MASSACHUSETTS MOSQUITO CONTROL

ANNUAL OPERATIONS REPORT

Year Report Covers: 2020 Date of Report: 1/12/21

Project/District Name: **Plymouth County Mosquito Control Project**

Address: 272 South Meadow Rd

City/Town: Plymouth Zip: 02360

Phone: 781-585-5450 Fax: 781-582-1276

E-mail: denise.deluca@mass.gov

Report prepared by: ***Ross Rossetti, Ellen Bidlack, and Matthew McPhee***

NPDES permit no. **MAG 87B214**

If you have a mission statement, please include it here: To maintain an efficient, economical mosquito control operation that will provide the best results possible, be consistent with all ecological aspects and consider the best interests of member communities.

ORGANIZATION SETUP:

Commissioner names:

Cathleen Drinan	Michael Valenti
John Kenny	Ann Motyka
John Sharland	

Superintendent/Director name: Ross Rossetti/Stephen Gillett(Retired June 2020)
Superintendent/Director contact phone number: 781-585-5450
Asst. Superintendent/Director name: Vacant

District/Project website: http://Plymouthmosquito.org
Twitter handle: @
Facebook page: http://www.facebook.com/

Staffing levels for the year of this report:
Full time: 13
Part time: 1
Seasonal: 4
Other: (please describe)

Of the above, how many are:
(Please check off all that apply, and list employee name(s) next to each category)

☒ Administrative Denise Deluca
☐ Biologist
☒ Educator Dan Daly(Resigned July 2020), Ellen Bidlack
☒ Entomologist Ellen Bidlack
☒ Facilities Ross Rossetti, Matthew McPhee
☒ Information technology Ellen Bidlack, Ross Rossetti
☒ Laboratory Ellen Bidlack
☒ Operations Ross Rossetti, Denise Deluca, Matthew McPhee
☒ Public relations Dan Daly(Resigned July 2020)
☐ Wetland scientist
☒ Other (please describe) Pilot-Ross Rossetti, Excavator Operator-Brian Callahan, Brandon Gillett, General Foreman - Matthew McPhee, Field Technicians - Christoper Hanna, George Rego, Michael Wilkins, Russell Mazzilli, Keith Bachi, Stephanie Dugan

For the year of this report, the following were maintained (enter number in the column to the left):

1 Modified wetland equipment (list type) Link-Belt Excavator
12 Larval control equipment (list type) A-1 Mist Sprayer, 2 hydraulic units, 2 backpack sprayers, 6 pump can
9 ULV sprayers (list type) Clarke Pro Mist Dura
20 Vehicles
Other (please be specific): 1 John Deere 35G mini excavator, 1 John Deere 323E Compact Track Loader, 1 Mustang Skid-steer, 1 Cessna AG Wagon w/boom nozzle & grandular spreader

Comments: _____

How many cities and towns are in your service area?* 28
Alphabetical list: Abington, Bridgewater, Brockton, Carver, Cohasset, Duxbury, East Bridgewater, Halifax, Hanover, Hanson, Hingham, Hull, Kingston, Lakeville, Marion, Marshfield, Mattapoisett, Middleboro, Norwell, Pembroke, Plymouth, Plympton, Rochester, Rockland, Scituate, Wareham, West Bridgewater, Whitman

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):

☒ **Adult mosquito control**

☒ **Adult mosquito surveillance**
☒ **Ditch maintenance**
☒ **Education, Outreach & Public education**
☒ **Larval mosquito control**
☒ **Larval mosquito surveillance**
☒ **Open Marsh Water Management**
☒ **Research**
☒ **Source reduction (tire removals)**
☒ **Other (please list): Pesticide resistance testing**

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: The larval suppression program is one of our most effective methods to reduce the number of biting mosquitoes by preventing larvae from maturing into adults. Through spring aerial laviciding 12,000 acres of wetlands, site inspections, treating larval habitat by hand or hydraulic spraying, and catch basin treatments the Project hopes to enhance the quality of life of our residents by reducing the number of mosquitoes hatching out.

What months is this program active? Spring and Summer months

Describe the types of areas where you use this program: A variety of fresh water wetland, salt marshes, drainage basins, and stagnant water within the district.

Do you use:
☒ **Ground application (hand, portable and/or backpack, etc.)**
☒ **Aerial applications**
☒ **Other (please list): A-1 Mist Sprayer, hydraulic sprayer**
Comments: _____

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

Product Name	**EPA #**	**Application Rate(s)**	**Application Method**	**Targeted life stage**	**Habitat Type**	**Total finished product applied**
Vectobac 12AS	73049-38	1 pint per acre	Aerial	Larvae	☐ Catch basins ☐ Containers ☒ Wetland ☐ Other (please list):	1,500 gals.
Vectobac 12AS	73049-38	4oz to 50gals water	Hydraulic Sprayer	Larvae	☐ Catch basins ☒ Containers ☒ Wetland ☐ Other (please list):	1.5 gals.
Four Star 90 Day Briquet	83362-3	1 Briquet per 100 sq. feet surface area	Hand	Larvae	☐ Catch basins ☐ Containers ☒ Wetland ☐ Other (please list):	10 lbs.
Summit Briquets	6218-47	1briquet /10'x10' surface area	hand	Larvae	☐ Catch basins ☒ Containers ☒ Wetland ☐ Other (please list):	90 lbs.
VectoLex WSP	73049-20	1 pouch per basin	hand	Larvae	☒ Catch basins ☐ Containers ☐ Wetland ☐ Other (please list):	616.5 lbs.
VectoMax	73049-429	1 pouch per basin	hand	Larvae	☒ Catch basins ☐ Containers ☐ Wetland ☐ Other (please list):	714 lbs.
Four Star MBG	85685-3	5-10 lbs. per acre	backpack	Larvae	☐ Catch basins ☒ Containers ☒ Wetland ☐ Other (please list):	151 lbs.

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

Product Name	**EPA #**	**Application Rate(s)**	**Application Method**	**Targeted life stage**	**Habitat Type**	**Total finished product applied**
Four Star 45 Day Briqute	83362-3	1 Briquet per 100 sq. feet surface area	hand	Larvae	☐ Catch basins ☐ Containers ☒ Wetland ☐ Other (please list):	2.5 lbs.
BVA 2 Larvacide Oil	70589-1	1-5 Gallons per acre depending on vegitation	Wand Sprayer	Larvae/pupae	☐ Catch basins ☐ Containers ☒ Wetland ☐ Other (please list):	2.3 oz.
Altosid P35	89459-95	5lb/acre	Aerial	Larvae	☐ Catch basins ☐ Containers ☒ Wetland ☐ Other (please list):	1,920 Lb
				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: Refer to GEIR Table 17
☐ Other (please describe):
Comments: _____

Please attach a map of your service area (or a website link to that map).
http://www.plymouthmosquito.org/service-area.html

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: The goal of our program is to reduce the number of biting mosquitoes to protect human health and improve the quality of life of our residents. The Project takes residential, businesses and town officials requests for adulticiding with ULV truck mounted sprayers .

What is the time frame for this program? May to October (end date depends on virus activity and weather conditions).

Describe the types of areas where you use this program: Streets, Fields, Schools (per Children's Protection Act regs), yards, recreation areas.

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):

Product Name	**EPA #**	**Application Rate(s)**	**Application Method**	**Total finished product applied**
DUET	1021-1795-8329	.62oz.per acre	ULV	442 Gals
Mavrik	2724-478	5oz/50gal water	Hydraulic Sprayer	14.7 oz.

Please describe the maximum amounts or frequency used in a particular time frame such as season and areas
Each resident household has a maximum of 8 treatments per season

What is your trigger for adulticiding operations? (check all that apply)
☒ Arbovirus data
☒ Best professional judgment
☒ Complaint calls (Describe trigger for application: 2 per geographical area)
☐ Landing rates (Describe trigger for application)
☒ Light trap data (Describe trigger for application 5 per night))
Comments: _____

Please attach a map of your service area (or a website link to that map).
http://www.plymouthmosquito.org/service-area.html

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: We often inspect properties and offer advice to landowners regarding actions they can take to reduce the amount of mosquito production on their property. We currently run a tire removal program year round. This year we removed 1,960 tires for recycling.

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

Comments: _____

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:
☒ Inland/freshwater
☒ Saltmarsh
Please describe your program: The project's water management program is conducted pursuant of chapter 252 of the MA General Laws and is compliant with US Army Corps guidance. The goal of the program is to maintain existing drainage in order to reduce the amount of flooding and stagnant water in the district. This kind of work can reduce the amount of pesticide used and the number of mosquitoes in the area. We seek to use the least impactful methods to maintain these water ways. Techniques include site monitoring both before and after work, hand cleaning of the water way or use of mechanized equipment.

For **inland/freshwater water management**, check off all that apply.

Maintenance Type	**Estimate of cumulative length of culverts, ditches, swales, etc. maintained (ft)**
☐ Culvert cleaning	
☒ Hand cleaning	62,955 Ft
☒ Mechanized cleaning	6,690 Ft

☐ Stream flow improvement	
☐ Other (please list):	

Comments: _____

For **saltmarsh ditch maintenance**, check off all that apply:

Maintenance Type	**Estimate of cumulative length of ditches maintained (ft)**
☒ Hand cleaning	70 Ft
☒ Mechanized cleaning	265 Ft
☐ Other (please list):	

Comments: _____

What time frame during the year is this method employed? Jan-Dec

Comments: _____

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

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.

Describe the purpose of this program: OMWM aims to protect the salt marsh from the adverse impacts of grid ditching and improve the ecosystem. OMWM utilizes the natural features of the salt marsh to enhance predatory fish and native bird habitat while reducing or eliminating stagnant areas that are conducive to mosquito larval development

What months is this program active? The program is active year round. In the summer months the salt marsh is monitored and in the winter the OMWM site is constructed.

Please give an estimate of total square feet or acreage: 0

Comments: We obtained all our permits for this program 2017.

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:	Pre and Post applications
Ground ULV Adulticide:	Trapping data and Service Requests
Larvicide – catch basins:	prior to application
Larvicide-hand/small area	prior to application

Open Marsh Water Management: Pre and Post application and per permit

Source Reduction: Pre and Post applications

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):
Per established Mass. Best Management Practice Standards and State Reclamation and Mosquito Board G.E.I.R.

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

Research Project	**Details**
Bottle assays	Used the CDC's bottle assay to test for pesticide resistance in adult mosquitoes.
Efficacy testing	Conducted a joint research project with BCMCP, Cornell University, and CT Agricultural Experiment Station to examine the efficacy of methoprene applications against Culiseta melanura.
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: The purpose of this program is three fold to monitor the mosquitoes for diseases, to determine general population levels and to decide where we can better focus our larvaciding and adulticiding efforts.

What months is this program active? May-October

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

Trap Type	**Canopy?** (check box for yes)	**Number of traps** (leave blank if zero)
☐ ABC light trap	☐	
☐ ABC light trap w/CO_2	☐	
☐ CDC light trap	☐	
☒ CDC light trap w/CO_2	☐	27
☒ Gravid trap		25
☐ Landing rate test		
☒ NJ light trap	☐	28
☐ NJ light trap w/CO_2	☐	
☒ Ovitrap		8
☐ Resting box		
☐ 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:
28 NJ trap sites, 17 - CDC trap sites, and 16 - Gravid trap sites

Please check off the species of concern in your service area:

☒ *Ae. albopictus*
☒ *Ae. cinereus*
☒ *Ae. vexans*
☒ *An. punctipennis*
☒ *An. quadrimaculatus*
☒ *Cq. perturbans*
☒ *Cx. pipiens*
☒ *Cx. restuans*
☒ *Cx. salinarius*
☒ *Cs. melanura*
☐ *Cs. morsitans*
☐ Others (please list):

☒ *Oc. abserratus*
☒ *Oc. canadensis*
☒ *Oc. cantator*
☒ *Oc. j. japonicus*
☒ *Oc. sollicitans*
☒ *Oc. taeniorhynchus*
☒ *Oc. triseriatus*
☒ *Oc. trivittatus*
☒ *Ps. ferox*
☐ *Ur. sapphirina*

Number of adult mosquitoes collected this season (whether submitted to DPH or not): 89,995
Number of adult mosquito pools collected this season (submitted and unsubmitted): 2,154
Number of ovitrap collections this season, if any: 32
Any other trap collections of note (please describe): We ran many extra CDC light traps to collect data on the efficacy of the aerial adulticiding conducted by the state.

Do you participate in the MDPH Arboviral Surveillance program? Yes
Total number of adult mosquito pools submitted to DPH this past season: 23,267
How many pools do you submit weekly on average? 43

Number of traps in your service area **placed by MDPH**: 16
Were these long-term trap sites or supplemental trapping sites? both

Which arboviruses were found in your area during the previous mosquito season? Enter the number of pools/cases below:

Arbovirus	**Positive Mosquito Pools**	**Equine Cases**	**Human Cases**
☒ Eastern Equine Encephalitis (EEE)	61	0	2
☒ West Nile Virus (WNV)	8	0	0
☐ Other (please list):			

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):

Arbovirus	Start of Season	End of Season
EEE	all towns at low risk	Low Level Risk:Abington, Brockton, Cohasset, Duxbury, Hanover, Hingham, Hull, Marion, Marshfield, Mattapoisett, Norwell, Rockland, Scituate, and Whitman Moderate Risk: Lakeville, Pembroke, and West Bridgewater High Risk: Bridgewater, East Bridgewater, Hanson, Kingston, Plympton, Plymouth, Rochester and Wareham Critical risk: Carver, Halifax, and Middleboro
WNV	all towns at low risk	all towns at low risk

Comments: _____

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: The over-arching purpose of the program is to enhance public health and safety of the residents of Project communities as it applies to mosquitoes and mosquito viruses. The Project employs all the methods checked on the form to reach individuals and groups of people of all ages in our member communities and to communicate the messages of the Massachusetts Department of Public Health, The Centers for Disease Control ,the Environmental Protection Agency, and the American Mosquito Control Association.

What time frame during the year is this method employed? Primarily April through October, but requests may take place any time of the year. The time period of November - March is generally a time for planning the focus of the next season's efforts.

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): Hosted a meeting with Boards of Health regarding services and EEEV.

Estimate the audience reached this year using the education/outreach methods above:
There were several outreach events in 2020. On the 25th of February the Project hosted an event for Boards of Health to hear about plans for EEEV management and our program. The event was well attended. Ellen Bidlack participated in a mosquito identification class called Mosquito Mayhem. The program was attended by 20 people. It is geared toward mosquito control personnel and pesticide applicators. It was sponsored by the Northeast Mosquito Control Association. The Project's press events reached a large audience. On July 7th PCMCP hosted the Governor and Lieutenant Governor for a press conference designed to highlight the state's efforts to control EEEV. The press conference was covered by most local TV stations. In July the Superintendent was interviewd by WATD and in August the Entomologist was interviewed by WGBH 89.7 for an article about EEEV activity.
Comments:

List your program's top 3 education/outreach activities for this year:

1. To increase public awareness of who we are, what we do, how we do it, and to be able to access our services.
2. To increase public awareness of what actions they can take to avoid mosquito bites, including how to select the best repellents (EPA registered options).
3. To ensure that school districts stay current of the CFPA, have updated IPM plans and understand the required steps to be able to have the Project spray their grounds.

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 Cornell University
☒ Another mosquito control district/project BCMCP
☒ Another state agency (DCR, DPH, etc.) CT Agricultural Experiment Station
☐ Environmental groups
☐ Industry

List any training/education your staff received this year: Applicators License Training, NMCA Annual Meeting, Hoisting License Continuing Ed., Mosquito Identification Training

Please list the certifications and degrees held by your staff: Stephen Gillett Commonwealth Supervisor Certificate, Class A CDL , 1c2a Hoisting Engineer License, Commercial Certification 47 - Ellen Bidlack B.S., M.A. Entomology, Commercial Certification 47 - Dan Daly BS, M Ed., CAGS, CAS. - Ross Rossetti B.S. Aviation Science, CORE Management Program, Commercial Pilots Certificate, Commercial Certification 47 and 34, Hoisting license 1c2a, Class A CDL - Brain Callahan Commercial Certification 47, Class A CDL, 1c2a Hoisting License - Brandon Gillett Commercial Certification 47, 1c2a Hoisting License, Class A CDL - Keith Bachi Core Applicator License - Christopher Hanna Commercial Certification 47, 2a Hoisting License - George Rego Applicators License, Class A CDL, 1c2a Hoisting License - Matthew McPhee B.A. Earth, Environment and Oceanic Sciences, CORE Management Program, Commercial Certification 47, 1c2a Hoisting License, Class A CDL - Russell Mazzilli B.S. Criminal Justice, Commercial Certification 47, Class A CDL, Hoisting License 1c2a - Michael Wilkins, Commercial Certification

47, Hoisting License 1c2a - Stephanie Dugan, B.S. Environmental Biology, Commercial Certification 47.

Comments: _____

INFORMATION TECHNOLOGY (IT)

Does your program use (check all that apply):

☒ Aerial Photography
☒ Databases
☐ Dataloggers (monitoring for temperature, etc.)
☒ GIS mapping (Describe:)
☒ GPS equipment
☒ Smartphones
☒ Tablets/Toughbooks
☐ Other (please describe):

Describe any changes/enhancements in IT from the previous year: PCMCP started to migrate to Field Seeker for managing survailance data, pesticide applications, and water management activites. We also upgraded our server and phone system.

Describe any difficulties your program had with IT software/equipment this year:

Comments: _____

REVENUES & EXPENDITURES

Please enter your approved budgets for the current, previous, and future fiscal years.

	Date of Fiscal Year	Approved Budget	Notes
Previous	2020	1,896,764.00	
Current	2021	1,991,602.00	
Future	2022	2,041,392.00	Not approved at this time

List each member municipality, along with the corresponding (cherry sheet) funding assessment dollar amount, for the current fiscal year (or provide a web link to this information): https://dlsgateway.dor.state.ma.us/reports/rdPage.aspx?rdReport=CherrySheets.CSbyProgMunis.MuniBudgFinal

Comments: _____

SERVICE REQUESTS

How many service requests did you receive this season? 17,923
How many were for larviciding? 424
How many were for adulticiding? 17,499

Was this an increase or decrease over last season? Increase

Comments:

EXCLUSIONS

How many exclusion requests did you receive this season? 453

Was this an increase or decrease over last season? Increase

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. There are 23,898 acres excluded from mosquito control activities. In order to avoid the no spray areas we are unable to apply chemical within 300 ft of the properties. Our equipment alerts the applicator when they are within 500ft of an excluded property. Based on an analysis the median number of properities within 300ft of an excluded property is 10 and the median number of propeties with in 500 ft is 17. The mean number of households within 300ft is 25 and within 500ft is 42. Based on this information we estimate the total number of households impacted by no sprays to be between 4,500 - 19,000.

SPECIAL PROJECTS

Did your program perform any of the following special projects? Check all that apply.

- ☐ Inspectional services (inspections at sewage treatment facilities, review of subdivision plans, etc.)

  Describe:

- ☒ Work with DPW departments or other local or state officials to address stormwater systems, clogged culverts, or other areas identified as man-made mosquito problem areas

  Describe: We continually work with local DPW and MassDOT on water management projects.

- ☐ Work with groups as described above on long term solutions?

  Describe:

- ☒ Conduct or participate in any cooperative research or restoration projects?

  Describe: Conducted a joint research project with BCMCP, Cornell University, and CT Agricultural Experiment Station to examine the efficacy of methoprene applications against Culiseta melanura.

- ☒ Participate in any state/regional/national workgroups or panels, or attend any meeting pertaining to the above?

Describe:

- ☐ Work on any biological control projects, such as enhancement of habitat for native predators, release of predatory fish or invertebrates, etc.?

  Describe:

CHILDREN AND FAMILIES PROTECTION ACT (CFPA)

Is your program impacted by the CFPA? Yes

If yes, please explain: Incomplete listing of our products delays or prohibits treating for mosquitos on school property.

If you have data on compliance rates with the CFPA within your program area, please list here: PCMCP checks IPM plans for every school before it schedules an application.

Describe any difficulties you have had with the implementation of your program due to the CFPA, please elaborate here: No problems, schools were anxious to make sure that they were in compliance with the CFPA.

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: _____