



Commonwealth of Massachusetts
STATE RECLAMATION AND MOSQUITO CONTROL BOARD
**NORTHEAST MASSACHUSETTS MOSQUITO CONTROL
AND WETLANDS MANAGEMENT DISTRICT**
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Operations

Barry Noone: *District Director*
Kimberly A. Foss.: *Entomologist*
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Katelynn E. King: *Wetlands Project Coordinator*

Commissioners

John W. Morris, CHO: *Chair*
Vincent J. Russo, MD, MPH: *Vice Chair*
Paul Sevigny, RS, CHO
Joseph T. Giarrusso, Conservation Officer
Rosemary Deci, RS

**2022 Best Management Practice Plan
Nahant**

**FY23 Percentage of assessment allocated to specific measures as prescribed by individual municipalities
Best Management Practice (BMP) in the Town of Nahant.**

NEMMC is requesting a 3% increase above the FY2022 certified assessment for a FY2023 operational budget. During FY2022 the District reorganized allowing more technicians in the field while maintaining our current staffing level. FY2022 allowed the district the opportunity to replace one of our frontline heavy equipment pieces which was 23 years old. Due to ongoing pandemic challenges, the district was unable to make the vehicle purchases it had intended to keep on schedule with our vehicle and equipment replacement plan. Our FY2023 budget addresses funding for staffing changes, allowing for two vehicle replacements, and to adapt with increased costs of materials, energy, fuel, and pesticides. With the region experiencing environmental changes, it remains challenging to plan for a “normal” year of mosquito control. Often dictated by the weather, mosquito populations, additional treatment for viruses and requests from member municipalities, NEMMC will work diligently to deal with exceptional mosquito nuisance and health issues.

Assessment: As estimated by the Massachusetts Department of Revenue, Division of Local Services, in accordance with Chapter 516 of the General Laws of the Commonwealth. The assessment formula is based on a regional concept, which considers square miles and evaluation. The district offers this breakdown as a general guide to how funds are allocated specific to your community.

FY23 Estimated District Budget for the Town of Nahant	\$ 8,032.00
FY23 State Reclamation and Mosquito Control Board	\$ 344.00
FY23 Total Estimated Assessment for the Town of Nahant	\$ 8,376.00

-Committed to the principals of mosquito control and wetland management –

District Control Measures specific to Nahant

General Operational Cost Share

Regional Adult Mosquito Surveillance Program

Regional Vector / Virus Intervention

Surveillance

Ground Larviciding

Catch Basin Treatments

Manual Ditch Maintenance

Adulticiding (**Virus Intervention with Board of Health approval**)

Exception: Additional preemptive adulticiding may be added to Nahant BMP for 2020. Scheduling of this treatment shall be determined through NEMMC surveillance of mosquitoes from traps in Nahant: This additional spraying may be done in the following areas around the Golf Course (Kelley Greens at Nahant), Lowlands – Heritage Trail, Flash Road recreation area, Baileys Hill Park, and the Furbush Sanctuary, to the extent allowed and if accessible.

Barrier Treatment (**By Board of Health and School Department request only**)

Ditch Maintenance / Wetlands Management

Tire Recycling Program

Property Inspections

Mosquito Habitat Mitigation

Research and Development

Education and Outreach

Social Media

NOTE: Any adulticiding, larviciding or treatment of catch basins for mosquito control on public school property requires a current IPM (Integrated Pest Management) Plan. We are often asked by local Boards of Health and/or athletic directors to treat ball fields and/or parks that may be owned/used by the school departments, and without an IPM plan that includes our materials we may not be able to assist.

Board of Health Checklist for 2022

☐ **Schedule an annual Board of Health meeting/ presentation with NEMMC**

Note: meetings will only be scheduled between the dates of October 1st - June 1st

☐ **Review login information for Municipal Toolbox on NEMMC website**

Our Liaison, Kelsey will e-mail you the password and login (see contact below)

☐ **Update School IPMs to have all current and recently added NEMMC pesticide products**

Recently added pesticide products include Metalarv XRP and Merus 3.0

☐ **Schedule Barrier Treatment for schools, parks, and/or public areas for peak mosquito season**

Note: scheduled barrier treatments are recommended between July 15th – August 25th

☐ **Check with Department of Public Works for field access for barrier treatments once scheduled**

☐ **Notify NEMMC with Board of Health contact changes**

Work phone, cell phone, and email are required of primary and secondary contacts

☐ **Review District Phased Response to WNV/EEE Virus Isolations in Integrated Pest and Vector Management Plan (IPVMP)**

For any questions on where to find this information, scheduling, and/or how to complete these tasks, please reach out to our Board of Health Liaison:

Kelsey Liakos, Board of Health Liaison

Cell: (978) 992- 6974

Office: (978) 352- 2800 Email: Kelsey.liakos@mass.gov

Updated 2022 NEMMC Protocols for District Arboviral Events

Climate change is expected to affect the geographic and seasonal patterns of mosquito-borne diseases in the United States. The northeast is experiencing an increase in precipitation and unusually hot temperatures. Since EEE is more prevalent in wetter years and WNV in hotter years the likeness of the district experiencing EEE and/or WNV events in any given year is possible, in some years both viruses can present substantial risk. The district feels that it is beneficial to our subscribing municipalities to set prevention and response criteria preparing for both mosquito-borne viruses.

District Prevention for WNV and EEE

- Adult mosquito surveillance and DPH virus testing
- Larviciding areas that can promote mosquito breeding including municipal catch basins
- Public notification to use personal protective measures from spring to first hard frost
- Wetlands management and stormwater maintenance
- Property inspections to larvicide standing water and remove containers holding water
- Early barrier treatments for public parks, recreation areas and schools
- Tire disposal program

District Response for WNV and EEE

If *risk level increases* for municipality but no virus in municipality:

- Public notification to use personal protective measures
- Additional larviciding of freshwater wetlands and flooded areas
- Recommendation for municipality to complete barrier treatments

If *bird biting mosquitoes* in municipality test positive for virus:

- Public notification to use personal protective measures
- Supplemental adult mosquito trapping and additional DPH virus testing in risk areas
- Additional larviciding of freshwater wetlands and flooded areas
- Retreatment of catch basins (if WNV) in focal area
- Retreatment of hummock swamps (if EEE) in focal area

If *human biting mosquitoes* in municipality test positive for virus:

- Public notification to use personal protective measures Supplemental adult mosquito trapping and additional DPH virus testing in risk areas
- Additional larviciding of freshwater wetlands and flooded areas
- Recommendation for municipality to complete a block adulticide of focal area
- Recommendation for municipality to complete barrier treatments

If *mammal or human case* of WNV or EEE in municipality:

- Public notification to use personal protective measures
- Supplemental adult mosquito trapping and additional DPH virus testing in risk areas
- Additional larviciding of freshwater wetlands and flooded areas
- Recommendation for municipality to complete a block adulticide of focal area
- Recommendation for municipality to complete barrier treatments

Summary of NEMMC District Operations Completed in Nahant during 2021

Date	Activity Completed
1/11/2021	2021 Integrated Pest and Vector Management Plan published to NEMMC website
1/7/2021 to 1/13/2021	Mechanized Phragmites ditch mowing (.47 acres) + manual ditch maintenance 288 ft +2 Ditches on Kelley Greens Golf Course
1/14/2021	Mechanized ditch maintenance- 2 Ditches on Kelley Greens Golf Course 367 ft
1/15/2021	Mechanized ditch maintenance- 2 Ditches on Kelley Greens Golf Course 126 ft
1/16/2021	Residential Pesticide Exclusion Received (15)
1/17/2021	Residential Pesticide Exclusion Received (3)
1/19/2021	Residential Pesticide Exclusion Received (1)
1/22/2021	Mechanized ditch maintenance- 2 Ditches on Kelley Greens Golf Course 463 ft
1/28/2021	Meeting with Nahant DPW Superintendent re: update on mechanized ditch maintenance
1/28/2021	Mechanized ditch maintenance- 2 Ditches on Kelley Greens Golf Course 200 ft
1/29/2021	Mechanized ditch maintenance- 2 Ditches on Kelley Greens Golf Course 214 ft
1/30/2021	Mechanized ditch maintenance- 2 Ditches on Kelley Greens Golf Course 90 ft
2/2/2021	Residential Pesticide Exclusion Received (1)
2/4/2021	2021 Draft Best Management Plans (BMP) e-mailed to BOH for review
2/15/2021	Residential Pesticide Exclusion Received (1)
4/13/2021	Contacted DPW for catch basin cleaning schedule and treatment notification
4/24/2021	Residential Pesticide Exclusion Received (1)
4/27/2021	Habitat Site Inspections (7)
4/30/2021	Habitat Site Inspections (6)
5/3/2021	Residential Pesticide Exclusion Received (1)
5/23/2021	Residential Pesticide Exclusion Received (1)
6/21/2021	Total catch basins in Nahant completed- 380 basins (2,660 g Altosid WSP)
7/7/2021	(1) Mosquito batch sent to DPH for EEE/WNV testing- Negative
7/28/2021	(2) Mosquito batch sent to DPH for EEE/WNV testing- Negative
8/3/2021	(2) Mosquito batch sent to DPH for EEE/WNV testing- Negative
8/17/2021	(3) Mosquito batch sent to DPH for EEE/WNV testing- Negative
8/24/2021	(1) Mosquito batch sent to DPH for EEE/WNV testing- Negative
8/31/2021	(2) Mosquito batch sent to DPH for EEE/WNV testing- 1 batch WNV positive (Cx. pipiens)
9/2/2021	Notified BOH- WNV risk raised by DPH to MODERATE
9/6/2021	Supplemental mosquito trap placed
9/8/2021	(7) Mosquito batch sent to DPH for EEE/WNV testing- Negative
9/14/2021	(2) Mosquito batch sent to DPH for EEE/WNV testing- Negative
9/21/2021	(2) Mosquito batch sent to DPH for EEE/WNV testing- Negative
9/28/2021	(2) Mosquito batch sent to DPH for EEE/WNV testing- Negative
10/1/2021	Adult mosquito surveillance and DPH testing concluded for season

- **0 Residential property inspection service requests, unchanged from 2020**

Informing residents that they can contact the district to inspect for standing water and help identify new breeding areas can help reduce mosquito populations.

- **13 mosquito habitat site inspections**
- **Catch basin larviciding was completed on 6/21/2020: 380 total municipal basins were treated**
- **24 Residential pesticide exclusions were filed with the district this year from Nahant**
- **1,748 feet of storm water ditches were cleared of debris**

2021 Nahant Mosquito & Arbovirus Surveillance Summary

There was 1 WNV mosquito isolation. There were no EEE mosquito isolations or WNV/EEE human or animal cases in Nahant in 2021. At the end of 2021, the arboviral risk level for Nahant remained at REMOTE for EEE and was raised to MODERATE for WNV on 9/2 due to the positive WNV mosquito isolation on 8/30. Risk Categories are described on pages 13, 22, 25 of the 2021 Massachusetts State Arbovirus Surveillance and Response Plan.

Massachusetts DPH assesses arboviral risk levels based on many factors including but not limited to mosquito isolations, locations of acquired veterinary and human infections, virus history locally and in bordering states, weather conditions present and predictions, and current mosquito populations and future trends.

- 24 mosquito pools/batches were sent from Nahant to the MDPH lab for testing in 2021, 1 batch of *Cx. pipiens* tested positive for WNV on 8/30. No mosquito batches tested positive for EEE.
- DPH raised risk level in Nahant to moderate on 9/2, following the positive WNV isolation.
- A supplemental trap was placed on 9/7. Additional mosquito batches (5) were sent for testing. All supplemental batches returned with a negative result for WNV/EEE. There were no subsequent virus isolations in Nahant for the remainder of the season.

Mosquito virus isolation history (WNV/EEE) in Nahant:

Collection Date	Species	Test Type	Result
8/30/2021	<i>Culex pipiens</i>	WNV	Positive
9/9/2019	<i>Culex pipiens</i>	WNV	Positive
8/8/2016	<i>Culex pipiens</i>	WNV	Positive
8/10/2016	<i>Culex pipiens</i>	WNV	Positive
8/15/2016	<i>Culex pipiens</i>	WNV	Positive
8/17/2016	<i>Culex pipiens</i>	WNV	Positive
8/22/2016	<i>Culex pipiens</i>	WNV	Positive
8/24/2016	<i>Culex pipiens</i>	WNV	Positive
8/29/2016	<i>Culex pipiens</i>	WNV	Positive
8/31/2016	<i>Culex pipiens</i>	WNV	Positive
9/7/2016	<i>Culex pipiens</i>	WNV	Positive
9/21/2016	<i>Culex pipiens</i>	WNV	Positive
9/21/2016	<i>Culex salinarius</i>	WNV	Positive
9/28/2015	<i>Culex pipiens</i>	WNV	Positive

2022 Best Management Practice Plan: Nahant

9/3/2013	<u>Culex pipiens</u>	WNV	Positive
8/22/2012	<u>Culex pipiens/restuans</u> complex	WNV	Positive
8/21/2011	<u>Culex pipiens/restuans</u> complex	WNV	Positive
8/21/2011	<u>Culex pipiens/restuans</u> complex	WNV	Positive
8/24/2011	<u>Culex pipiens/restuans</u> complex	WNV	Positive
8/2/2006	<u>Culex species</u>	WNV	Positive

<u>Total Mosquitoes Collected in Nahant</u>	<u>2020</u>	<u>2021</u>	<u>% Change</u>
CDC CO2/Light traps (1) - Mammal & bird feeders/bridge vectors	47	240	411%
Gravid Traps (1) - Bird feeders/WNV primary vectors	79	38	-52%
Totals	126	278	121%

<u>Mosquito Species- pest/disease list- Nahant</u>	<u>2020</u>	<u>2021</u>	<u>% Change</u>	<u>WNV/EEE +</u>	<u>District Total % change 2020 to 2021</u>
<i>Culiseta melanura</i> (red maple swamp/acid bog)	0	0	-	NO	11%
<i>Culex pipiens</i> (container/catch basins/heavy organics)	76	34	-55%	WNV	64%
<i>Culex restuans</i> (container/catch basins)	0	0	-	NO	75%
<i>Culex salinarius</i> (brackish water/phragmites/roadside ditches)	41	133	224%	NO	747%
<i>Coquillitidia perturbans</i> (cattail)	2	0	-100%	NO	-20%
<i>Aedes vexans</i> (rainwater/fresh floodwater)	0	103	10300%	NO	1781%
<i>Aedes japonicus</i> (tree hole/container breeder)	2	0	-100%	NO	52%
<i>Aedes sollicitans</i> (salt marsh)	1	0	-100%	NO	824%
<i>Aedes cantator</i> (salt marsh)	2	6	200%	NO	266%
<i>Aedes canadensis</i> (snowmelt/woodland pool)	0	0	-	NO	588%

Red denotes there were positive mosquito batches in the total collections during 2021

WNV/EEE bridge vectors/human biters

- Due to excessive and prolonged rain events during 2021 caused these species to increase district-wide, there was an increase in multiple fresh floodwater species in Nahant; *Ae. vexans* and *Cx. salinarius*, a brackish water mosquito, increased by a total of 476%. The cattail species *Cq. perturbans* have still not recovered from the drought conditions of 2020 and populations continued to decrease in Nahant by 100% in 2021. Informing residents that they can contact the district to inspect for standing water and help identify new breeding areas can also reduce these populations.

WNV primary vectors/bird biters (*Cx. pipiens/restuans*)

- There was a 55% decrease in collections of WNV primary vectors from 2020 to 2021 in Nahant. 1 batch of *Cx. pipiens* tested positive for WNV in Nahant this year. Timely catch basin cleaning and treatments helped keep *Culex* mosquito populations in check. Informing residents that they can contact the district to inspect for standing water and help identify new breeding areas can also reduce these populations.

EEE primary vectors/bird biters (*Cs. melanura*)

- While 2019 was an unprecedented year for EEE statewide, due to early and sustained drought conditions and anticipatory targeted larviciding activities in the Northeast during 2020 the district saw

an 81% decrease in *Cs. melanura* populations from 2019. In 2021 the average precipitation increased, and the district saw a slight 11% increase from 2020. However, there remains a decrease of 48% from the 10-year mean and 50% from the 5-year. It will take several years for these populations to recover from the droughts. Only 1 batch of *Cs. melanura* tested positive for WNV in Boxford during 2021. There were no EEE isolates in this species during 2021.

Pest Status salt marsh mosquitoes (*Ae. sollicitans*)

- *Ae. sollicitans*, a summer-fall salt marsh species, increased by 224% district-wide. However, despite consistent larviciding and adulticiding, tides, high temperatures, prevailing wind direction, frequent rain and heavy thunderstorm activity caused this mosquito species to become a serious weekly nuisance for the district and its residents throughout 2021.

There were no arbovirus detections in Nahant prior to 2006. However, the increasing frequency and number of WNV detections are becoming evident in our District, especially during drought years. Surrounding communities have had extensive WNV history, in both mosquitoes and humans. It is recommended Nahant residents take necessary precautions; from July to the first full hard frost, to reduce the risk of infection from WNV and other arboviruses, regardless of low mosquito populations and/or aggressiveness of control.

A hard, or killing frost, is defined meteorologically as two consecutive hours of temperatures below 28 degrees Fahrenheit or three hours below 32 degrees. This will occur at different times for different communities, and there may even be variation within communities based on local geography. Although mosquitoes are not killed until a hard frost occurs, they are extremely unlikely to be active when temperatures fall below 50 degrees in the evening (Page 15 of the 2021 MA Arbovirus Plan listed below).

Refer to the 2021 Massachusetts State Arbovirus Surveillance and Response Plan viewed online at:

<https://www.mass.gov/lists/arbovirus-surveillance-plan-and-historical-data>