TORONTO STAFF REPORT

October 31, 2001

To: Board of Health,
Economic Development and Parks Committee, and
Works Committee

From: Dr. Sheela V. Basrur, Medical Officer of Health
Joe Halstead, Commissioner, Economic Development, Culture and Tourism
Barry Gutteridge, Commissioner, Works and Emergency Services

Subject: Implementation of the Contingency Plan for the Prevention and Control of the West Nile Virus (WNV)

Purpose:

To obtain approval for implementation of the Contingency Plan for the Prevention and Control of the West Nile Virus

Financial Implications and Impact Statement:

The budget enhancements required to implement Option (b) of the Contingency Plan for the Prevention and Control of the West Nile Virus for 2002 are estimated at:

a) Toronto Public Health: $104,000, which includes 3 seasonal staff.

b) Toronto Parks and Recreation: $263,000, which includes 5 seasonal and 1 full time staff.

c) Works and Emergency Services: $30,000 for mapping services and $250,000 contingency to contract with licensed applicators for larval mosquito control in catch basins using the biological pesticide *Bacillus thuringiensis* if, based on the surveillance data, the Medical Officer of Health determines that additional control measures are required.

Actual expenditures in any year will depend on the degree of activity of the virus in Toronto and the associated risk to health. This is a new function that requires a budget allocation.

Toronto Public Health is seeking full funding for its portion of the cost of the program from the Ontario Ministry of Health and Long-term Care. Should these efforts become successful, revenues for these activities are anticipated at:

Ontario Ministry of Health and Long-term Care:	$ 104,000
Property tax base:	$ 543,000

If the Ontario Ministry of Health and Long-term Care will only cost share the Toronto Public Health portion, then the revenues for these activities will be:

Ontario Ministry of Health and Long-term Care:	$ 52,000
Property tax base:	$ 595,000

If City Council is successful in obtaining a commitment from the provincial government to fully fund Option (a) for a total estimated cost of $1,634,000, there will be no financial impact on the City.

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

Recommendations:

It is recommended that:

(1) subject to the receipt of full provincial funding, City Council endorse, in principle, the implementation of the Contingency Plan for the Prevention and Control of the West Nile Virus as outlined in Option (a);

(2) City Council request the Premier of Ontario, the Provincial Minister of Health and Long-term Care, and the Minister of Municipal Affairs and Housing to fully fund the implementation of the Contingency Plan for the Prevention and Control of the West Nile Virus as outlined in Option (a) for a total estimated cost of $1,634,000 in 2002;

(3) In the event that full provincial funding is not approved, City Council endorse, in principle, Option (b);

(4) City Council authorize the Chief Administrative Officer to approve contingency expenditures for mosquito control, on the recommendation of the Medical Officer of Health;

(5) the Board of Health, Economic Development and Parks Committee, and Works Committee refer this report for consideration in the 2002 Operating Budget process; and

(6) the appropriate City Officials be authorized and directed to take the necessary action to give effect thereto.

Background:

At its meeting of July 24, 25, and 26, 2001, City Council adopted the report from the Board of Health on a Contingency Plan for the Prevention and Control of West Nile Virus in Toronto. This report requested that the Medical Officer of Health report back through the 2002 budget process on the financial implications of implementation of the Contingency Plan and that the appropriate City Officials report back jointly through the 2002 budget process on recommended service levels and costs.

Comments:

The surprise emergence of WNV in North America highlighted the need to strengthen the surveillance capacity of local public health units and their ability to respond to new and re-emerging diseases. In 1999, the West Nile virus (WNV) was identified for the first time in North America and it caused severe illness in 62 people, including 7 deaths, in New York and surrounding areas. From around New York City, WNV has since spread to the whole U.S. eastern seaboard and into the mid-western United States. During 2001 in the U.S., the latest data available (October 16) show that 40 people have been identified with a WNV-related disease, one of whom has died. WNV was identified for the first time in Canada in a bird near Windsor in August 2001. By October 17, 2001, 112 birds had been reported with the virus in southern Ontario, 40 of these in Toronto. On October 18, 2001, Peel Region announced that mosquitoes collected earlier in the season had tested positive for the virus. It is anticipated that without adequate measures, WNV will result in human illness and possible death in 2002 and beyond.

Federal and Provincial Initiatives

In 2000, in response to the initial detection of the WNV in New York, Health Canada and the Ontario Ministry of Health and Long-term Care co-ordinated a surveillance programme. In 2001, the emphasis was placed on testing birds of the crow family as the best early-warning indicator. Local health units in Ontario were requested to participate in this effort by collecting dead blue jays, crows and related birds and submitting them to the Canadian Co-operative Wildlife Health Centre in Guelph. Tissue samples were then forwarded to the Health Canada National Microbiological Laboratory in Winnipeg for analysis. For 2001, bird surveillance was undertaken from May 15 until the end of October.

In August 2001, in co-operation with Toronto and other selected health units in Ontario, the Ontario Ministry of Health and Long-term Care initiated a pilot mosquito surveillance programme. After WNV infected birds were identified in Toronto, this programme was enhanced with the assistance of Health Canada. Given that it was late in the season, only a few mosquitoes were trapped. The 2001 surveillance activities were terminated at the end of September. Mosquitoes collected during this period have been sent to the Health Canada laboratory for WNV analysis.

Activities in 2001

The West Nile virus is a mosquito-borne disease that is best prevented through a mosquito management programme, which is a new function for the City. In the June 13, 2001 report to the Board of Health, the Medical Officer of Health outlined the elements of a contingency plan for the prevention and control of WNV. These are education and outreach, surveillance, source reduction and mosquito control which form the basis of an integrated pest management (IPM) approach for the control of WNV. Experience in municipalities that have long-standing mosquito control programs have shown that an IPM approach reduces the need for pesticides and is the most cost effective way to control mosquito populations.

During 2001, as part of its education and outreach efforts, Toronto Public Health (TPH) set up a West Nile virus information line and an Internet site. 17000 enquiries were received on the information line and 3000 hits recorded on the web site. In conjunction with Works and Emergency Services, Parks and Recreation, and other partners, TPH distributed about 20,000 fact sheets to school boards, doctors' offices, long-term care facilities, libraries, community centres, and selected community events. As part of the surveillance programme, more than 1400 birds were collected and about 150 submitted to Guelph for analysis. On behalf of TPH, Toronto Parks and Recreation with assistance from the Toronto Zoo and the Humber Arboretum set out mosquito traps in 10 locations across the City. Human surveillance activities undertaken by TPH included two circulars sent to hospitals and relevant medical specialists, and weekly contacts with hospitals instituted in September. Limited efforts were undertaken in reduction of mosquito-breeding sites with educational materials sent on request to about 150 households.

Provincial and federal support for 2001 activities included the provision of mosquito traps, the costs of processing of mosquito samples and testing for WNV in birds and mosquitoes. The contributions of the City for WNV prevention activities for 2001 are projected to be $ 250,000, including 7 seasonal staff and the reassignment of 3 staff to WNV activities.

There were several limitations in the efforts taken in 2001. Rather than starting in May, activities were not fully implemented until August 2001, the middle of the WNV season. As well, Animal Services was not able to collect dead birds within a 24-hr period resulting in numerous complaints and decayed birds that were not suitable for analysis. Public education depended largely on media coverage and resulted in a peak of attention after the report of the first positive bird near the end of August. This is beyond the optimal time to extend efforts to reduce mosquito-breeding sites and past the period of high risk for WNV transmission, resulting in a lost opportunity to reduce the risk to human health through a more informed public. Even the limited mosquito surveillance undertaken in 2001 had an adverse impact on Parks and Recreation operations and cannot be sustained or expanded within the current budget.

Proposed Activities in 2002

Current provincial guidelines provide guidance to health units on education, surveillance and control activities that should be undertaken to prevent and control the risk of human disease and death related to WNV. The level of activity increases as the risk of disease from WNV increases from Stage 1, when WNV is not identified in the Health Unit or adjacent Health Unit to Stage 4

when a human case is identified in the Health Unit. In 2001, Toronto went from "Stage 1" (no evidence of WNV in Toronto or adjacent health unit) to "Stage 3" (Evidence of WNV in animals in Toronto). Toronto needs to enhance its activities in 2002 to reflect the higher level of risk. Health Canada and the Ontario Ministry of Health and Long-term Care are in process of evaluating the 2001 WNV season in order to make recommendations for future activities.

Preparation for 2002 WNV prevention and control activities needs to start early in the year to ensure implementation at the beginning of the WNV season in early May. Increased educational outreach is needed to encourage removal of standing water that could breed mosquitoes and the adoption of personal protection measures in areas where there are a large number of mosquitoes. Increased surveillance is needed to ensure that appropriate and cost effective measures are take to minimise the risk of transmission of WNV to humans and to minimise the use of pesticides.

Staff have considered three levels of service for 2002, which are described below.

(a) Level of service as outlined in the contingency plan:

Education and outreach: response to 20,000 enquiries, 5000 hits on web site, distribution of 100,000 fact sheets and 5,000 posters to schools, doctors' offices, long-term care facilities, libraries, community centres, "Environment Days" and other community events, bus shelter advertising and an interior TTC posters campaign, distribution of promotional materials at garden centres, and advertising in community and targeted newspapers.

Surveillance: it is anticipated that Toronto Animal Services will be requested to collect 3000 birds from May to October and to respond to requests to collect crows and blue jays within 24 hrs, 7 days a week. Birds would then be submitted to the laboratory for WNV testing as required. Surveys and Mapping proposes to map potential mosquito breeding sites, and Parks and Recreation propose to undertake mosquito surveillance once a week at 40 locations from April to October and survey parks for potential mosquito breeding sites and dead crows and blue jays. As part of its human surveillance activities, Toronto Public Health will send circulars to hospitals and relevant medical specialists and maintain weekly contact with hospitals.

Source reduction: to encourage the reduction in mosquito breeding areas, educational materials will be distributed to 5000 households/businesses where potential breeding sites have been identified and inspections undertaken as needed. Educational outreach to City staff, especially outdoor staff and staff responsible for building and ground maintenance, will be enhanced.

Mosquito control: in cities in the U.S. and Europe, storm water catch basins have been identified as a major breeding ground for C*ulex pipiens*, the mosquito mainly responsible for the transmission of WNV. It is possible to control these mosquitoes through flushing or emptying the catch basins. The annual maintenance programme already includes such activity, and Works and Emergency Services could modify their schedule to address

areas that have been identified as high priority for the control of WNV. Mosquito monitoring will help assess if this is effective in Toronto.

Based on bird, mosquito, and human surveillance data, the Medical Officer of Health may determine that additional control measures are required. There is only a short window of opportunity to effectively target mosquito larvae, and there is the requirement for public notification of any pesticide spraying. Therefore, to ensure that the City is prepared for enhanced mosquito control, a contingency contract with licensed applicators for larval mosquito control in catch basins using the biological pesticide *Bacillus thuringiensis* will be set in place.

Education, outreach, surveillance and control activities are interrelated and the effectiveness of the programme in 2002 depends on successful implementation of each component. An inadequate effort in education, outreach, and surveillance increases the potential need to use pesticides to control mosquitoes. There are over 5300 km of roads in the city and the cost of spraying pesticides to control adult mosquitoes is estimated at $ 115 per kilometre plus the cost of equipment. The proposed programme is designed to prevent this least desirable approach to mosquito control.

The budget enhancement required for this option is estimated at:

(i) Toronto Public Health: $661,000, which includes 16 seasonal and 1 full time staff;

(ii) Toronto Parks and Recreation: $363,000, which includes 8 seasonal and 1 full time staff; and,

(iii) Works and Emergency Services: $110,000 for mapping services and a $500,000 contingency for larval mosquito control in catch basins.

These cost estimates assume that the federal and provincial governments will continue to pay for WNV testing, that public health inspectors will be reassigned to WNV duties as required, and that Works and Emergency Services will be able to modify its catch basin maintenance schedule to help in mosquito control.

(b) Level of service with reduced bird and mosquito surveillance and limited education outreach:

In this option, bird surveillance will be reduced to birds sighted and collected by students hired by Parks and Recreation for the WNV programme. This is expected to reduce the number of staff needed to answer enquiries. Mosquito surveillance will be limited to a pilot program in the region where the highest WNV activity was detected in 2001, and the educational promotion budget will be reduced by eliminating the production and distribution of promotional materials at garden centres and newspaper advertisements. A smaller contingency is also proposed for controlling mosquitoes in catch basins.

The budget enhancement required for this option is estimated at:

(i) Toronto Public Health: $104,000, which includes 3 seasonal staff;

(ii) Toronto Parks and Recreation: $263,000, which includes 5 seasonal and 1 full time staff; and,

(iii) Works and Emergency Services: $30,000 for mapping services and a $250,000 contingency for larval mosquito control in catch basins.

This reduced level of service has the following implications:

(i) decreased sensitivity of bird surveillance as a measure of the level of WNV activity in Toronto;

(ii) inability to meet public expectation for the removal and disposal of dead birds possibly infected with WNV;

(iii) mosquito data available for only a portion of the City, limiting the ability to accurately estimate the degree of risk in parts of the City where no mosquito surveillance has been undertaken and limited data with which to evaluate the effectiveness of control measures;

(iv) reduced awareness of the need for reducing mosquito breeding grounds and of the use of appropriate personal protective measures with a possible increase in the risk of transmission of WNV to humans;

(v) insufficient data to accurately determine the need for mosquito control measures with the potential for additional health risk or the risk of use of inappropriate mosquito control methods and their associated costs;

(vi) potential that human cases will occur in an area of the City where no mosquito surveillance activity has been undertaken; and,

(vi) funds allocated for contingency mosquito control measures may be insufficient to cover all the areas of the City where they are needed.

(c) Level of service with no surveillance activities.

In this option, activities will be limited to education and outreach. A WNV enquiry line and web site would be maintained, fact sheets and posters distributed to schools, doctors' offices, long-term care facilities, libraries, community centres, "Environment Days" and other community events. Subject to availability of free space, bus shelter advertising and an interior TTC poster campaign are also planned.

The budget enhancement required for this option is estimated at:

(i) Toronto Public Health: $104,000, which includes 3 seasonal staff; and,
(ii) Works and Emergency Services: $250,000 contingency for larval mosquito control in catch basins.

This reduced level of service has the following implications:

(i) Toronto would be the only health unit in Ontario with confirmed presence of WNV in 2001 that is not engaging in bird and mosquito surveillance in 2002;

(ii) no data on WNV activity in Toronto;

(iii) no data on mosquito populations in the city to enable to estimate the degree of risk in various areas or the effectiveness of control measures;

(iv) reduced awareness of the need for reducing mosquito breeding grounds and of the use of appropriate personal protective measures with a possible increase in the risk of transmission of WNV to humans;

(v) no data to help determine the need for mosquito control measures with the potential for additional health risk or the risk of use of inappropriate mosquito control methods and their associated costs;

(vi) inability to meet public expectation for the removal and disposal of dead birds possibly infected with WNV; and,

(vii) funds allocated for contingency mosquito control measures may be insufficient to cover all the areas of the City where they are needed.

The proposed service levels can only be achieved with additional allocation of resources. Any attempt to undertake these activities within current allocations will have a detrimental impact on other priority services.

Conclusions:

In the summer of 2001, the West Nile virus was identified for the first time in Ontario, including Toronto. City Council has adopted a Contingency Plan for the Prevention and Control of WNV. To effectively address the risk to human health of West Nile virus, the City needs to strengthen its education and outreach, surveillance, source reduction and mosquito control activities for 2002. This is a new function that can only be achieved with an enhanced budget allocation. Any attempt to undertake these activities within current allocations will have a detrimental impact on other priority services. City Council should request the province to fully fund the Contingency Plan as described in Option (a). In the event that such funding is not available, given the fiscal constraints on the City of Toronto, Option (b), with an associated budget enhancement of $ 647,000 is recommended as the most appropriate level of service for 2002.

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