# MASSACHUSETTS MOSQUITO CONTROL

#### ANNUAL OPERATIONS REPORT

Year Report Covers: 2022 Date of Report: 1/16/2022

Project/District Name: Norfolk County Mosquito Control District

Address: 144 Production Road, Suite C

City/Town: Walpole Zip: 02081

Phone: (781) 762-3681 Fax: (781) 762-6436

E-mail: dave.lawson@ncmcd.org

Report prepared by: David Lawson

NPDES permit no. MAG87B255

If you have a mission statement, please include it here: "The Norfolk County Mosquito Control District Commission represents the interests of the member communities and their residents by providing oversight of District activities. The Commissioners each live or work within a community serviced by the District, were nominated by municipal authorities, and were evaluated and appointed to their posts by the State Reclamation and Mosquito Control Board. The Commission strives to ensure that the member communities receive services consistent with applicable laws and justified by tenets of public health, vector control, environmental safety and fiscal responsibility. The Commission invites input and questions from community officials and residents. The District's website announces the Commission's monthly meetings and planned agendas, and hosts minutes from past meetings."

#### **ORGANIZATION SETUP:**

#### **Commissioner names:**

Norman Jacques
Richard Pollack

Robin Chapell

Kylee Sullivan \_\_\_\_\_

**Superintendent/Director name:** David Lawson

Superintendent/Director contact phone number: (781) 762-3681

Asst. Superintendent/Director name: Caroline Haviland

**District/Project website:** http://www.ncmcd.org

Twitter handle: @

Facebook page: http://www.facebook.com/

Staffing levels for the year of this report:

Full time: 11 Part time: 0 Seasonal: 2

Other: (please describe)

Of the above, how many are: (Please check off all that apply, and list employee name(s) next to each category)
<ul> <li>Administrative Liz Donnell, Caroline Haviland, David Lawson</li> <li>Biologist Caroline Haviland</li> <li>Educator Kaitlyn O'Donnell</li> <li>Entomologist Kaitlyn O'Donnell</li> <li>Facilities Caroline Haviland, David Lawson</li> <li>Information technology Nate Boonisar, Caroline Haviland</li> <li>Laboratory Kailyn O'Donnell</li> <li>Operations David Lawson, Caroline Haviland</li> <li>Public relations David Lawson</li> <li>Wetland scientist Caroline Haviland</li> <li>Other (please describe)</li> </ul>
For the year of this report, the following were maintained (enter number in the column to the left):
Modified wetland equipment (list type) Larval control equipment (list type) ULV sprayers (list type)  Yehicles Other (please be specific):
Comments:
How many cities and towns are in your service area?* 25 Alphabetical list:
Were there any changes to your service area this year? No Cities/towns added: Cities/towns removed:
*Please attach a map of your service area (or a website link to that map).
INTEGRATED PEST MANAGEMENT (IPM):  Check off all services that your district/project currently provides to member cities and towns as part of an IPM program (details will be provided in the sections below):
<ul> <li>Adult mosquito control</li> <li>Adult mosquito surveillance</li> <li>Ditch maintenance</li> <li>Education, Outreach &amp; Public education</li> <li>Larval mosquito control</li> <li>Larval mosquito surveillance</li> <li>Open Marsh Water Management</li> <li>Research</li> </ul>

igtiee Source reduction (tire removals)	
Other (please list):	
Comments:	

#### **LARVAL MOSQUITO CONTROL:**

If you have a larval mosquito control program, please fill out the section below, else skip ahead to the next section.

Describe the purpose of this program: Targeted preemptive control measures are the most cost effective, efficient and environmentally friendly way to reduce mosquito populations. NCMCD applies biorational insecticides to shallow water to control mosquitoes in their most vulnerable aquatic stages in an attempt to prevent the emergence of adult mosquitoes. A GIS database of mosquito larval development sites are checked and treated as necessary by means of hand, truck and/or aerial application. Spring and summer flooding following snow melt and/or heavy rainfall creates a potential each year for significant mosquito larval development in various wetlands across the NCMCD. The predominate species which develop in the spring are Ochlerotatus abserratus, Ochlerotatus excrucians and Ochlerotatus canadensis. In the summer the predominate species following river flooding are Ochlerotatus trivittatus, Aedes cinereus, Aedes vexans, Psorophora ferox and Ochlerotatus canadensis. All of these mosquito species are strong human biters and can create significant nuisance level populations during the late spring and summer months. During certain years, some of the summer mosquito species, such as Aedes vexans, may be involved in the transmission of Eastern Equine Encephalitis (EEE) from birds to humans. In an effort to proactively control these aggressive human biting species, and in an environmentally responsible manner, the Norfolk County Mosquito Control District conducts aerial larval control operations using products with the active ingredient Bacillus thuringiensis israelensis (Bti). In small wetlands and in larval development sites proximate to homes, where aircraft applications are not suitable, hand applications using the same products at the same rates are utilized. Truck mounted larvicide application equipment is used for treating wetlands that are at the edge of roadways and parking lots.

NCMCD makes applications of an insecticide to catch basins, storm water structures, etc. to control primarily Culex mosquitoes in their aquatic stages. Culex species have been identified as likely vectors of WNv..

What months is this program active? April - September

Describe the types of areas where you use this program: Ground larvicide treatments are typically made to smaller natural and manmade wetlands and depressions. The typical wetlands treated during the spring aerial larvicide are described as large (greater than five acres) Wooded Swamp Deciduous/Coniferous/Mixed, Shrub Swamp, Shallow Marsh/Meadow/Fen wetlands. Summer aerial applications are more typically conducted on river floodplain areas especially within wetlands adjacent to the Neponset and Charles Rivers. Maps of aerially targeted wetlands are available on the District's website. The new focus on Cq. perturbans is treating deep marsh habitat with specific vegetation that is utilized by this mosquito larvae to complete its life cycle.

Do you use:
Ground application (hand, portable and/or backpack, etc.)
Aerial applications
Other (please list):
Comments:

Rain basin treatments typically occur in high density population areas around centers of towns

and heavy residential/commercial areas.

List all products that you use for larval mosquito control in the table below (leave blank if not applicable):

Product Name	EPA#	Application	Application	Targeted life	Habitat Type	Total finished
Altosid XR	2724-421	Rate(s)  1 bq/100 sq ft or Catch Basin	Method Hand	stage Larvae	Catch basins Containers Wetland Other (please list): Pool	8
Altosid WSP	2724-448	1 Pouch/135 Sq ft or Catch Basin	Hand	Larvae	□ Catch basins     □ Containers     □ Wetland     □ Other (please list):	6,950 Pouches
Four Star Briquette (90)	83362-3	1 bq/100 sq ft or Catch Basin	Hand	Larvae		10,707 Briquettes
Four Star Briquette (45)	83362-3	1 bq/100 sq ft or Catch Basin	Hand	Larvae		176 Briquettes
Vectobac G	73049-10	10 lbs/acre	Hand	Larvae	Catch basins Containers Wetland Other (please list):	1,272.2 lbs
Vectobac GR	73049-486	10 lbs/acre	Hand	Larvae	Catch basins Containers Wetland Other (please list):	5.7 lbs
Vectobac GS	73049-10	10 lbs/acre	Hand	Larvae	☐ Catch basins ☐ Containers ☑ Wetland ☐ Other (please list):	281.2 lbs

List all products that you use for larval mosquito control in the table below (leave blank if not applicable):

Product Name	EPA#	Application	Application	Targeted life	Habitat Type	Total finished
		Rate(s)	Method	stage		product applied
Vectolex WSP	73049-20	1 Pouch/50 sq ft or Catch Basin	Hand	Larvae/pupae	Catch basins Containers Wetland Other (please list):	12,084 Pouches
				Choose one	Catch basins Containers Wetland Other (please list):	
				Choose one	Catch basins Containers Wetland Other (please list):	
				Choose one	Catch basins Containers Wetland Other (please list):	
				Choose one	Catch basins Containers Wetland Other (please list):	
				Choose one	Catch basins Containers Wetland Other (please list):	
				Choose one	Catch basins Containers Wetland Other (please list):	

What is your trigger for larviciding operations? (check all that apply)  Best professional judgment  Historical records  Larval dip counts – please list trigger for application: any larvae found  Other (please describe):  Comments:
Please attach a map of your service area (or a website link to that map).  http://norfolkcountymosquito.org/service-request/
ADULT MOSQUITO CONTROL:  If you have a larval mosquito control program, please fill out the section below, else skip ahead to the next section
Describe the purpose of this program: When larviciding is not a viable option (example: Coquillettidia perturbans or Culiseta melanura) and/or when adult mosquito populations reach levels which are either bothersome to residents and/or a public health concern is realized, targeted adulticiding applications are used. NCMCD makes decisions to use adulticides based on evaluations of the risks of EEE or WNv transmission to humans in collaboration with MDPH or based on evaluations of the nuisance level that residents report to NCMCD. NCMCD also bases decisions to adulticide on mosquito surveillance (trap counts), field crew observations and after careful analysis of predicted local weather conditions.
What is the time frame for this program? May through October
Describe the types of areas where you use this program: ULV applications can be conducted anywhere the Districts trucks can access, though mostly on paved streets in residential neighborhoods.  Barrier applications are conducted on municipal properties that the public utilizes and where the public may be at risk, such as schools, public parks, and athletic fields.
Do you use:  Aerial applications  Portable applications  Truck applications  Other (please list):  Comments:

For each product used, please list the name, EPA #, and application rate(s):

<b>Product Name</b>	EPA#	Application	Application	Total finished
		Rate(s)	Method	product applied
Zenivex E4	2724-807	1.0 oz/acre	Truck Mounted ULV	695.3 gal
Suspend	432-1514	.25-1.5	Truck mounted	60 gal
		oz/gal	sprayer	

Please describe the maximum amounts or frequency used in a particular time frame such as season and areas

ULV is potentially conducted in each town once per week. Possibly more if a disease threat warrants further applications. Barrier applications are conducted based on requests from municipal officials and our own assessments and surveillance. Barrier applications are effective for a couple weeks, and so not repeated for at least 2 weeks.

What is your trigger for adulticiding operations? (chec	k all that apply)
Arbovirus data	
Best professional judgment	
Complaint calls (Describe trigger for application:	)
☐ Landing rates (Describe trigger for application	)
Light trap data (Describe trigger for application	)
Comments:	

Please attach a map of your service area (or a website link to that map). www.norfolkcountymosquito.org/service-request/

### **SOURCE REDUCTION (Tire Removals)**

If you practice source reduction methods, such as tire removal, please fill out the section below, else skip ahead to the next section.

Please describe your program: NCMCD advises residents/Boards of Health in person or via phone or internet to empty any containers that may hold water on their property. When performing site visits, personnel will overturn containers that hold water with mosquito larvae present. In 2012 NCMCD initiated a tire removal program which continued into 2022. The District picks up tires from residents who request this service. Tires must be off the rim and the District takes no more than 10 tires per resident per year. The District also removes dumped tires from the environment. Locations are reported as employees find tires during routine field work. 300 tires were removed and recylced in 2022.

What time frame during the year is this method employed? October - March

**Comments:** NCMCD shuts down tire removal as a service during the 'mosquito' season, April through September due to the fact that the tire removal work District's from more important control work.

#### WATER MANAGEMENT/DITCH MAINTENANCE

If you have a water management or ditch maintenance program, please fill out the section below, else skip ahead to the next section.

Please check all that apply:

development through a variety of method Management Program includes Ditch & Porconducted to improve water quality and includes require heavy work. Crews also employ Our Open Marsh Water Management (Comaintenance mode) employs methods that habitat reduction.  Tire casing collection is a service in which eliminate this source of potential larval mosq	OMWM) Program (which is currently only in improve saltmarsh habitat along with mosquito we remove and recycle off rim tires in order to uito development.
For inland/freshwater water management, o	
Maintenance Type	Estimate of cumulative length of culverts, ditches,
	swales, etc. maintained (ft)
Culvert cleaning	588 Culverts cleaned
Hand cleaning	78,030 feet cleaned
Mechanized cleaning	175 feet
Stream flow improvement	
Other (please list): Pond Cleaned	7,500 cubic feet
Comments:  For saltmarsh ditch maintenance, check off a  Maintenance Type	Ill that apply:  Estimate of cumulative length of ditches maintained
Maintenance Type	(ft)
Hand cleaning	860 ft
Mechanized cleaning	00010
Other (please list):	
Comments: What time frame during the year is this meth Comments:	od employed? All year

### **OPEN MARSH WATER MANAGEMENT**

If you have an Open Marsh Water Management program, please fill out the section below, else skip ahead to the next section.

Please attach a map of ditch maintenance areas (or a website link to that map).

Describe the purpose of this program: The NCMCD has conducted OMWM in the past, but has stopped performing OMWM due to regulatory requirements that make it overly burdensome to the District. The Districts OMWM permit from the ACOE expired in January 2016, and was

not renewed. Maintenance on past projects is required by the ACOE permit and the District will maintain all past completed OMWM projects.

What months is this program active? Usually, October - March

Please give an estimate of total square feet or acreage:

**Comments:** <u>Currently, The NCMCD is only conducting maintenance on past OMWM projects, as needed.</u>

Please attach a map of OMWM areas (or a website link to that map).

### **MONITORING (Measures of Efficacy)**

### Describe monitoring efforts for each of the following:

Aerial Larvicide – wetlands:	In the weeks prior to a spring aerial application, wetlands
are dipped in all aerial regions and this	s data is compiled in the GIS map data. Post application
dipping is conducted.	

Ground ULV Adulticide:

Larvicide – catch basins:

Larvicide-hand/small area

Open Marsh Water Management:

Source Reduction: The Field Operations Manager conducts follow-up site visits to water management project sites to make sure the work is fucntioning as designed.

Other (please list):

Provide or list standard steps, criterion, or protocols regarding the documentation of efficacy (pre and post data), and resistance testing (if any):

Check the boxes below, indicating if your program has performed any of the following:

Research Project	Details
Bottle assays	Bottle assays done 1x during summer 2022 with
	etofenprox and adult Culex mosquitoes
Efficacy testing	pre and post spray event trapping done throughout
	month of July 2022
Other:	
Other:	

### **ADULT MOSQUITO SURVEILLANCE**

If you have an adult mosquito surveillance program, please fill out the section below, else skip ahead to the next section.

Describe the purpose of this program: CDC Light Traps: CDC light traps with CO2 are used to determine the presence of adult mosquitoes and their density. CDC light traps with CO2 are also used to monitor for EEE and West Nile virus. Samples of mosquitoes are submited weekly to the Massachusetts Arbovirus Surveillance Laboratory (MDPH) and tested for the presence of West Nile Virus and EEE in local mosquito populations.

Gravid Traps: These traps are used by NCMCD to collect primarily Culex pipiens and restuans mosquitoes for submission to the Massachusetts Arbovirus Surveillance Laboratory (MDPH) for West Nile virus analysis. The gravid mosquitoes attracted to these traps are important for virus surveillance because they have previously fed on a host. Bird biting mosquito species are usually the first to pick up West Nile and Eastern Equine Encephalitis viruses each season. Resting boxes are used to supplement the capture of C. melanura for the detection of EEE.

What months is this program active? May - October

Check off all trap types used this past season by your program:

Trap Type	Canopy?	Number of traps
	(check box for yes)	(leave blank if zero)
ABC light trap		
☐ ABC light trap w/CO <sub>2</sub>		
CDC light trap		
CDC light trap w/CO <sub>2</sub>		31
Gravid trap		27
Landing rate test		
NJ light trap		
NJ light trap w/CO₂		
○ Ovitrap		50
Resting box		60
Other (please describe):		
Other (please describe):		
Other (please describe):		

Do you maintain long-term trap sites in any of your areas? Yes If yes, how many:

30 sites are monitored for > 10 years

Please check off the species of concern in your se	ervice area:
🔀 Ae. albopictus	🔀 Cq. perturbans
🔀 Ae. cinereus	🔀 Cx. pipiens
🔀 Ae. vexans	🔀 Cx. restuans
🔀 An. punctipennis	🔀 Cx. salinarius
🔀 An. quadrimaculatus	🔀 Cs. melanura

	s. morsitan c. abserrat c. canaden c. cantator c. j. japonio c. sollicitar thers (plea	us sis cus os		Oc. taen Oc. trise Oc. trivit Ps. ferox Ur. sapp	tatus	
Number of adult mosquitoes collected this season (whether submitted to DPH or not): 67681  Number of adult mosquito pools collected this season (submitted and unsubmitted): 2868  Number of ovitrap collections this season, if any: 100  Any other trap collections of note (please describe): none						
Do you participate in the MDPH Arboviral Surveillance program? Yes Total number of adult mosquito pools submitted to DPH this past season: 236 How many pools do you submit weekly on average? 11						
Were Which	these long	s in your service area <b>p</b> g-term trap sites or sup	plemental trap	ping sites i	-	on? Enter the
number of pools/cases below:  Arbovirus		Positive Mosqu	uita Daals	Equine Cases	Human Cases	
		ine Encephalitis (EEE)	0	IILU PUUIS	0	0
_=_	est Nile Vi		0		0	0
_=_		· · · · · · · · · · · · · · · · · · ·	0	U		
Comments:  For each arbovirus listed below, please list the risk levels in your project area at both the start and end of the season (if more than one, please list all):						
Arbov		Start of Season	.e, piedse list di	•	of Season	
EEE	43	low		low		
WNV		low		low		
	nents:	1011		1000		

#### **EDUCATION, OUTREACH & PUBLIC RELATIONS**

If you have an education/outreach program, please fill out the section below, else skip ahead to the next section.

Describe the purpose of this program: NCMCD maintains a very informative website which is updated frequently during the season. It contains fact sheets concerning West Nile virus and EEE virus. It also contains notices and news regarding treatment beginning and end dates and ways for residents to protect themselves from mosquito bites around the home. The website

also contains links to the Massachusetts Department of Public Health and the Centers for Disease Control and Prevention (CDC) where residents can find up to date information on arbovirus activity in the county, the state as well as country-wide. Our Entomologist participates in educational activities such as classroom activities in the schools and field education activities with summer camp programs as appropriate, as well as health fairs and farmers markets. Employees leave door hangers at residents homes after completeing larvicide requests. The hangers highlight actions a resident can do to reduce or eliminate mosquito breeding on their property. Employees conducting ULV applications, have brochures on the ULV program to hand to residents with questions regarding the program. Employees connect to various outside organizations in an effort to better inform the public about what the District does.

What time frame during the year is this method employed? year round

Check off all education/outreach methods that were performed by your program this year:  Development/distribution of brochures, handouts, etc.  Door-to-door canvassing (door hangers, speaking to property owners, etc.)  Facebook page, Twitter, or other social media  Mailings (Describe target audience(s):  Media outreach (interviews for print or online media sources, press releases, etc.)  Presentations at meetings  School-based programs, science fairs, etc.  Tabling at events (local events, annual meetings, etc.)  Website  Other (please describe):
Estimate the audience reached this year using the education/outreach methods above: 600 people Comments: We were able to get somewhat back to normal outreach activities this year, as in person events such as health fairs, senior centers, and library programs were back. We reached many people in person through health fairs and through in person interactions in the field. Our website is always available with up to date inforamtion and we distributed updated brochures to our member town boards of health. In addition, our field crew spent 44 hrs talking to residents in the field throughout the year
List your program's top 3 education/outreach activities for this year:  1. <a href="health fairs">health fairs</a> 2. <a href="board of health presentations">board of health presentations</a> 3. <a href="board-order: brochure updates">brochure updates</a>
Were you involved in any collaborations with the following partners this year? Provide details below, including a list of technical reports, white/grey papers, journal publications, trade magazine articles, etc:  Academia  Another mosquito control district/project

	nmental group	(DCR, DPH, etc.) s			
List any tr	List any training/education your staff received this year:				
Please list	Please list the certifications and degrees held by your staff:				
Comment	ts:				
Does your Aerial Datab Datab GIS ma GPS ea Smart Tablet Other  Describe a  Comment	Photography ases oggers (monitor apping (Describ quipment phones cs/Toughbooks (please describ any changes/en any difficulties ves:	check all that apply) ring for temperature rie:  he):  hancements in IT from the work program had well the second to the second the	om the previous year: with IT software/equipment this year:		
Please en		Approved Budget	current, previous, and future fiscal years.  Notes		
	Year	Approved Budget	Notes		
Previous	2021	2,001,626			
Current	2022	2,061,678			
Future	2023	2,113,219			
			ne corresponding (cherry sheet) funding assessmen provide a web link to this information):		
Comment	ts:				
SERVICE F	REQUESTS				

15

How many service requests did you receive this season? 5,242

How many were for larviciding? 344

How many were for adulticiding? 4,804

Was this an increase or decrease over last season? Decrease

Comments: In addtion, we received 94 requests for tire pick-up

# **EXCLUSIONS**

How many exclusion requests did you receive this season? 288

Was this an increase or decrease over last season? Decrease

Do you have large areas of pesticide exclusion, such as estimated or priority habitats? Yes

If yes, please explain, and attach maps or a web link if possible. Mass Audubon and Trustees of Reservations Properties

# **SPECIAL PROJECTS**

Did your program perform any of the following special projects? Check all that apply.
<ul> <li>Inspectional services (inspections at sewage treatment facilities, review of subdivision plans, etc.)</li> </ul>
Describe:
<ul> <li>Work with DPW departments or other local or state officials to address stormwate systems, clogged culverts, or other areas identified as man-made mosquito problem areas</li> </ul>
Describe:
<ul> <li>Work with groups as described above on long term solutions?</li> <li>Describe:</li> </ul>
<ul> <li>Conduct or participate in any cooperative research or restoration projects?</li> <li>Describe:</li> </ul>
<ul> <li>Participate in any state/regional/national workgroups or panels, or attend any meeting pertaining to the above?</li> <li>Describe:</li> </ul>
<ul> <li>Work on any biological control projects, such as enhancement of habitat for native predators, release of predatory fish or invertebrates, etc.?</li> <li>Describe:</li> </ul>

### **CHILDREN AND FAMILIES PROTECTION ACT (CFPA)**

Is your program impacted by the CFPA? Yes

If yes, please explain: Throughout the Districts service area, NCMCD has approximately 225 schools and 250+ day cares that must comply with this law. Each school/day care has been located either through parcel maps, when available, or through geocoding, combined with aerial photography. These properties are excluded from routine applications. The exclusion zones are clearly marked on the ULV route maps that are posted on the districts website in an effort to keep the public informed of the exclusionary status of these areas.

If you have data on compliance rates with the CFPA within your program area, please list here:

Describe any difficulties you have had with the implementation of your program due to the CFPA, please elaborate here:

Comments:

### NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT PROGRAM

Did your program report any adverse incidents during this reporting period? No

If yes, please list any corrective actions here: \_\_\_\_\_

#### **GENERAL COMMENTS**

Please add any comments here for topics not covered elsewhere in this report: \_\_\_\_\_