

Appendix D

(City Council, at its Special Meetings on February 24, 25, 26, 27 and 28, 2003, and March 3, 2003, had before it, during consideration of the foregoing Clause, the following report (February 24, 2003) from the Chief Administrative Officer:

Purpose:

The purpose of this report is to advise Council on the views of certain stakeholders on specific aspects of the West Nile Virus (WNV) Program proposed by Toronto Public Health and recommend action regarding the 2003 budget for this program.

Financial Implications and Impact Statement:

At its meeting of February 12, 2003, Budget Advisory Committee in its consideration of the operating budget of Toronto Public Health, referred the following motion to Policy and Finance Committee and Council, for its consideration:

“One time funding in the amount of \$688,000.00 net be added for the West Nile Virus Program such funds to be from the Water and Wastewater reserve budget for treatment of catch basins, subject to a favourable report in that regard to City Council for its meeting of February 24, 2003 from the Chief Administrative Officer, in consultation with, but not limited to, the Commissioner of Works and Emergency Services, the Chair of the Board of Health, the Ministry of Fisheries, Toronto Environmental Alliance and the Toronto and Region Conservation Authority.”

Following discussion with Works and Emergency Services it became apparent that the Water and Wastewater reserve fund was not an appropriate source of funding. Sufficient funding from the Corporate Non-program budget has been identified to fund the net cost (\$688,000.00), as proposed by Budget Advisory Committee, for the 2003 West Nile Virus Program in the event the provincial government will not 100 percent fund the program.

The Chief Financial Officer and Treasurer has reviewed this report and concurs with the financial impact statement.

Recommendations:

It is recommended that:

- (1) Council approve the 2003 West Nile Virus program with funding of \$1,376,000.00 gross/ \$688,000.00 net from the Corporate Non-Program budget;*
- (2) the Chief Administrative Officer, the Mayor and the Medical Officer of Health continue to make strong representations to the provincial government in collaboration with other municipalities, the Association of Municipalities of Ontario (AMO) and the Association of*

Local Public Health Agencies (ALPHA) that the West Nile Virus Program be 100 percent provincially funded;

- (3) the Medical Officer of Health continue to work in collaboration with other GTA health units, the Ministry of Environment, the Ministry of Health and Long Term Care and Works and Emergency Services in monitoring and evaluating the West Nile Virus Program in 2003 and beyond;*
- (4) the City of Toronto establish a West Nile Virus Advisory Committee comprised of staff from Toronto Public Health, Works and Emergency Services, Parks and Recreation, the Toronto Environmental Alliance and the Toronto and Region Conservation Authority with a particular focus on the environmental issues associated with the West Nile Virus Program;*
- (5) that Works and Emergency Services, in partnership with Toronto Public Health, explore a collaboration with other interested municipalities in Ontario affected by the spread of the West Nile Virus, to undertake a series of pilot tests to assess the effectiveness of various non-chemical alternatives for the control of mosquitoes transmitting the West Nile Virus;*
- (6) that Works and Emergency Services, in collaboration with the Toronto and Region Conservation Authority, undertake an environmental impact assessment at a representative subwatershed area, wholly contained within the City of Toronto, associated with the application of methoprene in roadside catch basins to consist of:*
 - (a) water quality analysis of stormwater runoff from sewer outfalls and within the watercourse post larviciding to assess the concentrations of methoprene discharged to the aquatic environment;*
 - (b) toxicity testing, pre and post larviciding, of stormwater runoff to assess whether concentrations of methoprene in this type of discharge are toxic to representative target organisms; and*
 - (c) an instream aquatic community assessment pre and post larviciding; and*
- (7) the appropriate City officials be authorized and directed to take the necessary action to give effect thereto.*

Background:

At its meeting of February 12, 2003, Budget Advisory Committee in its consideration of the operating budget of Toronto Public Health, referred the following motion to Policy and Finance Committee and Council, for its consideration:

“One time funding in the amount of \$688,000.00 net be added for the West Nile Virus Program such funds to be from the Water and Wastewater reserve budget for treatment of catch basins, subject to a favourable report in that regard to City Council for its

meeting of February 24, 2003 from the Chief Administrative Officer, in consultation with, but not limited to, the Commissioner of Works and Emergency Services, the Chair of the Board of Health, the Ministry of Fisheries, Toronto Environmental Alliance and the Toronto and Region Conservation Authority.”

The issue of larvicide application in wastewater catch basins is dealt with in two reports to the Board of Health. At its meeting of November 18, 2002, the Board of Health adopted a report titled “West Nile Virus Program.” The report outlined the City’s 2002 program to combat West Nile Virus and made recommendations about the required program response for 2003. The report stated that the West Nile Virus is a mosquito borne virus first detected in Ontario in 2001. The report described the various surveillance programs undertaken in 2002 by the City which indicated an increased prevalence of the virus and a significant number of human deaths and illnesses linked to it. During the course of the City’s surveillance activities it was confirmed that stormwater catch basins are a significant source of mosquito breeding. The report points out that the 2002 WNV program received 100 percent funding by the provincial government. In the fall of 2002, however, the provincial government informed local health units that funding for 2003 would be on a 50:50 cost-shared basis.

The report proposed the establishment of a permanent WNV program in Toronto in 2003 based upon an integrated pest management approach and recommended the following components and service levels:

- (a) primary prevention of WNV through source reduction, public education, surveillance and mapping (\$777,700.00 gross / \$388,850.00 net);*
- (b) larvicidal control of mosquitoes across the City (\$720,000.00 gross/\$360,000.00 net;*
- (c) a retainer for a licensed pest control service that would be used only if, in the opinion of the Medical Officer of Health, the use of adulticides is necessary as an effective and essential strategy to reduce WNV transmission to humans and when all other measures to prevent this health hazard have failed (\$80,000.00 gross/ \$40,000.00 net)*

One of the specific strategies of the proposed program was the application of larvicide in the approximately 175,000.00 catch basins on city-owned property twice during the course of the summer. The larvicide recommended for use was methoprene pellets, a synthetic mosquito growth hormone that prevents mosquitoes from becoming adults.

At its meeting of January 20, 2003, the Board of Health considered a report titled “Protocol for the Control of the Mosquito Larvae to Prevent and Control West Nile Virus.” The report described in greater detail the elements of the proposed mosquito control strategy. The report also provided background on the range of potential control measures and assessed their relative effectiveness. This report was referred to the Commissioner of Works and Emergency Services for comment and consideration of joint initiatives with Public Health regarding public education and mosquito control measures for a report thereon to the next meeting of the Works Committee in March 2003.

Comments:

A complex set of public health and environmental concerns surrounds the decision to authorize the use of methoprene in City catch basins to control mosquito populations and prevent the spread of West Nile Virus. There is a wide range of views and concerns regarding the issue among the affected stakeholders and no complete reconciliation of those views seems possible at this time.

In carrying out the consultation directed by the Budget Advisory Committee motion, staff contacted officials from Toronto Public Health, Water and Wastewater Services, the Federal Department of Fisheries and Oceans, the Toronto Environmental Alliance, the Toronto and Region Conservation Authority, the Ontario Ministry of the Environment as well as the Chair of the Board of Health. In an attempt to clarify areas of similarity and difference, all these parties were invited to provide summaries of their views and concerns for inclusion in this report. These statements are attached as Attachments A to E. The following summarizes key points from the statements:

Toronto Public Health

The outbreak of West Nile Virus (WNV) in Toronto in 2002 resulted in serious human health impacts. As of February 20, 2003, there were 97 confirmed and 60 probable human cases of the virus reported to Toronto Public Health. Twelve Toronto residents with evidence of WNV infection have died. These numbers far exceeded the expectations of public health officials.

Toronto Public Health is recommending that a more intensive campaign be undertaken to control the further spread of WNV in 2003. The WNV strategy involves a preventive approach including public education efforts to increase residents' awareness of the actions necessary to minimize health risks. This activity will be supported by the application of the larvicide methoprene in up to 200,000 catch basins maintained by the City, of which 175,000 are on the road allowance under the control of Works and Emergency Services. The timing, actual number, and location of catch basins to be treated will be determined by on-going mosquito surveillance and local weather conditions.

Catch basins have been identified as a significant source of mosquitos in urban areas, providing favourable breeding grounds for the Culex pipiens mosquito, which is the main vector of the virus in the Toronto region. Depositing a slow-release formulation of methoprene in the City's catch basins will have no impact on human health. Because methoprene is of low toxicity to fish and other aquatic organisms, it poses minimal risk to other species when used in the amounts required to kill mosquito larvae. Methoprene breaks down quickly in water and in the presence of sunlight, and does not remain in the ground or leach into groundwater. Methoprene deposited in catch basins is not expected to reach rivers, ponds or Lake Ontario in an amount that would have a negative impact on the natural environment.

Attachment A contains an overview of the views of Toronto Public Health. Attachment F contains questions and answers prepared by Public Health on the West Nile Virus Program.

Water and Wastewater Services

The division observes that application of pesticides by the City, in the estimated 175,000 catch basins maintained by WES contradicts the Wet Weather Flow Management Master Plan

approved by Council. The introduction of a pesticide in roadside catch basins, later released untreated to the aquatic environment through City sewer outfalls during rainfall events, may violate the Federal Fisheries Act, Ontario Environmental Protection Act and Ontario Water Resources Act.

Besides catch basins there are many other sources of standing water that may serve as mosquito breeding grounds and will not be affected by the catch basin larviciding. Concerns have also been raised that methoprene may have adverse impacts on other insects and aquatic organisms within area watercourses and natural wetland systems. Natural predators of mosquitoes and mosquito larvae may also be at risk, which could therefore increase our dependence on pesticide use in the future.

Attachment B contains an overview of the concerns expressed by Water and Wastewater Services and recommendations for the testing of non-chemical alternatives and for monitoring environmental impacts.

Federal Department of Fisheries and Oceans

The federal Department of Fisheries and Oceans reports that it is currently considering the toxicological aspects of the issue and how they may impact on fish or fish habitat. The department states that it will respond soon with advice to the Ontario Ministry of the Environment on those issues.

Toronto Environmental Alliance (TEA)

TEA's position is that Toronto's West Nile Virus (WNV) Control Program should focus on public education and sustainable mosquito control rather than on chemical interventions. Toronto should make its first priority the research and pilot-testing of mechanical means of mosquito control and the education of citizens and commercial properties regarding standing water.

*TEA believes that the use of pesticides (e.g. larvicides, adulticides) has not proven to be effective in stopping the spread of WNV. Its position is that chemicals can also contaminate the environment, harm health and may undermine ecological mosquito controls (natural predators). It argues that a sustainable solution to WNV lies in limiting the breeding habitat for *Culex pipiens* mosquitoes and a strategy that includes more public education, assessment of mosquito breeding grounds, pilot-testing of non-chemical alternatives, review of the efficacy and safety of methoprene, a WNV advisory committee and a comprehensive multi-year source reduction plan to begin this summer.*

Attachment C contains an overview of the concerns and recommendations of the Toronto Environmental Alliance.

Chair, Board of Health

The Chair of the Board of Health supports the West Nile Virus Program as a public health necessity and stresses the importance of public education as well as research on impacts and

evaluation of alternative methods of mosquito control. He supports larviciding for 2003 as a means of reducing the possibility of the later use of more drastic measures such as pesticide fogging of residential neighbourhoods. He also supports measures to review the efficacy and safety of methoprene.

Attachment D contains an overview of the views of the Chair of the Board of Health, Toronto and Region Conservation Authority (TRCA):

The TRCA stresses the need for more public education and an increased awareness that wetlands are not the primary breeding areas for the mosquitoes that carry the West Nile Virus. The TRCA also expresses concerns over the impacts of methoprene on non-target species such as fish and amphibians and calls on the City to monitor outfalls that drain into sensitive natural areas.

The TRCA recommends the formation of West Nile Advisory Committee to deal with WNV issues over the long-term and to establish an open dialogue between interest groups.

Attachment E contains an overview of the views of the Toronto and Region Conservation Authority.

Summary:

While there is not full agreement among the various parties on all points, common themes do emerge. There is a recognition that West Nile Virus constitutes a serious public health risk which requires action by the City. Most of the stakeholders emphasise the need for increased public education, for research into alternative methods of mosquito control and monitoring the impacts of the larviciding program. There is also agreement that the implementation of the 2003 WNV program and the development of programs for future years requires a consultative approach that involves key stakeholders. In view of these considerations, it is therefore recommended that the 2003 West Nile Program be approved, with a budget of \$1,376,000.00 gross/ \$688,000.00 net with the understanding that the Medical Officer of Health will continue to work with Works and Emergency Services and other stakeholders on ongoing impact assessments and a search for alternative methods of mosquito control.

Unlike last year, for 2003, the provincial government advised Health Units that West Nile Virus programs would now be 50:50 cost-shared. This position is inconsistent with the positions of other boards of health and municipalities, including the City. Because West Nile Virus and the control of the mosquitoes that carry it are province-wide issues, the City should continue to work with other municipalities to restore full provincial funding. However, in the absence of full provincial funding, it is recommended that the City fund the net share of the program for 2003 from the Corporate Non-Program budget.

Conclusions:

The consultation with various stakeholders was intended to give City Council clear statements of their respective views and concerns about the use of larvicide to control the spread of West Nile Virus in 2003. While a full reconciliation of views is not possible, there appears to be sufficient

justification to proceed with larviciding as part of the 2003 WNV Program that includes source reduction, public education, surveillance and mapping. It is recommended, therefore, that Council approve the 2003 West Nile Program with funding of \$1,376,000.00 gross/ \$688,000.00 net from the Corporate non-program budget. The province-wide nature of the health risk suggests that the Province should assume the full cost of the program. The concerns expressed by various stakeholders warrant an ongoing process of consultation and evaluation as proposed in this report.

Contact:

*Nancy Matthews, Executive Director, Social Development and Administration Division
Tel: 416-392-5207; Fax: 416-392-8492; E-mail: NMatthew@toronto.ca*

List of Attachments:

- Attachment A — Toronto Public Health*
- Attachment B — Water and Wastewater Services*
- Attachment C — Toronto Environmental Alliance*
- Attachment D — Councillor Joe Mihevc, Chair, Board of Health*
- Attachment E — Toronto and Region Conservation Authority*
- Attachment F — Toronto Public Health, Questions and Answers regarding West Nile Virus*

Attachment A

Toronto Public Health

It is now clear that the West Nile Virus (WNV) outbreak in Toronto in 2002 resulted in serious human health impacts. As of February 20th, 2003, there were 97 confirmed and 60 probable human cases of the virus reported to Toronto Public Health. Twelve Toronto residents with evidence of WNV infection have died; in three of these cases encephalitis brought on by the virus was the cause of death. While most people infected with WNV show no symptoms or have mild flu-like illness, some people become very sick and may experience serious, lasting illness. While the risk of serious illness is greatest in the frail elderly and the immuno-compromised, serious illness can also occur in younger adults and otherwise healthy seniors.

There is currently no vaccine or cure for WNV in humans. The primary route of transmission of WNV to humans is through the bite of an infected mosquito. Mosquitoes get infected by feeding on birds that carry the virus.

After WNV was first detected in New York City four years ago, local authorities adopted an extensive program to fight the mosquito-borne disease. This included: a large-scale public education program; inspection of standing water on private properties and enforcement of its removal; a comprehensive larviciding program in catch basins and natural areas; and adult mosquito control (aerial spraying of pesticides) in high risk areas.

Toronto Public Health (TPH) has developed a comprehensive strategy that takes into consideration the environmental and human health implications of chemical mosquito controls while focusing on protecting the public from WNV.

In 2001 TPH began an education and surveillance program using existing resources, and identified the first WNV- positive dead crow in Toronto. In 2002, in anticipation of a further northward spread of the virus, but with no indication as to the likelihood of human cases, TPH conducted a more extensive WNV surveillance program, and a public education campaign with funding provided by the province. During this time staff gathered limited data on mosquito concentrations across the city and gained a sense of viral activity in crow populations. More human cases than expected were detected in 2002.

It has become apparent that a more intensive campaign is necessary to control the spread of WNV. The Medical Officer of Health is therefore proposing to increase the public education program to promote personal protective measures and the importance of eliminating stagnant water on private property. The Medical Officer of Health recommends that this education effort be supplemented by the control of mosquito larvae in the City's catch basins. Public Health staff will continue surveillance activities to gather more data and will also map surface bodies of water and other potential sources of mosquito breeding to prepare for future mosquito controls that may be required in 2004.

Reports from experts in the mosquito control field and experience from jurisdictions such as New York City indicate that catch basins are a significant source of mosquito breeding in urban areas. Catch basins provide favourable breeding grounds for the Culex Pipiens mosquito, which is the main vector of the virus in the Toronto region. A sampling program in 2002 revealed that virtually all of the catch basins examined contained Culex larvae. It is estimated that the City of Toronto maintains approximately 200,000 catch basins, of which 175,000 are on the road allowance under the control of Works and Emergency Services. Since catch basins present a major source of mosquito breeding on properties under the direct control of the City, the Medical Officer of Health is proposing to apply the larvicide methoprene to these catch basins across the city. The timing, actual number, and location of catch basins that will be treated will be determined by the results of on-going mosquito surveillance and local weather conditions. Larviciding can only be conducted with a permit from the Ontario Ministry of the Environment.

Methoprene has been classified by the U.S. Environmental Protection Agency as a "least toxic" insecticide and has been the subject of a thorough and recent regulatory review. Small pellets release the methoprene a little at a time into the catch basin. Because methoprene is of low toxicity to fish and other aquatic organisms, it poses minimal risk to other species when used in the amounts required to kill mosquito larvae. Methoprene breaks down quickly in water and in the presence of sunlight, and does not remain in the ground or leach into groundwater. Methoprene deposited in catch basins is not expected to reach rivers, ponds or Lake Ontario in an amount that would have a negative impact on the natural environment. This proposal balances the need to protect human health with a mosquito- control strategy that has the least impact on the environment.

Contact: Dr. Karl Kabasele, Associate Medical Officer of Health, 416-338-8041

Attachment B

Water and Wastewater Services

Council recently approved the Wet Weather Flow Management Master Plan, which addresses objectives of improving water quality and achieving healthy aquatic communities in area watercourses and the waterfront. The Plan advocates the implementation of source control measures such as reductions in pesticide use to help achieve these objectives. Notwithstanding the human health issues and the need to control the West Nile Virus, the application of pesticides by the City, in the City's estimated 175,000 catch basins, is in direct contradiction with the Plan and may therefore challenge the City's credibility. Furthermore, most of these catch basins are directly connected, via sewer pipes, to the nearest stream or creek and consequently soluble substances placed in these catch basins will be flushed directly to local watercourses during a rainfall event. While we recognize that methoprene, the recommended larvicide, has been chosen because it is effective in controlling the species of mosquitoes found to be transmitters of the West Nile Virus, we are also concerned that this pesticide may have adverse impacts on other insects and aquatic organisms within area watercourses and natural wetland systems. Natural predators of mosquitoes and mosquito larvae may also be at risk, which could therefore increase our dependence on pesticide use in the future.

The environmental impact on area watercourses may be exacerbated should other municipalities, within watersheds which extend beyond the City limits, also opt for this control measure.

It should also be noted that in addition to roadside catch basins there are many other sources of standing water, which provide additional habitat for this type of mosquito, including private properties across the City including parking lot catch basins, eavestroughs, awnings, tarps, pavement depressions, empty containers, chemical drums, etc.. These additional sites would continue to be problematic as they are unaffected by the proposed larviciding.

The introduction of a pesticide in roadside catch basins, later released untreated to the aquatic environment through City sewer outfalls during rainfall events, may place the City in violation of the Federal Fisheries Act, Ontario Environmental Protection Act and Ontario Water Resources Act.

The following are recommended actions to address these concerns:

- (1) Works and Emergency Services, in partnership with Toronto Public Health explore a collaboration with other interested municipalities in Ontario, affected by the spread of the West Nile Virus, undertake a series of pilot tests to assess the effectiveness of various non-chemical alternatives for the control of mosquitoes transmitting the West Nile Virus;*
- (2) Works and Emergency Services, in collaboration with the Toronto and Region Conservation Authority undertake an environmental impact assessment at a representative subwatershed area, wholly contained within the City of Toronto, associated with the application of methoprene in roadside catch basins to consist of:*

- (a) *water quality analysis of stormwater runoff from sewer outfalls and within the watercourse post larviciding to assess the concentrations of methoprene discharged to the aquatic environment,*
 - (b) *toxicity testing, post larviciding, of stormwater runoff to assess whether concentrations of methoprene in this type of discharge are toxic to representative target organisms, and*
 - (c) *an instream aquatic community assessment pre and post larviciding.*
- (3) *Approval for the proposed application of methoprene be sought from the Federal Department of Fisheries and Oceans and the Ontario Ministry of the Environment.*
Contact: Michael D'Andrea, Manager, Infrastructure Asset Management, Water and Wastewater Services, 416- 397-4631

Attachment C

Toronto Environmental Alliance

Toronto's West Nile Virus (WNV) Control Program should focus on public education and sustainable mosquito control rather than on chemical interventions. Toronto should therefore make its first priority the research and pilot-testing of mechanical means of mosquito control and the education of citizens and commercial properties regarding standing water.

Pesticides (e.g. larvicides, adulticides) have not proven effective in stopping the spread of WNV. These chemicals can also contaminate our environment, harm our health and may undermine natural ecological mosquito controls (predators).

*The sustainable solution to WNV lies in limiting the breeding habitat for the *Culex pipiens* mosquito that is the vector for WNV. The U.S. Centers for Disease Control recommend education programs to encourage citizens and commercial properties to eliminate standing water where the mosquitoes breed instead of pesticide use. Non-chemical interventions that would disrupt mosquito breeding in catch basins, culverts, etc., also hold promise for effective control. To date, the City has not fully implemented an education program and has conducted only limited exploration of mechanical and biological means of reducing mosquito-breeding habitat.*

The Toronto Environmental Alliance (TEA) recommends that the City expand the proposed WNV Program. It should include:

- (1) *More Public Education: The City can do much more than it has done to encourage citizens and businesses to limit standing water on their properties. The program should be expanded to include door-to-door information campaigns, ads, flyers and display booths at community events. The City must evaluate the effectiveness of educational activities on an ongoing basis.*
- (2) *Assessment of mosquito breeding grounds: There are many unanswered questions as to the relative significance of catch basins to mosquito breeding. The city should establish*

a program to survey which types of standing water in Toronto are harbouring Culex pipiens. In addition to confirming the extent to which catch basins are a source, the city should survey storm water ponds, woodland pools, ditches, field pools and standing water on residential and commercial properties (i.e. rain gutters, bird baths, uncovered pools) for mosquito larvae to determine the most significant breeding grounds.

- (3) *Pilot-testing of non-chemical alternatives: The City should implement pilot projects to test emerging new mechanical or biological methods for controlling Culex pipiens breeding grounds.*
- (4) *Review of the efficacy and safety of methoprene: The Water and Wastewater Division should monitor the effectiveness of methoprene as a larvicide, and study the effects of methoprene on the health of Toronto's waterways.*
- (5) *A WNV Advisory Committee: Toronto Public Health should establish a WNV Advisory Committee to review the ongoing development, monitoring and implementation of the WNV program. The Committee should include representatives from relevant city divisions, TEA, TRCA and the Ontario Ministry of Environment.*
- (6) *A comprehensive multi-year source reduction plan to begin this summer: This plan could include, but should not be limited to:*
 - (a) *Improved management practices for city property to reduce mosquito breeding grounds. The City should consider practices such as altering culverts and ditches for better drainage, revitalizing ponds and wetland areas, re-grading parks and an enhanced program to flush and monitor stormwater catch basins; and*
 - (b) *Enforcement of existing property standards bylaws that reduce standing water on private and commercial properties, and/or the amendment or creation of bylaws that will reduce standing water in Toronto.*

Contact: Katrina Miller, Toronto Environmental Alliance, 416-596-0660

Attachment D

Councillor Joe Mihevc, Chair, Board of Health

The dramatic increase in the incidence of deaths and infections caused by virus carrying mosquitoes in Toronto makes it essential to control mosquito larvae in order to prevent the spread of West Nile Virus. While I support strong restrictions on pesticides used for cosmetic purposes, the use of methoprene as a mosquito larvicide in the current situation is a public health necessity and not a cosmetic use. It is important to note that the approval of funding West Nile Virus program will not automatically lead to use of the larvicide. Council must still give final approval to the protocol governing its use.

The proposed control program seeks to minimize risk while recognizing that it cannot eliminate it. More research and evaluation are needed. On balance, however, I believe it is prudent to use

the larvicide in catch basins on city-owned property. I hope that early application of methoprene will significantly reduce the possibility of later having to use much more drastic measures such as fogging to control mosquito populations and the spread of West Nile Virus.

Although methoprene appears to be the most suitable product legally available in Canada, the City should urge the federal government to approve the use of other pesticides such as Bti, which may have fewer potential environmental risks. The City should also take an active role in testing other more environmentally friendly alternatives to pesticides. All mechanical solutions to catch basin cleaning should be evaluated. The City must also commit itself to a comprehensive public education campaign to make residents aware of the steps they can take to avoid infection. Public education on the risks and means of prevention is critical.

Contact: Councillor Joe Mihevc, 416-392-0208

Attachment E

Toronto and Region Conservation Authority

*The Toronto and Region Conservation Authority (TRCA) is concerned over the public's perception of green spaces as a result of the WNV outbreak. The TRCA and Conservation Ontario has been working very hard to increase the awareness of the value of wetlands and green spaces. Wetlands are an essential part of the water cycle and they play an important role in ensuring water quality and in turn public health. We feel that the Public Health Report needs an expanded public education program about WNV. The public education program should clarify the types of habitats that the mosquito species of concern breed in, that wetlands and other natural areas tend not to be the sites that contain WNV mosquitoes (*Culex pipiens* and *Culex restuans*). Improving wetland function and increasing habitat for many species, such as dragonflies and fish, will actually help control mosquitos as more natural predators live in an area. The TRCA would be willing to assist by providing information on methods to improve the function of natural areas.*

Natural areas such as marshes, creeks and ponds do breed some species of mosquitoes however open or flowing water do not make good mosquito habitat. So far, research has shown that stagnant water in urban areas, including roadside catch basins, have the highest numbers of mosquitoes and that wetlands and storm water ponds pose the least risk. The TRCA has already agreed to assist other Regions within our jurisdiction to monitor larval mosquito populations in select natural areas to confirm that natural areas are not of concern for WNV vector mosquitoes. We would be willing to do the same for the City of Toronto. Natural areas present special challenges for mosquito control and as a result any intervention in these areas must take extreme care to not to disrupt the existing ecosystem. These decisions must be made based on monitoring programs.

The TRCA also has concerns over the impacts of Methoprene (Altosid) on non-target species such as fish and amphibians. We feel that it is extremely important that the City of Toronto monitor outfalls that drain into sensitive natural areas to see if any Methoprene is entering these systems. Monitoring of any possible effects on the ecosystem must also be examined. The TRCA

would be pleased and willing to assist the City by providing data from our existing monitoring programs (i.e./ fish and amphibian monitoring programs). In addition, it will be important for the City to identify catch basins that drain directly into environmentally sensitive areas and to treat those catch basins with Bti (*Bacillus thuringiensis* var. *israelensis*) instead of Methoprene.

The TRCA also feels that it would be of great benefit to establish a City of Toronto West Nile Advisory Committee to deal with WNV issues over the long-term and to establish an open dialogue between interest groups.

Contact: Tamara Chipperfield, Toronto and Region Conservation Authority, 416-661-6600

Attachment F

Toronto Public Health West Nile Virus Larviciding Program for the City of Toronto

The first human cases of West Nile Virus (WNV) in Toronto were confirmed last year. As of February 20th, 2003, there were 97 confirmed and 60 probable cases of the virus reported to Toronto Public Health. Twelve Toronto residents with evidence of WNV infection have died. In three of these cases encephalitis brought on by the virus was the cause of death. While most people infected with WNV show no symptoms or have mild flu-like illness, some may become very sick and experience serious, lasting illness. The virus is new to Canada, and it is impossible to predict the number of human cases or deaths that may occur in 2003.

1. Why is the Medical Officer of Health (MOH) recommending larviciding?

The MOH is recommending an enhanced program to control mosquitoes in the City. This includes strengthened education outreach and a limited larviciding program that will consist of placing the larvicide methoprene in up to 200,000 storm water catch basins maintained by the City. This larvicide program is designed to limit the mosquito population at the larval stage, and thus reduce the risk of humans contracting the virus. While methoprene will not eliminate the mosquito population, it may prevent the need for spraying more toxic pesticides later in the season. Methoprene was chosen because it is safe for human health and unlikely to cause harm to the natural environment when used in the concentration recommended for mosquito control.

The MOH is consulting with the Ministry of Health and Long Term Care and with neighbouring health units in Southern Ontario, most of whom are also developing plans for application of methoprene into catch basins. American jurisdictions such as New York City and Chicago have used methoprene in catch basins to control WNV. The WNV control program adopts an Integrated Pest Management approach that includes a comprehensive public education campaign informing residents of personal protection measures and the importance of eliminating stagnant water on private property. The application of methoprene to Toronto's catch basins will be evaluated for effectiveness and impact.

2. *Why is the MOH recommending larviciding in storm water catch basins?*

Storm water catch basins are artificial containers of water that have been identified as concentrated breeding grounds of mosquitoes in many cities across North America. There are many types of mosquitoes. Those most likely to carry WNV (Culex pipiens) breed in small, stagnant pools of water such as that found in catch basins, and not in open bodies of water like rivers or lakes. A sampling of Toronto's catch basins in 2002 confirmed the presence of these mosquito larvae in virtually all catch basins sampled. The use of methoprene is the most effective way to control mosquito larvae in catch basins..

3. *When will the larviciding begin?*

To be effective, larviciding must take place in the spring or early summer. Catch basins will be monitored this spring and throughout the season for mosquito larvae to determine those catch basins where the larvicide will be placed. Preparations for larviciding (including purchase of methoprene, training and licensing of staff, catch basin monitoring, and issuing of Ministry of Environment permits) require a three-month lead time.

4. *What is methoprene?*

Methoprene is classified by the U.S. Environmental Protection Agency (EPA) as a "least toxic" insecticide. It is a growth regulator that interrupts the mosquito life cycle and prevents immature mosquitoes from developing into biting adults. The mosquito larvae die before maturing. Methoprene is one of the simplest and most effective methods of reducing mosquitoes. It is licensed for mosquito control in Canada and the United States and can only be applied by licensed applicators. It is not available for consumer use.

5. *What is the human health impact of methoprene?*

Methoprene, when used as a larvicide for mosquito control in catch basins, is not harmful to humans.

6. *Will putting methoprene into catch basins harm the natural environment?*

Methoprene pellets dissolve slowly over a period of 3 to 4 weeks. Once dissolved, methoprene has a half-life of less than two days, which means half the concentration will disappear within two days, and the remaining half will be undetectable within ten days. Methoprene breaks down quickly in water and in the presence of sunlight, and does not remain in the ground or leach into groundwater.

Methoprene has low toxicity to fish and other aquatic organisms and poses little or no risk to other species when used in the amounts required to kill mosquito larvae. Application of methoprene in catch basins is not expected to reach rivers, ponds or Lake Ontario in an amount that would have a negative impact on the natural environment. Nevertheless, a thorough environmental assessment of the application will be conducted.

7. *Does a larvicide program this year mean there will be one every year?*

No. This year's larviciding program will be fully evaluated before any recommendations are made to continue it. The volume of human cases, mosquito surveillance, consultation with the Ministry of Health and Long Term Care, and the experiences of other health units will all be taken into consideration when considering options for 2004.

8. *What is the difference between "larviciding" and "adulticiding" (spraying)?*

Pellets of larvicide will be dropped manually into catch basins, not sprayed. Larvicide can be applied in small targeted amounts to reduce the number of immature or larval mosquitoes before they develop into biting adult mosquitoes. Adulticides are sprayed into the air to kill adult mosquitoes, and are more toxic to humans and the environment.

9. *What role does education play in the WNV program?*

Public education remains an essential strategy in reducing the risk of exposure to WNV. Toronto Public Health will develop a campaign with Works and Emergency Services to reach residents through a variety of communications vehicles, including existing City publications and on-line information, paid advertising and the circulation of materials to libraries and civic and recreation centres. This information will emphasize both what the City is doing and what residents, businesses and institutions can do. Messages will focus on personal measures such as wearing protective clothing, using insect repellent, avoiding dusk and dawn exposure to mosquitoes and reducing stagnant water at home. Strategies to reduce mosquito breeding sites will be promoted to the private sector and with institutional partners such as school boards, hospitals, TTC, Toronto Community Housing Corporation, Toronto Hydro, etc.

10. *What other efforts are being undertaken to reduce mosquito breeding sites?*

Toronto Public Health, in conjunction with Works and Emergency Services, will conduct a number of pilot projects to control mosquito populations in the City's catch basins using alternative methods. These may include the flushing, steaming or vacuuming of catch basins and possible trials of mechanical devices using sound waves to kill larvae. Natural bodies of water and stagnant water on public lands will be surveyed and assessed in 2003 to determine if they present a potential concern, and if so, what control measures may be required.)
