MASSACHUSETTS MOSQUITO CONTROL
ANNUAL OPERATIONS REPORT

2014 Year of Report Date of Report: 1/20/2015

Project/District Name: **Northeast Mass. Wetlands Mgmt. Mosquito Control**

Address: 261 Northern Boulevard

City/Town: Newburyport Zip: 01950

Phone: 978-463-6630 Fax: 978-463-6631

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Report prepared by: ***Esteban Cuebas-Incle, Robyn Januszewski, William Mehaffey and Emily DW Sullivan***

NPDES permit no. **MAG87A028**

If you have a mission statement, please include it here: The Northeast Massachusetts Mosquito Control and Wetlands Management District represents the mosquito control and wetland management interests of those communities that choose to subscribe to its services. The prime directive of the District is to protect its citizens from mosquito-borne diseases by targeting precise, measured, and preemptive responses to specific risks as prescribed by the District's annually-revised "Vector Management Plan" (VMP). To ensure that our citizens quality of life and regional economy is not severely impacted by abundant pestiferous mosquito outbreaks; strategies targeted to reduce dominant mosquito populations are implemented as prescribed by the District's annually-revised "Best Management Practice" (BMP) plans. BMPs are designed to incorporate the District's environmentally sensitive and cost effective mosquito control strategies with the specific needs and concerns of each member community.

ORGANIZATION SETUP:

Please list your Commissioner's names:

John W. Morris, CHO	Chairman
Vincent J. Russo, MD, MPH	Vice Chairman
Joseph Giarrusso, Conservation Officer	
Paul Sevigny, RS, CHO	
Rosemary Decie, RS	

Please list the Supt./Director's name: William C. Mehaffey, Jr., District Supervisor
Please list the Supt./Director's contact phone number: 978-463-6630
Please list your Asst. Supt./Asst. Director's name: Robyn Januszewski, District Administrator

Do you have a website? Yes If yes, please list the web address here: http://www.northeastmassmosquito.com

Please list your staffing levels for the year of this report:

Full time: 9
Part time: 1
Seasonal: 5
Other: 1 (please describe) Management Analyst

Please break these down into the following areas:

Administrative staff: 3.5
Field staff: 12
Please check off all that apply, and list employee name(s) next to each category:
☒ Public relations Esteban Cuebas-Incle, Robyn Januszewski, William Mehaffey and Emily Sullivan
☒ Information technology Robyn Januszewski and Anthony Corricelli
☒ Entomologist Esteban Cuebas-Incle
☒ Wetland Scientist Emily Sullivan (Wetlands Project Coordinator)
☒ Biologist Robyn Januszewski
☒ Education Esteban Cuebas-Incle, Robyn Januszewski and Emily Sullivan
☒ Laboratory Esteban Cuebas-Incle and Anthony Corricelli
☒ Operations Anthony Corricelli, Esteban Cuebas-Incle, Maureen Douglas, Dennis Gallant, Timothy Hay, Robyn Januszewski, Ross Mehaffey, William Mehaffey, John Moak, Barry Noone, Emily Sullivan, Horace Baxter (seasonal), Richard Caron (seasonal), Daniel Gurlitz (seasonal), William Montgomery (seasonal) and Thaddeus Tatarczuk (seasonal)
☒ Facilities William Mehaffey, John Moak
☒ Other (please list) Management Analyst: John Moak

For the year of this report, we maintained:
22 vehicles
14 modified wetland equipment (list type) Kassbohrer DR270 "Pisten Bully" Flail mower/Grader; Kassbohrer DR270 "Pisten Bully" Flail mower/Rotary ditcher/Grader; Kassbohrer PB260 "Pisten Bully" Dump Body/Grader; 1987 Bombardier Muskeg Backhoe/Dump Body; 1999 Link Belt 1600 Excavator; 1995 Eager Beaver Heavy Equipment Trailer (rebuilt in 2007); 1996 Hudson Spray Trailer; 1998 Carmate Utility Trailer; 2012 EZ Loader Boat Trailer; 2012 Starcraft 14' aluminum Boat; 2012 Mercury 20 hp Outboard Motor; Wayne Wood Chipper; 1996 Rokon all-terrain Motorcycle; 1987 ARGO 8 wheel Amphibious ATV
7 ULV sprayers (list type)

Type	Mod#	Usage
BecoMist	A0003S	Adulticiding

Larval control equipment (list type)
Other (please be specific): 3

Type	Mod#	Usage
Leco	HD Series D 70001047 (Blower Model 26-3210)	Barrier Sprayer
Leco	1100 (Blower Model RAI 89D Roots ID # 865-105-20)	Barrier Sprayer
Rears Ag Sprayer S-95-1044		Invasive Veg. Control

Comments: _____

How many cities & towns in your service area? 32
Please list: Amesbury, Andover, Beverly, Boxford, Danvers, Georgetown, Groveland, Hamilton, Haverhill, Ipswich, Lynn, Lynnfield, Manchester-by-the-Sea, Marblehead, Merrimac, Methuen, Middleton, Nahant, Newbury, Newburyport, North Andover, Peabody, Revere, Rowley, Salem, Salisbury, Saugus, Swampscott, Topsfield, Wenham, West Newbury and Winthrop

Any changes to your service area this year? No
Please list cities/towns added or removed

***Please attach a link to a map of your service area if possible.**
http://www.mass.gov/eea/docs/agr/boards-commissions/mcps-map.pdf

http://www.mass.gov/eea/docs/agr/mosquitos/docs/mcp-members-list.pdf

INTEGRATED PEST MANAGEMENT (IPM):

DEFINITION: a comprehensive strategy of pest control whose major objective is to achieve desired levels of pest control in an environmentally responsible manner by combining multiple pest control measures to reduce the need for reliance on chemical pesticides; more specifically, a combination of pest controls which addresses conditions that support pests and may include, but is not limited to, the use of monitoring techniques to determine immediate and ongoing need for pest control, increased sanitation, physical barrier methods, the use of natural pest enemies and a judicious use of lowest risk pesticides when necessary.

Please check off all of the services that you currently provide to your member cities and towns as part of your IPM program; details of these services are in the next sections.

☒ **Larval mosquito control**

☒ **Adult mosquito control**
☒ **Source reduction**
☒ **Ditch maintenance**
☐ **Open Marsh Water Management**
☒ **Adult mosquito surveillance**
☒ **Education, Outreach & Public education**
☒ **Research**
☒ **Other (please list): Inspectional Services, Development Plan Reviews, Wastewater and Water Treatment Facility inspections and treatments, Site Reviews, Greenhead Fly Control, and Source Reduction Services such as Wetland Management Activities: Mechanized Ditch Maintenance, Manual Ditch Maintenance, Predator Habitat Improvement, Restoration, Problem Beaver Management, Aquatic Invasive Vegetation Control, Tire Removal/Recycling and Container Removal.**

Comments: POLICY, PROCEDURE AND FACTS: INSPECTIONAL SERVICES
Original: 02/09 - Merged: 04/11

Existing and potential mosquito development habitats can often be readily corrected without treatment of an insecticide if early intervention actions are conducted. The District is authorized under the provisions of Chapter 252: Section 4 of the General Laws of the Commonwealth to enter upon lands for the purpose of inspection. The District carries no regulatory authority nor is it our intention to impose upon any citizen or business but to rather be a source of information to help people prevent or abate mosquitoes to the mutual benefit of the community. The District may act as technical advisor as requested by local boards of health to represent the municipalities' public and animal health as well as human annoyance concerns relative to factors effecting mosquito populations (potential and realized).

The primary vector species of West Nile Virus, Culex pipiens usually breeds in artificial containers, catch basins, storm water control structures, and other highly organic and polluted water. Therefore the District will routinely inspect areas in and around industrial facilities, office parks, and agricultural based operations because of the potential for Culex species proliferation and its correlation to West Nile Virus by request of the Board of Health. The District may review proposed new development site plans upon request and/or inspect sites where storm water control structures are located or are in the process of being constructed. Upon inspection of a site the District makes written recommendations and submits them to the Board of Health, cc-ing the land owner.

The District has recently found that in many cases, routine maintenance practices on private properties have been abandoned in lieu of recent economic decline. Neglect often leads to increased potential for mosquito larval development habitat i.e., discarded items in and around yards like trash, tarps, debris, abandoned swimming pools etc. The District works with local boards of health to assist in abating mosquito issues related to abandoned/neglected properties.

LARVAL MOSQUITO CONTROL:

Do you have a larval mosquito suppression program? Yes

If yes, please describe the purpose of this program: The District implements aerial and ground applications as a pre-emptive measure to control mosquito populations before they become adults.

The District's aerial salt water larviciding program was developed to control salt marsh mosquitoes in approximately 23,000 acres of salt marsh stretching from Boston north to the New Hampshire border. Two species of salt marsh mosquitoes lay their eggs in moist muddy areas like salt pannes, depressions and overgrown ditches along the upper edges of the salt marsh. Flooding of the marsh, the result of monthly high run tides, storms or rain events, triggers the hatching of dormant mosquito eggs into mosquito larvae. The larvae then progress through a series of instars, pupating and then eventually emerging as adult mosquitoes. Under optimal conditions the whole process from egg to adult can occur in as little as four days. Salt marsh mosquitoes are known for their aggressive biting behavior even in the heat of daylight hours. If not controlled salt marsh mosquitoes can be present in large numbers from April through September.

Ground larviciding is a site specific application of an insecticide by hand to potential and/or realized mosquito larval habitat (i.e., wetland) also designed to control mosquitoes in their aquatic stages before they emerge as adult mosquitoes. The District Supervisor assigns Field Technicians to specific areas within District territory. Field Technicians inspect and treat known larval development sites from the District's data base within their assigned area.

Please give the time frame for this program: March - October

Describe the areas that this program is used: Fresh water wetlands, upland, salt marsh and artificial structures.

Do you use:
☒ **Ground applied (includes hand, portable and/or backpack)**
☒ **Helicopter applications**
☒ **Other (please list): Source Reduction such as Wetland Management Activities (see "IPM" above for highlights).**
Comments:

What products do you use in – (please use product name and EPA#)

Wetlands: Vectobac G #73049-10; Vectobac CG #275-70; Vectobac 12AS #73049-38; Altosid Pellets #2724-448-64833; FourStar Bti-CRG #85685-4
Catch basins: Vectolex WSP #73049-20; VectoMax G #73049-429; VectoMax WSP #73049-429; Altosid Pellets #2724-448-64833; Altosid WSP #2724-448; Altosid XR Briquets 150 day #2724-421; Agnique MMF G PAK 35 #53263-30; Fourstar Briquets (180, 90 & 45 day) #83362-3; FourStar WSP #85685-3
Containers: Vectolex WSP #73049-20; VectoMax WSP #73049-429; Vectobac G #73049-10; Altosid WSP # 2724-448; Altosid Pellets #2724-448-64833; Agnique MMF G PAK 35. #53263-30; FourStar WSP #85685-3
Other (please list): Storm water structures: Vectobac G #73049-10; Vectolex WSP #73049-20; Altosid Pellets #2724-448-64833; Altosid WSP #2724-448; Altosid XR Briquets 150 day #2724-421; Agnique MMF G PAK 35 #53263-30; Fourstar Briquets #83362-3; FourStar WSP #85685-3

Please list the rates of application for the areas listed above:

Wetlands: Vectobac G, Vectobac CG, & Altosid Pellets (2.5-10 lbs / acre); Vectobac 12AS (1qt. / acre); FourStar Bti-CRG (7.5-10 lbs / acre)
Catch basins: Vectolex WSP (1 pkt. / basin = 10g); VectoMax G (10g / basin); VectoMax WSP (1 pkt. / basin = 10g); Altosid Pellets (0.25 oz. / basin); Altosid WSP (1pkt. / basin = 7g); Altosid XR Briquets 150 day (1 briquet / basin); Agnique MMF G PAK 35 (1pkt. / basin); Fourstar Briquets 180 day (1 briquet / basin = 37.4g); Fourstar Briquets 90 day (1 briquet / basin = 20.85g); Fourstar Briquets 45 day (1 briquet / basin = 13.6g); Fourstar WSP (1 pkt. / basin = 10g)
Containers: (application rate dependant on container type & size)
Other: storm water structures (application rate dependant on structure type & size)

What is your trigger for larviciding operations? (check all that apply)

☒ Larval dip counts – please list trigger for application: one or more per dip depending on type of mosquito, type of habitat, type of conditions.
☒ Historical records
☒ Best professional judgment

Comments: _____

***Please attach a link to maps of treatment areas if possible.**

ADULT MOSQUITO CONTROL:

Do you have an adult mosquito suppression program? Yes

If yes, please describe the purpose of this program: To limit mosquito population size, control species specific for vectoring West Nile Virus and Eastern Equine Encephilitis (EEE) and to reduce nuisance mosquito populations in response to resident complaints.

Please give the time frame for this program: June through October. One half hour after sunset to one half hour before sunrise (as conditions warrant and allow).

Describe the areas that this program is used: Outdoors and only in communities that participate in the NEMMCWMD's program per city/town and resident request. Adult mosquito control occurs as outlined in individual municipality Best Management Practice Plans, (BMPs) and as advised by the NEMMCWMD based on surveillance data and/or MA Department of Public Health (MDPH) information or other applicable conditions.

Do you use:
☒ **Truck applications**
☐ **Portable applications**
☐ **Aerial applications**
☐ **Other (please list):**
Comments: _____

Please list the names of the products used with EPA #:
1). Duet #1021-1795-8329
2). Suspend SC #432-763
3).
4).
5).
6).

Please list your application rates for each product:
1). Duet : 0.41 fl oz. / acre ULV variable flow. (15 mph = 3.7 fl oz. / min.)
2). Suspend SC : 1 oz. / gal. water (1 Gal / min.)
3).
4).
5).
6).

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

Duet: Selective adulticiding of specific areas will be provided at the request of the Board of Health or residents, not to exceed one day per week from June 1st to October 31st or as circumstances warrant and conditions allow. Applications to schools must be in compliance with MGL ch85.

Suspend SC: Barrier applications, requested by local Boards of Health or school officials, are applied to public use areas such as play grounds, parks, athletic fields and

school grounds. These applications typically have a longer residual and need only to be applied every two to three weeks for effective control of adult mosquitoes. Applications to schools must also be in compliance with MGL ch85.

What is your trigger for adulticiding operations? (check all that apply)

☐ Landing rates - please list trigger for application
☒ Light trap data - please list trigger for application : Increaseing amount of disease carrying vectors.
☒ Complaint calls - please list trigger for application : 2 or more on street or in neighborhood.
☒ Arbovirus data
☒ Best professional judgment

Comments: ADULTICIDING - Ultra Low Volume
Ultra Low Volume Applications (ULV) applications are done in response to surveillance data, multiple resident requests, municipal Health Department or other approved board requests in accordance with the individual municipality BMP. The District uses truck mounted ULV non-thermal aerosol sprayers for selective, targeted and wide area applications. These high tech sprayers atomize the product resulting in droplets in the range of 10 to 30 microns. A small pickup truck drives along the road travelling between 5 and 20 miles per hour. A computerized variable flow control system automatically calibrates the correct amount of material to be applied, depending on truck speed and dispenses a mist like swath. Depending on wind direction the swath of tiny droplets can drift off the road up to 300 feet and impinge upon the flying mosquitoes and vegetation that they rest on. All ULV machines are independently calibrated and certified for accuracy on an annual basis.

Selective and Targeted ULV Applications: The District expects a minimum of two residential requests from the same vicinity before ground adulticiding. ULV application targets are determined by location and number of complaints and may include a street, section of a street, neighborhood, block or specified area as requested by the Health Department.

Wide Area ULV Applications: The District may make recommendations for a wide area ULV application in response to surveillance data and specific vector/virus threats in accordance with the District's VMP.

Timing of Application: ULV applications will be conducted during evening hours, one half hour after sunset to one half hour before sunrise and as weather conditions permit. If any circumstances prevent a safe or effective evening application then a predawn application may be considered.

Post Application Security: Field Technicians will disable and cover the ULV sprayer when not in use.

ADULTICIDING - Ground Barrier

Pesticides used in barrier applications have a longer residual effect and thereby reduce the need for repeated ULV applications. Barrier applications are used on public use areas such as parks, play grounds, athletic fields and school grounds in response to requests from school officials and municipal health departments or other approved boards in accordance with individual municipality BMP or the District's VMP. Since barrier applications may be performed within areas that children frequent, all applications are conducted in strict accordance with the MA Children's Protection Act. The District only uses EPA registered pesticides approved by the MA Pesticide Bureau and in compliance with federal and state regulations.

Application: Barrier applications will be done by means of truck mounted barrier spray equipment. Truck mounted sprayers will be capable of delivering 1 gallon of mixed product per minute.

Applications on School Property: Prior to the application the applicator will make sure that no student/child is present or that any student/child remains minimally at least 150 feet away form the treatment area. At the time of the application the applicator will post approved signs at conspicuous points of access to the treated areas.

Timing of Application: Barrier applications will be conducted during evening hours, one half hour after sunset to one half hour before sunrise and as weather conditions permit. If any circumstances prevent a safe or effective evening application then a predawn application may be considered.

Post Application Security: Field Technicians will disable and cover the barrier sprayer when not in use.

***Please attach a link to maps of treatment areas if possible.**

SOURCE REDUCTION

Do you perform source reduction methods such as tire/container removal? Yes

If yes, please describe your program:
SOURCE REDUCTION
The District conducts source reduction activities typically by hand and as necessary during inspections, treatments, ditch maintenance, or in conjunction with organized wetlands management projects and clean ups. Emptying, tipping over or removal of containers prone to attract ovipositon by mosquitoes has long been a practice of the District. The District performs activities such as but not limited to: hooking; removal of debris/vegetation that causes obstruction of flow from waterways as well as clearing outfall and inlet grates etc.

TIRE REMOVAL/RECYCLING

Tire Removal/Recycling

Tires have historically been dumped/abandoned in all types of locations including public and private properties in both upland and wetland environments. Once a pile is started it can quickly grow into a substantial public health issue in terms of mosquito proliferation but also as a potential fire hazard or worse; a source of toxic fumes once ignited that can be extremely difficult to extinguish.

Used tires almost always hold water and are a prime location for artificial container breeding mosquito species, most notably Culex pipiens and Aedes japonicus. Culex pipiens is considered a key vector species of West Nile Virus. Aedes japonicus is a relatively new species to the Massachusetts area, since 2000, and was originally thought to have been imported to the United States in tires. Aedes japonicus has tested positively for West Nile virus.

The District has facilitated the removal and proper disposal of used tires from its service area for many years during the course of coordinated clean-ups and petitioned wetland management projects. This practice is considered an important part of the District's source reduction efforts and a strong component to their integrated pest management (IPM) approach. Tire disposal can be costly and increased economic woes may be adding to the problem as more and more people look for ways to cut expenses. For these reasons the District offers tire removal and disposal to all of its member communities. The District's tire removal program has been well received amongst its communities. Tire removal has become a valuable tool in source reduction and best management practices across the District's territory.

The District may select tire piles from locations in its data base but encourages communities to petition for projects requesting removal of non-commercial tire piles according to the process outlined in the District's Policy and Procedures for Mechanized Wetland Management (revised September 2013). Small piles (under 250) are considered on an individual basis. As necessary the District will coordinate with appropriate local boards i.e., the Board of Health and local Conservation Commission to address any concerns prior to removal. All tires will be collected and removed to a state approved recycling facility. The District will conduct these projects between November and March or otherwise as time allows.

A maximum number of tires slated for removal / disposal as agreed upon by the District and member municipality may be specified for in each municiplaity's Annual Best Management Practice Plan. This number will be reviewed annually. Curbside collection, "drop off days", and/or household hazardous waste day collections up to a maximum specified annual amount may be considered on an individual municipality basis.

What time frame during the year is this method employed? Year round or as time allows.

Comments: _____

DITCH MAINTENANCE

Do you have a ditch maintenance program? Yes

Please check all that apply:
☒ Inland/freshwater
☒ Saltmarsh

If yes, please describe: Ditch maintenance projects, once common throughout the District's territory, became subject to intense regulatory scrutiny several years back. Changes in interpretation of the regulations and misinterpretation of the District's legislated authority has made it diffiicult to implement the program with any kind of consistency. Forced compliance to ambiguous "policies" (despite the District's broad sweeping authority) have directly impacted our agencies ability to offer these services in a widespread manner.

In repsonse to increased regulatory pressure the District has strived to incoprorate a more holistic approach to projects. Projects are designed to consider solutions to historic, ongoing and potential future environmental stressors. Implications to the larger resource is factored into each plan. Integration of sustainable practices promoting resilience of the habitat is now a key component to all District projects. The District now offers a wide range of wetland management activities in accordance with Massachusetts General Laws Chapter 252, in compliance with established federal guidelines and in coordination with local Conservation Commissions and municipal officials.

The District enjoys implementing larger scale projects through partnerhsips which promote not only mosquito control interests but interests that consider long term solutions to a wide range of environmental needs. The objectives of the District's Wetlands Management Program remain the same: abate mosquito populations, decrease potential mosquito larval habitat and reduce insecticide applications as part of an integrated pest management, (IPM) strategy. The District has found a way to balance these objectives with activities that also promote positive environmental impacts through both mechanized and manual strategies applied in both fresh and salt water habitats.

Policy and Procedure for Mechanized Wetlands Management
Proposed: January 1st, 2002
Revised: 08/11/04, 02/23/05, 11/08/05, 01/12/06, 01/07/09, 02/26/09, 01/07/2011, 09/2013

Introduction:
Although Mosquito Control Districts are considered state agencies, they are unique in the fact that they are directly accountable to member municipalities. As such, the needs and concerns of participating communities drive operational policy and strategies. For several years now our program has been in transition from what once was considered a primarily nuisance mosquito control program, to a primarily public health based program. Transmission and transplantation of world-wide mosquito-borne viruses to the United States is on the increase. West Nile virus (WNV) is now endemic to northeast Massachusetts and since 2004, Eastern Equine Encephalitis virus (EEEV) has a presence here as well. In response, the District has enhanced its Adult Mosquito Surveillance Program. Warmer weather trends have also contributed to an increase in significant virus activity well into the fall ultimately resulting in extending control operations by about two months annually. The extent of the District's Wetland Management Program capacity has also been restricted by ever tightening regulations for operating in aquatic habitats. This problem is further compounded by an increase in site complexity as aging infrastructure, lack of maintenance and decreased funding for DPWs contribute to long term neglect of drainage statewide. Increased demands on the District's resources have severely limited the District's availability and ability to conduct mechanized and manual wetlands management, i.e. ditch maintenance, as well as the ability of the District to fund these operations through standard member municipality annual assessment. Water management expenses have increased considerably; purchases of specialty equipment and associated maintenance and fuel costs fluctuate dramatically.

Site Specific Appropriation:
In some cases, the District may propose mechanized wetland management projects that necessitate a request for member municipality funding by means of separate and additional appropriation. Though the District understands that this may be a burden to some communities, project solutions will be proposed which consider as many non-funded activities as possible. In order to ensure equal opportunity for each member municipality projects of this type will be considered by the following petition process only.

Petition:
The District operates under the authority of Chapter 252 of the General Laws of the Commonwealth of Massachusetts. To be consistent with the provisions of Chapter 252 and because of reasons described above, wetlands management projects by means of specialized low ground pressure equipment will be considered by site specific petition only. A petition is simply a brief written request from a municipality's Petitioning Body requesting District investigation into a site specific ditch maintenance project or

particular location. A municipality may petition for one project at a time and no other petitions will be considered from that municipality until the District deems that project complete.

Petitioning Body:
In an effort to avoid confusion municipalities should consider designating a petitioning body. In the event a municipality wishes to change their designated petitioning body they may do so once annually. Changes should be made at the time of the annual review of each municipality's Best Management Practice Plan (BMP), usually around the end of March or first of April. The District suggests that the local Board of Health, (BOH) is the most appropriate designee. In the event a municipality does not designate a petitioning body, the District will default to the BOH as the petitioning body.

Wetlands Management Proposal:
Once a petition is received by the District a site number will be issued and we will begin an evaluation process. The District will make recommendations to the Petitioning Body regarding wetlands management strategies for the petitioned site. If necessary, the District will develop a site specific proposal outlining the proposed project including but not limited to a site description, site history, scope of services and a “not to exceed” projected cost for implementing said project if applicable.

The proposal will be submitted to the Petitioning Body for distribution to other appropriate municipal authorities for review, comments and approval indicating the acceptance of the terms and conditions of said project as put forth in the Proposal before implementation of any such project will commence. All wetland management projects will be conducted in accordance with Massachusetts General Law Chapter 252, established federal guidelines and in coordination with local Conservation Commission and municipal officials.

FRESH WATER
The District has evolved its wetland management activities over the years to reflect the most effective and environmentally sensitive best management practices (BMPs). These BMPs are based on the accumulation of years of lessons learned in the field, suggestions provided by regulatory representatives and others in the professional industry, current trends, evolving equipment sophistication, and increased knowledge of environmental response. The District followed recommendations outlined in its own Standards for Ditch Maintenance for years. Since the latest GEIR update it now follows the recommendations outlined in the "Massachusetts Best Management Practices and Guidance for Freshwater Mosquito Control" and "Mechanized Wetland Management Activity Post Monitoring Guidelines" as applicable.

Problem Beaver Management
Policy and Procedure for Problem Beaver Management
(Originally an amendment to the District's Policy and Procedures for Mechanized Ditch Maintenance, Revised: 01/07/04, 02/23/05, 11/08/05 and 01-06-2011)

Introduction:
Since the adoption of the anti-trapping ballot referendum in 1996, the beaver population in Massachusetts has nearly tripled. Waterways subject to beaver activity are often altered from free flowing systems to large, slow or no flow systems. As a result, many areas adjacent to wetlands have now become flooded, resulting in the potential of increased breeding habitat for mosquitoes. The District established a pilot program to investigate the relationship between mosquito breeding habitat and beaver habitat; their potential impacts on increased mosquito populations and mosquito borne viruses and their relevance to human populations.

Observations revealed that in many instances beaver active waterways were not of tremendous concern in terms of mosquito development. Water depths typically increase with beaver presence and can promote populations of mosquito predators. In some cases however, local topography supports habitat that is more suitable for mosquito development and likely increases prevalence for flooding of adjacent areas which can be more prone to larval activity. Careful examination of each site is warranted. The District will continue to investigate the correlations between beaver, mosquito and predator.

Petition:
Municipalities may petition the District to investigate locations associated with beaver activity in accordance with the District's Policy and Procedures for Wetlands Management. Upon determination that mosquito breeding or a potential for mosquito breeding exists, the options listed below may be recommended to the Petitioning Body (PB). All wetland management activities conducted on beaver impacted wetlands and waterways will be performed in full cooperation with the Massachusetts Division of Fisheries and Wildlife as well as in partnership with the petitioning municipality.

A. Trapping: Removal of beavers from an area will occur prior to beginning any wetland management activity. Trapping can be done by certified District personnel.

B. Ditch Maintenance: Dams, dikes, blockages, etc. may be cleared from existing ditches to manage the level of water within a wetland or waterway.

C. Water-Flow Devices: In certain circumstances, depending on the site, water-flow devices may be installed to maintain a desired level of water within a wetland or waterway while still allowing beavers to remain in the system.

SALT WATER
In lieu of Coastal Zone Management's decision to issue a negative determination for federal consistency on Open Marsh Water Management, the District's federal permit renewal application was denied in 2008. The District (as requested) may evaluate sites for selective salt marsh ditch maintenance. Parameters for selecting sites include

mosquito prone areas that are difficult to treat by helicopter (see Aerial Salt Marsh Larviciding Program) and/or that are subject to salt marsh haying. Reclamation of ditches in hayed areas promotes drainage and firmer ground conditions, alleviating potentially damaging operation of equipment which lends itself to creation of larval habitat.

Please check off all that apply INLAND DITCH MAINTENANCE:

☒ **Hand tools**
☒ **Mechanized equipment**
☐ **Other (please list):**
Comments: _____

Please check off all that apply SALTMARSH DITCH MAINTENANCE:

☒ **Hand cleaning**
☒ **Mechanized cleaning**
☐ **Other (please list):**
Comments: _____

Please give an estimate of cumulative length of ditches maintained from the list above **INLAND**:

Hand cleaning 9,836
Mechanized cleaning 75
Other (please list):

Comments: _____

Please give an estimate of cumulative length of ditches maintained from the list above **SALTMARSH**:

Hand cleaning 600
Mechanized cleaning
Other (please list):

What time frame during the year is this method employed?

Comments: _____

***Please attach a link to maps of ditch maintenance areas if possible.**

MONITORING (Measures of Efficacy)

Please describe monitoring efforts for each of the following:

Aerial Larvicide – wetlands: **SALT WATER**

Pre Treatment Surveillance: The District Supervisor will assign Field Technicians to designated areas. Field Technicians observe salt marsh conditions relating to tidal flooding and rainfall events. Field Technicians survey potential larval development habitat dipping randomly as needed to determine location, developmental stage and extent of the mosquito brood. Field Technicians establish 10 fully recoverable dip stations (RDS) for their designated area. Prior to application each RDS is sampled. Larval stage and number are recorded on the Aerial Larviciding Survey – Pre Treatment form.

Post Treatment Surveillance: Field Technicians will survey sprayed sites after 24 hours post application. Field Technicians randomly dip as needed to determine the overall efficacy of the application. The 10 pre-selected RDS are sampled. Larval stages and number of dead/live/moribund are recorded on the Aerial Larviciding Survey – Post Treatment Form for efficacy comparisons.

Two Biological materials Vectobac 12AS and Vectobac G were used as larvicides on the Salt Marsh. Vectobac 12AS, a liquid BTI was the material used in our Aerial applications with an efficacy rate average of 97.9% using Pre and Post application data from various site locations. Vectobac G, a dry granular form of BTI was used for hand treatments with an efficacy of 100%.

Larvicide – catch basins: **Pre treatment Inspection: Field Technicians inspect each basin for condition, presence of water, flowing water, ability to hold water, and ability to dry back before treatment. Field Technicians use their best professional judgment when determining whether to treat a basin or not.**

Formal efficacy testing was not conducted in 2014 due to drought conditions, however, post treatment spot checking of catch basins in several communities found that many catch basins were dry by mid to late summer.

Larvicide-hand/small area **Pre-Treatment Inspection: Field Technicians sample for immature aquatic mosquito stages by taking 10 dips of water with a standard white 250 – 300 ml dipper. Field Technicians are trained to identify and select the most suitable mosquito habitat for each dip location. All immature mosquito stages are counted for each dip and recorded on a Larviciding Report (including location). A maximum of thirty (30) larvae/pupae per dip are counted. Ultimately Field Technicians use their best professional judgment to determine whether or not a site will be treated but many factors are considered including: # of mosquitoes, stage of mosquito, amount of water, water temperature, time of season, possibility of site to dry back prior to emergence and anticipated weather conditions at the site.**

Ground ULV Adulticide: **Efficacy tests for adulticiding products were not conducted in 2014.**

Source Reduction: **For mechanized wetland management projects as applicable in accordance with the "Mechanized Wetland Management Activity Post Monitoring Guidelines" and for others as reviewed through general observation or during routine ground larviciding efforts.**

Open Marsh Water Management: **N/A**

Other (please list): **N/A**

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

OPEN MARSH WATER MANAGEMENT

Do you have an OMWM program? No

If yes, please describe:

Please give an estimate of total square feet or acreage:

What time frame during the year is this method employed?

Comments: _____

***Please attach a link to maps of OMWM areas if possible.**
http://maps.massgis.state.ma.us/map_ol/oliver.php
Select "available data layers" (right side), open "Coastal and Marine Features", open "Northeast Salt Marsh Projects" and then add layer.

ADULT MOSQUITO SURVEILLANCE

Do you have an adult mosquito surveillance program? Yes

Please list the number (not location) of MDPH traps in your service area: 0

Please check off all the types of surveillance that apply to your program:

☒ Gravid traps
☒ Resting boxes
☐ CDC light traps
☐ CDC light traps w/CO_2
☐ Canopy
☐ Canopy

☐ ABC light traps	☐ Canopy
☐ ABC light traps w/CO_2	☐ Canopy
☐ NJ light traps	☐ Canopy
☒ NJ light traps w/CO_2	☐ Canopy

Other (please describe):

Please describe the purpose of this program: To monitor species, especially vector species for 1) management of populations, & 2) testing for disease arboviruses.

Do you maintain long-term trap sites in any of your areas? Yes

If yes, please describe how you chose these long-term sites. Proximity to population centers; access to electrical power, & security of trap sites

From Introduction to "Best Managament Plans": "Our focus is to collect a representative sample of mosquitoes in a city or town. We collect mosquitoes in areas where substantial portions of municipality residents live because we need to determine whether local mosquitoes may be transmitting viruses dangerous to people. Human impact on natural mosquito-breeding habitats may dramatically lower their populations but, if there is an unusual rise in populations in residential areas, then you know something indeed is going wrong!"

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

☐ *Ae. albopictus*	☒ *Oc. cantator*
☐ *Ae. cinereus*	☒ *Oc. excrucians*
☒ *Ae. vexans*	☐ *Oc. fitchii*
☐ *An. punctipennis*	☒ *Oc. j. japonicus*
☒ *An. quadrimaculatus*	☐ *Oc. punctor*
☒ *Cq. perturbans*	☒ *Oc. sollicitans*
☒ *Cx. pipiens*	☒ *Oc. stimulans*
☒ *Cx. restuans*	☒ *Oc. taeniorhynchus*
☒ *Cx. salinarius*	☒ *Oc. triseriatus*
☒ *Cs. melanura*	☐ *Oc. trivittatus*
☒ *Cs. morsitans*	☐ *Ps. ferox*
☐ *Oc. abserratus*	☐ *Ur. sapphirina*
☒ *Oc. canadensis*	

☐ Other (please list):

Do you participate in the MDPH Arboviral Surveillance program? Yes

How many pools do you submit weekly on average? 70

Please check off the arboviruses found in your area in the past 5 years:

☒ West Nile Virus
☒ Eastern Equine Encephalitis
☐ Other Please list:

Did the above listed diseases cause human or horse illnesses? Yes

Please explain: EEE - in 2009: Horse in West Peabody & Alpaca in Newbury (Byfield);
- in 2012: Human cases (& fatalities) in Amesbury & Georgetown AND Horse in Georgetown & Horse in Essex (Essex is not District member)
WN - Human case in Revere in 2010, Human case in Peabody in 2011 & suspected human case in 2014; Human case in Saugus in 2014

At what arbovirus risk level did the year begin in your area? (If more than one please list)

WNV: LOW RISK: all subscribing District municipalities
EEE: REMOTE RISK: Andover, North Andover, Middleton, Saugus, Lynn, Nahant, Revere, Winthrop, Salem, Swampscott, Marblehead, Beverly, Hamilton, Wenham, Manchester
LOW RISK: all remaining District municipalities.

At what arbovirus risk level did the year end in your area? (If more than one please list)

WNV: MODERATE RISK: Saugus
LOW RISK: all remaining District municipalities
EEE: REMOTE RISK: Andover, North Andover, Middleton, Saugus, Lynn, Nahant, Revere, Winthrop, Salem, Swampscott, Marblehead, Beverly, Hamilton, Wenham, Manchester
LOW RISK: all remaining District municipalities

What time frame during the year is this method employed? 15 May through 25 Sep

Comments: _____

***Please attach a link to maps of surveillance areas if possible.**

EDUCATION, OUTREACH & PUBLIC RELATIONS

Do you have an education/public outreach program program? Yes

If yes, please describe: General: The District will provide educational outreach on mosquito & tick control and related environmental science to schools, civic organization, public access-TV, and public officials upon request.

Website: The District will maintain a Website (www.northeastmassmosquito.com) which will provide general information about operational strategies and procedures.

Other Media: the District has various hand-outs, posters, presentations and DVD's available which will be provided to schools and civic groups, etc. upon request.

Outreach Programs: During the off season the District's Entomologist, Wetlands Project Coordinator and /or Biologist will present educational programs tailored to the specific needs of schools, civic organization and public officials.

Please check off all that apply:

☒ School based program
☐ Website
☒ PR brochures/handouts
☒ Community events
☐ Science fairs
☒ Meeting presentations
☒ Other (please describe): As requested by school / municipal / associations / agencies / board of health etc.

Please give an estimate of attendance/participants in this program: 5 to 500

Please list some events you participated in for the year of this report:
North Andover Board of Health Public Meeting (27 February)
Newbury Elementary School GROWS Committee ~ Clean Up and Play Event (16 May)
Rowley Board of Health (1 June)
Peabody Public Access-TV ("Protection from Ticks" (3 June)
Plum Island Field Station (22 July)

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

Have you performed any research projects, efficacy, bottle assays, etc.? Not at this time

If yes, please elaborate on your research projects:

Are you involved in any collaboration with academia, industry, environmental groups, etc.? Yes

If yes, please elaborate on your collaborations this past year: The District's Wetlands Project Coordinator has been an active particpant of the Great Marsh Revitalization Task Force since its inception in 2011. The Wetlands Project Cooridnator (WPC) is a member of the Resource and Research Subcommittee. " …this sub-committee will review existing mapping and scientific literature, plan and execute additional mapping, and develop scientific resources and recommendations to inform and guide the work of the task force. It will also continue to follow through with short term control efforts and

salt marsh restoration". Also, the District's WPC has been an active member of the MA-NH-ME Invasives Work Group since its inception in 2007.

Please provide a list of technical reports, white/grey papers, publication in journal or trade magazines, etc. 0

Does your staff participate in educational opportunities? Yes

If yes, please list the training and education your staff received this year: Northeastern Mosquito Control Association's (NMCA's) Annual Conference, Clarke Mosquito's "Community Mosquito Control Update Workshop", NMCA Field Day's "Deer Ticks: One Bite Can Change Your Life" and "Protect Yourself, Protect Your Yard and Protect Your Pet, Tick-Borne Diseases are Preventable", Dig Safe's "Managaing Underground Safety Training", UMASS Extension Service's "Pesticides and Impacts on Pollinators", Everett J. Prescott's Engineering Seminar "Know H(2)ow 7 ~ Ground Level Stormwater Solutions, Commonwealth of MA PACE Training:Domestic Violence/Sexual Assault and Stalking Awareness; Workplace Violence prevention; Sexual Harassment Prevention, and Conflict of Interest through the State Ethics Commission.

Please list the certifications and degrees held by your staff: Associate's of Applied Science; B.Sci.; Ph.D. degrees

Comments: _____

BIOLOGICAL CONTROL EFFORTS

Do you have a biological control program? Yes

If yes, please describe: The District's Wetlands Management Porgram has expanded its approach to every project, whether manual or mechanized, to consider improvement of habitat to increase predator survivability, refugia, and access to mosquito larval development habitat whenever possible.

Is this program the introduction of mosquito predators or the enhancement of habitat for native predators? see above

Please check off all that apply:

☒ Predatory fish
☒ Predatory invertebrates
☐ Other (please describe):

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

Comments: _____

INFORMATION TECHNOLOGY

Does your program use (check all that applies):

☒ Computers
☒ GIS mapping
☒ GPS equipment
☒ Computer databases
☒ Aerial Photography
☐ Other (please describe):

Please describe your capabilities in these areas: District staff continues to learn and our capabilities continue to grow fairly consistently. GIS is used for mapping projects, particularly in the District's Wetland Management Program. Available Massachusetts GIS layers such as sensitive areas, wetlands, topography etc. are overlaid on project locations and examined to reveal data which can then be used to help define the project. Data are also collected in the field and eventually will be mapped to illustrate recoverable dip stations, recoverable photo stations, project bounds, etc.

Please describe your current GIS abilities: Intermediate

Give details if possible on your GIS abilities: The District has ArcMap 9.3 and 10.2. We can prepare professional looking maps, add layers for analysis of data, calculate acreage and determine linear footage. The District is also working on becoming more proficient with digitizing, creating/using attribute tables and adding shapefiles. The District utilizes a data collection program that allows us to map where our adulticiding operations occurred. We will be adding the larviciding module to this program for greater data collection.

Please describe any changes/enhancements in this area from the previous year:

Comments: ____

REVENUES & EXPENDITURES

Please give a concise statement of revenues & expenditures for the prior fiscal year ending June 30.

FY14 Budget and Spending Plan July 1, 2013 - June 30,2014			Level funded Approved 01-24-2013
Proposed Budget	$1,590,190.04	SRB Approved Budget 10/7/2013	$1,590,190.04

Account 2520/1500	Line Item Budget		Spending Plan Encumbances
Full Time Payroll - 46%	$729,673.20	FT Payroll	$729,673.20

Full Time - inc Dyna Cash Res.		($12,000.00)	
Travel -	$2,000.00		$2,000.00
Com/Contract Employees - 4%	$58,880.08	Com Meetings	$3,002.00
		Contract Emp	$55,878.08
Retire/Ins/Fringe - 22%	$364,476.86		
Retirement 12% increase			$136,546.73
Group Ins estimated		FY13	$203,388.59
Terminal Leave		FY13	$8,586.90
Unemployment Insurance		FY13	$2,896.61
Universal Health Insurance		FY13	$548.24
Medicare Tax		FY13	$12,509.79
Office & Administration 1%	$19,620.00		
Network maintenance		No contract	$3,000.00
Computers/accessories		Dell	$3,000.00
Office Supplies		NE Office Supply	$3,500.00
Office Supplies		Office Max	$2,000.00
Printing		G&G Printing	$1,000.00
Postage		U.S. Post Office	$600.00
Legal Notice		Eagle Tribune	$3,000.00
Pre registration/dues NMCA		Associations	$3,520.00
Litigation / Insurance	$0.00		$0.00
Facility Operations Utilities	$17,825.69		
Electric service		National Grid	$5,000.00
Propane gas heat		Osterman Gas	$2,500.00
Heat Oil		Dennis K Burke	$0.00
Dumpsters		Allied Waste	$2,000.00
Water Bill		Town of Andover	$300.00
Water Bill		City of Newburyport	$300.00
Long dsitance phone		AT&T	$200.00
Internet service		Comcast	$830.00
Cell and direct connect service		Nextel	$5,195.69
Office Phones		Verizon	$1,500.00
Facility Maintenance	$12,500.00		
		Home Depot	$10,000.00
		Heat/AC	$2,500.00
Ops Fleet Maint/Repair	$67,758.52		

Vehicle Maintenance/repair		Fleet Response	$26,000.00
Welding		Gunderson Welding	$0.00
Wetlands Equip maint/repair		Kassbohrer	$14,758.52
Hydraulic hoses & connections		Tech Hydraulics	$2,000.00
Equip hauling/towing/maint			
Vehicle accessories		MHQ	$1,000.00
Excavator maint/repair		Chadwick BaRoss	$16,000.00
Misc equip/parts/supplies		Granger	$3,500.00
Auto Glass		J.N. Phillips	$500.00
Misc equip/parts/supplies		Napa Auto Supplies	$1,500.00
Tires		Goodyear	$2,500.00
Operations Fleet Fuel -	$41,000.00		
Fleet Fuel gas/diesel		Wright Express	$41,000.00
Ops Support/Contractors	$121,930.87		
Helicopter Contract		JBI Helicopter	$87,932.87
CO2 surveillance		Airgas	$4,000.00
Virus Testing		DPH	$20,000.00
Airport user Fee		Plum Island Airport	
Field equipment & Supplies		Forestry Suppliers	$2,998.00
Surveillance/Lab supplies		Fisher Scientific	$2,000.00
Surveillance/Lab supplies		Bio Quip	
Surveillance/Lab supplies		BioSensory	$1,500.00
Erosion Control materials		no contract	$2,000.00
Work gear / uniforms		Aramark	$1,500.00
Ops Pest/Spray equip - 10%	$152,925.06		
Pesticides/Sprayer parts		Clarke	$127,925.06
Pesticides/Sprayer parts		Adapco	$25,000.00
Lease/Purchase	$0.00		$0.00
Capital Equipment	$1,599.76		$1,599.76
Total Spending	$1,590,190.04		$1,590,190.04

Budget allotment

FY 13 Rollover & Stabilization Fund $345,502.93

List each **member municipality along with the corresponding (cherry sheet) funding assessment** dollar amount for the prior fiscal year.

Comments:

Municipality	FY14 District Assessment
Amesbury	41,955
Andover	114,062
Beverly	69,762
Boxford	72,463
Danvers	53,747
Georgetown	40,068
Groveland	27,716
Hamilton	45,523
Haverhill	114,263
Ipswich	98,317
Lynn	53,782
Lynnfield	37,889
Manchester	35,067
Marblehead	35,287
Merrimac	26,085
Methuen	80,951
Middleton	44,744
Nahant	6,742
Newbury	71,168
Newburyport	37,790
No. Andover	90,141
Peabody	73,916
Revere	33,795
Rowley	54,310
Salem	40,698
Salisbury	48,018
Saugus	46,134
Swampscott	18,324
Topsfield	39,545
Wenham	24,197
W. Newbury	39,695
Winthrop	13,427
Totals	**1,629,581**
SRB Budget	**40,043**
Proposed Budget	**1,589,538**

PESTICIDE USAGE

Please total your pesticide usage with information from your Mass. Pesticide Use Report, WNV Larvicide Use records and contracted pesticide applications. Applications methods include; hand/backpack, aerial, ULV, mistblower, other (please explain)

Product Name: Altosid Pellets
EPA Reg. #: 2724-448-64833
Application method: Hand
Targeted life stage: Larvae
Total amount of concentrate applied: 10.75 ozs.
Comments: Catch basin treatments

Product Name: Fourstar Bti-CRG
EPA Reg. #: 85685-4
Application method: Hand
Targeted life stage: Larvae
Total amount of concentrate applied: 350 lbs.
Comments: Salt marsh larviciding

Product Name: Fourstar WSP
EPA Reg. #: 85685-3
Application method: Hand
Targeted life stage: Larvae
Total amount of concentrate applied: 16,800 Pouches
Comments: Catch basin treatments

Product Name: Fourstar 45 day Briquets
EPA Reg. #: 83362-3
Application method: Hand
Targeted life stage: Larvae
Total amount of concentrate applied: 6,793 briquets
Comments: Catch basin treatments

Product Name: Fourstar 90 day Briquets
EPA Reg. #: 83362-3
Application method: Hand
Targeted life stage: Larvae
Total amount of concentrate applied: 20,070 briquets
Comments: Catch basin treatments

Product Name: Fourstar 180 day Briquets
EPA Reg. #: 83362-3
Application method: Hand
Targeted life stage: Larvae
Total amount of concentrate applied: 10,391 briquets
Comments: Catch basin treatments

Product Name: Vectobac 12AS
EPA Reg. #: 73049-38
Application method: Aerial
Targeted life stage: Larvae
Total amount of concentrate applied: 2,010 gals
Comments: Applied by JBI Helicopters (contracted pesticide applicator)

Product Name: Vectobac G
EPA Reg. #: 73049-10
Application method: Hand
Targeted life stage: Larvae
Total amount of concentrate applied: 1,789.75 lbs.
Comments: Freshwater and salt marsh larviciding

Product Name: Duet
EPA Reg. #: 1021-1795-8329
Application method: ULV Truck Sprayer
Targeted life stage: Adult
Total amount of concentrate applied: 32.52 gals.
Comments:

Product Name: Escort
EPA Reg. #: 352-439
Application method: Backpack sprayer
Targeted life stage: In flower - pre seed
Total amount of concentrate applied: 1.419 ozs.
Comments: Invasive Pepperweed Control

LARGE AREA EXCLUSIONS

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. As agreed upon with MA Fish and Wildlife Service, National Marine Fisheries Service, MA Audubon and Trustees of Reservations.

SPECIAL PROJECTS

Do you perform any inspectional services such as inspections at sewage treatment facilities or review sub division plans? Yes

If yes, please elaborate Upon request, the District will conduct inspections/review of subdivision plans or renovations to existing properties.

POLICY, PROCEDURE AND FACTS: INSPECTIONAL SERVICES
Original: 02/09 - Merged: 04/11

Existing and potential mosquito development habitats can often be readily corrected without treatment of an insecticide if early intervention actions are conducted. The District is authorized under the provisions of Chapter 252: Section 4 of the General Laws of the Commonwealth to enter upon lands for the purpose of inspection. The District carries no regulatory authority nor is it our intention to impose upon any citizen or business but to rather be a source of information to help people prevent or abate mosquitoes to the mutual benefit of the community. The District may act as technical advisor as requested by local boards of health to represent the municipalities' public and animal health as well as human annoyance concerns relative to factors effecting mosquito populations (potential and realized).

The primary vector species of West Nile Virus, Culex pipiens usually breeds in artificial containers, catch basins, storm water control structures, and other highly organic and polluted water. Therefore the District will routinely inspect areas in and around industrial facilities, office parks, and agricultural based operations because of the potential for Culex species proliferation and its correlation to West Nile Virus by request of the Board of Health. The District may review proposed new development site plans upon request and /or inspect sites where storm water control structures are located or are in the process of being constructed. Upon inspection of a site the District makes written recommendations and submits them to the Board of Health, cc-ing the land owner.

The District has recently found that in many cases, routine maintenance practices on private properties have been abandoned in lieu of recent economic decline. Neglect often leads to increased potential for mosquito larval development habitat i.e., discarded items in and around yards like trash, tarps, debris, abandoned swimming pools etc. The District works with local boards of health to assist in abating mosquito issues related to abandoned/neglected properties.

Do you work with DPW departments or other local or state officials to address stormwater systems, clogged culverts or other areas that you have identified as man-made mosquito problem areas? Yes

If yes, please elaborate: District Wetland Management Projects typically evaluate condition of all artifical feautures as related to natural wetlands within the project vicinity. Recommendations to the municipality for maintenance, upgrades and/or repairs to existing infrastructure components is common.

Have you worked with these departments on long term solutions? Yes

If yes, please elaborate: The District continues to advocate for improved storm water capacity and more recently efforts to educate the public regardng climate change and

its potential impacts regarding storm frequency, storm magnitude and sea level rise have been included in these discusssions.

Did you conduct or participate in any cooperative research or restoration projects?

If yes, please elaborate: The District continues to partner with local, state and federal agencies in an effort to control aquatic invasive vegetation in the salt marsh and other wetland habitats. By decreasing the extent of Phragmites australis (common reed) as well as Lepidium latifolium (pernnial pepperweed) in the District's territory we are able to access greater area, perform thorough inspections, evaluate mosquito larval habitat efficiently, and perform treatments to control and reduce larval development safely and without riskling spread of non-native species.

The District also partnered to restore hydrology, connectivity and predator access to a section of Crooked Pond Brook in Boxford, MA along with the Nor'east Chapter of Trout Unlimited and several Boxford Town Departments.

The District continues to work with the Division of Ecological Restoration on a project in Revere, MA and the Parker River Wildlife Refuge on Great Marsh issues.

Did you or participate on any **State/Regional/National workgroups or panels or attend any meeting pertaining to the above**?

If yes, please elaborate: The District's Wetland project Cooridnator is an active member and particpant of the Great Marsh Task Force, its Resource and Research Subcommittee and the MA-NH-ME INvasive Workgroup.

CHILDREN AND FAMILIES PROTECTION ACT

Is your program impacted by the Children and Families Protection Act? Yes

If yes, please explain: Pesticide materials used by the District are required to be listed on a school's IPM plan to allow the District to treat the property. In recent years, the District has been asked by local Boards of Health to spray town fields including school properties for adult mosquitoes, particularly in the event of virus outbreaks. Many of the schools have not included mosquito control as part of their IPM plan resulting in delays of efficient and expedient treatment and/or an inability to provide a proactive approach by treating the school property for mosquito larvae.

If you have data on compliance with this Act and your program, please list here: The District contains 402 public/private schools and 1091 day care programs. We consider an IPM plan complete if it includes mosquito and a complete list of materials used by the District. That being said, our data shows 11% of all schools/day cares in the District have a complete plan and 13% have some mention of mosquito control in their IPM

plans. If we separate the public/private schools from the day cares we find that 32% of schools and 3% of day cares have a complete plan, while 36% of public/private schools and 4% of day cares have some mention of mosquito control in their plans. Addtitionally we have a number of member municipalities in which no school or day care has an IPM plan filed with the state.

If you had difficulties with implementation of your program due to this law, please elaborate here: Although we reach out to all the schools/day cares in our district on an annual basis asking that they update/file an IPM plan with the state, we find that many do not bother to come into compliance with the law. This creates problems with being able to provide proactive mosquito control in many of our municipalities as we are not able to treat school properties that do not have our products listed in their plan. Non-compliance of schools also creates problems when we are asked by local Boards of Health to spray town properties for adult mosquitoes, particularly during times of virus outbreaks. Non-compliance by school administrators results in a lack of efficiency, the possibility of increased virus for the surrounding towns, and increased costs to the District.

Comments: Despite continued efforts to help the schools/day cares in our district complete their IPM plan by providing annual reminders, examples of text to include mosquito control in their plan and a complete list of our products, most of the schools/day cares remain non-compliant. One complaint that we hear is that the state's IPM website is daunting and confusing. Many school administrators are unaware that they are required to complete the plan and that our email/letters to them are the first time they are hearing about it. And many others take the easy way out by stating that they do not use any products outdoors. Although many schools/day cares may be small and do not feel that mosquito control applies to them, we often find that there may be treatable areas on their property, such as catch basins or re-flood areas, that we are unable to treat due to their non-compliance.

NPDES SECTION

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

If yes please list any corrective actions here: _____

GENERAL COMMENTS

Please list any comments not covered in this report: _____