includes a summary of the WNV control program in Markham in 2003 and recommends continuing that role in 2004. Town staff will work co-operatively with the Region of York, Health Services Department to provide support and information to ensure a coordinated approach to preventing WNV. However, the use of larvicide and adulticide will reside with the Region of York, Health Services Department, Public Health Branch.

FINANCIAL CONSIDERATIONS:

The cost of the recommendations in this report are estimated to be;

- One 150-day employee dedicated to surveillance activities, database production, communications and reduction of standing water on Town property at a cost of \$25,000 (including fringe benefits and overhead).
- \$50,000 be established: for a high-pressure flusher truck as an enhanced approach to reducing mosquito breeding in those areas of Markham without catchbasins; to erect bat boxes at appropriate Town-owned properties; to pilot fathead minnows and solar-powered windmill aerators in SWMPs within Markham.
- One 150-day By-Law Enforcement Officer dedicated to enforcement of the Standing Water By-Law at a cost of \$20,000 (including fringe benefits and overhead).

These funds have been incorporated into the 2004 Proposed Operating Budget.

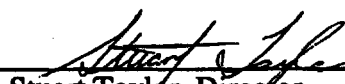
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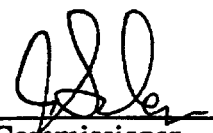
The following departments may have responsibility for some portion of the WNV control in the Town of Markham:

- Corporate Communications
- Operations
- Enforcement and Licensing
- Strategic Services

ATTACHMENTS:

Appendix 'A' – Region of York Report, dated January 23, 2004, "2003 West Nile Virus Control Activities"


Stuart Taylor, Director
Strategic Services Department


Jim Sales, Commissioner
Community and Fire Services

Clause No. 1 in Report No. 1 of the Health and Emergency Medical Services Committee was adopted, without amendment, by the Council of The Regional Municipality of York at its meeting on January 22, 2004.

1

2003 WEST NILE VIRUS (WNV) CONTROL ACTIVITIES

The Health and Emergency Medical Services Committee recommends the adoption of the recommendations contained in the following report, December 17, 2003, from the Commissioner of Health Services:

1. RECOMMENDATIONS

It is recommended that:

1. Health and Emergency Medical Services Committee and Regional Council receive this report for information purposes regarding the West Nile virus (WNV) activities in 2003.
2. The Regional Chair write a letter to the Premier of Ontario and the Minister of Transportation requesting that construction standards for catch basins be reviewed in an effort to reduce potential mosquito breeding sites as an ongoing long-term preventative measure for WNV activity in the Province of Ontario, and that this letter be copied to the Minister of Health and Long-Term Care, the Minister of Environment, the Chief Medical Officer of Health, Council of Ontario Medical Officers of Health, the Ontario Public Health Association and local area municipalities.
3. The Regional Chair write a letter to the Premier of Ontario, the Minister of Environment, the Toronto Regional Conservation Authority and the Lake Simcoe Region Conservation Authority requesting that construction standards for storm water retention ponds be reviewed in an effort to reduce potential mosquito breeding sites as an ongoing long-term preventative measure for WNV activity in the Province of Ontario, and that this letter be copied to the Minister of Health and Long-Term Care, the Minister of Transportation, the Chief Medical Officer of Health, Council of Ontario Medical Officers of Health, the Ontario Public Health Association and local area municipalities.
4. The Regional Clerk circulate this report to area municipalities for their information.

2. PURPOSE

The purpose of this report is to provide Health and Emergency Medical Services Committee and Regional Council with a summary of the activities related to the spread and control of West Nile virus (WNV) in 2003.

3. BACKGROUND

WNV is a potentially fatal mosquito-borne arbovirus that spreads in nature primarily through a bird-mosquito-bird cycle, spilling over into other species such as humans when there is a significant increase in the infected mosquito population. Most people who contract the disease will experience mild flu-like symptoms; however WNV can cause severe illness or death. In the past, it was believed that the elderly and the immune compromised were more susceptible to the disease; however recent findings indicate that all ages can be negatively impacted by WNV.

Although the virus was initially brought into Canada by migrating birds that had acquired the disease by mingling with infected birds in the United States, research has determined that the virus is now present in over-wintering mosquitoes and therefore is now endemic in Ontario.

In 2002 Ontario experienced its first human case of WNV and by the end of the year, there were 307 confirmed cases and 84 probable cases in the human population. Of these positive cases, 7 confirmed and 4 probable were York Region residents. Seventeen deaths occurred in Ontario in 2002 due to the virus.

In the United States, WNV human cases increased from 61 in 1999 to 4,161 in 2002. Due to this significant increase, it was anticipated that the level of WNV activity in the mosquito and bird populations, and subsequently the human population, would continue to increase in Ontario unless measures were undertaken to actively control the spread of the disease. Mosquito control measures needed to be implemented and surveillance and educational programs needed to be enhanced from the previous year, to try and mitigate the activity of the virus.

On May 16, 2003 Ontario Regulation 199/03 to the *Health Protection and Promotion Act* was filed (*see Attachment 1*). Ontario Regulation 199/03 requires a Medical Officer of Health to make a determination, based on a local risk assessment, whether action including the use of larvicides or adulticides is required to decrease the risk of WNV. Larviciding is the use of approved insecticides to kill larvae before becoming adult mosquitoes. Adulticiding is the use of approved pesticides to kill adult mosquitoes. The local risk assessment weighs the level of risk to the public from WNV based on the most current evidence of local WNV activity including WNV in the human population and in non-human species.

Ontario Regulation 199/03 also indicates the circumstances under which a local Medical Officer of Health may consider the use of adulticides to decrease the risk of WNV.

Therefore a contingency adulticiding plan was implemented for York Region during the summer of 2003. The plan includes a registry for residents to advise Health Services if they have health concerns relating to adulticiding. In the event that adulticiding is necessary people on the registry living in the affected area would be notified by telephone 48 hours in advance that adulticiding would be occurring in the neighbourhood so that they would have time to take any precautions they deem necessary and/or make alternative living arrangements. The plan also included provisions for alerting the homeless population of adulticiding through outreach vehicles, posters at shelters and word of mouth. York Region Public Health met with member agencies of the York Alliance on Homelessness and Isolation to discuss how best to inform the homeless population of adulticiding activity. This plan was not activated in 2003.

3.1 West Nile Virus Activity in York Region

The following table provides the positive activity for WNV from 2001 to 2003.

Table 1
York Region WNV Statistics 2001-2003
(Update: November 18, 2003)

Activities	2001	2002	2003
Human Cases	0	7+ (4 Probable)	2
Birds	1	8	9
Mosquito Pools	0	14	6

The following table shows a comparison of positive human cases 2002 and 2003 for the surrounding regions. There were no positive human cases in Ontario in 2001.

Table 2
Surrounding Regions' WNV Human Cases 2002 - 2003
(Update: November 18, 2003)

Region	2002	2003
York Region	7+ (4 probable)	2
Toronto	127+ (41 probable)	44
Peel Region	38+ (20 probable)	10
Halton Region	56+ (3probable)	0
Simcoe Region	0	0
Durham Region	0	0

In 2003 the WNV program in York Region included:

- Increased educational initiatives
- Increased surveillance in mosquito bird and human populations
- Use of larvicides to control mosquito populations in targeted areas such as catch basins and some standing surface waters

- Contingency planning for adulticiding

Attachment 2 indicates the different activities that were undertaken for the WNV program and compares initiatives between 2002 and 2003.

4. ANALYSIS AND OPTIONS

In order to help control the spread of the WNV in the Regional Municipality of York, there were several initiatives that were undertaken or expanded from the program of 2002.

4.1 Education and Communication

Education remains one of the most important components of York Region's WNV program. It was vital in 2003 to ensure all residents knew about the disease and that they understood how they could play a part in the mitigation of the disease within the Region.

The public education program focused on two messages: personal protection (use of proper clothing and insect repellents) and the need to reduce the mosquito breeding habitats around their homes (changing water in the bird baths etc.). Information was made available through weekly planned media conferences and readily available on the York Region website. Pamphlets were developed and sent to all homes. Inspectors dropped off educational materials at garden centres and variety stores. Displays were placed in malls and libraries. Workshops were carried out in long term care facilities, public groups and businesses. Over a five-month period 101 workshops were given.

In April, letters were sent to all York Region companies with outside workers advising them of the need to reduce standing water on work sites and ensure that outside workers were protected against the virus by using personal protection. In addition, educational workshops were conducted by Health Protection Division staff to outside workers at both the regional and municipal levels of government.

The York Children's Water Festival presented a venue for teaching children in grades 3, 4, and 5 about WNV and the importance of eliminating standing water around their homes using an interactive display.

Other educational initiatives included two sets of open houses held in each of the nine municipal offices. The first round of open houses held in May and June were designed to advise residents about WNV and the larviciding program. The Ministry of the Environment (MOE) local officer and employees of the contracted pest control company as well as Health Department staff attended all meetings. The second set of open houses started in July and was held to update the public about the program and introduce the possibility of adulticiding should the need arise.

An open forum was held on August 20 to meet with environmental groups from York Region to discuss their concerns about the use of Malathion should adulticiding be needed. The MOHLTC as well as the MOE and Health Services representatives gave presentations. Environmental groups were advised that Health Canada's Pest Management Regulatory agency recently renewed the pesticide that would be used in adulticiding and concluded that its use for adult mosquito control in residential areas using ultra-low volume application did not pose a health concern.

In most cases, once positive WNV cases in mosquitoes, birds or humans were identified, information was distributed door-to-door by staff to residents living within a one kilometre radius of the positive findings.

Overall, the educational initiatives, combined with increased media coverage, were successful in ensuring residents were aware of the disease. In an analysis of the Rapid Risk Factor Surveillance System (RRFSS) survey conducted by the Health Services Department, the percentage of York Region adults aged 18+ who were asked if they had heard about WNV increased from 68% in 2001 to 98% in 2003.

4.2 Surveillance

Three types of surveillance are prescribed by the MOHLTC to detect the presence and spread of WNV. The bird, mosquito and human populations are studied to determine the presence of the virus and to determine actions that will be taken to mitigate the disease. The Geomatics Division of the York Region Planning and Development Services Department developed a database for Health Services that allows for the compilation of data and mapping of WNV activity. This allows the pattern of the disease to be tracked.

4.2.1 Bird Surveillance

Bird surveillance has been part of the overall WNV program for the last three years in Ontario. Since crows are very susceptible to the virus and die within a few days of contracting it, they act as sentinels (early warning system) for the disease and are sent for testing. In 2003 the collection of crows started in April, a month earlier than previous years, to determine if the virus was present in the environment earlier than first thought. In 2003 the first positive crow in Canada was found in the Newmarket area of York Region. Attachment 3 shows a map of the positive crows detected in 2003.

When positive bird results were identified, residents within a one kilometre radius were informed by door-to-door visitation by staff delivering pamphlets. Standing water on municipal property in the area was also checked for larvae and treated if necessary. All York Region residents were informed by media releases of the positive results.

During 2001 and 2002, residents were asked to bury birds that were not crows or crows that were not suitable specimens for testing. Health and Emergency Medical Services Committee requested that, in order to enhance service to residents, all birds be picked up in 2003. A private company was contracted to pick up all bird species. The contractor was asked to visit all locations after public calls and pick up birds, noting the type of bird

and the location for surveillance purposes. Suitable crow specimens were sent to the lab for WNV testing by the York Region Health Protection Division staff. A cap was put on the number of birds submitted for testing by the MOHLTC, in conjunction with Dr. Ian Barker of the Canadian Cooperative Wildlife Health Centre of the University of Guelph, so the positive crows reported are not a true reflection of the number of positive crows throughout the Region.

4.2.2 Mosquito Surveillance

The mosquito surveillance program consisted of three major components: response to standing water complaints, trapping adult mosquitoes and a storm water retention pond survey.

Staff responded to complaints by the public about standing water issues as part of the mosquito surveillance program. During the investigation, residents with the standing water were educated about the role of water in the spread of the disease and advised of remedial actions. Re-inspections were carried out and if the problem had not been rectified, the complaint was referred to the local municipalities for further action under their local by-laws.

Since mosquitoes are the vectors (carriers) of the disease it is important to detect the presence of positive adult mosquitoes. Traps designed to attract mosquitoes were set up weekly throughout the Region from the third week in May until mid-October to collect mosquito pools. Although York Region was originally allowed five traps from the MOHLTC, it was felt that more traps would be needed to understand the spread of the disease. Ten additional traps were set weekly by the hired pest control company and sent to a private lab. As positive birds and human cases were identified, additional traps were sent for testing and the program expanded to include 41 trap sites. Six pools were positive in 2003.

4.2.3 Human Surveillance

WNV is detected by blood specimens taken from humans exhibiting symptoms. During 2003, York Region Health Services Infectious Diseases Control Division investigated 89 suspect human cases. As of November 18, 2003 only two cases have been identified as positive for WNV within the Region. In 2002, 29 suspect cases were investigated and 7 cases were confirmed while 4 remain classified as probable. A seroprevalence study undertaken in 2002 by Halton Region Health Unit and the MOHLTC shows that 3.1 % of the population has already been exposed to the disease without becoming ill. Assuming York Region has a similar rate of infection described in the Halton Region study; this would translate into approximately 26,350 York Region residents who have already been exposed to WNV without becoming ill.

As part of the surveillance program, letters were sent in June, July and August to physicians and hospital infection control practitioners reminding them to be actively looking for patients with potential symptoms of the virus. Weekly communications with

the local hospitals by the Infectious Diseases Control Division were carried out to keep hospitals informed and to answer concerns about the virus.

4.3 Mosquito Control

Under present circumstances, the MOHLTC has endorsed the implementation of a larviciding program as an effective method to curb the spread of the virus. Controlling mosquitoes during their larval stage is preferred to controlling adult mosquitoes since larviciding offers greater efficacy and limited impact on the environment.

As part of the abatement program, York Region Health Services had contracted the services of a pest control company to provide a larviciding program throughout the Region. Since it was identified by the MOHLTC that catch basins were primary targets for mosquito control of the *Culex pipiens*, three rounds of the larvacide methoprene was applied to public catch basins in an effort to break the chain of infection. Methoprene in pellet form was applied three times over the summer months. It was applied approximately every 28 days as the residual of the product was to last for about 28 days. The larviciding started the week of June 12 and finished August 25, 2003.

During the summer, standing water on municipal property such as the storm water retention ponds found to contain larvae were treated by the pest control company using Bti. Bti is a larvicide with little residual affect that targets only mosquito larvae and does not impact other species of insects.

These activities reinforced that the current construction standards for catch basins and storm water retention ponds allow for ideal mosquito breeding sites. Future catch basins and storm water retention ponds should be constructed with additional consideration given to minimizing the attractiveness of these sites to mosquitoes for breeding opportunities.

4.4 Relationship to Vision 2026

The implementation of both the 2003 WNV control activities and the *West Nile Virus: York Region Contingency Plan* support various goals of Vision 2026. Responding to the Needs of our Residents and Engaged Communities and a Responsive Region are examples of the identified goals of Vision 2026.

5. FINANCIAL IMPLICATIONS

The costs associated with 2003 WNV control activities are outlined in the table below.

Table 3
Summary of WNV Budget and Expenditures for 2003

	2003 Budget	2003 Estimated Expenditures
Larviciding	\$1,928,000	\$1,472,059
GIS Mapping & Database	0	108,600
Additional Traps	0	0
Program Costs (including advertising, materials & supplies, printing, and communications)	267,000	138,168
Total Gross Expenditures	\$2,195,000	\$1,718,827
Provincial Funding (50%)	1,097,500	859,414
Contribution from Contingency Reserve Fund	997,500	759,413
Net Tax Levy	\$ 100,000	\$ 100,000

At its meeting of April 17, 2003, Regional Council authorized an expenditure increase to the 2003 Public Health budget in the amount of \$1,995,000 for additional program costs which had not been included in the 2003 Health Services budget. As noted above, the Region's share of these costs was to be funded from a contingency reserve fund. Therefore, the net tax levy impact for 2003 was only \$100,000 (as originally budgeted).

Staffing costs related to WNV activities for 2003, estimated at \$388,000, have been absorbed within the 50% cost shared Public Health programs.

6. LOCAL MUNICIPAL IMPACT

The Region and the area municipalities developed a successful working relationship throughout the 2003 WNV season. Biweekly meetings were held with representatives from all nine area municipalities to discuss WNV control activities in York Region. All area municipalities now have varying degrees of standing water bylaws to assist in the enforcement of reducing potential mosquito breeding sites.

Roles of the municipalities were defined in the *West Nile Virus: York Region Contingency Plan* and distributed to the local municipalities in the spring of 2003. These responsibilities include:

- Maintaining an inventory of potential mosquito breeding sites on municipal property
- Reducing or eliminating mosquito breeding sites on municipal property where possible
- Flushing and maintaining storm drains, catch basins and drainage ditches on a regular basis and in co-ordination with planned mosquito larviciding activities

- Addressing mosquito breeding control measures in the design of new systems or retrofitting of existing systems
- Participating fully on all multi-stakeholder regional WNV control meetings

7. CONCLUSION

The efforts of the York Region Health Services Department to control the spread of WNV in the Region have contributed to minimal impacts to residents throughout the 2003 mosquito season.

The 2003 WNV Control Activities raised the issue of current construction standards for catch basins and storm water retention ponds. These standards should be reviewed by the appropriate Provincial Ministry in order to reduce potential mosquito breeding sites and reduce WNV activity in Ontario.

A further report detailing proposed WNV Control Activities for 2004 will be brought forward in February.

The Senior Management Group has reviewed this report.

(A copy of the attachments referred to in the foregoing has been forwarded to each Member of Council with the January 8, 2004 Health and Emergency Medical Services Committee agenda and a copy thereof is on file in the Office of the Regional Clerk.)

Health Protection and Promotion Act
Loi sur la protection et la promotion de la santé
ONTARIO REGULATION 199/03
Amended to O. Reg. 231/03
CONTROL OF WEST NILE VIRUS
This Regulation is made in English only.

Determination if action required

1. A medical officer of health shall make a determination whether action is required by a municipality to decrease the risk of West Nile Virus to persons either inside or outside the health unit served by the medical officer of health, based upon a local risk assessment in accordance with the document entitled *West Nile Virus Preparedness and Prevention Plan for Ontario*, published by and available from the Ministry of Health and Long-Term Care, and as revised on May 27, 2003. O. Reg. 231/03, s. 1.

Notice to municipality

2. (1) Where the medical officer of health has determined that action is required, he or she may give notice to the municipality of the required action. O. Reg. 199/03, s. 2 (1).

(2) In determining required actions under subsection (1), the medical officer of health shall have regard to,

(a) the document mentioned in section 1; and

(b) the generally accepted practices in the field of public health with regard to decreasing the risk of West Nile virus to persons. O. Reg. 199/03, s. 2 (2).

Must comply

3. A municipality shall comply with any requirements set out in the notice. O. Reg. 199/03, s. 3.

What may be required

4. Action required under this Regulation may include, without being limited to,

(a) requirements respecting source reduction measures;

(b) requirements respecting surveillance;

(c) requirements respecting public awareness campaigns about personal protection;

(d) requirements respecting the control measures for larviciding and adulticiding set out in Table 1; and

(e) requirements respecting the time within which the action shall be taken. O. Reg. 199/03, s. 4.

TABLE 1
LARVICIDING AND ADULTICIDING IN ONTARIO
WEST NILE VIRUS RESPONSE

"Triggers" based on surveillance of WNV positive humans, birds, mosquito pools or mammals (horses)

Current-Year WNV findings in Health Unit, or municipality	Last Year's WNV findings in Health Unit or municipality	Preparatory Status (Larval surveys, mosquito trapping, mapping, training, etc.)	Larviciding ACTION	Adulticiding ACTION
No West Nile virus found yet	No West Nile virus found; virus found in adjacent Health Unit(s)	Not yet done	Do the preparatory work, then larvicide where indicated	Not indicated
No virus found yet	Virus found	Not yet done	Do the preparatory work, then larvicide where indicated	Not indicated
No virus found yet	Virus found	Done last year and under way this year	Larvicide where indicated	Not indicated
Virus found in non-human (dead bird, mosquito pool or mammal) - isolated or as a "hot spot"	Virus found or not found	Done or under way this year	If a "hot spot" and larvae are present, larvicide around this "hot spot" (if not too late in the season)	Adulticide a 3-km "Zone" ONLY IF there are high-risk indicators of transmission to humans*
Human case(s) - one or a few in a space-time "cluster"	Virus found or not found	Done or under way this year	Larvicide around the case or cluster if larvae are present (and if not too late in season)	Adulticide a 3-km radius Zone around the case or cluster
Human cases continue to occur; continued high-risk indicators*	Virus found or not found	Done or under way this year	Larvicide widely where larvae are found (if not too late in season)	Adulticide 3-km Zones - may be contiguous or overlapping

Note: Public education efforts and non-pesticide means of mosquito source reduction should be in place, and increased as increasing evidence of virus is found (especially human cases) in the current year.

* **High-risk indicators of transmission to humans:** increasing dead bird sightings; high mosquito infection rates; abundant bridge vector populations; increasing mammal (horse) cases; proximity of mosquito breeding sites to human populations (especially large population centres) and weather conditions that favour mosquito breeding.

1. These are minimum activity standards. Medical Officers of Health may increase the Zone size to be treated or take additional mosquito control actions, if justified by scientific data or recommendations.

2. Medical Officer of Health will maintain a means to record, investigate, and report any confirmed or likely adverse or unintended human health effects attributed to mosquito control actions, and will report any non-human environmental adverse effects that he or she knows about to the Ministry of the Environment and/or other relevant local or provincial authorities.

O. Reg. 199/03, Table 1.

WNV Activities
As of November 11, 2003

WNV Comparison Summary 2002 & 2003

Surveillance	2002	2003 to date
Positive mosquito pools	14	6
No. of mosquito trap sites	10	41
Bird sightings (calls)	2,286	3,617
Birds picked up	127	925
Birds sent	55	54
Positive birds	8	9
Suspect human cases investigated	29	89
Positive human cases (confirmed)	7+(4 Probable)	2
Positive horses	4	0

Mosquito Control	2002	2003 to date	
Larviciding of catch basins	0	1 st round 60,526 2 nd round 68,923 3 rd round 70,194	
Larviciding of standing surface water (i.e. ponds, culverts, roadside ditches, woodland pools, field pools)	0	89	
York Region storm water retention pond survey	0	Total Number Surveyed 226	Number with Larvae 46 (all larvicided)

Education Activities	2002	2003 to date
Public meetings (open houses)	0	18 (2 in each municipality)
Discussion forum with environmental organizations re adulticiding	0	1
Mall displays	0	5
Library displays	0	9
Other displays	0	4
Presentations (by WNV team)	17	101
Presentations (adulticiding)	0	11
Presentations (Chinese)	1	7
Health Connection calls	2,079	6,280
WNV related investigations	25	1,039
Printed material sent out	# N/A (By request only)	300,000
Bus ads	0	16 weeks in 16 buses

Media Releases	2002	2003 to date
Media Releases	9	26
Media Briefings	0	16
Ads (educational)	0	4
Ads (larviciding announcements)	0	3

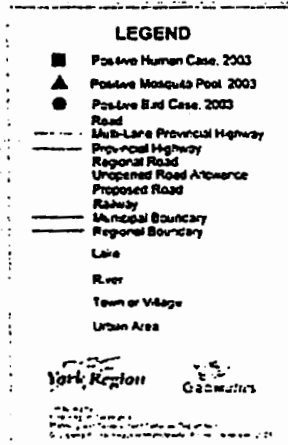
WNv Related Investigations/Complaints

Municipality	2002	2003
Aurora	2	27
East Gwillimbury	1	40
Georgina	3	73
King	2	50
Markham	12	190
Newmarket	1	157
Richmond Hill	3	246
Vaughan	1	235
Whitchurch-Stouffville	0	21
Total	25	1,039

West Nile Virus Positive Cases 2003

(as of December 16, 2003)

ATTACHMENT 3



West Nile Virus Adult Mosquito Traps

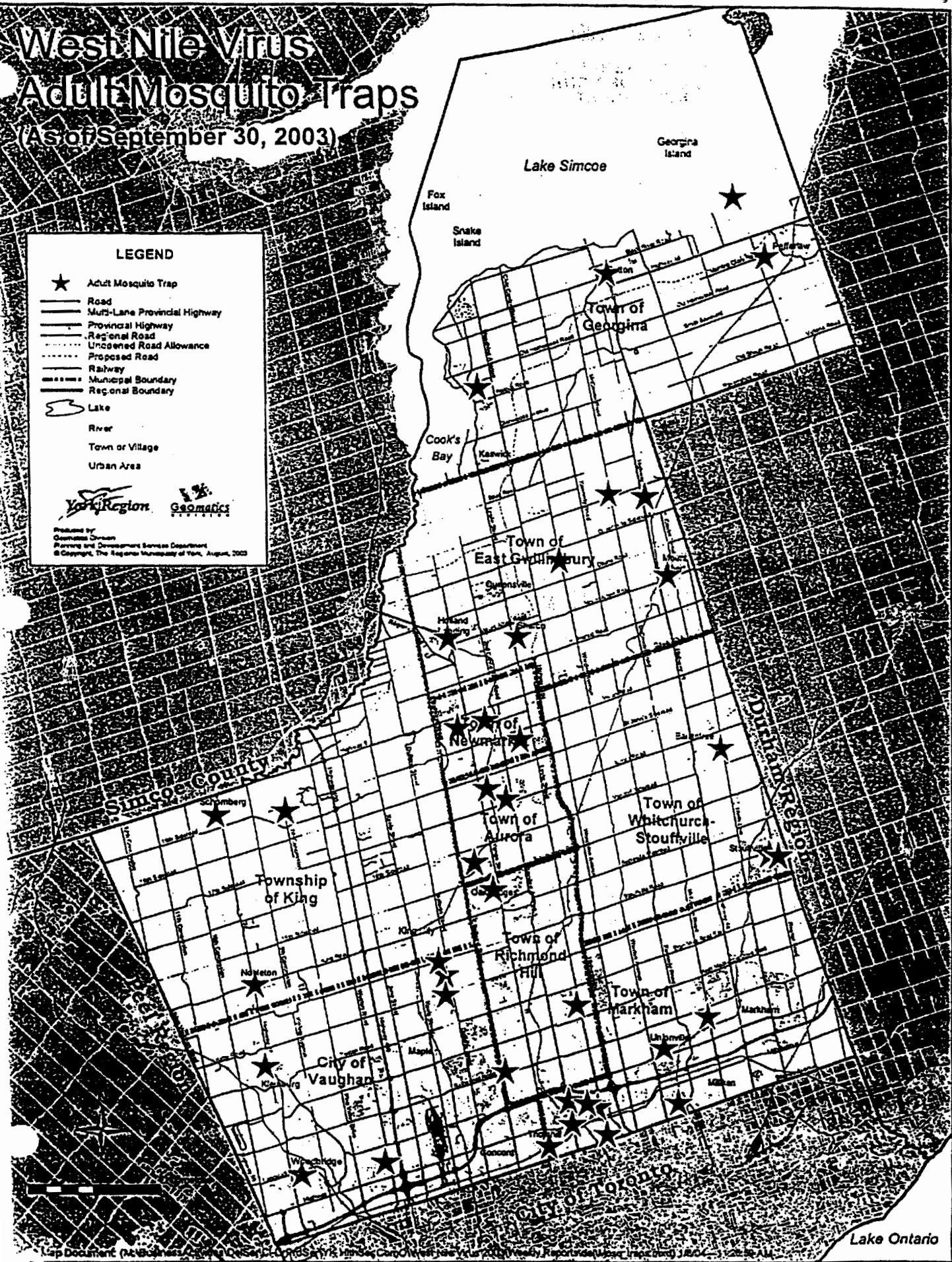
(As of September 30, 2003)

LEGEND

- ★ Adult Mosquito Trap
- Road
- Multi-Lane Provincial Highway
- Provincial Highway
- Regional Road
- Unopened Road Allowance
- Proposed Road
- Railway
- Municipal Boundary
- Regional Boundary
- Lake
- River
- Town or Village
- Urban Area



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