

THE COMMONWEALTH OF MASSACHUSETTS  
STATE RECLAMATION & MOSQUITO CONTROL BOARD

# CENTRAL MASSACHUSETTS MOSQUITO CONTROL PROJECT

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[www.cmmcp.org](http://www.cmmcp.org)



## ANNUAL REPORT 2006

## PREFACE

The 2006 Annual Report of the Central Massachusetts Mosquito Control Project (the Project) has been prepared to provide the citizens and officials of the member cities and towns with information pertaining to the Project's control procedures and related activities.

As you read through this report you will notice that the Project is committed to an Integrated Mosquito Management (IMM) program. IMM utilizes a variety of control techniques and evaluation procedures. All control efforts are undertaken only after surveillance data has been collected and analyzed. This allows control decisions to be made based on the exact need that exists at each specific site. Environmental considerations are paramount when prescribing various control techniques.

The CMMCP Board of Commission is appointed by the State Reclamation and Mosquito Control Board to represent your community's interest. The Commissioners meet with the Executive Director and Director of Operations on a regular basis to discuss and formulate policies, and to provide their expertise in the operation of the Project. The Commissioners welcome your input, and we encourage you to schedule an appointment to visit our Project headquarters.

Copies of this report are distributed to key officials and departments in our member communities, as well as to the public libraries. We would encourage officials to take time from their busy schedule to read this report. Project personnel are available to answer questions you may have, and to meet with you to discuss out procedures and techniques. The Project's website at [www.cmmcp.org](http://www.cmmcp.org) has extensive information on mosquito control in Central Massachusetts.

The Project's goal is to provide effective and environmentally sound mosquito control, reducing mosquito annoyance and the potential for the transmission of mosquito-borne diseases. Our staff of competent, well-trained employees are known throughout the member communities as individuals who take great pride in their work.

Thank you,

Richard J. Day, Chair  
Board of Commissioners  
Central Massachusetts Mosquito Control Project

**THE COMMONWEALTH OF MASSACHUSETTS**

State Reclamation & Mosquito Control Board  
251 Causeway Street Suite 500  
Boston, Massachusetts 02114

<http://www.mass.gov/agr/mosquito/>

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Mr. Michael Gildesgame (DCR)

Mr. Gary Gonyea (DEP)  
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**Commissioners of Central Massachusetts Mosquito Control Project**  
[commission@cmmcp.org](mailto:commission@cmmcp.org)

Mr. Richard J. Day - Chair  
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Leominster, Massachusetts

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Billerica, Massachusetts

Mr. George Smith  
Northborough, Massachusetts

Mr. Paul Mazzuchelli  
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LIST OF MEMBER COMMUNITIES - 2006

TOWN

SQUARE MILES

DISTRICT ONE

BILLERICA	25.96
CHELMSFORD	22.70
DRACUT	20.90
LITTLETON	16.60
TEWKSBURY	20.70
WESTFORD	30.60
WILMINGTON	17.12

DISTRICT TWO

ACTON	20.00
AYER	9.00
BOXBOROUGH	10.40
FITCHBURG	27.80
LEOMINSTER	28.90
LUNENBURG	26.40
STOW	17.60

DISTRICT THREE

BERLIN	12.90
CLINTON	5.70
HUDSON	11.50
MARLBOROUGH	21.10
NORTHBOROUGH	18.50
SHREWSBURY	20.70
SOUTHBOROUGH	14.10

DISTRICT FOUR

ASHLAND	12.40
HOLLISTON	18.70
HOPEDALE	5.27
HOPKINTON	26.60
MILFORD	14.60
NATICK	15.10
SHERBORN	16.00
WESTBOROUGH	20.50

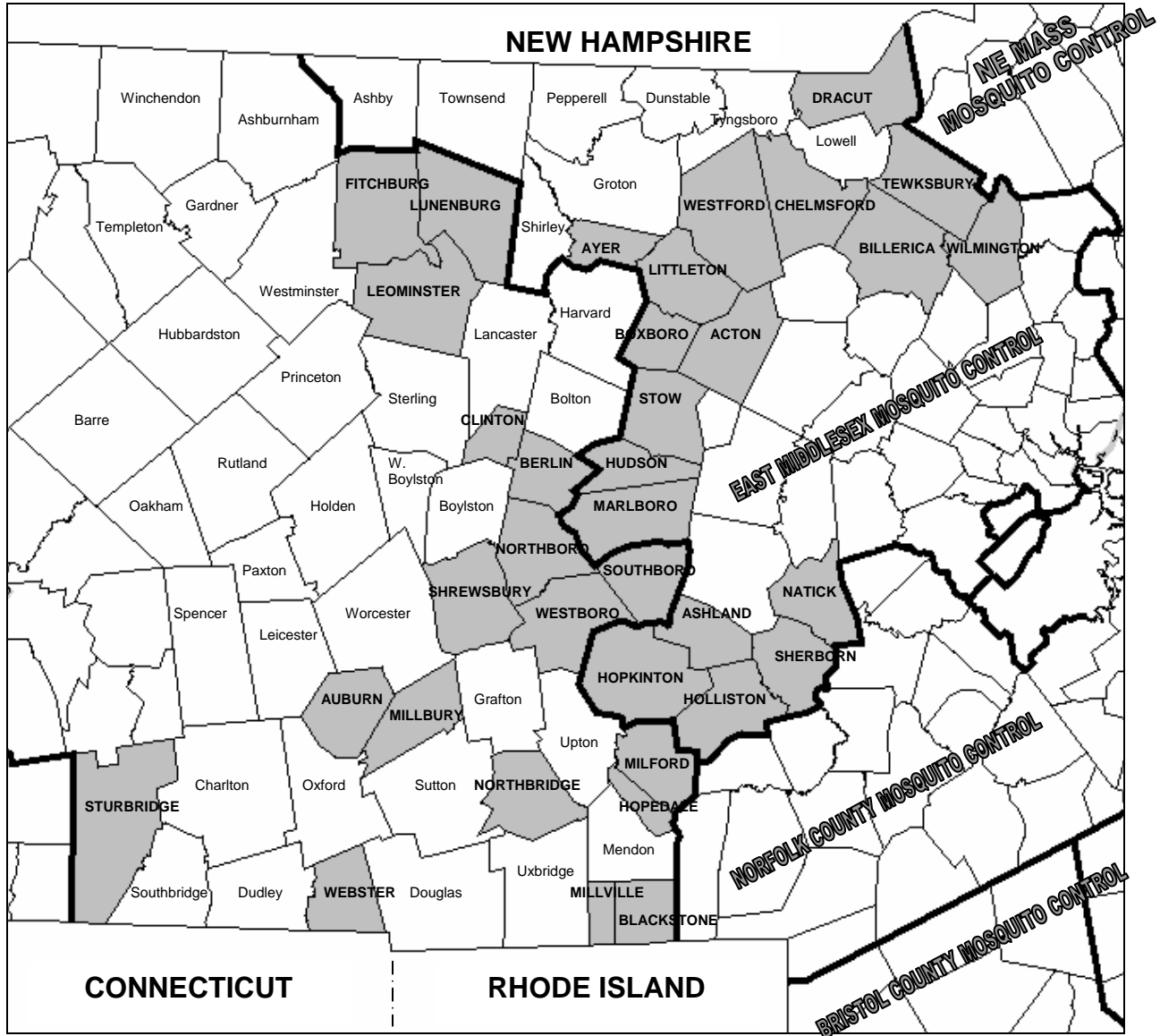
DISTRICT FIVE

AUBURN	15.40
BLACKSTONE	10.90
MILLBURY	15.70
MILLVILLE	4.92
NORTHBRIDGE	17.20
STURBRIDGE	37.40
WEBSTER	12.50

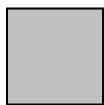
Total Square Miles

642.37

# CMMCP SERVICE AREA



≈ 2006 ≈



= member towns



## MOSQUITO CONTROL ACTIVITIES

One basic fact of the mosquito's biology is the dependence on still, stagnant water to complete its life cycle from egg to adult. Currently, there are two basic control methods practiced by the Project to disrupt this process. The first and most permanent method is called "*water management, source reduction or wetlands restoration*". This method reduces or eliminates the source of a potential mosquito problem, and consists of cleaning road-side ditches and culverts, removal of brush and accumulated debris from streams, and removal of containers which contain water. All of the above mentioned methods serve to accomplish the same goal - they permit water to flow freely, and reduce the likelihood for stagnant areas, areas in which the mosquito needs to reproduce. Source reduction is practiced year-round, and is done only after extensive examinations, and permission is received by the property owner(s).

There are places where water management is neither practical nor feasible for one reason or another. In these situations, we practice a method called *larviciding*. After a field technician has determined that larval mosquitoes are present, a small amount of environmentally sensitive product is applied to the area according to label directions. This is often a very effective control method, reducing the emergence of the adult mosquito from that area. Larviciding is practiced from late-March to September. Bti is the product of choice for larviciding in wetlands.

A third method is to attempt to control the adult mosquito. The control of adult mosquitoes is done on a *request-only* basis, and the presence of adult mosquitoes is confirmed before any application is done. Adulticiding can be an effective method of *temporary* control, which can be beneficial prior to public gatherings, outdoor events and festivals, or when mosquito populations have been determined to be intolerable. Since this part of the program is done **only upon request**, this allows the individual resident to have the ultimate discretion on mosquito spraying in their area - how much or how little. Exemptions for spraying are handled through the City/Town Clerk and the Project office, and are updated each year. Adulticiding is done from approximately Memorial Day to Labor Day, depending on prevalent mosquito populations and the mosquito-borne disease situation.

All products used by the Project have been extensively tested by manufacturers, the US government and mosquito control agencies for many years. They are registered by the EPA and the Mass. Pesticide Bureau. Labels and fact sheets are available upon request to the public from the Project's office, or from our website.

We operate a full surveillance program in our service area. The landing rates performed by our field staff are brought back to the Project lab to be keyed out to species, allowing us to tailor our larviciding program and reduce future dependence on adulticides. We have a mobile team of specialized mosquito traps, called *gravid traps*, designed to capture virus-bearing mosquitoes. These mosquito collections, called *pools*, are sent into the Mass. Dept. of Public Health (MDPH) laboratory in Jamaica Plain for testing of West Nile Virus, Eastern Equine Encephalitis, and other arboviruses of concern by MDPH. These traps are used in a rotation throughout our service area, and are then concentrated in areas showing arboviral activity to supplement MDPH's collection protocols. Additional trap types are utilized in suspect areas to monitor and evaluate the risk of viral transmission to the local populace.

A comprehensive educational program is offered to area schools and civic groups. The program is aimed towards mosquito biology, mosquito habitat, and efforts citizens can undertake to reduce the potential for mosquito populations in their own neighborhood. This program is tailored to suit the requirements of the individual group, from elementary school children, to high school, to adult groups.

## PROGRAM EVALUATION

This is a part of the program which many people involved directly never see. It must begin with a carefully planned program, one designed so that the data obtained during surveys before treatment and the surveys taken after treatment can be analyzed by statistically sound methods. Only by doing this can the value of a mosquito control program be determined. We will then know what type (species) of mosquito we are dealing with; what the population density is; what method(s) of control provide the most economical and efficient results.

Then and only then can we say that we have or have not affected mosquito control on a level that is acceptable to the community.

#### SEASONAL OUTLINE OF MOSQUITO CONTROL PROGRAM

1. Vehicle and equipment repair and storage - November through March
2. Wetlands Restoration - throughout the year
3. Program Preparation - December through March
4. Map compilation and training - throughout the year
5. Larviciding - May through September
6. Adulticiding - June through September
7. Catch Basin Treatment - May through September

Any mosquito control being done by individual member communities must, by law, be coordinated through the Central Massachusetts Mosquito Control Project.

## SERVICES AND ACTIVITIES

The following services and activities are available to those communities participating in the Central Massachusetts Mosquito Control Project:

### **ADMINISTRATIVE**

1. Assess the need for mosquito control within each of the member communities.
2. Plan and organize a mosquito control program for each member community based on the specific needs of that community.
3. Assist member communities to implement mosquito control programs so as to enable the residents of that community to receive maximum benefits from organized mosquito control.
4. Administer new and coordinate existing mosquito control programs.
5. Collect and maintain accurate records of mosquito populations, ascertain prevalent species, and collate pertinent data for each member community.
6. Cooperate with federal, state and local agencies concerned with vector control programs which may be implemented in the community.
7. Prepare annual reports of Project activities, mosquito population density profiles, recommendations, and any other data requested by the member communities.
8. Provide supervision to staff members and encourage policies which lend themselves to effective and efficient mosquito control.

### **PUBLIC EDUCATION**

1. Inform the general public, as well as professional groups, of the mosquito control activities intended for each member community through news releases, speakers for community and professional organizations, special educational and training programs (including seminars for environmental interest groups), integration of proposed vector control programs with other organizations, agencies and institutions with similar goals.
2. Offer educational programs to the public school system within the member cities and towns. Programs will be aimed toward mosquito biology, mosquito habitat, and efforts which citizens can undertake to reduce mosquito populations in their neighborhoods.
3. Keep the member communities informed of changes and advancements in mosquito control technology and legislation.

MEDICAL ENTOMOLOGY LABORATORY REPORT, 2006

The mission of the Medical Entomology Laboratory is to refine and maximize the CMMCP's ongoing effort to control mosquitoes. During 2006 Medical Entomology Laboratory personnel carried forward this mission in the following ways:

- Medical Entomology Laboratory personnel made educational presentations about mosquito biology and mosquito control practices before elementary school students.
- The CMMCP's adulticiding practices were evaluated for efficacy.
- The Medical Entomology Laboratory's physical capabilities were improved during 2006 by the acquisition of ten New Standard Miniature Light Traps with Photocell-Controlled CO<sub>2</sub> Release.

A New Standard Miniature Incandescent Light Trap uses a small incandescent light bulb to attract mosquitoes. Cleaner collections may be made by not using the light bulb and adding CO<sub>2</sub> gas released from a cylinder. Mosquitoes are attracted by the CO<sub>2</sub> to the trap. The addition of CO<sub>2</sub> gas also results in larger collections of mosquitoes. The trap has a small precision pneumatic valve which is controlled by an internal photo switch that turns on and off the release of CO<sub>2</sub> with the light level. Therefore the release of gas is taking place when mosquitoes are most likely to be active in the area being monitored.

During 2006 three interns were employed for part of the season to operate the mosquito surveillance traps. CMMCP staff also participated in the operation of surveillance traps. Using their knowledge of mosquito behavior and the local terrain, these skilled and experienced personnel monitored the adult mosquito population. New Standard Miniature Light Traps with Photocell-Controlled CO<sub>2</sub> Release were used to monitor the adult mosquito population for Eastern Equine Encephalitis. Modified Reiter Gravid Traps were used to monitor the adult mosquito population for West Nile virus. Modified Reiter Gravid Traps are attractive to the mosquito species thought most likely to have a role in the maintenance and spread of West Nile virus in the United States of America.

CMMCP personnel made 1,528 collections of mosquitoes this season. The collections contained 39,506 adult mosquitoes. Adult mosquitoes of species known to play a role in the transmission of disease were tested for the presence of West Nile virus and Eastern Equine Encephalitis virus. Two collections tested positive for West Nile virus. One collection tested positive for Eastern Equine Encephalitis virus. The surveillance indicates that these pathogens were circulating in the local environment during 2006. Mosquito control efforts were augmented in the areas where these infected mosquitoes were collected. Further surveillance did not provide any additional positive findings. The data from these collections was shared with the Massachusetts Department of Public Health. A mosquito surveillance report was uploaded each week during the collection season on the CMMCP website at this link: [www.cmmcp.org/06summary.htm](http://www.cmmcp.org/06summary.htm). These reports listed mosquito collections and virus results for each week. Graphs showing mosquito population trends compared to historical data were also included, as well as detailed summaries by town of mosquito collections submitted to MDPH.

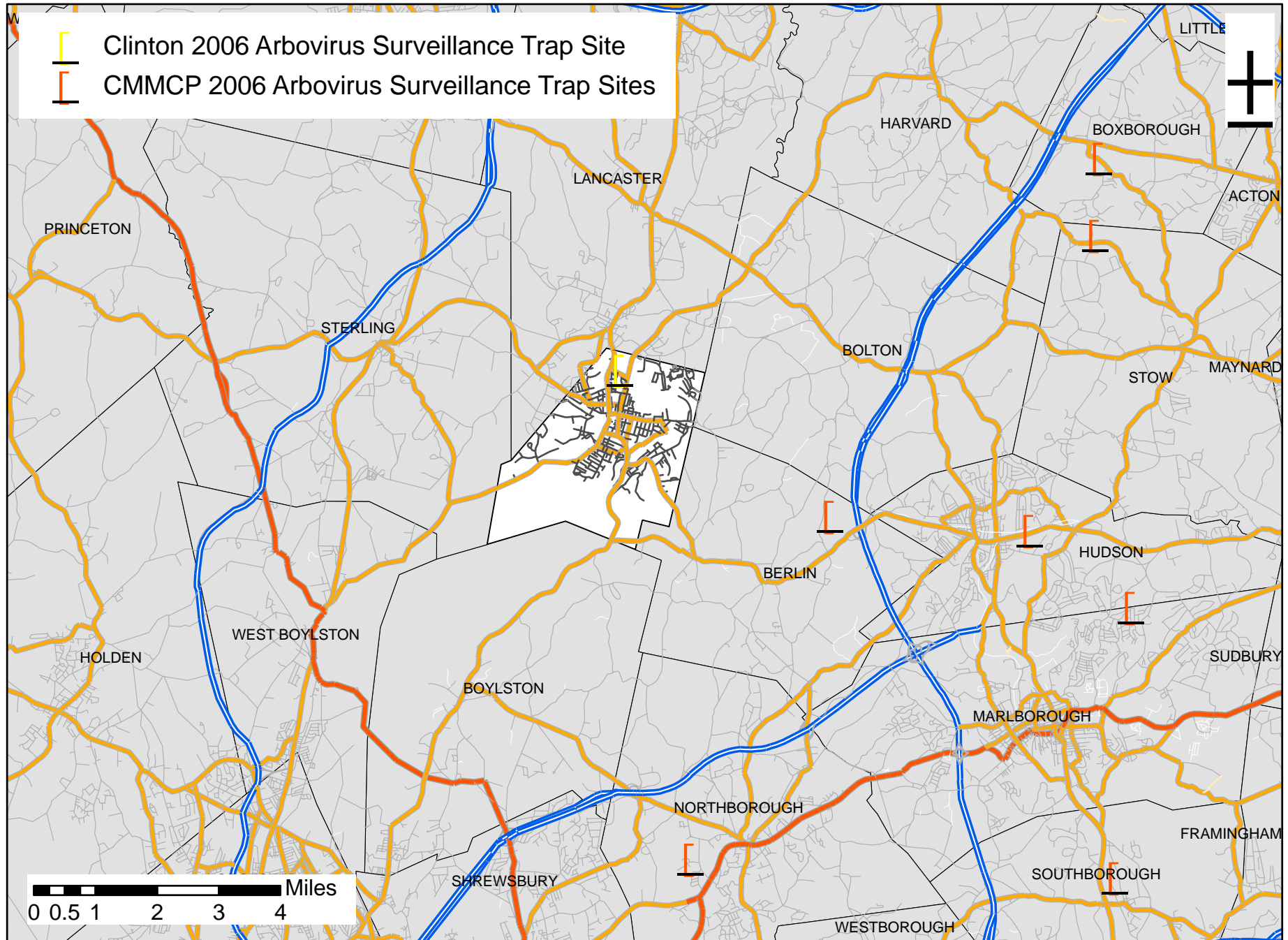
Town	Tested Date	Pool ID	Species	Result	Virus Type
Westborough	9/6/2006	CM06-00835	<i>Culex pipiens/restuans</i>	Positive	WNV positive
Westborough	9/27/2006	CM06-01064	<i>Culiseta melanura</i>	Positive	WNV positive
Leominster	10/4/2006	CM06-01186	<i>Culiseta morsitans</i>	Positive	EEE positive

The Medical Entomology Laboratory is committed to the advancement of mosquito control practices by the application of the scientific method. Such a commitment will further enable the Central Massachusetts Mosquito Control Project to provide its member communities with quality mosquito control for comfort and health.

WNV Surveillance Summary - <u>Statewide</u>	2006
Dead Birds Reported	4,261
Birds Submitted for Testing	320
Birds Tested	313
Birds Positive	57
Mosquito Pools Positive	43
Horses Positive	0
Humans Positive	3

<b>EEE</b> Surveillance Summary - <u>Statewide</u>	<b>2006</b>
Mosquito Pools Positive	157
Horses Positive	6
Humans Positive	5
** A llama from Scituate in Plymouth County (onset 9/7/06) and a harbor seal from Fall River in Bristol County (onset 9/21/06) also tested positive for EEE virus in 2006.	
<b>CMMCP</b> Surveillance Summary	<b>2006</b>
Mosquito Pools Submitted for testing	1,276
Mosquito Pools (total)	3,594
Mosquito Pools Positive WNV	2 (both Westboro)
Horses Positive	0
Humans Positive	2 (Billerica & Webster)
Pools Positive EEE	1 (Leominster)
Horses Positive	0
Humans Positive	0

# Town of Clinton Arbovirus Surveillance Program



TOWN OF CLINTON

<u>DATE</u>	<u>WORK DONE</u>	<u>LOCATION</u>
01-26-06	Stream Cleaning 45'	Rigby Road
	Stream Cleaning 10'	Greeley Street
	Stream Cleaning 10'	Brendan Avenue
	Stream Cleaning 20'	Bolton Road
	Culvert Cleaning (22)	Fitch Road, Rigby Road, Greeley Street, Craig Drive, Brendan Avenue, Lancaster Road, Ridgefield Circle, Fox Run Drive, Horseshoe Lane, Bolton Road, Berlin Street, Candice Street, Woodland Circle
02-15-06	Administrative Contact	Town Hall
	Stream Cleaning 10'	Fox Run Drive
	Stream Cleaning 10'	Lancaster Road
	Stream Cleaning 10'	Berlin Street
	Stream Cleaning 15'	Berlin Street
	Stream Cleaning 10'	Route 62
	Culvert Cleaning (27)	Fox Run Drive, Lancaster Road, Colonial Drive, Horseshoe Lane, Water Street, Berlin Street, Coyne Street, Wilson Street, Cameron Street, Allen Street, Main Street, Parker Street, Marshall Street, Sterling Street, Rigby Street, Fitch Road, South Meadow Pond Road, John Street, Fairview Street, Route 62
03-07-06	Administrative Contact	Town Clerk, Board Of Selectmen, Finance Committee, Board Of Health, Library, Conservation Commission, Department Of Public Works
03-14-06	Administrative Contact	Board Of Health
	Stream Cleaning 15'	Brendan Avenue
	Stream Cleaning 30'	Lancaster Road
	Stream Cleaning 15'	Fox Run Drive
	Stream Cleaning 15'	Horseshoe Lane
	Stream Cleaning 25'	Fitch Road
	Stream Cleaning 10'	Berlin Street
	Stream Cleaning 10'	Berlin Street
	Stream Cleaning 15'	Berlin Street
	Culvert Cleaning (27)	Craig Drive, Brendan Avenue, Lancaster Road, Ridgefield Circle, Fox Run Drive, Colonial Drive, Horseshoe Lane, Fitch Road, South Meadow Road, Willow Road, Boylston Street, Cameron Street, Wilson Street, Berlin Street, Coyne Street, Rigby Street, Parker Street, Marshall Street, John Street, Fairview Street
04-04-06	Administrative Contact	Town Clerk's Office
04-12-06	Public Relations	Chace Street
	Larval Survey	High Street, Allen Street, Main Street, Berlin Street, Coyne Street, Chace Street
	Larviciding	High Street, Berlin Street, Clinton Place Condominium, Chace Street
04-28-06	Larval Survey	Fox Run Drive, Horseshoe Lane, Water Street, Eileen Avenue, Chace Street, Green Street, Myrtle Street, Candice Street, Willow Road
	Larviciding	Lancaster Road, Boylston Street
05-02-06	Administrative Contact	Board Of Health
	Public Relations	Clinton Elementary School - 100 Church Street
05-09-06	Larval Survey	South Meadow Road, West Boylston Street, South Main Street, Rigby Road, Allen Street, Gorham Avenue, Main Street
	Larviciding	South Meadow Road, Woodlawn Street, Sterling Street, Main Street
05-18-06	Larval Survey	Adams Road, Main Street, South Meadow Road, Fox Run Drive, West Boylston Street, Lancaster Road, Horseshoe Lane, Water Street, Eileen Avenue, Green Street, Berlin Street
	Larviciding	Adams Road, Lawrence Street, Main Street, Fox Run Drive, Eileen Avenue, Berlin Street
05-19-06	Administrative Contact	Board Of Health
05-22-06	Trap Survey	Allen Street
05-30-06	Administrative Contact	Police Department
	Public Relation	Bolton Road, Wilson Street, Clamshell Road
	Adulticiding	Clamshell Road, Wilson Street
	Set Trap	Allen Street
05-31-06	Pick Up Trap	Allen Street

TOWN OF CLINTON

<u>DATE</u>	<u>WORK DONE</u>	<u>LOCATION</u>
06-05-06	Administrative Contact Public Relations Landing Count Adulticiding Larval Survey	Police Department Bolton Road Bolton Road, Ridgefield Condominiums, High Street Ridgefield Condominiums, Bolton Road Green Street, Eileen Street, Water Street, Chace Street, Horseshoe Lane, Fox Run Drive
	Larviciding	Fox Run Drive
06-06-06	Set Trap	Allen Street
06-07-06	Pick Up Trap	Allen Street
06-08-06	Administrative Contact Public Relations Adulticiding	Police Department Berlin Street Berlin Street
06-12-06	Administrative Contact Public Relations Adulticiding	Police Department Skyline Drive, Wilson Street, Pearl Street Skyline Drive, Wilson Street, Pearl Street
06-13-06	Set Trap	Allen Street
06-14-06	Pick Up Trap	Allen Street
06-19-06	Administrative Contact Public Relations  Landing Count Adulticiding	Police Department Skyline Drive, Beacon Street, Stonebridge Circle, Wilson Street, Oak Street, Mulberry Drive, Candice Street, JFK Avenue, Milton Avenue Skyline Drive, Wilson Street, JFK Drive Skyline Drive, Beacon Street, Stonebridge Circle, Wilson Street, Oak Street, Candice Street, Mulberry Drive, JFK Avenue, Milton Avenue
06-20-06	Set Trap	Allen Street
06-21-06	Pick Up Trap	Allen Street
06-26-06	Administrative Contact Public Relations Adulticiding	Police Department JFK Avenue, Nathan Drive JFK Avenue, Nathan Drive, Ridgefield Circle, Ridgefield Condominiums
06-27-06	Set Trap	Allen Street
06-28-06	Pick Up Trap	Allen Street
07-3-06	Administrative Contact Public Relations  Landing Count Adulticiding	Police Department Sprague Road, Stonebridge Circle, Rogers Field Way, Candice Street, Kilmurry Street, Webster Street Extension, Webster Street, Mulberry Drive, Wilson Street, Hill Street, Berlin Street, Berlin Street, Oak Street, Stonebridge Circle, Webster Street Extension, Oak Street, Sprague Road, Stonebridge Circle, Rogers Field Way, Kilmurry Street, Webster Street Extension, Webster Street, Wilson Street, Hill Street, Berlin Street, Candice Street, Oak Street, Mulberry Drive, Acorn Street
07-10-06	Administrative Contact Public Relations  Landing Count Adulticiding	Police Department Bolton Road, Mount View Drive, Elm Street, East Street, Liberty Street, North Walnut Street, Gorham Avenue, Woodruff Street, Nathan Drive, JFK Avenue, Walden Terrace, Pearl Street, Haskell Avenue, Beech Street, Fox Run, Green Street, Oak Hill Avenue, Dennis Street, Dike Drive, Parker Street Bolton Road, JFK Avenue, Beech Street, Oak Hill Avenue, Fairmont Street Bolton Road, Mountview Drive, Elm Street, East Street, Liberty Street, North Walnut Street, Gorham Avenue, JFK Avenue, Woodruff Street, Nathan Drive, Walden Terrace, Pearl Street, Haskell Avenue, Beech Street, Fox Run Lane, Green Street, Oak Hill Avenue, Dennis Street, Fairmont Street, Dike Drive, Parker Street
07-11-06	Set Trap	Allen Street
07-12-06	Pick Up Trap	Allen Street
07-13-06	Larviciding Catch Basin Larviciding [50]	Berlin Street Woodland Subdivision
07-17-06	Catch Basin Larviciding [150]	Wilson Street, Robert Street, Harris Street, Schobert Street, Cromie Street, Chipman Street, Oak Ridge Drive, Acorn Street, North Street, Crown Street, James Street, Oak Hill Avenue, Barrett Street, Acre Court, Acre Street, Top Street, Oak Street, Hill Street, Green Street, Spruce Street, Wittig Court, Birch Street, Haskell Avenue,

TOWN OF CLINTON

<u>DATE</u>	<u>WORK DONE</u>	<u>LOCATION</u>
07-17-06	Catch Batch Larviciding	Beech Street, Orange Street, Cedar Street, Auburn Street, Centennial Street, Blossom Street, Mt. View Drive, Oxbow Circle, Colonial Drive, Lincoln Street, Lorraine Avenue, Otis Street, Horseshoe Lane
	Administrative Contact	Administrative Contact
	Public Relations	Mayflower Street, Pilgrim Street, Longedge Road, Worcester Street, Clark Street, Myrtle Street, Summit Street, Berlin Street, Chace Street, Chestnut Street, East Street, Main Street, Water Street, Sterling Street
	Adulticiding	Mayflower Street, Pilgrim Street, Longedge Road, Worcester Street, Clark Street, Myrtle Street, Summit Street, Berlin Street, Chace Street, Chestnut Street, East Street, Main Street, Water Street, Sterling Street
	Landing Count	East Street, Chace Street, Berlin Street, Summit Street, Mayflower Street
07-18-06	Set Trap	Allen Street
07-19-06	Pick Up Trap	Allen Street
07-24-06	Administrative Contact	Police Department
	Public Relations	Woodruff Road, Allen Street, East Street, North Walnut Street, Goss Street, Pearl Street, Liberty Street, Webster Street, Candice Street
	Adulticiding	Woodruff Road, Allen Street, East Street, North Walnut Street, Goss Street, Pearl Street, Liberty Street, Webster Street, Candice Street
07-25-06	Set Trap	Allen Street
07-26-06	Pick Up Trap	Allen Street
07-29-06	Administrative Contract	Police Department
	Public Relations	Stonebridge Circle, Brendan Avenue, Elm Street, East Street, Greeley Street, Prescott Street, Berlin Street, Candace Street
	Adulticiding	Stonebridge Circle, Brendan Avenue, Elm Street, East Street, Greeley Street, Prescott Street, Berlin Street, Candace Street
08-01-06	Set Trap	Allen Street
08-02-06	Pick Up Trap	Allen Street
08-07-06	Administrative Contact	Police Department, Board Of Health
	Public Relations	Webster Street Ext., Kilmurray Street
	Adulticiding	Webster Street Ext., Kilmurray Street
08-08-06	Set Trap	Allen Street
08-09-06	Pick Up Trap	Allen Street
08-14-06	Administrative Contact	Police Department
	Public Relations	Woodruff Avenue, Brendan Road, Milton Avenue, Greeley Street, Willow Street, East Street, Walnut Street, Liberty Street, Leighton Avenue
	Adulticiding	Woodruff Avenue, Brendan Road, Milton Avenue, Greeley Street, Willow Street, East Street, Walnut Street, Liberty Street, Leighton Avenue
08-15-06	Set Trap	Allen Street
08-16-06	Pick Up Trap	Allen Street
08-21-06	Administrative Contact	Police Department
	Public Relations	Fairview Street, Bolton Road
	Adulticiding	Fairview Street, Bolton Road
	Catch Basin Larviciding [282]	Pheasant Lane, Bobcat Circle, Bear Path, Deer Run Circle, Fox Run Drive, Ridgefield Circle, Gorham Avenue, Milton Avenue, Eileen Avenue, St. Jude Avenue, John F. Kennedy Avenue, Hillside Avenue, Woodruff Road, Nathan Avenue, McMahon Avenue, Walden Terrace, Allen Street, Fuller Street, Olive Street, Laurel Street, Alexander Avenue, Plain Avenue, Worcester Street, West Street, Myrtle Street, Clark Street, Parker Street, Lewis Street, Adams Road, Forrest Avenue, Marshall Street, Washington Street, Maple Street, Greeley Street, Flagg Street, Highland Street, Harkins Street, Bristol Avenue, Belmont Avenue, Broadway Street, Willow Street, Rigby Street
08-22-06	Set Trap	Allen Street
08-23-06	Pick Up Trap	Allen Street
08-28-06	Administrative Contact	Police Department
	Public Relations	East Street, Elm Street, Berlin Street
	Adulticiding	East Street, Elm Street, Berlin Street

TOWN OF CLINTON

<u>DATE</u>	<u>WORK DONE</u>	<u>LOCATION</u>
08-28-06	Larval Survey	High Street, Main Street, Adams Road, Webster Street, Brook Street, Woodland Estates, Chase Street, Berlin Street
08-29-06	Set Trap	Allen Street
08-30-06	Pick Up Trap	Allen Street
09-05-06	Set Trap	Allen Street
09-06-06	Pick Up Trap	Allen Street
09-11-06	Administrative Contact Public Relations Adulticiding Larval Survey	Police Department East Street, Bolton Road East Street, Bolton Road Berlin Street, Coyne Street, Town Line Apartments, Clinton Place Condominiums
09-12-06	Set Trap	Allen Street
09-13-06	Pick Up Trap	Allen Street
09-14-06	Administrative Contact Public Relations	Police Department North Walnut Street
09-19-06	Set Trap	Allen Street
09-20-06	Pick Up Trap	Allen Street
09-26-06	Set Trap	Allen Street
09-27-06	Pick Up Trap	Allen Street
10-03-06	Clear Trap Site	Allen Street
10-19-06	Stream Cleaning 75' Stream Cleaning 5' Stream Cleaning 10' Stream Cleaning 50' Stream Survey Culvert Cleaning (3)	Fox Run Colonial Drive Horseshoe Lane Rigby Street Berlin Street Colonial Drive, Horseshoe Lane, Plain Street
10-24-06	Brush Cutting 325' Stream Cleaning 325'	Fairview Street Fairview Street
10-25-06	Brush Cutting 335' Stream Cleaning 335'	Fairview Street Fairview Street
10-26-06	Brush Cutting 310'	Fairview Street
10-27-06	Brush Cutting 50' Stream Cleaning 360'	Fairview Street Fairview Street
11-14-06	Stream Cleaning 70' Stream Cleaning 40' Stream Cleaning 70' Stream Cleaning 100' Stream Cleaning 80' Stream Cleaning 30' Stream Cleaning 30' Culvert Cleaning (28)	Allen Street Marshall Street Greenly Street Brook Street Berlin Street Rigby Street Fitch Road Allen Street, Marshall Street, Parker Street, Greenly Street, Brook Street, New Harbor Road, John Street, Franklin Street, Oak Street, Berlin Street, Rigby Street, Fitch Road, Plain Street, South Meadow Road, Main Street, Clinton Place Condominiums
12-01-06	Administrative Contact Stream Cleaning 20' Stream Cleaning 5' Stream Cleaning 25' Stream Cleaning 5' Stream Cleaning 5' Stream Cleaning 5' Stream Cleaning 5' Stream Cleaning 30' Stream Cleaning 5' Stream Cleaning 5' Stream Cleaning 5' Stream Cleaning 5' Stream Cleaning 5' Stream Cleaning 30' Stream Cleaning 25' Stream Cleaning 10' Stream Cleaning 5' Stream Cleaning 15' Stream Cleaning 5' Stream Cleaning 5' Culvert Cleaning (22)	Board of Health John Street John Street Fairview Street Fox Run Drive Fox Run Drive Fox Run Drive Bolton Road Harbor Street Fitch Road Fitch Road Fitch Road Fitch Road Fitch Road Fitch Road Rigby Street Rigby Street Berlin Street Berlin Street Berlin Street South Main Street, John Street, Fairview Street, Fox Run Drive, Bolton Road, Harbor Street, Fitch Road, Rigby Street, Berlin Street

TOWN OF CLINTON

<u>DATE</u>	<u>WORK DONE</u>	<u>LOCATION</u>	
12-14-06	Stream Cleaning 40'	Craig Drive	
	Stream Cleaning 30'	Lancaster Road	
	Stream Cleaning 30'	Fox Run	
	Stream Cleaning 40'	Berlin Street	
	Stream Cleaning 20'	John Street	
	Stream Cleaning 50'	Rigby Street	
	Stream Cleaning 40'	Greenly Street	
	Stream Cleaning 30'	Cameron Street	
	Culvert Cleaning (28)	Allen Street, Brendan Avenue, Craig Drive, Vale Street, Lancaster Road, Fox Run, Berlin Street, John Street, Fairmont Street, Main Street, South Meadow Road, Rigby Street, Greenly Station, Parker Street, Marshall Street, Brook Street, Plain Street, High Street, Lowe Street, Cameron Street	
	12-18-06	Stream Cleaning 5'	Main Street
		Stream Cleaning 10'	Greenly Street
Stream Cleaning 20'		Fitch Road	
Stream Cleaning 20'		Fitch Road	
Stream Cleaning 5'		Fitch Road	
Stream Cleaning 5'		Fitch Road	
Stream Cleaning 5'		Fitch Road	
Stream Cleaning 10'		John Street	
Stream Cleaning 10'		John Street	
Stream Cleaning 10'		Fairview Street	
Stream Cleaning 5'		Boylston Street	
Stream Cleaning 10'		Berlin Street	
Stream Cleaning 10'		Berlin Street	
Stream Cleaning 35'		Berlin Street	
Stream Cleaning 5'		Berlin Street	
Stream Cleaning 5'		Clinton Place	
Stream Cleaning 5'		Wilson Street	
Stream Cleaning 5'		Bolton Road	
Stream Cleaning 5'		Colonial Drive	
Culvert Cleaning (24)		Main Street, Plain Street, Brook Street, Greenly Street, Fitch Road, Boylston Street, John Street, Fairview Street, Berlin Street, Clinton Place, Wilson Street, Bolton Road, Colonial Drive	
12-22-06	Administrative Contact	Board Of Health	
	Stream Cleaning 25'	John Street	
	Stream Cleaning 25'	Fairview Street	
	Stream Cleaning 30'	Rigby Road	
	Stream Cleaning 40'	Rigby Road	
	Culvert Cleaning (4)	John Street, Fairview Street, Rigby Road	

2006 Mosquito Surveillance Data  
CLINTON

#	Town	Date	Pool ID	# of Traps	Trap Site	Pool Size	Species	Result	Virus Type
1	Clinton	5/31/2006	CM06-00008	2	56 Allen Street	3	<i>Culex restuans</i>	Negative	
2	Clinton	5/31/2006	CM06NS-00014	2	57 Allen Street	1	<i>Ochlerotatus japonicus</i>	N/S	
3	Clinton	6/7/2006	CM06-00045	2	58 Allen Street	1	<i>Culiseta melanura</i>	Negative	
4	Clinton	6/7/2006	CM06-00046	2	59 Allen Street	2	<i>Culex restuans</i>	Negative	
5	Clinton	6/7/2006	CM06NS-00116	2	60 Allen Street	1	<i>Ochlerotatus abserratus</i>	N/S	
6	Clinton	6/7/2006	CM06NS-00117	2	61 Allen Street	1	<i>Ochlerotatus canadensis</i>	N/S	
7	Clinton	6/7/2006	CM06NS-00118	2	62 Allen Street	1	<i>Ochlerotatus sticticus</i>	N/S	
8	Clinton	6/14/2006	CM06-00067	2	63 Allen Street	13	<i>Culex pipiens</i>	Negative	
9	Clinton	6/14/2006	CM06NS-00229	2	64 Allen Street	2	<i>Coquillettidia perturbans</i>	N/S	
10	Clinton	6/21/2006	CM06-00114	2	65 Allen Street	8	<i>Culex pipiens</i>	Negative	
11	Clinton	6/21/2006	CM06-00115	2	66 Allen Street	1	<i>Culex restuans</i>	Negative	
12	Clinton	6/21/2006	CM06NS-00429	2	67 Allen Street	26	<i>Coquillettidia perturbans</i>	N/S	
13	Clinton	6/21/2006	CM06NS-00430	2	68 Allen Street	2	<i>Ochlerotatus japonicus</i>	N/S	
14	Clinton	6/21/2006	CM06NS-00431	2	69 Allen Street	2	<i>Ochlerotatus triseriatus</i>	N/S	
15	Clinton	6/28/2006	CM06-00197	2	70 Allen Street	11	<i>Culex pipiens</i>	Negative	
16	Clinton	6/28/2006	CM06-00198	2	71 Allen Street	9	<i>Culex restuans</i>	Negative	
17	Clinton	6/28/2006	CM06NS-00617	2	72 Allen Street	72	<i>Coquillettidia perturbans</i>	N/S	
18	Clinton	6/28/2006	CM06NS-00618	2	73 Allen Street	1	<i>Ochlerotatus trivittatus</i>	N/S	
19	Clinton	7/12/2006	CM06-00313	2	74 Allen Street	6	<i>Culex pipiens</i>	Negative	
20	Clinton	7/12/2006	CM06-00314	2	75 Allen Street	1	<i>Culex restuans</i>	Negative	
21	Clinton	7/12/2006	CM06NS-00875	2	76 Allen Street	1	<i>Aedes vexans</i>	N/S	
22	Clinton	7/12/2006	CM06NS-00876	2	77 Allen Street	2	<i>Coquillettidia perturbans</i>	N/S	
23	Clinton	7/12/2006	CM06NS-00877	2	78 Allen Street	4	<i>Ochlerotatus triseriatus</i>	N/S	
24	Clinton	7/19/2006	CM06-00389	2	79 Allen Street	8	<i>Culex pipiens</i>	Negative	
25	Clinton	7/19/2006	CM06-00390	2	80 Allen Street	5	<i>Culex restuans</i>	Negative	
26	Clinton	7/19/2006	CM06NS-00995	2	81 Allen Street	1	<i>Anopheles quadrimaculatus</i>	N/S	
27	Clinton	7/19/2006	CM06NS-00996	2	82 Allen Street	5	<i>Coquillettidia perturbans</i>	N/S	
28	Clinton	7/19/2006	CM06NS-00997	2	83 Allen Street	2	<i>Ochlerotatus japonicus</i>	N/S	
29	Clinton	7/19/2006	CM06NS-00998	2	84 Allen Street	4	<i>Ochlerotatus triseriatus</i>	N/S	
30	Clinton	7/26/2006	CM06-00476	2	85 Allen Street	8	<i>Culex pipiens/restuans</i>	Negative	
31	Clinton	7/26/2006	CM06NS-01169	2	86 Allen Street	2	<i>Coquillettidia perturbans</i>	N/S	
32	Clinton	7/26/2006	CM06NS-01170	2	87 Allen Street	1	<i>Ochlerotatus triseriatus</i>	N/S	
33	Clinton	8/2/2006	CM06-00538	2	88 Allen Street	3	<i>Culex species</i>	Negative	
34	Clinton	8/2/2006	CM06NS-01270	2	89 Allen Street	1	<i>Anopheles barberi</i>	N/S	
35	Clinton	8/2/2006	CM06NS-01271	2	90 Allen Street	3	<i>Coquillettidia perturbans</i>	N/S	
36	Clinton	8/2/2006	CM06NS-01272	2	91 Allen Street	1	<i>Ochlerotatus japonicus</i>	N/S	
37	Clinton	8/2/2006	CM06NS-01273	2	92 Allen Street	1	<i>Ochlerotatus triseriatus</i>	N/S	
38	Clinton	8/9/2006	CM06-00610	2	93 Allen Street	50	<i>Culex pipiens</i>	Negative	
39	Clinton	8/9/2006	CM06-00611	2	94 Allen Street	47	<i>Culex pipiens/restuans</i>	Negative	
40	Clinton	8/9/2006	CM06-00612	2	95 Allen Street	1	<i>Culiseta melanura</i>	Negative	
41	Clinton	8/9/2006	CM06NS-01409	2	96 Allen Street	1	<i>Anopheles barberi</i>	N/S	
42	Clinton	8/9/2006	CM06NS-01410	2	97 Allen Street	2	<i>Coquillettidia perturbans</i>	N/S	

2006 Mosquito Surveillance Data  
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43	Clinton	8/9/2006	CM06NS-01411	2	98 Allen Street	5	<i>Ochlerotatus triseriatus</i>	N/S	
44	Clinton	8/16/2006	CM06-00705	2	99 Allen Street	33	<i>Culex pipiens/restuans</i>	Negative	
45	Clinton	8/16/2006	CM06NS-01559	2	100 Allen Street	1	<i>Aedes vexans</i>	N/S	
46	Clinton	8/16/2006	CM06NS-01560	2	101 Allen Street	1	<i>Ochlerotatus japonicus</i>	N/S	
47	Clinton	8/16/2006	CM06NS-01561	2	102 Allen Street	4	<i>Ochlerotatus triseriatus</i>	N/S	
48	Clinton	8/23/2006	CM06-00767	2	103 Allen Street	22	<i>Culex pipiens</i>	Negative	
49	Clinton	8/23/2006	CM06NS-01677	2	104 Allen Street	1	<i>Coquillettidia perturbans</i>	N/S	
50	Clinton	8/23/2006	CM06NS-01678	2	105 Allen Street	1	<i>Ochlerotatus japonicus</i>	N/S	
51	Clinton	8/23/2006	CM06NS-01679	2	106 Allen Street	7	<i>Ochlerotatus triseriatus</i>	N/S	
52	Clinton	8/30/2006	CM06-00856	2	107 Allen Street	11	<i>Culex pipiens</i>	Negative	
53	Clinton	8/30/2006	CM06NS-01814	2	108 Allen Street	1	<i>Ochlerotatus japonicus</i>	N/S	
54	Clinton	8/30/2006	CM06NS-01815	2	109 Allen Street	1	<i>Ochlerotatus triseriatus</i>	N/S	
55	Clinton	9/6/2006	CM06-00968	2	110 Allen Street	11	<i>Culex pipiens</i>	Negative	
56	Clinton	9/6/2006	CM06-00969	2	111 Allen Street	1	<i>Culiseta melanura</i>	Negative	
57	Clinton	9/6/2006	CM06NS-01930	2	112 Allen Street	1	<i>Coquillettidia perturbans</i>	N/S	
58	Clinton	9/6/2006	CM06NS-01931	2	113 Allen Street	2	<i>Ochlerotatus triseriatus</i>	N/S	
59	Clinton	9/13/2006	CM06-01016	2	114 Allen Street	1	<i>Culex pipiens</i>	Negative	
60	Clinton	9/13/2006	CM06-01017	2	115 Allen Street	1	<i>Culiseta melanura</i>	Negative	
61	Clinton	9/13/2006	CM06NS-01978	2	116 Allen Street	1	<i>Anopheles punctipennis</i>	N/S	
62	Clinton	9/13/2006	CM06NS-01979	2	117 Allen Street	1	<i>Ochlerotatus triseriatus</i>	N/S	
63	Clinton	9/20/2006	CM06-01188	2	118 Allen Street	8	<i>Culex pipiens/restuans</i>	Negative	
64	Clinton	9/20/2006	CM06NS-02147	2	119 Allen Street	9	<i>Aedes vexans</i>	N/S	
65	Clinton	9/20/2006	CM06NS-02148	2	120 Allen Street	3	<i>Ochlerotatus japonicus</i>	N/S	
66	Clinton	9/20/2006	CM06NS-02149	2	121 Allen Street	2	<i>Ochlerotatus triseriatus</i>	N/S	
67	Clinton	9/27/2006	CM06NS-02199	2	122 Allen Street	1	<i>Culex restuans</i>	N/S	
68	Clinton	9/27/2006	CM06NS-02200	2	123 Allen Street	1	<i>Aedes vexans</i>	N/S	
69	Clinton	9/27/2006	CM06NS-02201	2	124 Allen Street	1	<i>Ochlerotatus japonicus</i>	N/S	
70	Clinton	9/27/2006	CM06NS-02202	2	125 Allen Street	5	<i>Ochlerotatus triseriatus</i>	N/S	
			<b>70 collections</b>				<b>454 mosquitoes collected</b>		
			<b>25 collections submitted</b>				<b>265 submitted for testing</b>		
			<b>NO VIRUS IDENTIFIED IN 2006</b>				<b>N/S= Not Submitted for testing</b>		



## 2006 SUMMARY

The Central Massachusetts Mosquito Control Project (the Project) currently provides its services to 36 cities and towns throughout Middlesex and Worcester Counties. The Project's headquarters is located at 111 Otis Street, Northboro, MA. Tours of the headquarters or visits to field work sites may be arranged by calling the office in advance. Please call (508) 393-3055 during business hours for more information. The Project practices Integrated Mosquito Management (IMM), blending state of the art methods and techniques with expertise, experience, and scientific research to provide our member communities with environmentally sound and cost effective mosquito control.

During 2006 the Project received eight thousand and fifty five (8,455) requests for service from town residents and officials. A total of over six thousand (6,000) pounds of Bti (*Bacillus thuringiensis israelensis*) was applied by helicopter in 2 towns, Chelmsford & Billerica, and five thousand, nine hundred and fifty nine (5,959) pounds by hand throughout our service area were applied to area wetlands to reduce the emergence of adult mosquitoes. This represents over one thousand, one hundred and ninety one (1,191) acres of wetland that was treated with this mosquito-specific bacterium, significantly reducing adult mosquito populations in these areas. Thirty three thousand, nine hundred and eighteen (33,918) catch basins were treated with larvicidal product to control the mosquitoes that seek out these cool dark wet areas to breed, including the *Culex* mosquito, a major target for West Nile Virus transmission. Seven thousand, three hundred and ninety three (7,393) culverts were cleaned in an attempt to eliminate unnecessary standing water and reduce mosquito breeding. This work was done in conjunction with cleaning, clearing, and digging of one hundred and seventy six thousand, one hundred and eighty one (176,181) feet of streams, brooks and ditches. This represents over thirty three (33) miles of waterways which were cleaned and improved by Project personnel in 2006.

The Mosquito Awareness Program which we offer to elementary schools and other civic organizations in our district has become very popular. Project staff meets with students, teachers or concerned residents to discuss mosquito biology, mosquito habitat, and control procedures. Much of the presentation is directed towards what children and their families can do to prevent mosquitoes from breeding around their homes. Slides, videos, coloring books and other handouts make this an interesting program. This program is tailored to meet the needs of the specific audience. Two thousand, two hundred and fifty (2,250) students attended these programs.

As part of our effort to reduce the need for pesticides we continue to expand our wetlands restoration program. By cleaning clogged and overgrown waterways, mosquito breeding can be reduced and drainage areas are restored to historic conditions.

Bti mosquito larvicide is used to treat areas where mosquito larvae are found. We routinely check known breeding sites kept in our database, but also encourage the public to notify us of any areas they suspect could breed mosquitoes. Our field crews will investigate all such requests and treat the area only if surveillance gathered at the time shows an imminent threat of mosquito emergence.

Our goal is to manage all mosquito problems with education, wetlands restoration or larviciding, but we recognize that there are times when adult mosquito spraying is the only viable solution. In such cases specific areas are treated with either hand-held or pickup truck mounted sprayers if surveillance gathered at the time exceeds a pre-determined threshold to warrant an application. This program is offered on a **request-only** basis, and the exclusion process allows residents and/or town officials to exclude areas under their control from this or any part of our program.

The Project's surveillance program monitors adult mosquito and larval population density, and is the backbone for prescribing various control techniques. Specialized mosquito traps are deployed throughout the Project's service area to sample for mosquitoes that may be transmitting mosquito-borne diseases. In conjunction with the Mass. Dept. of Public Health we sample in areas suspected of harboring WNV and other viruses. One thousand, five hundred and twenty eight (1,528) pools (collections) of mosquitoes totaling thirty nine thousand, five hundred and six (39,506) specimens were tested for mosquito-borne viruses this year. One (1) pool of *Cs. morisitans* in Leominster was confirmed to be infected with the EEE virus late in the season. Two (2) pools of West Nile Virus were confirmed, both in Westborough in the *Culex* species. Two (2) human cases were identified with WNV, one in Billerica and one in Webster. No human cases of EEE were identified, and there were no cases of WNV or EEE in horses in our service area.

Educational pamphlets are available to anyone interested in learning about mosquito control and the services provided by the Project, and these items are routinely stocked in member Town/City Halls and libraries. Display boards with information on our program are rotated through area Town Halls throughout the year. We also have a website, [www.cmmcp.org](http://www.cmmcp.org) that has extensive information on mosquito biology, our control procedures, etc. This website has become a model for other Mosquito Projects and has been widely used throughout our service area and beyond.

We would like to thank you for your support during 2006 and we look forward to helping you and your community with its mosquito problems in 2007 and beyond.