Zavolas, Nicholas (EEA)

From: Tom Purcell [tpurcell@webster-ma.gov]
Sent: Tuesday, December 08, 2009 10:36 AM
To: Zavolas, Nicholas (ENV)
Subject: Mosquito Control Program Comments

Please be aware that the Town of Webster, MA has been a participant in the Central Massachusetts Control Program for a few years. The tools that the program brings to the table are invaluable. The testing, monitoring, treatment and reporting that the Project provides, far exceeds what we can perform at the local level. The specialized expertise, equipment and manpower that are made available to the local community provide an affordable tool in disease awareness, control and management.

Near the end of the last mosquito season, EEE has started to appear in mosquito samples. The samples indicate that the virus is in some of the bird population. It was alarming to see these reports for fear that the virus might cross over to other animals and eventually transmit to humans. With this valuable information at hand, the local Board of Health will be able take prudent measures to try to minimize our resident's exposure to these vector mosquitoes. Also, we are now aware of the potential of the spread of disease and it is no longer restricted to southeastern Massachusetts. WMV has been our main focus in past years, now with the threat of EEE looming, we must now step our activities up a notch. We must tread lightly, so as not to over-react.

In the past, we have been educating people on how to limit one's exposure to mosquitoes and we have had limited success regarding code enforcement to eliminate stagnant water and pooling issues. This latest information has caused us to renew our efforts so that we might help minimize the public exposure to these diseases.

The CMMCP has been performing larva treatment activities for us in our target areas, monitoring and reporting to us regularly and they have also stood ready to do localized and mass spraying, if needed.

The Town of Webster would like to see the program continue. The results that we have seen are proof positive that the concept of regional specialized services has value and we are glad to have participated in this program.

Thomas P. Purcell, RS, RPh
Director of Public Health
Town of Webster
350 Main Street
Webster, MA 01570
508-949-3800 x 4002 (office)
508-949-0845 (fax)

STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION

December 9, 2009

Secretary Ian A. Bowles
Executive Office of Energy and Environmental Affairs (EEA)
Attn: MEPA Office
Nicholas Zavolas, EEA No. 5027
100 Cambridge Street, Suite 900
Boston MA 02114

Comments may be submitted electronically to Nicholas.zavolas@state.ma.us

I would like to comment on the "Update to the 1998 Mosquito Control Program Generic Environmental Impact Report (GEIR) EOEEA #5027 dated August 14, 2009"under review.

The Mosquito Control Projects of the state of Massachusetts will be using integrated pest management (IPM) techniques. I support the use of this document to describe the tools of surveillance, mosquito larval control through pesticide and OMWM techniques and mosquito adult control program.

Paul Capotosto

Paul Capotosto

CT DEP Wetlands Habitat and Mosquito Management Program
Wetland Restoration Biologist
391 Route 32
N. Franklin, CT 06254
860-642-7630
paul.captosto@ct.gov

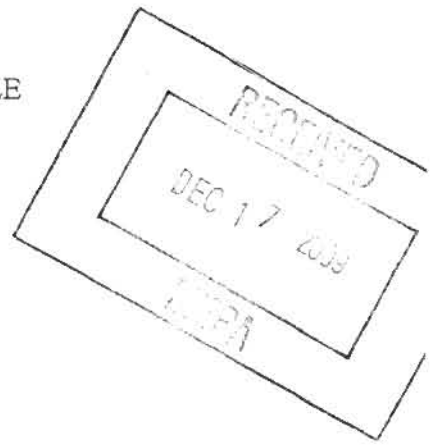
12

BOXBOROUGH BOARD OF HEALTH
29 Middle Road, Boxborough, Massachusetts 01719
Phone: (978) 263-1116 · Fax: (978) 264-3127
www.town.boxborough.ma.us

Marie Cannon, Chair | Bryan Lynch | Franklin D. Roth, DDS

December 17, 2009

VIA FACSIMILE
(617) 626-1181



Secretary Ian A. Bowles
Executive Office of Energy and Environmental Affairs (EEA)
Attn: MEPA Office
Nicholas Zavolas, EEA No. 5027
100 Cambridge Street, Suite 900
Boston, MA 02114

Dear Sir:

The Boxborough Board of Health supports continuing the current program for mosquito control by insecticide and Bti for applications in the Town of Boxborough. Since contracting with Central Massachusetts Mosquito Control for annual Bti treatment, there has been a noted long-term reduction in mosquito population after application.

Therefore, we support continuing the program as currently employed.

Very truly yours,

Marie Cannon /mac

Marie Cannon, Chair
Boxborough Board of Health

MC/mac

STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION

December 30, 2009

Secretary Ian A. Bowles
Executive Office of Energy and Environmental Affairs (EEA)
Attn: MEPA Office
Nicholas Zavolas, EEA No. 5027
100 Cambridge Street, Suite 900
Boston MA 02114

Comments may be submitted electronically to Nicholas.zavolas@state.ma.us

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Paul Capotosto

Paul Capotosto

CT DEP Wetlands Habitat and Mosquito Management Program
Wetland Restoration Biologist
391 Route 32
N. Franklin, CT 06254
860-642-7630
paul.captosto@ct.gov

Town of Swansea

CONSERVATION COMMISSION

Town Hall Annex
68 Stevens Road
Swansea, MA 02777
Tel (508) 673-6467 - Fax # (508) 676-0317

January 4, 2010

Secretary Ian A. Bowles
Executive Office of Energy and Environmental Affairs (EEA)
Attn: MEPA Office
Nicholas Zavolas, EEA No. 5027
100 Cambridge Street, Suite 900
Boston MA 02114

Re: Environmental Impact Report (GEIR) EOEEA # 5027 dated August 14, 2009

Dear Secretary Bowles:

I have reviewed the above-named document and wish to make the following comments. The Town of Swansea and the Swansea Conservation Commission have a very good working relationship with the Bristol County Mosquito Control (BCMC) program. We have reviewed and worked together on several projects responding to complaints by citizens of long-standing water and its related mosquito control problems. Many of these projects were usually due to wetlands disturbance by an unknown third party or the accumulation of silts and debris from roadways blocking drainage pipes and outlets causing the cessation of the flow of water. Prior to the start of any project within the Town of Swansea, Bristol County Mosquito Control contacts the Commission in order to review the project and discuss any concerns which the Commission may have about jurisdictional areas and the use of best management practices. We are informed when the project will start and its expected duration. While the work is occurring, the Commission can stop by and review the actual project. This process has occurred on several occasions to the satisfaction of the Commission, the Town and the BCMC.

The Commission supports the work and practices of the Bristol County Mosquito Control program as it provides a service to the community and Commonwealth which the Town cannot do. We have always found that they use the best management practices for the situation and are sensitive to concerns about the wetlands and the environment. We hope that the program continues.

Sincerely,

Colleen M. Brown
Agent

NORTHEASTERN MOSQUITO CONTROL ASSOCIATION, INC.

MOSQUITO CONTROL FOR HEALTH AND COMFORT

www.nmca.org

Massachusetts Maine Vermont Rhode Island New Hampshire New York New Jersey Connecticut Pennsylvania

Mr. Zavolas;

In regards to EEA No. 5027, the Northeastern Mosquito Association (NMCA) Advisory Committee would like to comment on the GEIR update for mosquito control in Massachusetts. This advisory committee is comprised of NMCA members from each of the nine NMCA member states, and provides comments, guidance and advice on mosquito control issues in the Northeast, as well as national issues that may affect our industry.

This committee would like to express support for the work done by the mosquito control projects in Massachusetts, and recognizes that these entities strive to provide an environmentally sound program of mosquito control that weighs the efficacy of the product used against the non-target effects of that product. A basic tenet of IPM is to consider multiple strategies against a pest, and to use the product or procedure with the least impact while providing the most efficacy. Through our guidance and training programs, the employees and staff at the projects are educated each year on the appropriate methods to achieve these goals.

We are concerned that the projects may be compelled to implement additional monitoring procedures that will restrict the goal of controlling mosquitoes by using the limited manpower in place and drawing upon the finite budgetary resources for non control work. These procedures may only work to support existing research that has been done for pesticide registration purposes; i.e. as monitoring for efficacy or non-target effects. There is a wealth of data available on these important aspects of pesticide use, and we would respectfully ask that this research is considered in lieu of requiring the projects to collect redundant data that would be costly, time consuming and possibly of little value.

Thank you for your time in reviewing our comments.

TOWN OF FAIRHAVEN
MASSACHUSETTS

OFFICE OF THE
BOARD OF HEALTH
TOWN HALL
40 Center Street
Tel. (508) 979-4022
Fax (508) 979-4079

January 8, 2010

Mr. Ian A. Bowles, Secretary
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, 9th Floor
Boston, MA 02114

Dear Secretary Bowles:

RE: GEIR Comments/Bristol County Mosquito Control Project

On behalf of Fairhaven please accept this letter of support for the Bristol County Mosquito Control Project (BCMCP) and the consistent work it does year after year to contain and manage the increasingly dangerous arbovirus activity in our region. The Fairhaven Board of Health has always worked well with the BCMCP and urges your support as well, not only to maintain its intervention and management practices, but its level of services to our citizens.

Working with Wayne Andrews of the BCMCP and his staff, Fairhaven has been well served by the project. For many years Fairhaven has bought and placed mosquito inhibitors into our stormdrain systems and it has been the BCMCP that has greatly assisted us in this effort. When Town resources, both human and financial, fall short Mr. Andrews steps in to finish what we cannot. In summer and through fall our residents continually call with requests for spraying and with questions on the viruses and mosquitoes involved. The BCMCP is always there for us and our citizens abating health nuisances and reinforcing education efforts to prevent the potentially deadly disease the mosquitoes harbor. Please do not curtail the operation procedures of the BCMCP as it will be to the detriment of our citizens' health and well being.

As you look to update the environmental impact report for mosquito control in Bristol County, Fairhaven urgently seeks your support for the work the BCMCP does for us already with efficiency, expertise and dedication. Please know that any dilution of its efforts would immediately impact the health and well being of our citizens. Any increase in mosquito activity would have the most negative result on them, and in effect could have been avoidable!

In conclusion, Fairhaven considers the BCMCP's mosquito control practices well balanced and maintained in their present format. We plead with you, please DO NOT allow the established practices to be diminished in any way.

Very truly yours,
FAIRHAVEN BOARD OF HEALTH

Peter DeTerra,
Chairman

Zavolas, Nicholas (EEA)

From: margaret sheehan [meg@ecolaw.biz]
Sent: Wednesday, March 24, 2010 5:48 PM
To: Zavolas, Nicholas (ENV)
Subject: EEA # 5027

EcoLaw Massachusetts supports the comments on EEA # 527 and urges a thorough review of the impacts of aerial spraying. Specifically, we

1. Support continued evolution of the program toward a **focus on ecological management and restoration**, working in partnership with MassWildlife, watershed associations, conservation commissions, and other local officials to identify and remove human-made sources of mosquito breeding (e.g. tire dumps) and restore fish habitat (upgrade undersized culverts, remove obsolete dams, improve stormwater management with a focus on Low Impact Development (LID);
2. **Support transparency and accountability including** development of GIS based systems with web postings showing current mosquito activity levels, disease risk areas, and mosquito control treatments.
- 3. Support immediate completion of the updated guidelines on **Open Marsh Water Management** – a technique used to improve fish access to mosquito breeding sites on salt marshes.

Finally, we note this week there have been important developments in Florida in which officials have voted to severely limit and revise plans for aerial spraying for mosquito control due to the human health and environmental impacts. Massachusetts needs to take a much closer look at evolving science and trends around the nation and must ensure that the strictest precautions are taken and applications made only on an emergency basis, if at all.

Margaret E. Sheehan
Attorney at Law
EcoLaw Massachusetts
meg@ecolaw.biz
cell 508-259-9154

TOWN OF YARMOUTH
1146 ROUTE 28 SOUTH YARMOUTH MASSACHUSETTS 02664
Tel (508) 398-2231 — Fax (508) 398-0836

CONSERVATION COMMISSION

RECEIVED
MAR 25 2010
MEPA

March 25, 2010

Secretary Ian A. Bowles
Executive Office of Energy and Environmental Affairs
Attn: MEPA Office
Nicholas Zavolas
EEA # 5027
Cape Cod Mosquito Control GEIR

Dear Mr. Zavolas,

During my 30 year tenure as Conservation Administrator for the Town of Yarmouth, I have witnessed the vital work of the Cape Cod Mosquito Control Project. Our working relationship has been excellent and their vast efforts have benefited both man and the environment. Yarmouth residents and town owned land stewards greatly depend upon the prudent work of the Cape Cod office. Their office has utilized "best management practices" and remains on the cutting edge of the evolving science of pest management.

I would be happy to field any questions or comments regarding Yarmouth's "partnership" with this valuable resource.

Very truly yours,

Bradford L. Hall,
Town of Yarmouth Conservation Administrator

March 25, 2010

Secretary Ian A. Bowles
Executive Office of Energy and Environmental Affairs
Attn: MEPA Office, Nicholas Zavolas
100 Cambridge Street, Suite 900
Boston MA 02114

EEA #5027

Dear Secretary Bowles,

I respectfully submit the following comments in regards to EEA #5027. I write in support of -

- The continued evolution of the program toward ecological management and restoration for mosquito control, removing human-made sources of mosquito breeding sites and restoration of fish habitat; and encourage close partnerships with MassWildlife, watershed associations, conservation commissions, and other local officials.

- A program that demonstrates transparency, accountability, and detailed record-keeping with public access to annual reports.

- Development of GIS based systems with web postings of EEE disease risk areas, and mosquito control treatments.

- Completion of the updated guidelines on Open Marsh Water Management (overdue).

- The use of natural biological larvacides (Bs & Bti) versus toxic chemical (Methoprene), especially in coastal communities.

- Advanced notification of neighbors and Board of Health of 'back-yard' spraying requests carried out by the District.

- Tax-payer District dollars to be spent on: public education grants on how to reduce backyard mosquito breeding sites and avoid mosquito bites, and the purchase and installation of Mosquito Magnets placed in sensitive areas.

Sincerely,

Martha Dansdill
Member
Swampscott Board of Health
49 Pine Hill Road, Swampscott, MA 01907

From: Nahant SWIM [nahantswim@verizon.net]
Sent: Thursday, March 25, 2010 8:58 AM
To: Zavolas, Nicholas (ENV)
Subject: Re: EEA No. 5027

Secretary Ian A. Bowles
Executive Office of Energy and Environmental Affairs (EEA)
Attn: MEPA Office
Nicholas Zavolas, EEA No. 5027
100 Cambridge Street, Suite 900
Boston MA 02114

Re: EEA No. 5027

Dear Secretary Bowles:

Safer Waters in Massachusetts (Nahant SWIM, Inc.) urges that for mosquito control only the natural biological agent (Bs or Bti) be used as a larvacide in the storm drains and wetland areas vs Methoprene (endocrine disrupting toxin).

Sincerely yours,

Polly Bradley
Safer Waters in Massachusetts (Nahant SWIM, Inc)
c/o Northeastern University Marine Science Center
East Point, 430 Nahant Road
Nahant, MA 01908
781-581-0075
nahantswim@verizon.net
http://www.nahant.org/swim

From: Nahant SWIM [nahantswim@verizon.net]
Sent: Thursday, March 25, 2010 8:58 AM
To: Zavolas, Nicholas (ENV)
Subject: Re: EEA No. 5027

Secretary Ian A. Bowles
Executive Office of Energy and Environmental Affairs (EEA)
Attn: MEPA Office
Nicholas Zavolas, EEA No. 5027
100 Cambridge Street, Suite 900
Boston MA 02114

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Sincerely yours,

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Safer Waters in Massachusetts (Nahant SWIM, Inc)
c/o Northeastern University Marine Science Center
East Point, 430 Nahant Road
Nahant, MA 01908
781-581-0075
nahantswim@verizon.net
http://www.nahant.org/swim

Zavolas, Nicholas (EEA)

From: Robert W Burkhardt [bobwb@juno.com]
Sent: Thursday, March 25, 2010 5:21 PM
To: Zavolas, Nicholas (ENV)
Cc: conservation@shirley-ma.gov; cdbrauck@earthlink.net; ricci07@verizon.net; margcwilson@abcisp.net; nancyaskin@aceweb.com; nhowlett1@hotmail.com; Bean.Sheri@gmail.com
Subject: Reference EEA# 5027 mosquito control

The issue of mosquito control came up recently in town for some of us when a local newspaper reported that the town of Shirley is in the mosquito control project when actually, like Harvard, Shirley opted out over 15 years ago. The mosquito problem has not gotten any worse in Shirley, but this is my subjective opinion and not based on any monitoring data. I think healthy ecosystems are a big help here, and spraying causes more harm than good. Monitoring mosquito populations could be helpful, but it needs to be done by an agency that is independent from the one executing the control projects to guard against make-work or private-benefit projects that do more public harm than good.
The recent problems with the bat populations is worrisome since they are good about consuming mosquitos. Solutions that improve habitat and access for mosquito consuming wildlife seem the most preferable, along with removal of inadvertently created breeding areas created by people, for example old tires.

The newspaper article in the Oracle back in August was in regard to an effort by some residents of the Devens community to deal with what they perceived was a mosquito problem. The only solution broached was spraying. There seemed to be no thought at all to taking a closer look at what was happening ecologically. I do not know how the issue got resolved. I am appending the letter I sent to the editor. The Oracle courteously retracted its statement shortly thereafter, at least on their website.

Thank you for the opportunity to comment.

Bob Burkhardt
Member, Shirley Conservation Commission

From: Robert W Burkhardt <bobwb@juno.com>
To: editor@nashobapub.com
Date: Tue, 1 Sep 2009 15:00:33 -0400
Subject: mosquito spraying

Hi Kate,

I was surprised to read in the Oracle of August 28 that your News Briefs reporter Mary E. Arata thought that Shirley was in the state mosquito-spraying program. I know the Town voted to leave the program at its May 17, 1993, annual meeting, and the Conservation Commission was a sponsor of this action. I am not aware that we have rejoined since that time. The Conservation Commission initiated the move to leave the mosquito-spraying program mainly because of a wetlands ditching project we thought was harmful to the local ecology. The mosquito control projects are exempt from Conservation Commission oversight, though they were very good about keeping us informed about this project. At the town meeting, residents looked at the expense of the program and didn't think it did much good. I certainly haven't noticed any significant changes in Shirley since we left the program, and I think our ecosystems and people are healthier for not having the spraying. In any case, spraying should not be a knee jerk reaction. Maybe cleaning up some problem spots will help, and encouraging insectiverous wildlife. And it is good to get opinions from disinterested

parties and look into alternatives. Quick fixes are not always lasting problem worse.

Bob Burkhardt
Member, Shirley Conservation Commission

DEP's Commen

Wetland Protection Program Comments: 2009 Mosquito Control EIR Update

March 26, 2010

Clarification of Certificate references:

Page 7: The reference to 5,600 sf should be 5,000 sf in the sentence "Therefore, for projects involving new ditching such as that required for Open Marsh Water Management (OMWM), the MC proponent has been obliged to file an Environmental Notification Form (ENF) for, projects affecting at least 1,000 square feet of salt marsh or 5,600-sf- of bordering-vegetated wetlands (BVW)."

Page 7: Since Phragmites occurs in both upland and brackish salt marsh environments, the Department suggest that future references to Phragmites as "upland plants" as in the sentence: "It is generally recognized that the principal concern associated with OMWM arises" from the disposal of the dredge material on the marsh and the potential for invasion of upland plants (particularly Phragmites) that can occur with even slight elevation increases (i.e." 1-2 inches)." be changed to reflect that "upland and salt marsh" habitats which can be colonized by Phragmites. This concept is more accurately depicted in the GEIR text on page 108.

Table of Contents:

Provide individual page numbers for each subsection listed in the Table of Contents pages of the GEIR.

Page 18: Comments about the use of GIS

During the course of the GEIR Update, the Wetland Program has developed an electronic permit application (eDEP) which incorporates new mapping capabilities. While mosquito-related projects are not subject to the Wetlands Protection Act, the GEIR should make reference the capabilities that the electronic system could provide to District Managers. Of particular note is the "MapViewer" tool which incorporates all the MassGIS capabilities (e.g. resource data-layers) and would provide MCPs with valuable information about an area in which they propose to work such as rare species data, ACEC, PWS, and floodplain.

eDEP would also allow MCPs to geo-locate (i.e. point and click site locations on the aerial photography base map will automatically self populate the lat/long data fields) project sites. Although Districts would not be submitting permit applications to the Department, this eDEP system can be used organize and maintain records (including comment fields for individual projects) within each District. District records would not be accessible to the Department unless submitted as part of a permit application. On the other hand, the eDEP system provides a "share" feature which would allow Districts to electronically share information and project locations, as needed (e.g. advising sponsors of project status and location or providing notice to commissions that work is scheduled to be undertaken at certain times and places). This feature can also be used by the Board and MCPs to facilitate communications with other state agencies such as the Department of Public Health, Coastal Zone Management (CZM) and Fish and Game (Natural Heritage Endangered Species Program).

On whole, the eDEP capabilities could help address longstanding concerns of the Board and MCPs regarding the inability to develop GIS programs. eDEP instructions about the MapViewer tool are available at: https://edep.dep.mass.gov/DEPLogin.aspx

Page 19: Channelization

Discussions related to the opportunity for improved methods of channelization would benefit from references to existing and established guidelines such as the North Carolina (Restoration) Guidebook: http://www.bae.ncsu.edu/programs/extension/wqg/srp/sr_guidebook.pdf

Pages 21 – 31: Monitoring for efficacy of source reduction in wetlands

Note the comment at the bottom of pg. 21 –that BMP's are evolving to include standardized monitoring for the effects of interventions on mosquito density – this is desirable. Comments throughout the remainder of the document suggest that the MCP's are not sufficiently staffed to do this on a routine basis. While it does not appear that Secretary's certificate intended to require monitoring for every wetlands water management project, (at least not the extent of monitoring that has been sought in the past) it may be appropriate for selective studies be conducted as opposed to requiring monitoring of mosquito density for every single wetland management project.

Such studies could be funded by a grant and carried out by a university student as a thesis project. The study could compare reference wetlands to treated wetlands as well as monitoring before and after conditions in all of the sample areas. The parameters that should be monitored besides mosquito density would be those required necessary to determine the effectiveness of the source reduction work and determine if the wetland is permanently altered by source reduction work (e.g. wetland delineation, vegetation transects, soils data, groundwater elevations). Basic questions that need to be answered would be: how effective is source reduction in wetland areas in reducing mosquito density and are there any long term impacts to the wetland areas – as noted by groundwater levels and vegetation changes?

While acknowledging that MCPs have limited funding and staffing constraints to conduct this sort of monitoring from within the program, but it doesn't mean that it shouldn't be done. Exploration of alternative funding sources could serve to address these questions and provide data to counter the perception that source reduction activities convert significant areas of wetlands to uplands.

Page 39: To address biodiversity concerns

There are techniques that could be employed with each source reduction project that could focus on increasing biodiversity. The CMMCP has incorporated this in their activities – for example, putting meanders back into channels that had been straightened in the past while eliminating pools of stagnant water. Each source reduction project in wetlands can be viewed as an opportunity to improve biodiversity while reducing the need to return to the area in the future.

Adulticide/Larvalcide:

The Department supports the additional documents and references to adulticide and larvalcide monitoring produced by Dr Telford with input from Audubon. These guidance documents appear to provide through approach to effectively monitor the effectiveness of larviciding and adulticiding activities.

Page 91: Current Practice – Salt Marsh mosquito

Suggest deletion the subjective terms such as "affluent" and "intense" in the following sentence: "The combination of large, affluent human population (both permanent residents and visitors) and prolific pest mosquito populations near Massachusetts coastal marshes suggests that the public may always demand control programs to deal with this intense annoyance problem. Most salt marshes that breed *Aedes* mosquitoes are now under management and, in most cases, the strategy is source reduction." Not all people who live near salt marshes are affluent and not all would characterize mosquito annoyances as intense.

Update text discussion to include references and finding of most recent research related to OMWM effectiveness in salt marsh mosquito management. Include final OMWM Standards developed by the Massachusetts Open Marsh Water Management Workgroup.

Page 204: Ecosystem changes of non-target biota as a result of physical controls

Ditto.

Summary:

The Wetlands Program of the Department of Environmental Protection acknowledges the efforts of the Mosquito Control Board to compile the current comprehensive update of the Mosquito Control GEIR. The Department also recognizes the budgetary constraints facing Mosquito Control Projects in their effort to meet the charge of mosquito control. While expectations may continue to exceed program capacity, the Board and MCPs are encouraged to maintain their on-going efforts to refine and improve effective inland and coastal mosquito infestation control in an environmentally thoughtful manner.

Mass Audubon
Protecting the Nature of Massachusetts

March 26, 2010

Secretary Ian A. Bowles
Executive Office of Energy and Environmental Affairs
Attention: MEPA Office
Nicholas Zavolas, EOEEA #5027
100 Cambridge Street, Suite 900
Boston MA 02114

Via email: Nicholas.zavolas@state.ma.us

Re: **EEA #5027, Mosquito Control Program, Statewide**

Dear Secretary Bowles:

On behalf of Mass Audubon I submit the following comments on the Second Update to the Mosquito Control Generic Environmental Impact Report (GEIR). Mass Audubon supports an Integrated Pest Management (IPM) approach to mosquito control focused on the protection of human health and the environment.

This MEPA review process began in 1985. The most recent MEPA Certificate issued on January 16, 2009, required submission of complete information on the program and its policies, monitoring programs, and how monitoring is used to determine actions. The Second Update is generally responsive to this Certificate in that it provides over a thousand pages of documentation of the programs plans, policies, and supporting literature, along with a summary description. The Update also confirms, however, that practices vary considerably from one mosquito control district to another; that applications of larvacides or adulticides have only transient impacts on local mosquito populations; and that the efficacy of mosquito control activities in reducing risk of human disease (e.g. truck-based adulticide applications for West Nile Virus in suburban neighborhoods) is uncertain.

Mass Audubon supports continued further improvements in the program in terms of:

- transparency and accountability including annual district level meetings enhancing local public input into program plans and budgets;
- GIS-based information regarding mosquito populations, disease incidence, and control measures;
- additional cooperative efforts on ecological approaches to reduction of mosquito habitats; and
- timely completion of the Open Marsh Water Management (OMWM) guidelines.

Resources are necessary to implement ongoing improvements in the program, and we hope that funds will be directed toward these priority areas. Mass Audubon also supports legislative reforms that would provide official roles for the Department of Public Health and Department of Fish and Game on the Reclamation Board. While a great deal of progress has been achieved in working with these agencies through informal cooperative agreements, we believe that their expertise should be brought to bear in a more formal way as members of the State Reclamation and Mosquito Control Board.

Ecological Approaches to Mosquito Control

Mass Audubon supports a continued evolution of the program toward greater emphasis on ecological management and restoration, including restoration of fish habitat, along with public education regarding personal protections and reduction of mosquito breeding sources around the home. We recognize that such measures will never eliminate mosquito habitat and mosquitoes, but neither will pesticide applications. We recognize that the

full range of tools needs to remain available and we support a trend toward limiting pesticide applications, especially adulticiding, to situations where risk of human disease is high and these interventions are deemed necessary according to the Department of Public Health's (DPH) mosquito-borne disease response plan.

In particular, we encourage an emphasis on identifying and eliminating human-created mosquito-breeding habitat, including clogged gutters, discarded tires and illegal dumping or filling, containers left around yards, etc. Mosquito district staff often identify such features when responding to mosquito complaints, and encourage landowners to clean them up. Further steps could be taken including, in high risk disease situations, having the local board of health issue citations ordering remediation by the landowner.

Removal of blockages in streams, especially those caused by excessive roadway sedimentation or illegal dumping, and upgrading of culverts to improve fish passage is another area of focus, where mosquito districts can work with local officials such as departments of public works. Other opportunities to improve habitat for fish predators should also be pursued, such as working with the Division of Ecological Restoration in MassWildlife as well a local watershed associations and conservation commissions to remove obsolete dams or other barriers to fish passage.

The GEIR summary report downplays the role of either biodiversity restoration or public education in mosquito control and prevention of mosquito-borne disease. Given the mosquito control definition of IPM as comprising a combination of approaches, we believe that there are significant roles for ecological management and public education as significant components of the overall mosquito control program. Scientific literature does show that areas where fish and other mosquito predators flourish tend to have low mosquito populations. We recognize that it is not possible to convert all mosquito habitat to fish habitat, but nevertheless there is a role for aquatic habitat restoration within the overall approach to mosquito control. Similarly, given that stormwater systems are often significant mosquito breeding areas, encouragement of Low Impact Development (LID) techniques in new development that avoid creation of mosquito habitat is one role that mosquito districts can play in their communications with local officials and citizens.

Integrated Pest Management

We have previously commented on concerns regarding definition of IPM as a combination of practices vs. a program that utilizes established thresholds for actions based on monitoring data and emphasis on practices that achieve the greatest results with the least risk to human health and the environment. The GEIR Update indicates that the program continues to believe that reliance on the former approach is more appropriate than the latter. We remain concerned that this does not fully optimize the program, but are pleased to see continuing progress on the evolution of the program toward more ecologically focused efforts, such as the completion of the freshwater mosquito control guidelines and progress toward completion of updated guidance on Open Marsh Water Management (OMWM).

Given the program's choice of definition for IPM, the inclusion of ecological management and restoration and public education as significant elements of the overall program is appropriate, despite the statements in the summary document downplaying the effectiveness of these approaches.

Source reduction

Mass Audubon supports an emphasis on source reduction including removal of human-made sources such as clogged gutters and other sources around the home; the use of LID rather than traditional stormwater systems with catch basins and detention basins; upgrading culverts that block flow or fish passage; and working with the Division of Ecological Restoration, watershed groups and conservation commissions on fish habitat improvement projects such as removal of obsolete dams, etc.

One aspect of progress since the last update is development of post-project monitoring guidelines in the Freshwater Mosquito Control Best Management Practices Manual. We hope that this manual will be widely used to improve planning and documentation of pre- and post-project conditions on freshwater management sites.

Open Marsh Water Management

Mass Audubon has been a member of the Open Marsh Water Management (OMWM) Standards Working Group, whose goal is to update standards for evaluating OMWM mosquito control projects in salt marshes. This group includes state agencies, environmental organizations and mosquito control projects from coastal counties. Mass Audubon had been involved with developing the original set of standards for OMWM projects with the Northeast Mosquito Control and Wetlands Management District in the 1980s, so the issue is of long standing interest to our organization. After 25 years of experience with OMWM in Massachusetts, there was a general consensus that the ways in which projects are evaluated through monitoring needs to be updated to insure that wetland values are being maintained. The recent study of the impacts of OMWM projects on east coast national wildlife refuges, carried out by the United States Fish and Wildlife Service, raised questions about the long term impact of OMWM on marshes and highlighted the need for site-specific information. At the most recent meeting of the working group, held on March 15 at the Massachusetts Office of Coastal Zone Management, we arrived at a consensus that we believe adequately balances the availability of resources for monitoring with scientific concerns. We commend the mosquito control projects for coming together to produce draft documents and their willingness to incorporate the recommendations of scientists in their monitoring.

Mass Audubon urges that the updated OMWM standards be completed expeditiously no later than the end of 2010, and that at notice be filed in the Environmental Monitor regarding the availability of these standards when complete.

Larvaciding

The districts differ in their larval monitoring methods and triggers for application. Mass Audubon supports a movement toward greater standardization in larval monitoring and trigger thresholds for treatments.

There is scientific uncertainty regarding the ecological effects of repeated aerial applications of Bti over large areas of wetlands year after year. There is some evidence that this may reduce the diversity of dragonflies (mosquito predators), probably through food chain effects.

Use of methoprene in catch basins draining to coastal estuaries is also a concern of many in the conservation community. Although the review undertaken several years ago by the state found no undue risk, some degree of uncertainty remains. Since Bti is effective, it should be preferred over methoprene particularly where drainage to coastal waters will occur.

Adulticiding

The GEIR update summary acknowledges that ground-based adulticide treatments have only transient effects on mosquitoes and that their effectiveness in reducing West Nile Virus risk is uncertain. Given that these chemicals are toxic to beneficial organisms such as bees and fish, applications should be focused on situations recommended by the Department of Public Health's mosquito-borne disease plan.
Move away from routine spraying on demand. Use GIS to identify hot spots and work with landowners, local officials, and others to work on source reduction as much as possible.

Aerial Spraying and Ecological Monitoring

We encourage the Reclamation Board to work with the Department of Fish and Game and Department of Public Health to further refine ecological monitoring protocols in advance of any future aerial spraying. The consultations that were called for in the last MEPA Certificate did not occur as anticipated early in the drafting process for this update, and did not address this particular topic.

Conclusion

Mass Audubon is pleased to see the publication of this extensive update of the mosquito control program and related documents. We support continued evolution of the program with a focus on ecological management approaches and protection of public health and the environment.

Sincerely,

E. Heidi Ricci

E. Heidi Ricci
Senior Policy Analyst

cc: Lee Corte-Real, SRMCB
Gary Gonyea, DEP/SRMCB
Anne Carroll, DCR/SRMCB
Mark Buffone, DAR
Alisha Bouchard, SRMCB
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TOWN OF WELLFLEET
Health & Conservation Department

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Hillary H. Greenberg
Health & ConservationAgent
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March 26, 2010

Secretary Ian A. Bowles
Executive Office of Energy and Environmental Affairs
Attn: MEPA Office, Nicholas Zavolas
100 Cambridge Street, Suite 900
Boston, MA 02114

RE: EEA # 5027, Cape Cod Mosquito Control GEIR

Dear Mr. Zavolas:

I am writing to comment on the Cape Cod mosquito Control Program. This program is vital to the Town of Wellfleet and has provided a significant service to the town for many years. The work this office has performed has benefited both the residents of the town as well as the environment. In recent years we have had the opportunity to work together very closely on a number of delicate projects. The professionalism and diligence of the staff on Cape Cod continues to impress my colleagues and me. I very much look forward to continuing this relationship as the town moves forward on a number of salt marsh restorations. If I can be of any assistance to you or if you would like additional information on the relationship the Town of Wellfleet maintains with this office I would be more than happy to discuss that with you in more detail.

Yours truly,

Hillary H. Greenberg - Lemos

Jones River Watershed Association

781-585-2322 • PO BOX 73, KINGSTON, MA 02364 • WWW.JONESRIVER.ORG

26 March 2010

Secretary Ian A. Bowles
Executive Office of Energy and Environmental Affairs (EEA)
Attn: MEPA Office Nicholas Zavolas
EEA No. 5027
100 Cambridge Street, Suite 900
Boston MA 02114

By email to: MEPA Analyst Nicholas Zavolas, nicholas.zavolas@state.ma.us.
Reference EEA# 5027

Dear Secretary Bowles:

The Jones River Watershed Association (JRWA) has reviewed the GEIR relative to MDAR's Mosquito Control Program with particular emphasis on the program in our region (the Plymouth County Mosquito Control District (PCMCD)). We have not been able to thoroughly explore the thousands of pages of this submission, but we are appreciative of the massive effort to assemble and provide all of the documents in an effort to deliver a comprehensive picture of the program.

We continue to have concerns that can be summarized here:

- We do not think that the budget process reported by the districts is being followed in Kingston. The Finance Committee members we contacted had no knowledge of the attachment of Cherry Sheet revenues, and had not in this or in any previous year had a discussion regarding the PCMCD use of those funds. We continue to believe the program lacks local and regional accountability.
- JRWA is concerned with the routine use of chemicals for mosquito control, especially Methoprene in the estuarine environment. Despite the updating of the EPA Fact Sheet that removes the prohibition of the use of Altosid XR briquettes in estuaries, the studies provided and the caveat stated in the Report to the Pesticide Board subcommittee[1] does not alleviate our concern.

---

[1] Steven Antunes-Kenyon and Gerard Kennedy. August 2001
A review of the impacts of the insect growth regulator methoprene on non-target aquatic organisms in fish bearing waters (Ver. 2.0)

- JRWA supports continued evolution of the program toward a **focus on ecological management and restoration**, working in partnership with MassWildlife, watershed associations, conservation commissions, and other local officials to identify and remove human-made sources of mosquito breeding (e.g. tire dumps) and restore fish habitat (upgrade undersized culverts, remove obsolete dams, improve stormwater management with a focus on Low Impact Development (LID). LID does not involve catch basins and detention areas that often become major mosquito breeding sites). We are not in favor of routine application of BTI or methoprene, or Anvil by air, and believe routine practices such as this require routine monitoring.
- We support completion of the updated guidelines on **Open Marsh Water Management** – a technique used to improve fish access to mosquito breeding sites on salt marshes. These guidelines were supposed to have been completed for this update but are still undergoing final revision – JRWA asks that this process be completed soon.

The Jones River is sustained by a 30 sq mile coastal watershed that supports diadromous fish spawning and habitats, as well as host of native fish such as brook trout, all of which appear to be in decline. A wide array of birds live and migrate through the watershed to dine in the estuary and native cedar and spruce of Blackwater swamp and other areas. The watershed is also the home to PCMCD, and to a notoriously persistent incidence of Eastern Equine Encephalitis. PCMCD has monitoring traps for mosquitoes and routinely applies BTI, Altosid (methoprene) in pellet and briquette form as well as Anvil (sumithrin and piperonyl butoxide), Duet (d-phenothrin/prallethrin and piperonyl butoxide) and Flit (permethrin). To our knowledge PCMCD does not monitor the ecological richness of the area or pair the incidence of EEE with environmental conditions. We are suspect of the reliance on human application of pesticide to address a persistent problem that in our frame of reference appears to be broadening in scope. We do not have confidence in this approach and believe that a reliance on biological controls—i.e. strengthening the ecosystem functions and native species populations, coupled with a public education program, would be a more effective approach to controlling the disease than the constant application of products intended to kill or stunt mosquitoes.

It appears to us that the districts act without regard to the balance of biology in their regions. Although honey bees, organic farms and grazing animals may be considered when designing an aerial spray program, there seems to be relatively little effort to understand the aquatic ecosystems that directly receive repeated application of products intended to interrupt or foul natural processes. The claims of no adverse impact are not supported by recent studies.

The Annual Reports are not adequate to enable an understanding of the applications in individual ecosystem areas. Although 17lbs of Altosid XR briquettes were applied to catch basins last year, we do not know where. The same is true for the 128 gallons of Anvil, 497 gallons of Duet, 30 Gallons of Flit, 810 lbs of Altosid pellets and 38 lbs of wsp Altosid pellets; or the nearly 2,000 gallons of aerially applied BTI. Even as a personal user of limited quantities of BTI, one has to consider the environmental consequence of massive repeated dosing on fragile environmental ecosystems. It is essential that the Annual Reports—and in fact the annual work plans are provided to people of interest so that there is a more general understanding and appreciation of the applications in areas where unpredicted results may occur. Treatment maps should be provided.

Regardless of the citations that propose that both BTI and Methoprene are safe for environmental receptors, there are other studies that suggest negative impacts that result from long-term applications in freshwater and estuarine systems. Impacts on crayfish, on lobster larvae, on trout, on biodiversity in general are attributed to repeated use. JRWA is concerned because of the impaired nature of the Jones River watershed and its species. For example:

- Even today as the Rainbow smelt begin their annual migration up the Jones River we are finding puzzling issues—which may or may not develop as problems. Why, for example, of the 114 smelt captured in the DMF fyke net are only four female? Why are the vast majority truncated? Is this because of the year class or does it reflect a hormone problem?
- We know that fish and eels ravish mosquito larvae. We see glass eels in the estuary in July and know that the young manage a migration up river. When methoprene is used to prevent the larvae from becoming adults as a result of juvenile hormone interruption—does this impact the fish and eels that eat the infected larvae?

Because almost all the catch basins drain to the estuary, after storm events, especially at low tide, there is every expectation that the pesticide will concentrate to levels beyond the "expected environmental concentrations."

The Methoprene Report to the Pesticide Board

- *"Studies reviewed observed variable susceptibilities of crustaceans to methoprene. At this time, it is difficult to draw final conclusions regarding the safety of methoprene for crustaceans until further research is completed and available for review. The weight of evidence reviewed, however, suggests that impacts upon crustaceans are not likely at expected environmental concentrations.*
- *Because the half life of methoprene is quite short, the use of the liquid larvicide is unlikely to create any adverse impacts. Possible exceptions are repeated*

applications, or the use of methoprene slow release formulations in shallow, poorly flushed waters. The data gap for chronic exposure to small quantities of methoprene over the long term, particularly in a poorly flushed medium, prevents conclusions from being drawn about the long term effects of the 150 day slow release formulation.

- *While some impact on non-target organisms (especially in aquatic communities) could be expected, the effects of methoprene application would be less harmful than those caused by most mosquitocidal pesticides. Methoprene has longer persistence than BTI after application, but also causes greater impact on non-target organisms. Despite this, there is no indication in the literature of permanent disruption to ecosystems after methoprene application."*

JRWA's brief literature search however causes us more concern:
In addition to its intended impacts on mosquito larvae, methoprene has been shown to negatively impact a number of non-target organisms including lobsters, blue crabs, and mysid shrimp.

The findings described in a recent lobster study (Walker et al 2005) include:

- "Methoprene is a pesticide that acts as a juvenile hormone agonist. Although developed initially against insects, it has since been shown to have toxic effects on larval and adult crustaceans"
- "We found that low levels of methoprene had adverse effects on lobster larvae. It was toxic to stage II larvae at 1 ppb. Stage IV larvae were more resistant, but did exhibit significant increases in molt frequency beginning at exposures of 5 ppb. Juvenile lobsters exhibited variations in tissue susceptibility to methoprene: hepatopancreas appeared to be the most vulnerable, reflected by environmental concentrations of methoprene inhibiting almost all protein synthesis in this organ."

*Walker, et al. 2005. Bioaccumulation and metabolic effects of the endocrine disruptors methoprene in the lobster, Homarus americanus. Integrative and Comparative Biology 45:118–*126.

A related lobster study showed the extent to which methoprene bioaccumulates in portions of lobsters. Test lobsters were exposed to a concentration of 50ppb in the surrounding water. Internal tissue concentrations were then measured. Note that the following tissue concentrations are in given parts per million (i.e. 100 times higher the ppb concentrations in the water):

- hepatopancreas (1.55 ppm),
- gonad (5.18 ppm),
- epithelial tissue (6.17 ppm) and,
- most significantly, the eyestalks (28.83 ppm)

Walker, A. N., P. Bush, T. Wilson, E. Chang, T. Miller, and M. N. Horst 2005. Metabolic effects of acute exposure to methoprene in the lobster, Homarus americanus. J. Shellfish Res.

Methoprene has also been shown to have negative impacts on blue crabs including:

- "The juvenile hormone analog methoprene causes both cytologic and biochemical alterations in larval and adult stages of the blue crab Callinectes sapidus."
- "This insect growth regulator, used for mosquito control, caused (at a concentration of 10 μM) profound ultrastructural changes in the cuticular epithelial cells of postmolt adult blue crabs studied in vitro"
- "Exposure to methoprene at environmental concentrations (2-10 μM) produced morbidity and mortality in the form of an overall reduction in the number of successful hatching and lethargic behavior exhibited by the surviving zoeae. Methoprene exposure (3.3 μM) was also toxic to megalopae, delaying the molt to the first crab form and resulting in death of 80% of larvae after 10 days."

Effects of the Pesticide Methoprene on Morphogenesis and Shell Formation in the Blue Crab Callinectes sapidus, by Michael N. Horst and Anna N. Walker © 1999 The Crustacean Society.

Smaller crustaceans are noticeable impacted by methoprene exposure even at extremely low concentrations (shown in several studies):

- "Methoprene has multiple mechanisms of toxicity and low-exposure concentration effects. Methoprene elicits significant toxicity to endocrine-related processes in the 5–50 nM concentration range. Furthermore, molting and reproduction were impacted at significantly lower methoprene concentrations, with a distinct concentration response and a threshold of ≤0.2 nM." *Olmstead A.W., LeBlanc G.L. Low exposure concentration effects of methoprene on endocrine regulated processes in the crustacean Daphnia magna (2001) Toxicological Sciences, 62 (2), pp. 268-273*

- "Ecological concern exists because the responses of mysids in this study to very low concentrations of a synthetic pesticide resemble responses of insects to juvenile hormone and juvenile hormone analogues. Similarity in these responses suggest that methoprene may be interfering with an endogenous endocrine system in this crustacean which utilizes juvenile hormone-like compounds."*McKenney, Charles L., Jr. and David M. Celestial. 1996. Modified Survival, Growth and Reproduction in an Estuarine Mysid (Mysidopsis bahia) Exposed to a Juvenile Hormone Analogue Through a Complete Life Cycle. Aquat. Toxicol. 35(1):11-20. (ERL,GB 918).*

These findings raise serious concerns about the use of methoprene in estuaries where crustaceans are most abundant. The fact that these impacts are accentuated in juvenile stages (which rely on estuaries) further increases this concern. While direct application of methoprene in estuaries should obviously be avoided serious consideration should also

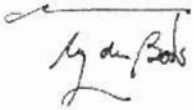
be given to watershed drainage dynamics when using this chemical. The accumulation of chemical concentrations in estuarine systems results when multiple areas drain to the common waters. Such may be the case when applying pesticides to catch basins or surface areas within a common watershed.

JRWA is expending our resources on restoring river processes, health and species. We would welcome an approach by the PCMCD that uses public resources/dollars to complement, rather than defeat this purpose. We believe that an improved focus on biological control efforts based on an understanding of how to improve the ecosystem balance and functions in the watershed would yield improved program results and greater public and environmental health.

JRWA appreciates the effort of everyone to attain an improved public involvement in this program that has such wide-ranging implications for the people and environment of Massachusetts.

Thank you for the opportunity to comment.

Yours truly,



Pine duBois
Executive Director

Massachusetts Association of Conservation Commissions
protecting wetlands, open space and biological diversity through education and advocacy

March 27, 2010

Secretary Ian A. Bowles
Executive Office of Energy and Environmental Affairs
Attn: MEPA Office
Nicholas Zavolas, EEA No. 5027
100 Cambridge Street, Suite 900
Boston, MA 02114

Re: **Update to the Generic Environmental Impact Report on Mosquito Control, Reference EEA #5027**

Dear Secretary Bowles and Mr. Zavolas:

On behalf of the Massachusetts Association of Conservation Commissions (MACC), I submit the following comments on the update to the Generic Environmental Impact Report on Mosquito Control. MACC represents the 2,400 Conservation Commissioners in the 351 cities and towns of the Commonwealth, who are charged with protecting the natural resources of their communities under the Conservation Commission Act (G.L. Ch.40 sec.8c) and with administering and enforcing the Massachusetts Wetlands Protection Act (G.L. Ch.131 sec.40). MACC is the voice of municipal conservation commissions across Massachusetts; and our mission is to promote strong, workable, science-based laws, regulations, and policies regarding wetlands, other water resources, open space, and biological resources.

Focus on Ecological Management and Restoration
MACC supports the State Reclamation and Mosquito Control Board Program's continued evolution toward a focus on ecological management and restoration. MACC encourages it to work in partnership with Massachusetts Division of Ecological Restoration, conservation commissions, watershed associations and other officials and relevant organizations to identify and remove human-made sources of mosquito breeding and restore fish habitat.

Continued Improvements in Transparency and Accountability
MACC acknowledges and supports the improvements made in public access to information regarding the mosquito districts' activities. We also support the development of GIS-based systems with web postings showing current mosquito activity levels, disease-risk areas and mosquito control treatments.

10 Juniper Road • Belmont • Massachusetts 02478
Phone: 617.489.3930 • Fax: 617.489.3935 • www.maccweb.org

Completion of Guidelines on Open Marsh Water Management

In conclusion, MACC hopes that the guidelines on Open Marsh Water Management will be updated and completed soon, as we understand this management technique can improve fish access to mosquito breeding sites on salt marshes.

Thank you for considering these comments.

Sincerely,

Michèle Guard for

Patrick Garner,
MACC President

HARVARD SCHOOL OF PUBLIC HEALTH
DEPARTMENT OF IMMUNOLOGY AND INFECTIOUS DISEASES
LABORATORY OF PUBLIC HEALTH ENTOMOLOGY

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15 April 2010

Secretary Ian A. Bowles
Executive Office of Energy and Environmental Affairs
Attn: MEPA Office
100 Cambridge Street, Suite 900
Boston MA 02114

RE: Mosquito Control Program: EOEEA #5027

Dear Secretary Bowles:

I wish to offer comments relevant to the GEIR focused on mosquito control issues in the Commonwealth of Massachusetts. I hope these will be helpful to you as you and your colleagues evaluate this document and consider related issues.

I offer my comments as a concerned resident and taxpayer of this Commonwealth, but also as a professional with specific insights of relevance to the issues under consideration. I serve, and have served for more than 21 years, as a public health entomologist at the Harvard School of Public Health. My work is particularly focused on the biology of mosquitoes and the epidemiology and management of mosquito-borne diseases locally and elsewhere across the globe. I serve as the Chairman of the Mosquito Advisory Group, a body assembled by, and assigned the mandate to advise, decision-makers at MDAR and MDPH. The members of this non-compensated group have significant expertise pertinent to mosquito biology and management practices, infectious diseases, epidemiology and toxicology. I also serve as a Commissioner of the Norfolk County Mosquito Control Project Commission, a group that represents the interests of more than 500 thousand residents in the 25 communities serviced by that project. At the behest of MDPH shortly after West Nile virus was detected within the Commonwealth, I served as a co-chair of a working group to evaluate risks associated with pesticides used against mosquitoes and for the purpose of reducing risks of mosquito-borne disease. I have also just completed my service as Chairman of the Science and Technology Committee for the American Mosquito Control Association. Hence, I believe I have the relevant and specialized background to comment on the issues pertinent to the GEIR and to mosquito control practices.

The goals of mosquito control are to reduce the burdens caused directly by mosquitoes, as well as the risks of infection by mosquito-borne agents of disease. Total elimination of mosquitoes neither is possible nor necessarily desirable. The structure of organized mosquito control within

this Commonwealth currently consists of regional mosquito control districts (MCDs) that function as surveillance-driven operational programs. The activities of the MCDs are overseen by their respective regional commissions, the State Reclamation and Mosquito Control Board (SRMCB), and by permit and authority of diverse other regulatory bodies. The MCDs serve as a major component of an impressive disease surveillance network operated in collaboration with the MDPH-SLI. Each of the MCDs, thereby, monitors local conditions and responds to mosquito-associated problems with proactive and reactive interventions in a manner consistent with federal, state and local regulations, and within the confines of their respective budgets.

Mosquitoes and mosquito-associated burdens differ dramatically by region. People who reside near or who visit coastal areas are often plagued by aggressively biting salt marsh mosquitoes; these mosquitoes are rare in sites further inland. Those who reside and work near certain cedar swamps particularly risk exposure to mosquitoes that transmit the frequently deadly EEE virus. Because the ecology of each kind of mosquito is vastly different, the means to monitor their populations and to intervene differ, accordingly. The current MCDs are staffed with personnel knowledgeable of the regional ecology and risks, and each project has specialized equipment necessary to perform the locally relevant tasks. The SRMCB and the MCDs base their programs on scientifically valid data, using procedures designed to maximize their impact against mosquitoes while minimizing collateral risk to the public and the environment.

Evidence from the past several seasons particularly attest that the system functions admirably. Analyses of data suggest that the aerial applications during 2006 likely saved a dozen or more human lives in the Commonwealth. Little, if any, data exist that would support claims that such efforts caused measurable and lasting harm to people or to the environment. Thus, this effort was hugely successful, despite it being significantly hampered by groups and individuals who grossly exaggerated the risks from the interventions.

During the past few years, residents of this region have experienced new challenges and concerns. Aggressive mosquitoes of exotic species have rapidly spread and become abundant throughout New England. West Nile virus arrived here in the year 2000, and has become a perennial burden to humans and wildlife alike. Most concerning, however, is the apparent increasing range and frequency of EEE infection in humans, wildlife and mosquitoes throughout the region. A permanent array of state-sponsored mosquito control projects is warranted and necessary to reduce burdens and risks imposed by mosquitoes, whether these relate to quality of life issues or to the transmission of infections that take a huge toll on the human residents and wildlife.

Based upon a careful reading and consideration of the GEIR update, I now offer my support for this document and for the activities described within. The overall program of surveillance and intervention serves as a model and standard for most other regions of the country. The activities described within the GEIR are based upon the best available objective data and practices currently available. The structure of the program intentionally allows – and promotes – a flexible approach. Opponents to this plan advocate, instead, a one-size-fits-all approach that would specify immovably defined thresholds for every action and reaction. Such a constrained strategy neither is desirable nor rational. Indeed, an overly rigid structure would be counterproductive and uneconomical, as it would prevent reliance upon certain of the most environmentally appropriate proactive interventions (as with the aerial application of Bti larvicide currently underway), and would require insecticidal applications other times when local experts might call for restraint. The flexibility defined within the GEIR, therefore, is in the best interests of the residents of this Commonwealth. Such flexibility is critical, as it allows the

MCDs to evolve and for them to embrace newer technologies and strategies if these are deemed to be more beneficial, environmentally friendly, and economical.

Operating a functioning and capable surveillance and intervention network requires sufficient funding, cooperation between state agencies that have differing mandates, and an array of highly trained professionals and specialized equipment otherwise unavailable. Although the costs to continuously fund such a program may seem excessive to some, the alternatives are unacceptable. As authorized by MGL 252, the MCDs operate throughout member communities (with a few notable exceptions), and their activities benefit all residents and businesses in the region, whether on public or private properties. Accordingly, they are able to deliver tangible public health benefits to the communities they service. Because of the funding structure, the cost of services to individual residents is trivial, generally being less than the price of a single bottle of insect repellent per year, but with profoundly greater results. A single surviving case of EEE may burden the patient's family – or the State – with lifetime costs that easily exceed $3 million. Hence, if a single case of EEE is averted by the MCDs, a cost savings may be realized that counterbalances the annual budget of the MCD. If several cases can be averted, not only would tragedy be prevented, the results would translate to a cost savings for the taxpayers.

Mosquito control and public health practitioners do not claim that their efforts are completely harmless. The products selected, and the manners of their application, are carefully considered to ensure that they provide far greater benefit than risk. No species – not even that of a mosquito – has been extirpated by the actions of mosquito control. In some cases, limited and transient non-target effects are evident, but the affected populations have always seemed to recover. Although certain representatives of various State agencies and private entities argue for enhanced monitoring of fish and other non-target populations that they claim are irrecoverably harmed by anti-mosquito interventions, objective data are lacking to justify such additional expenditures. Any such efforts should certainly be encouraged, if justified, but they should be funded and performed by agencies other than the MCDs.

A suitably funded and functioning network of mosquito control agencies, as we have in Massachusetts, offers real benefits to our residents. Many thousands of residents contact the MCDs or their local BOH each year for services and insight. It is important to be mindful that it is the MCD Commissions - not the various advocacy-driven groups in MA - that are the duly appointed representatives of the member communities and their residents to provide oversight of MCD activities. The Commissioners each live or work within a community serviced by the MCD, were nominated by municipal authorities and evaluated and appointed to their posts by the State Reclamation and Mosquito Control Board, participate in frequent open meetings to review needs and desires of the constituents, and provide fiscal and operational oversight of the MCD activities.

In conclusion, I urge that the GEIR update be accepted and adopted. I hope these comments are of some value.

Sincerely,

Richard J. Pollack, Ph.D.

THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENERGY AND ENVIRONMENTAL AFFAIRS
OFFICE OF COASTAL ZONE MANAGEMENT
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MEMORANDUM

TO: Ian Bowles, Secretary, EEA
ATTN: Nicholas Zavolas, MEPA Unit
FROM: Deerin Babb-Brott, Director, CZM
DATE: April 16, 2010
RE: EEA 5027 – Second GEIR Update for Massachusetts Mosquito Control

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The Massachusetts Office of Coastal Zone Management (CZM) has completed its review of the above-referenced second Generic Environmental Impact Report (GEIR) Update for Massachusetts Mosquito Control activities, noticed in the *Environmental Monitor* dated October 7 2009, and offers the following comments.

Project Description

On December 18, 1998, the Secretary of Environmental Affairs issued a Certificate on the Generic Environmental Impact Report (GEIR) to the State Reclamation and Mosquito Control Board ("Board"). The Secretary's Certificate established Open Marsh Water Management (OMWM) as the preferred practice for physical controls in salt marshes and found that the Board's GEIR detailing OMWM practices adequately complied with MEPA, subject to certain conditions. Those conditions included compliance with Section 401 of the Federal Clean Water Act and CZM Federal Consistency Review. The 1998 Certificate required that proponents be responsible for improved record keeping with respect to treatment location, type, efficacy, and post-treatment monitoring. In addition, the 1998 Certificate required annual updates to the information presented in the GEIR.

On November 26, 2007, the Board submitted a GEIR Update. On February 15, 2008, the Secretary of Energy and Environmental Affairs issued a Certificate for this submittal, establishing a Special Review Procedure for reviewing Board filings and acknowledging a need for more comprehensive information about the program's policies and activities. The Secretary also issued a separate, concurrent Certificate that directed the Board to provide MEPA with a GEIR Update on the policies and management practices that have been developed and implemented since the GEIR was published. As required by the Certificates, this additional information was necessary for a finding that mosquito control practices properly comply with MEPA. On October 7, 2009, the Board submitted a second GEIR update to address these issues. Following consultation with agencies, the Board submitted information to MEPA to supplement the second GEIR filing on April 1, 2010.

Project Comments

CZM would like to commend the Board and the Mosquito Control Districts ("Districts") for the effort and materials that went into the GEIR Updates. In previous comments—both through MEPA and through individual District federal consistency review—CZM raised concerns specific to mosquito control activities in estuarine (or salt) marshes. Open Marsh Water Management (OMWM) is an alternative mosquito management practice that seeks to control mosquitoes by establishing access of predaceous fish to mosquito breeding habitat by altering vegetated marsh areas with standing water (shallow puddle, panne, and pool areas) to larger and deeper pools or pannes

with networks of connecting ditches. CZM's concerns focused primarily on the ability of current monitoring protocols and procedures to generate the information and assessment necessary to determine if OMWM alterations are having the desired effects on mosquito populations and not having adverse effects on coastal resources. In the 2008 Certificate, the Secretary found that "...a key missing element of the current program is a monitoring program that can be used to modify best management practices and inform management decisions made within the integrated pest management matrix", and one of the specific tasks identified in the GEIR Update scope is the development of a work plan with "measures to incorporate monitoring results to measure the effectiveness and impacts of mosquito control practices, and to provide the basis for modifying Best Management Practices." CZM's key interests in the second GEIR Update was the information contained in the 10-year review and evaluation of OMWM and in revisions to monitoring practices and procedures contained in the standard operating protocols.

As stated in previous comments, the 10-year review and evaluation of OMWM activities would be a indication as to the adequacy of information to determine (with statistical confidence) if changes at a site before and after Open Marsh Water Management alterations were beneficial—both in terms of mosquito reduction and effects on salt marsh resources and ecology. Such a review would detail the number of sites assessed, frequency monitored, parameters measured, the methods for analyzing and presenting quantitative and qualitative data, and specific findings. The document would also address how techniques and methods used to evaluate other OMWM projects could be incorporated into Massachusetts' programs, review effectiveness and impacts through studies conducted elsewhere on the same practices in similar habitats, and discuss possible alternatives and their benefits and impacts. While the document included as part of Appendix 10 of the GEIR update provides helpful contextual discussion and data analysis on larvae counts for six OMWM sites, it does not reflect a level of detail and analysis sufficient to support the conclusions represented by the text nor to assess changes to such critical salt marsh parameters as fish numbers and densities, changes to vegetation, hydrology, or avifauna. As discussed below, CZM believes that the ongoing efforts of the districts and agencies to improve the monitoring protocols for the OMWM program through adjustments in design, methods, protocols, and GIS that will improve the rigor, statistical confidence, and use of the information collected and advance future reviews and evaluations.

In October 2008, a workgroup was formed to assist the Board and the mosquito control districts with ongoing state environmental review of OMWM under MEPA, Federal Consistency, and 401 Water Quality Certification. The focus of the work group—comprised of representatives from four mosquito control districts, the Board, CZM, Department of Environmental Protection, Natural Heritage and Endangered Species Program, Division of Marine Fisheries, and Mass Audubon—is to recommend modifications to the current OMWM monitoring design and integrated protocols that will not pose unreasonable new resource demands for the districts. In the 18 months since the workgroup was formed, significant progress has been made toward that goal and revisions to the monitoring practices and procedures are expected to be finalized this spring. CZM is committed to continued work with the districts and agencies to ensure these revisions move forward.

Throughout our OMWM review through both MEPA and the Federal Consistency process, CZM has emphasized the need to modernize OMWM data keeping and processing to include use of GIS capabilities. During the GEIR review and in workgroup meetings as described above, it has become clear that through partnership with CZM and other state agencies, the districts could quickly move toward this goal. CZM is also committed to working directly with the districts toward this important goal.

Cc:
Lealdon Langely, DEP
Gary Gonyea, DEP and State Reclamation and Mosquito Control Board
Mark Buffone, DAR and State Reclamation and Mosquito Control Board
Anne Monnelly, DCR and State Reclamation and Mosquito Control Board
Kathryn Glenn, CZM North Shore Regional Coordinator

Watershed Action Alliance

of Southeastern Massachusetts

April 22, 2010

Nicholas Zavolas
EEA MEPA Office
Nicholas.zavolas@state.ma.us

RE: Mosquito Control GEIR
EEA # 5027

Dear Mr. Zavolas:

The *nine undersigned member organizations of the Watershed Action Alliance of Southeastern Massachusetts* (WAA) would like to express our concern that existing mosquito control programs in much of the state need to be further revised to better protect human health, fish and wildlife, wetlands, and other important aquatic habitats. We recommend that mosquito control in Massachusetts be refined to be fully consistent with the scientifically-based Integrated Pest Management approach recommended by the Environmental Protection Agency and Centers for Disease Control.[1]

The state should move away from frequent and widespread pesticide applications and toward a greater emphasis on ecological management and restoration. The pesticides typically sprayed for adult mosquito control are highly toxic to fish and other beneficial species, with limited evidence that they are effective in reducing the risk of mosquito-borne disease or offering more than short-term, localized reductions in nuisance mosquitoes. Mosquito control pesticides also may have negative impacts on fish and shellfish in our coastal estuaries. So-called "ditching" in wetlands is frequently unnecessary and ineffective and can kill the very fish that are mosquito predators. (The new Freshwater Mosquito Control Guidance that is a part of this GEIR update addresses this issue to some degree. However we remain skeptical as to the alleged impacts of ditch cleaning on fish and other aquatic mosquito predators.) Far too little research has been done on the effects on human health of pesticides used for mosquito control. Repeated and routine spraying can also lead to pesticide-resistant mosquitoes that could become impossible to control in an emergency.

Mosquito borne diseases like West Nile Virus (WNV) and Eastern Equine Encephalitis (EEE), while sometimes deadly and of utmost concern, are nonetheless rare in Massachusetts. Careful use of pesticides on adult mosquitoes, including spraying, should be done, if at all, only in direct response to a high risk WNV or EEE situation as identified by the Department of Public Health, after all methods have proved ineffective in containing a significant outbreak. Widespread spraying across large areas of the state is the most risky and least effective method of mosquito control. According to published studies, research has shown that truck-based pesticide spraying is not effective in reducing the human health risk of WNV in the typical Massachusetts neighborhood[2]

Far more effective mosquito control measures than routine spraying include:

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[1] http://www.epa.gov/pesticides/health/mosquitoes/mosquitojoint.htm#ipm

[2] Michael R. Reddy, et. al., *Efficacy of Resmethrin Aerosols Applied from the Road for Suppressing Culex Vectors of West Nile Virus*, Vector-Borne And Zoonotic Diseases. Vol. 6, No. 2, 2006.

- Public education on the importance of personal protection from mosquito bites (including avoidance of marshy areas at dawn and dusk, wearing long sleeved shirts and pants, and using insect repellants on skin or clothing) and on eliminating man-made areas of stagnant water (including buckets, gutters, discarded tires, and dirty bird baths) on private property;
- Efforts by state, regional and local officials to eliminate stream blockages, undersized or blocked culverts and stormwater catch basins that don't drain properly;
- Restoration by Mosquito Control districts of the habitats of fish and wildlife species that eat mosquitoes;
- Application of bacterial materials designed to kill young mosquito larvae at selected locations, not including routine use of chemicals, especially Methoprene, in estuarine environments. ;
- Careful monitoring of mosquitoes to document localized high disease risk situations and limiting spraying of adult mosquitoes to those areas and times.

Although we understand that there are statutory restrictions on who sits on the State Reclamation and Mosquito Control Board, we believe that the Department of Public Health and the Department of Fish and Game should be given a larger advisory role until such time as the statute can be amended to formally add them to the Board. Furthermore, although the Mosquito Control districts need to have flexibility to respond to unique local conditions, the Mosquito Control Board (in consultation with DPH and DFG) should require greater uniformity regarding the principles upon which those decisions are to be made. The state, perhaps in cooperation with other states, should also fund studies on the affects of various pesticides on human health, as well as the environment. We also believe that the Open Marsh Water Management Guidance should be finalized as quickly as possible.

We do recognize that the proposed GEIR improves upon previous efforts. We also believe, however, that the state needs to do more to protect human health and the environment in their management of mosquitoes.

Sincerely yours,

Steve Pearlman, Coordinator
Watershed Action Alliance of Southeastern MA

and

Eel River Watershed Association
Mettie Whipple, President

Jones River Watershed Association
Pine duBois, Executive Director

Neponset River Watershed Association
Ian Cooke, Executive Director

North and South Rivers Watershed Association
Samantha Woods, Executive Director

Pembroke Watershed Association
Ray Holman, President

Save the Bay (Narragansett Bay)
John Torgan

Six Ponds Improvement Association (Plymouth)
Leighton Price

Taunton River Watershed Alliance
Carolyn LaMarre, Executive Director

Westport River Watershed Alliance
Gay Gillespie, Executive Director

The Commonwealth of Massachusetts

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SECRETARY

JOHN AUERBACH
COMMISSIONER

May 7, 2010

Secretary Ian A. Bowles
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

RE: Mosquito Control Program EIR Update #2, EOEEA #5027

Dear Secretary Bowles:

The purpose of this letter is to provide comments by the Massachusetts Department of Public Health, Bureau of Environmental Health *(MDPH/BEH),* regarding the 2nd Update (herein referred to as "the Update") to the Environmental Impact Report (EIR) submitted by the State Reclamation and Mosquito Control Board (SRMCB) on the Mosquito Control Program. We appreciate this opportunity to submit comments in relation to public health concerns.

The Update includes the document titled Update to the 1998 Mosquito Control Program Generic Environmental Impact Report (GEIR) EOEEA #50027, as well as additional supporting documents and information. The Update addresses issues outlined in the Secretary of Energy and Environmental Affairs Massachusetts Environmental Policy Act Certificate issued on January 16,2009.

The Certificate included a stipulation that that the Update include a detailed description of the SRMCB existing and proposed mosquito control monitoring program to measure the effectiveness and impacts of routine mosquito control activities. The Update states that measuring the effectiveness of routine mosquito control efforts is unprecedented and would present scientific challenges and require resources that do not currently exist. The Update describes how several of the nine mosquito control projects (MCPs) in the state measure effectiveness through customer satisfaction surveys or feedback and post-treatment biological counts, especially after aeriallarviciding. These efforts are done at the discretion ofthe MCPs and do not provide scientifically valid data. Currently, not all MCPs even use mapping computer programs to track areas that have been treated.

The first step in trying to measure effectiveness is to identify and map areas that are being treated and track pesticide usage. The SRMCB has indicated that one of the additional challenges in

measuring the effectiveness of the mosquito control activities is the difference in technology and resources between the MCPs. For example, the Norfolk MCP has a staff of 11 and uses spray trucks with global positioning system (GPS) units that provide detailed maps of areas treated, including the location of "no spray" residences, while the Berkshire MCP has a staff of 2 and does not have access to GPS units. MDPHIBEH recommends that the SRMCB work to increase the technological capacity of each MCP such that GPS units are uniformly used by all programs to map treated areas and track the type and amount of pesticide used at each location. These GPS data can then be channeled into one GIS mapping database that will enable the MCP, SRMCB, and others the ability to identify what locations are being treated repeatedly (a potential measure of effectiveness), the type and amount of pesticide being applied, and whether additional actions (including non-chemical) are needed that may increase the effectiveness of the mosquito-control efforts. MDPHIBEH believes that this information will assist policymakers when evaluating the potential human health impacts not only in relation to mosquito-borne diseases, but also of repeated pesticide applications. One potential strategy for accomplishing this first step would be to pilot enhanced pesticide usage monitoring with two MCPs in different economic and technology situations, collaboratively identified, such as Norfolk and Berkshire. It could then be expanded to include the other MCPs as capacity is increased across all MCPs. As we have expressed in various interagency discussions, the *MDPH/BEH* Geographic Information System (GIS) Center could, if requested, provide some technical support to this effort.

Additional effort is also necessary to develop plans for monitoring the effectiveness of emergency aerial spray events. These events are resource intensive (e.g., staff time at multiple agencies, use of private airplanes, purchase of pesticides) and involve the use and direct application of large amounts of pesticides sprayed over a large geographic area. MDPHIBEH supports collaborative efforts to enhance the understanding of the effectiveness of these aerial spray events, including the development of monitoring protocols to assess the impacts on target and non-target species. To this end we look forward to continuing our collaborative efforts to optimize the system of watchfulness employed during such events.

Thank you for consideration of these comments. Please feel free to contact us at (617) 624-5757 if you have any questions.

Sincerely,

Suzanne K. Condon, Associate Commissioner
Directof, Bureau of Environmental Health