

CITY OF BURNABY

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ENVIRONMENT COMMITTEE

*HIS WORSHIP, THE MAYOR
AND COUNCILLORS*

SUBJECT: INTERIM MOSQUITO CONTROL STRATEGY FOR PUBLIC LANDS

RECOMMENDATIONS:

1. **THAT** Council approve continuance of the interim mosquito control strategy for public lands in 2004 as noted in Section 3 of this report.
2. **THAT** a copy of this report be sent to Greater Vancouver Regional District, 4330 Kingsway, Burnaby, B.C., V5H 4G8; Medical Health Officer, Fraser Health Authority, Suite 400, 4946 Canada Way, Burnaby, B.C., V5G 4H7; and Parks, Recreation and Culture Commission.

REPORT

The Environment Committee, at its meeting held on 2004 February 10, received and adopted the *attached* report providing updated information regarding mosquito control management activities in Burnaby. The Committee noted that a recently established Regional Mosquito Management Working Group is working through the Regional Engineers Advisory Committee (REAC) to develop a comprehensive mosquito control strategy. In the interim, the Environment Committee proposed a mosquito control strategy for public lands in the event of a possible occurrence of West Nile Virus in Burnaby. The proposed strategy embraces Integrated Pest Management and adaptive management principles. The one-time only grant of \$50,000 from the Ministry of Community, Aboriginal and Women's Services will assist in implementing the prevention and surveillance phases of the proposed work. However, the Committee noted that additional funds may be required for the treatment phase of the proposed work.

Respectfully submitted,

Councillor D. Johnston
Chair

Councillor P. Calendino
Vice Chair

Councillor C. Redman
Member

COPY: CITY MANAGER
DIRECTOR ENGINEERING
DIRECTOR PARKS, RECR. & CULT. SERVICES
DIRECTOR FINANCE

TO: CHAIRPERSON & MEMBERS
ENVIRONMENT COMMITTEE

DATE: 2004 02 03

FROM: DIRECTOR ENGINEERING

FILE: 33000-05

SUBJECT: INTERIM MOSQUITO CONTROL STRATEGY FOR PUBLIC LANDS

PURPOSE: To provide the Committee with an update on various activities undertaken in 2003 relating to mosquito control in an event of a possible occurrence of West Nile Virus in Burnaby and seek continuance of the interim mosquito control strategy for public lands in 2004.

RECOMMENDATION:

1. **THAT** the Committee recommend Council to:
 - a) approve continuance of the interim mosquito control strategy for public lands in 2004 as noted in Section 3 of this report;
 - b) forward a copy of this report to Greater Vancouver Regional District, 4330 Kingsway, Burnaby, B.C., V5H 4G8; Medical Health Officer, Fraser Health Authority, Suite 400, 4946 Canada Way, Burnaby, B.C., V5G 4H7; and Parks, Recreation and Cultural Commission.

REPORT

1.0 INTRODUCTION

At the June 16, 2003 Council meeting, Council received a report from the Environment Committee on interim mosquito control strategy for public lands in an event of a possible occurrence of West Nile Virus in Burnaby and approved the recommendations noted in the report.

As the Committee will recall, West Nile Virus (WNV) is a mosquito-borne virus which is spread between mosquitoes and birds, but humans and birds can get WNV through the bite of an infected mosquito. Birds are reservoir hosts and most documented cases in birds are in the family of *Corvidae* or corvids (crows, jays, nutcrackers, magpies, ravens). According

to the BC Centre for Disease Control (BCCDC), most people who become infected will experience no symptoms at all. About 20% of those will develop mild flu-like symptoms lasting about a week or less. In rare cases (less than 1%) WNV can result in serious health effects such as meningitis (inflammation of the lining of the brain) or encephalitis (inflammation of the brain). There is no evidence of WNV spreading by direct person-to-person contact. There are no human vaccine for WNV at present.

The purpose of this report is to provide the Committee with an update on various activities undertaken in 2003 relating to the noted strategy and seek continuance of the interim mosquito control strategy for public lands in 2004.

2.0 MOSQUITO CONTROL MANAGEMENT ACTIVITIES (2003)

Given the possible occurrence of West Nile Virus (WNV) in the Lower Mainland, staff undertook the following actions in 2003:

a) Education and Awareness

In order to increase greater staff and public awareness regarding WNV, staff undertook the following actions:

Three joint City and Fraser Health Authority (FHA) information sessions on WNV were held with City staff. Pamphlets on WNV prepared by the Fraser Health Authority were distributed at all Civic facilities and information on WNV was also posted on the City Web site. A joint City and FHA information article on WNV was placed in the Burnaby Now in June and July. In addition, information on WNV was also included in the August issue of Information Burnaby.

b) Surveillance of Dead Crows and Adult Mosquito Trapping

Fraser Health staff collaborated with the Burnaby SPCA in collection of dead crows. Analysis of the dead crows was undertaken at B.C. Animal Health Center (Abbotsford). According to the BCCDC website, 1,911 corvids were tested (corvid surveillance period between May 05 to November 05, 2003). Of these 109 were from Burnaby. There was no WNV detected in the tested samples. Complete results are available through BCCDC web site (www.bccdc.org).

Similarly, the Fraser Health Authority placed an adult mosquito trap in Burnaby (initially located in Big Bend area and subsequently moved to Burnaby Lake area). Samples were obtained once a week and submitted to the BCCDC laboratory for genus identification during

the monitoring period (mid-June to end of September). In addition, a representative number of mosquito carcasses were sent for WNV testing. There was no WNV detected in the tested samples.

c) Surveillance and Mapping of Mosquitoes Breeding Sites on Public Lands

The City retained Acroloxus Wetlands Consultancy in affiliation with Evergro group of companies to undertake a phased approach in surveillance and mapping of mosquitoes breeding areas on public lands within Burnaby.

The first phase was to identify WNV vector hotspots and included:

- ▶ establishing key potential breeding areas using aerial photographs and local staff knowledge;
- ▶ carrying out field surveys of all the potential sites including obtaining basic physical information on water flow, water clarity, and total suspended solids, estimating percentage cover of emergent / marginal / submergent vegetation, and noting presence of predators including water beetles, dragonflies, and amphibians; and
- ▶ undertaking sampling for larval and pupal mosquitoes in accordance with the Municipal Mosquito Control Guidelines (Ellis, 2001). Based on the results, the mosquito breeding sites were rated according to high, moderate and low risk sites.

Phase 2 of the work included:

- ▶ focussing on high and moderate risk areas through a more detailed mosquito survey; investigation of local hydrology of the area and assessment of human activity / population near the sites;
- ▶ considering environmentally sensitive control options; and
- ▶ establishing Integrated Mosquito Management Plan (IMMP) for each of the high and moderate risk sites.

In Phase 1, a total of 154 sites were visited (see *Attachment #1*). Of these, 26 sites had no potential breeding habitat; 22 sites were dried up (due to extensive dry summer); 24 sites were fast flowing and therefore unsuitable as breeding habitat; and 82 sites contained shallow waterbodies that were sampled.

A total of 125 samples were taken at different stations. Based on the sampling, larvae or pupae were found at 37 sites. The most common species found were *Culex pipiens* (primarily feeds on birds but will also feed on reptiles and mammals and only become nuisance to humans in late summer and fall) *Culex tarsalis* (virus vector that bites both birds and humans) and *Culex territans* (predominantly an amphibian biter and not considered to

be a *WNV* vector). Pupae were found at 21 stations and all those that emerged were identified as *Culex* species. Of these 37 sites rated as WNV risk, 6 sites were ranked as high risk, 16 sites were identified moderate risk and 15 sites were noted to be low risk (see Attachment #2).

In Phase 2 of the work, the WNV priority sites identified in Phase 1 were condensed into five locations and IMMPs were presented for each of the five locations (see Attachment #3 and #4).

Phases 1 and 2 provided good baseline data for future monitoring and will considerably reduce the amount of effort required to assess and respond to the risk posed by WNV in future. However, the data are only the result of samples taken in a single season and in an exceptionally hot and dry year. To account for temporal variation, the consultant recommended that additional monitoring would be required in 2004. Assessment of catch basins as mosquito reservoirs needs to be undertaken as well.

3.0 INTERIM MOSQUITO CONTROL MANAGEMENT STRATEGY FOR PUBLIC LANDS - 2004

A recently established Regional Mosquito Management Working Group is working through the Regional Engineers Advisory Committee (REAC) to develop a comprehensive mosquito control strategy. In the interim, staff propose the following mosquito control strategy for public lands within Burnaby.

PHASE	ACTIVITY	TIMING	COMMENTS
Prevention	Public Education	February - May	Develop a public education strategy in collaboration with the GVRD and Fraser Health Authority to increase awareness regarding WNV;
	Staff Education	February - May	Continuation of distribution of information on WNV to staff.

PHASE	ACTIVITY	TIMING	COMMENTS
Surveillance	Monitoring of adult mosquitoes and breeding sites on public lands	March - May	Detection of the onset of egg laying by overwintering WNV vectors; Re-evaluation of high and moderate risk sites; Re-evaluation of Integrated Mosquito Management Plan for each site; Limited spot application of Bti (<i>Bacillus thuringiensis israelensis</i>) where necessary only and as a part of IMMP.
	Bird (crow) collection and testing	May - November	To be undertaken by Fraser Health Authority as a lead. Results of dead crow analysis to be available through BCCDC web site (www.bccdc.org).
	Adult mosquito collection, identification	To be determined	Placement of trap by Fraser Health Authority with samples submitted to the laboratory for genus identification and WNV testing. Results of analysis to be available through BCCDC web site (www.bccdc.org).
	Monitoring of catch basins	March - May	Determine the significance of these sites as breeding areas through sampling of catch basins and ranking catch basins with respect to high, moderate and low risk. Develop an Integrated Mosquito Management Plan for catch basins.

PHASE	ACTIVITY	TIMING	COMMENTS
	Mapping of adult mosquito and breeding sites.	April - May	Dynamic mapping utilizing GIS to provide information on potential population impact, institutions, permitted daycare and adult care facilities, streams (including classifications) at or near high and moderate WNV risk sites.
Treatment	Broader Larvicide Treatment - Ditches / Ponds / Swales / Catch Basins on Public Lands	If necessary	Only when ordered by the Medical Health Officer, Fraser Health Officer based on the evaluation of indicators - human cases, positive results in birds and or mosquitoes; Firm costs need to be established particularly for catch basin treatment.
	Adult Mosquito Treatment	If necessary	Application to adulticide to be undertaken only when ordered by the Medical Health Officer, Fraser Health Authority and upon receiving specific approval from Council.

In December 2003, the Ministry of Community, Aboriginal and Women's Services announced a one-time grant to a maximum of \$50,000 to help local governments fund their West Nile Virus program. The City had applied for the noted grant and recently received \$50,000. The grant monies will assist in implementation of the prevention and surveillance phases of the proposed work. However, additional funds may be required for the treatment phase of the proposed work.

3.0 CONCLUSION

A recently established Regional Mosquito Management Working Group is working through the Regional Engineers Advisory Committee (REAC) to develop a comprehensive mosquito control strategy. In the interim, staff have proposed and seek approval on a mosquito control strategy for public lands in the event of a possible occurrence of West Nile Virus in Burnaby. The proposed strategy embraces Integrated Pest Management and adaptive management principles. The one-time grant of \$50,000 from the Ministry of Community, Aboriginal and Women's Services will assist in implementing the prevention and surveillance phases of the proposed work. However, additional funds may be required for the treatment phase of the proposed work.



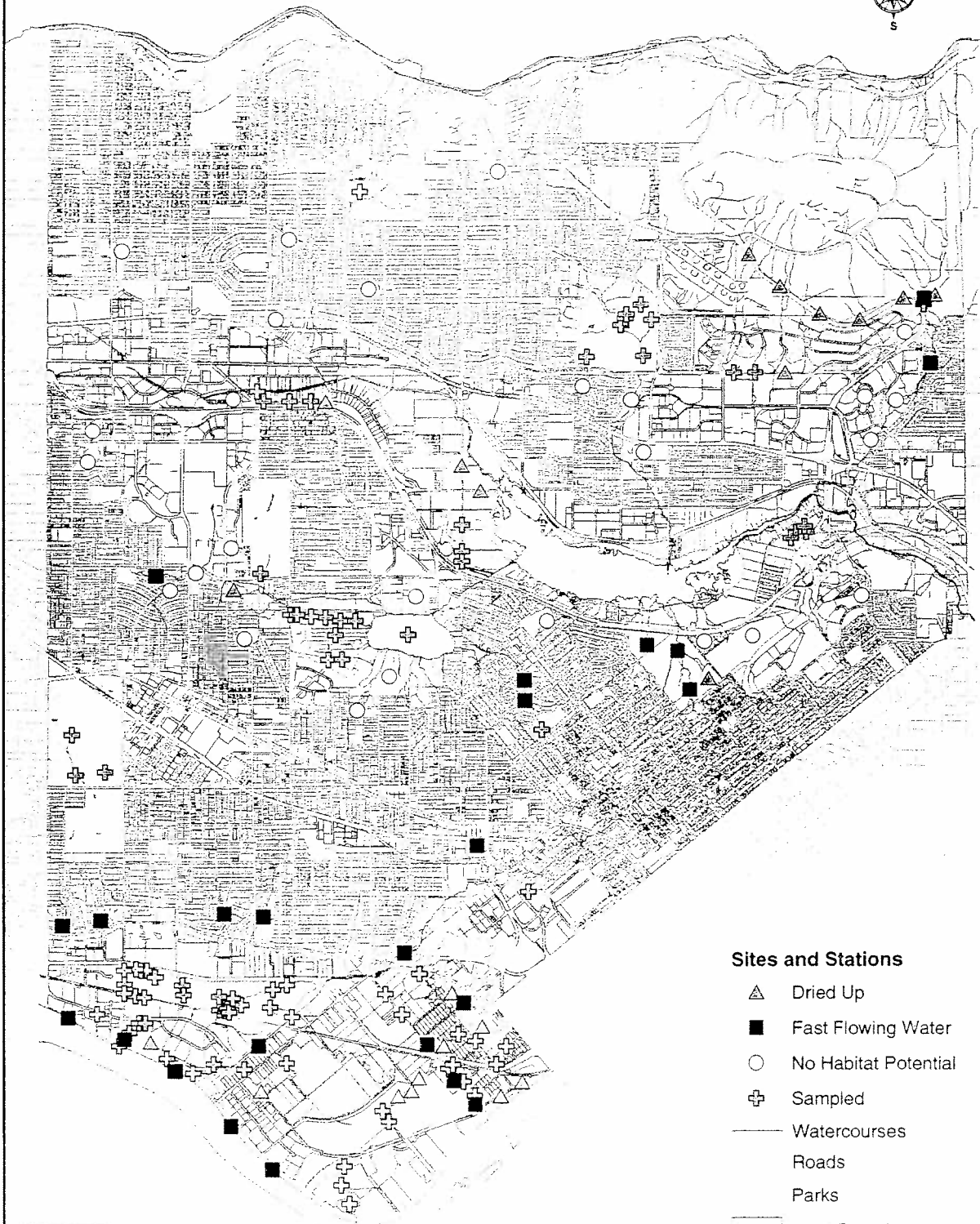
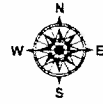
W.C. Sinclair, P. Eng.
DIRECTOR ENGINEERING

DD:dh
Attachments

cc: City Manager
Director Parks, Recreation and Cultural Services
Director Finance

City of Burnaby Interim Mosquito Control Strategy

Map 1. Sites Visited and Stations Sampled

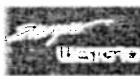


Sites and Stations

- △ Dried Up
- Fast Flowing Water
- No Habitat Potential
- ⊕ Sampled
- Watercourses
- Roads
- Parks
- - - Land Parcels



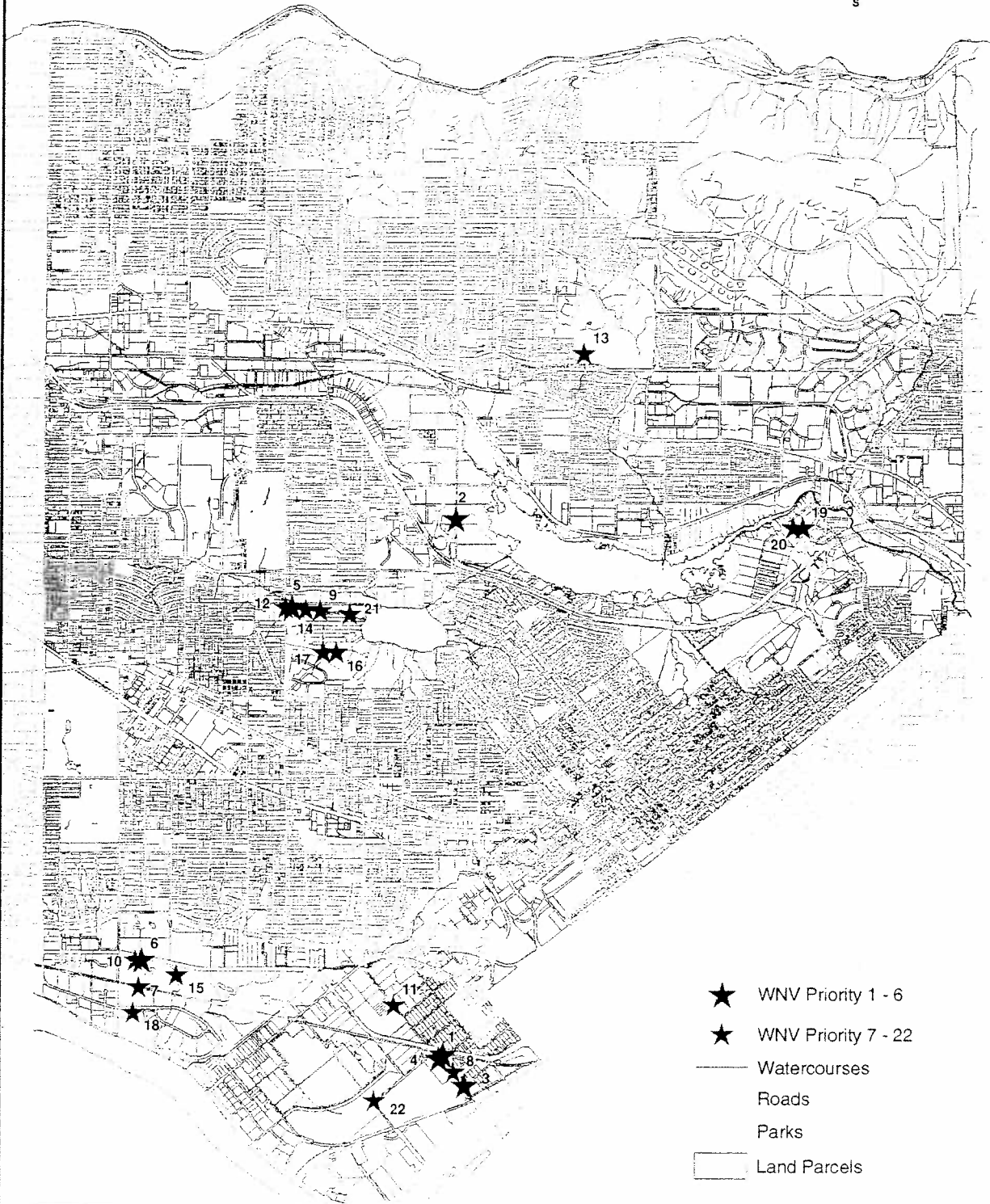
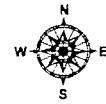
July, 2003



0 0.5 1 2 Kilometers
Scale 1:40,000

City of Burnaby Interim Mosquito Control Strategy

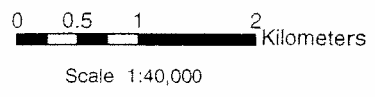
Map 4. WNV Priority Ratings



- ★ WNV Priority 1 - 6
- ★ WNV Priority 7 - 22
- Watercourses
- Roads
- Parks
- Land Parcels



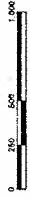
July, 2003



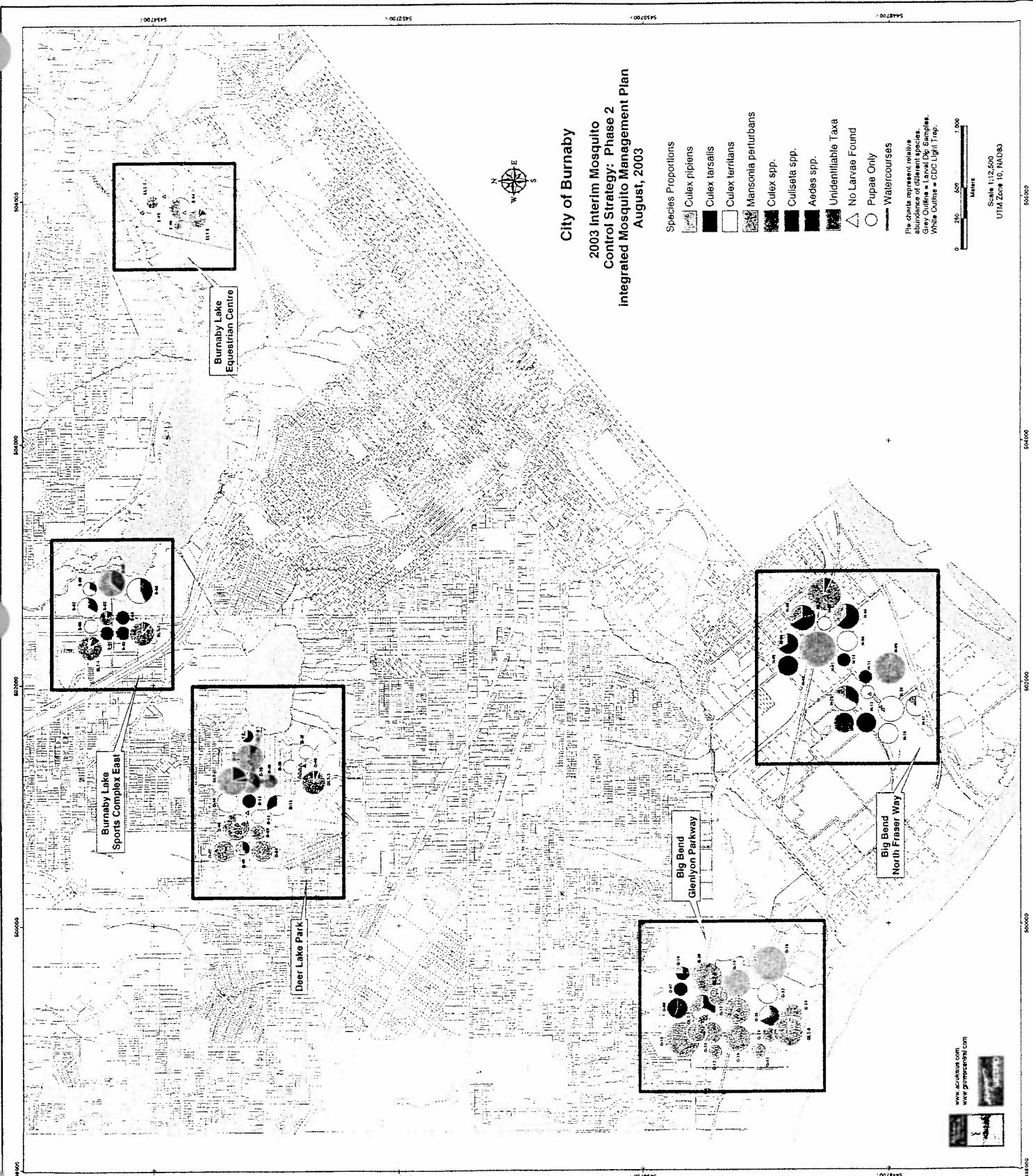
City of Burnaby
2003 Interim Mosquito
Control Strategy: Phase 2
Integrated Mosquito Management Plan
August, 2003



- Species Proportions**
- Culex pipiens
 - Culex tarsalis
 - Culex territans
 - Mansonia perturbans
 - Culex spp.
 - Culiseta spp.
 - Aedes spp.
 - Unidentifiable Taxa
 - No Larvae Found
 - Pupae Only
 - Watercourses
- Note: Pie charts represent relative abundance of different species. Grey Outline = Larval Dip. Samples. White Outline = CDC Light Trap.*



Scale 1:12,500
 UTM Zone 18, NAD83



www.cityofburnaby.ca
 www.gomocanada.com

