

Zavolas, Nicholas (EEA)

From: Alexandra [adawson@crocker.com]
Sent: Tuesday, December 30, 2008 4:22 PM
To: Zavolas, Nicholas (ENV)
Cc: Heidi Ricci; Linda Mack
Subject: mosquito control

This brief note is only to encourage you to continue to monitor the work of the Mosquito Control districts and to obtain much more definitive information about what is being done and where and some proof of effectiveness. Although the districts are no doubt sincere in thinking their work is necessary, I personally doubt they would have received the total free pass under the 1972 wetlands act if more had been known about chemistry at the time. My own experience with their work was actually frightening: They were spraying uplands at night right up the walls of a religious retreat house where I was staying where the doors were open because of the summer heat and the customers were mostly elderly women. This proved to me that there are worse things in the country than saltwater mosquitos!

Please maintain and improve your efforts.
Alexandra Dawson, MACC Legal Affairs

Zavolas, Nicholas (EEA)

From: ADADFARM@aol.com
Sent: Monday, December 22, 2008 10:36 PM
To: Zavolas, Nicholas (ENV); Bouchard, Alisha (AGR)
Cc: ADADFARM@aol.com
Subject: Comments on "Suggested Comments" re Mosquito Control Activities:

My comment is with regard to the third bullet in the E-MACC alert of 12/01/08 as follows:

- Support inland stream restoration projects such as culvert widening, restoration of channelized streams, and stormwater system upgrades to reduce mosquito breeding areas and improve habitat for fish and other mosquito predators.

I strongly agree with the need for these activities, however, they cannot be accomplished without there first being a resolution of the beaver problem. Beaver activity, and an inability to timely interdict their affects with minimal delay and red tape, is the direct cause of the bulk of the problems noted or implied in this bullet.

I understand on hearsay evidence (without confirmation) that New York State had various restrictions protecting beavers, but that they have been withdrawn or modified due to the deleterious impact of beavers and their ability to be self-sustaining without special protections.

It is time for Massachusetts to take similiar steps. I understand that the geography and size of New York is different than Massachusetts; however, Massachusetts has its own vast tracts of wilderness where beavers are, and will be, self-sustaining with little or no impact on human activity. They do not otherwise need to be protected.

As a point of information, I am a twenty year member of the Conservation Commission of the Town of Rowley.

Sincerely,
Curtis L. Turner

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December 30, 2008

Secretary Ian A. Bowles
EOEEA, Attn: MEPA Office
Nicholas Zavolas, EOEEA # 5027
100 Cambridge Street, Suite 900
Boston MA 02114

Email: nicholas.zavolas@state.ma.us
or FAX 617-626-1181
Copy to: alisha.bouchard@state.ma

Re: **EOEEA #5027 - Mosquito Control Generic Environmental Impact Report (GEIR) Update and Best Management Practices (BMPs) and Guidance for Freshwater Mosquito Control**

Dear Secretary Bowles:

We continue to appreciate the opportunity to participate in this discussion of mosquito control in the Commonwealth. The involvement of your office is serving to develop a more comprehensive picture of the practices now undertaken and considered by SRMCB and the Mosquito Control Districts.

Within the October submission, SRMCB responded to JRWA's January 2008 comment on the above submission. Here we will attempt to clarify some of our comments as well as comment further on the recent submission regarding the data submitted from the 2006 aerial application and the Freshwater BMP.

JRWA works to protect and restore natural ecosystem function in the environment. Our staff and members include fisherman, organic farmers and gardeners, beekeepers and people who love to recreate in the outdoors. The Jones River watershed is a 30 sq mile area that drains to Cape Cod Bay. The river is the largest river in the bay and supports a wide array of spawning and feeding fish, birds, bivalves, mammals, insects and macroinvertebrates. Most of the watershed has impacts from past industries, development and agriculture and is considered in impaired condition. It is within this context that Plymouth County Mosquito Control operates to trap and monitor mosquitoes and carry out larvacides and adulticide practices depending on their best judgment-- without relating to our work to restore the waterways biological function, to the conservation commission's active concern for environmental health, or to provide a holistic and sustainable program for containing mosquito populations to levels that do not threaten the public health or bother those who barbeque outside in the summer evening.

Need for Objective alternatives analysis

The documents submitted by the SRMCB do not provide any cost/benefit analysis to show that the \$7+ million spent by the districts in 2007 provide the best alternative for

managing mosquitoes in the Commonwealth. From a practical perspective it is impossible to determine how much money is spent on ridding area backyards of pesky biters that pose no health threat, or how much is spent controlling a potential virus outbreak. Nor do we know how much is spent on educating the 500 or so who might have attended a lecture by the Plymouth County MCD (PCMCD). An alternative expenditure to a round of truck mounted or helicopter spraying might be helping the schools to set up dragonfly larvae nursery and begin a biological control program that would serve two functions—education and inclusion of biologically integrated controls. Or, alternatively, the town could be assisted with implementing a trapping program surrounding its Blackwater swamp Opachinski playing fields (as an example)—to set up more sustainable and long lasting controls rather than engage in a program of repeated spraying of a sensitive ecological area.

Need for routine Biological/ Environmental impact Monitoring

We are concerned that PCMCD utilizes pesticides (Altosid XR briquets for catch basin control) and Anvil 10 + 10 in our area. EPA expresses concern that the briquet form of Altosid can harm estuarine systems; and Anvil 10 + 10 should not be used near water or when bees are flying. Yet we really know nothing about how and where these products are used, and we request a public repository for easy access. More importantly however, we request that the Water Quality Sampling and Biomonitoring Plans that DEP has prepared for aerial chemical applications be employed on a seasonal basis during routine chemical applications to water environments such as Blackwater Pond, Stony Brook and Jones River; and in stream/wetland environments that receive drainage from treated catch basins. In Appendix 5 (of the SRMCB Operation Response Plan October submission to MEPA) Water Quality sampling for Mosquito control Aerial Chemical Application DEP takes note (#3) “our review of sumithrin (Anvil 10+10) has a high non-target toxicity potential to aquatic life, particularly fish.” We also note that following the August 8th 2006 aerial application that PBO (synergist) levels in Jones River were found at 0.10ug/L indicating that with the ULV application reportable concentrations were found. Further, despite SRMCB claims to the contrary, JRWA reported a significant die-off of mud crabs in the Jones River estuary the morning of August 9th 2006, and two of our members reported overnight loss of one bee hive each. We are particularly dismayed by the lack of objective analysis of that program and offer the following comment on the SRMCB “Final Report for EPA File Symbol: 06-MA-06” dated March 6, 2007:

- General: Throughout the report the following terms are frequently used to describe the results: “remarkable, dramatic, significant”. However, the report contains no statistical data (means, standard deviations, reference site results, etc) to corroborate these claims. For example, data should be provided to specifically show the statistical ‘significance’ margins or error around the test results.
- Pg 2, 3rd paragraph, 2nd sentence: The time period described for the application includes 2 whole daytime periods (8/23 and 8/24). Provide

discussion or health and environmental effects related to daytime application. (We note both that the report is not clear as to the time of day of the application (“...began on August 22, 2006 at sunset and ended in evening Thursday, August 24, 2006 at 9:58 PM) and also that the application was initiated at least an hour before all public notifications and caused many people to be directly exposed to the spray.)

- General: In several instances the report contains statements such as “...mosquito populations in the treated areas were dramatically reduced, and overall risk to the public was lessened.” This report describes the application of pesticides and the associated reduction in mosquito abundance. It contains no data on public health risk. Further information should be provided to describe the exact statistical relationship between reductions in mosquito population abundance and public health risk.
- Table:
 - Column Header “Percent Control”: Does this mean “percent reduction”? As compared to what? Please provide data for the reference location and/or sampling event.
 - Please provide a discussion about the large discrepancies between data results. Examples:
 - Why does *Oc. canadensis* show a 72% control in one case and 0% in the other two cases?
 - Why the large range of overall effectiveness? Provide statistical comparisons of significance.
- Pg 3, 3rd sentence: In non-sprayed areas, the numbers of mosquitoes increased. This statement warrants considerably more discussion. Is it possible that mosquitoes moved from the sprayed areas to the non-sprayed? This could skew the “percent control” results and pose a major increase in public health risk as mosquitoes are pushed into other areas.
- Pg 3, last sentence: **“In summary, the operation was successful in obtaining a positive public health outcome and provided the most meaningful response to this public health emergency.”**
 - All of the data provided relate to reductions in mosquito abundance in sprayed areas. No data is provided about positive public health outcomes. This summary sentence should be revised to reflect the data results.
 - What is “most meaningful” compared to? There is no analysis of any other methods, efforts, techniques, etc.

- Pg 4 “Description of Unexpected Adverse Effects:
 - Please also provide a discussion of the Expected Adverse Effects.
 - “Significant impacts to the environment have not been observed...”. This sentence suggests that impacts may have been observed but that they were not statistically significant. Please provide a discussion of the statistical analysis performed on adverse effects. Also, include a discussion of all adverse effects observed even if not significant.
 - It appears that there was no monitoring performed for adverse environmental effects. Therefore, the discussion regarding no effects is not appropriate for this report. A monitoring program should be implemented.
- Pg 4 “Results of monitoring...”:
 - 1st paragraph claims that Sumithrin levels were below detection limits. However, the laboratory detection limit is (specifically) excluded. Therefore, the statement carries no value in terms of what the levels were or what the potential adverse impacts might be.

We are interested to know if the EPA or DEP had any follow up discussion with SRMCB following this final report.

In the response to our comment relative to the water chemistry of Blackwater pond, SRMCB misses our question relative to the loss of oxygen and low pH of pond water in the summer. Our question exists because no one is doing water quality monitoring during routine mosquito control activities. It seems entirely possible that the application of Anvil 10 + 10 might throw a stressed habitat over the edge, reduce available oxygen for fish, lower pH and have a negative cumulative impact on the environment. Our comment (JRWA 06) did not refer only to bioaccumulation—but to the accumulation of stresses on degraded environments. JRWA performed a biological assessment of Blackwater pond with DMF to measure feasibility of restoring a herring run. Can PCMCD objectively state that its activities in 2007 applying (how much ?) chemical to the pond environment, when added to the many other existing stresses, did not negatively impact the ecology of the pond or the survival of the young fish we saw gulping air on the surface? With no monitoring, there can be no answer. With no answers, there can be no progress. To have a single purpose of controlling mosquitoes without measuring impact on rest of the environment is a disservice to the Commonwealth.

Freshwater BMP

It remains a concern that although there is an attempt to provide site conditions prior to work in wetland areas that the site conditions sheet does not inventory existing conditions or reflect an understanding of the site in relation to the environment or biological function. It is important that the site investigation informs the BMP actions and lays the groundwork for later biological monitoring. Even though the MCDs are charged with mosquito control, it important that their methods and procedures work

With the environment and not at cross purposes. Descriptions of the waterway/wetland habitat values (not just regulatory triggers) should be included, it would seem beneficial to measure water chemistry as well as stream channel depth; include any description of water volume, and velocity for example; include presence of nesting animals, turtles and other amphibians, including the potential for vernal pool certification; in addition the plan should address the potential for alternatives or the integration of other methods like biological controls. First and foremost the credentials for the conditions survey analyst should be discussed so that a standard for achieving regulatory compliance might really be achieved. Finally, the districts should be required to submit the plan to the local conservation commission and post the proposed alteration in the local newspapers.

Source Reduction and Education

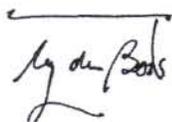
JRWA believes that not enough time, money and effort is expended on public education and recruiting the public in good housekeeping to reduce the incidence of mosquito breeding. This should be the first line of defense and should be **LOUD and INESCAPABLE**. The efforts at education and source reduction appear lame and uncommitted, and is a waste of a precious resource—an informed body politic. The exception to this is the DPH efforts when an emergency impends. However, if everyone always worked to reduce the likelihood of supporting mosquito breeding through poor drainage, discarded tires and other junk this would be the best dollar spent for the most effect. Despite all the paper and plans, we are failing to help people really be safe. In the face of climate change and shifting habitats (and declining dollars!) we must find more effective ways to deal with the nuisance and viral threats.

More Harm than Good?

It is especially important to evaluate what methods we adopt to control our problems to avoid repeating reliance on the “new DDT”. We ask that the Secretary take a hard look at the report (“Final Report March 2007, p. 3 & 4) that discusses the effectiveness of the aerial spray program when it states: **“In non-sprayed areas, the numbers of mosquitoes increased”** p.3...the SRMCB in consultation with MMAG “speculate that this increase was due to either/both immigration from outside the spray zone and /or emergence of new mosquitoes.” While this report is in reference to the aerial spray program of 2006, it should cause us to evaluate such broad scale programs on the regional and the local level. After all, the incidence of EEE and WNV is moving north.

Thank you for your consideration—I am out of time.

Very truly,



Pine duBois, Executive Director



Massachusetts Association of Conservation Commissions

protecting wetlands, open space and biological diversity through education and advocacy

December 30, 2008

Secretary Ian A. Bowles
EOEEA, Attn: MEPA Office
Nicholas Zavalas, EOEEA No.5027
100 Cambridge Street, Suite 900
Boston MA 02114

Via Email: nicholas.zavalas@state.ma.us
Hard copy in the mail.

Dear Secretary Bowles:

On behalf of the Massachusetts Association of Conservation Commissions (MACC) I submit the following comments on the October 24, 2008 update of the Mosquito Control Generic Environmental Impact Report (GEIR). MACC is a nonprofit organization that educates and supports the over 2,000 volunteer Conservation Commissioners statewide who locally administer the state Wetlands Protection Act and local wetlands bylaws and conduct a multitude of local conservation projects and programs. Many Conservation Commissions work with local watershed associations and volunteers to protect and restore rivers and their associated wetlands and watersheds.

MACC supports the continuation of this MEPA review process in support of a science-based approach to mosquito control that focuses on protecting humans from mosquito-borne diseases while simultaneously minimizing the environmental impacts of mosquito control through the use of Integrated Pest Management (IPM). At the same time, MACC remains concerned regarding the environmental impacts of mosquito control activities. According to the 2007 annual reports for the nine mosquito control districts, over 106 linear miles of streams were "cleaned" and thousands of pounds of pesticides were applied. However, no information has been presented documenting the effects of these activities (except some limited information provided from the 2006 aerial spraying).

The documents submitted to date to MEPA and on the State Reclamation and Mosquito Control Board (SRMCB) website have improved the availability of information regarding the general types of practices employed and the amount of activity undertaken. However, minimal information has been presented regarding what monitoring is taking place, or exactly how that information is being utilized in making operational decisions. For example, the SRMCB *Operational Response Plan to Reduce the Risk of Mosquito-Borne Disease in Massachusetts* provides for a tiered system of responses depending on the level of health risk corresponding to DPH risk categories. However, the responses identified in the plan are written in such vague and generalized language as to be entirely open to subjective interpretation. Terms such as "where necessary" or "where needed" are used to identify where and when source reduction, larvaciding, or adultciding should take place.

Monitoring and measurement of program efficacy are essential to the IPM approach. Designation of measurable thresholds triggering actions is another key element of IPM. The SRMCB and mosquito districts have indicated that they utilize monitoring to guide their activities. **MACC requests that the next round of MEPA documents filed include specific information regarding the monitoring that is being done and what triggers are employed to make decisions regarding implementation of source reduction, larvaciding, and adultciding.**

"Cleaning" of streams and ditches by mosquito control districts is a longstanding practice based on a belief that enhancing the flow of water through a waterway will reduce stagnant water and therefore mosquito breeding habitat. This is an overly simplified perspective of the functioning of wetlands and streams. Removal of streambank vegetation and natural detritus also has other effects, including impairment of habitat for fish and other mosquito predators. The response to comments on the *Massachusetts Best Management Practices [BMP] and Guidance for Freshwater Mosquito Control* added a paragraph to the document stating:

In addition to monitoring the stability of the BMPs, the MCDs will survey the project site during their standard site inspections to insure the BMP practice is effective in the short and long term. The MCDs and other state agencies will continue to work towards augmenting the post-project monitoring data they currently collect to addresses environmental concerns.

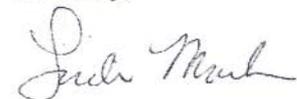
This indicates that monitoring is being done, but provides no information regarding what that monitoring consists of or what the results have been. Considering the fact that over 100 miles of streams are being altered annually, quantitative information should be provided explaining what forms of monitoring take place and summarizing the results.

Another key element of IPM is reducing sources of the pest being controlled. MACC is concerned that some of the annual reports indicate that mosquito districts do not remove tire dumps and instead annually apply pesticides to these areas. Similarly, much more could be done to work with local officials to improve stormwater sedimentation and enhance fish access through streams at culverts. These projects may be complex and require considerable coordination with other parties, but they will have long-lasting beneficial effects for both mosquito control and general environmental health. A truly IPM based program will place a strong emphasis on local source reduction through environmentally beneficial approaches. Those approaches may be more costly and challenging in the short term, but the long term societal benefits should be given at least equal weight.

MACC also requests that the next round of information filed document the extent of mosquito control activities in Priority Habitats and how that is being reviewed and conditioned under the Massachusetts Endangered Species Act (MESA). The BMP manual describes the proper procedures. We request a summary of the number of filings conducted under MESA since the BMP manual was developed, and the outcomes of those reviews, such as the number and percent of projects that were allowed or conditioned, and typical conditions applied.

In conclusion, MACC supports this continuing review process, and we look forward to the Open Marsh Water Management monitoring protocol update and the more comprehensive update that the SRMCB has stated it will file in the spring of 2009.

Sincerely,



Linda Mack
Executive Director



MEMORANDUM

TO: Ian Bowles, Secretary, EEA
ATTN: Nicholas Zavalas, MEPA Unit
FROM: Leslie-Ann McGee, Director, CZM 
DATE: December 29, 2008
RE: EEA 5027 – GEIR Update for Massachusetts Mosquito Control

The Massachusetts Office of Coastal Zone Management (CZM) has completed its review of the above-referenced Generic Environmental Impact Report (GEIR) Update for Massachusetts Mosquito Control activities, noticed in the *Environmental Monitor* dated December 10, 2008, 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 within six months of the Certificate date 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 must be provided before the Board’s mosquito control practices will be found to properly comply with MEPA.

Project Comments

As stated in the 2008 Certificate “...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.” Through the recent review of the Northeast Massachusetts Mosquito Control and Wetlands Management District’s Federal Consistency Certification for proposed OMWM activities, CZM raised similar concerns specific to mosquito control activities in estuarine (or salt) marshes.



While the Board's recent filing, noticed in the December 10, 2008 *Environmental Monitor*, focuses on best management practices (BMPs) and operational guidance for mosquito control activities conducted in freshwater wetland resource areas, work is underway to develop the information and materials for a future GEIR Update filing that will address OMWM activities. CZM would like to commend the Board and the districts for their commitment to developing the GEIR Updates in a thorough yet expeditious manner. CZM's specific interest is in the information contained in the 10-year review and evaluation of OMWM and in the specifics of revisions to monitoring practices and procedures contained in the standard operating protocols.

As stated in comments to the Board, CZM believes the 10-year review and evaluation of OMWM should contain information adequate to determine if past OMWM alterations have had the desired effects on mosquito populations and document corresponding effects on coastal resources (including fish numbers and densities, changes to salt marsh vegetation, hydrology, and birds). The report should detail the number of sites assessed, frequency monitored, parameters measured, the methods for analyzing and presenting quantitative and qualitative data, and specific findings. The report should 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.

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. The workgroup has held two meetings, with a third scheduled for January 5, 2009, and good progress has been made. While specific details for possible revisions to the monitoring practices and procedures contained in the OMWM Standards have not been finalized, it is apparent that there are some opportunities for adjustments to design and methods that will improve the rigor, statistical confidence, and use of the information collected.

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

Zavolas, Nicholas (EEA)

From: Sue Chamberlain [schamberlain@manomet.org]
Sent: Monday, December 29, 2008 2:38 PM
To: Zavolas, Nicholas (ENV)
Cc: Heidi Ricci
Subject: MEPA reivew

Hello Mr. Zavolas,

Please continue the MEPA review of mosquito control to ensure that the best possible, safest, and most effective processes are used while protecting our biodiversity to the fullest extent possible. This review allows for comment and is transparent for all concerned parties. Communication, planning and discussion are necessary for the best solutions concerning mosquito control.

Sue Chamberlain
Conservation Commissioner
Town of Kingston, MA
and

Director of Donor Relations
Manomet Center for Conservation Sciences
81 Stage Point Road
P.O. Box 1770
Manomet, MA 02345
Office: (508) 224-6521 ext. 237
Fax: (508) 224-9220

December 10, 2008

To: Mr. Nicholas Zavolas
EOEA
100 Cambridge Street
Boston, MA 02114

Fr: Martha Dansdill
Member, Swampscott Board of Health
49 Pine Hill Road
Swampscott, MA 01907
Tj_dansdill@hotmail.com

Re: Sate Reclamation Mosquito Control Board GEIR and MEPA filing – EOEEA #5027

Dear Mr. Zavoles,

(I am a member of the Swampscott Board of Health. Due to our Board's limited meeting schedule, the comments below have not been reviewed by all members of the Board. We are typically in general agreement on issues regarding mosquito control and will review the suggestions below for approval on Dec. 15.)

As a member of the Board of Health and citizen who has followed mosquito control issues closely, I would like to provide the following comments to the Generic Environmental Impact Report - EOEEA #5027.

Specifically regarding the Operational Response Plan document, Page 6, Paragraph 2, I suggest the addition of 'and local policy' following 'applicable laws' to recognize policies regarding mosquito control that may be specific to cities and towns, i.e. the Swampscott Board of Health has a 'no-spray' policy, except in the event of an emergency situation.

Also I suggest, replacing the last sentence in the abovementioned paragraph - 'The MCP Commissions consider the input and respond to questions from community official and residents' – and clarify it with 'The MCP Commissions work with the local Boards of Health to implement best practices of mosquito control to protect people from mosquito borne disease, while at the same time weighing the hazardous risk factors of pesticide exposure to persons and the environment. The MCP Commissions will provide services corresponding to a town's assessment and records of such services will be available to local Health Departments upon request.' It is my experience that the local Boards of Health oversee mosquito control in their communities and it is important to make this distinction. Record keeping is imperative in tracking successes or unanticipated problems that may arise due to control measures.

Thank you for your consideration.

Sincerely,

Martha Dansdill
Member, Swampscott Board of Health

December 30, 2008

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

Via email: Nicholas.zavalas@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 Mosquito Control Generic Environmental Impact Report (GEIR) update. Mass Audubon supports an IPM approach to mosquito control focused on the protection of human health and the environment. Mass Audubon also supports the continuation of this Massachusetts Environmental Policy Act (MEPA) review process, including the State Reclamation and Mosquito Control Board (SRMCB) proposal to submit an update regarding Open Marsh Water Management (OMWM) monitoring protocols this winter and a more complete update by the end of March, 2009 to address the scope of the February 15, 2008 MEPA Certificate. The review process to date, combined with the annual reports now available on the SRMCB website, provide information regarding operational plans and practices and the SRMCB's evaluation of the 2006 aerial spraying. As noted below, the plans provide general guidance but lack quantifiable metrics for monitoring, thresholds for action, and evaluation of results. The aerial spraying reports contain somewhat more information regarding monitoring, although limitations in the scope of monitoring conducted constrain the ability to determine environmental and human health effects. The responses to comments on the February 15, 2008 update also contains a few points warranting further clarification, particularly in regards to the definition of Integrated Pest Management (IPM).

Documentation of Monitoring

The responses to comments, operational plans, and freshwater Best Management Practices (BMP) guidance indicate that the mosquito control districts/projects (hereafter "districts") regularly perform monitoring and that they utilize the results of that monitoring in guiding their activities. Mass Audubon recommends that the next phase of MEPA review include documentation of what monitoring takes place, how results are measured, and the thresholds applied in determining what activities to undertake in response to monitoring results. This should include a summary of all forms of monitoring that the districts undertake, including:

- Larval sampling;
- Adult trapping;
- Disease testing in cooperation with the Department of Public Health (DPH); and
- Any other monitoring that the districts presently conduct.

Integrated Pest Management

Mass Audubon supports a science-based approach to mosquito control, with a focus on protection of human health and the environment. The use of Integrated Pest Management (IPM) is vital to the state's mosquito control and mosquito-borne disease management program. There are many definitions of IPM, but the general

principles include understanding and monitoring the pest targeted for control, modifying habitat to reduce populations of the pest, establishing thresholds for response, and using approaches that are most effective while minimizing risks to human health and the environment.

Mass Audubon's previous comments pointed to the definition of IPM at MGL Ch. 132B. The SRMBC's response to comments states that definition was written specifically for and applies only to IPM in a school setting pursuant to the Children and Families Protection Act. However, this is contrary to a direct reading of MGL Ch. 132B, which is titled the Massachusetts Pesticide Control Act and Section 1 which states the law's purpose:

The purpose of this chapter is to conform the laws of the commonwealth to the Federal Insecticide, Fungicide, and Rodenticide Act, Public Law 92-516, as amended, and the regulations promulgated thereunder and to establish a regulatory process in the commonwealth. The exclusive authority in regulating the labeling, distribution, sale, storage, transportation, use and application, and disposal of pesticides in the commonwealth shall be determined by this chapter.

The law applies to all pesticide use throughout the commonwealth. Section 5A states:

The department shall promote the use of biologic controls, integrated pest management, sustainable agriculture and other alternate pest control methods through education, technical assistance and research in order to reduce or eliminate, whenever possible, human or environmental exposures to chemical pesticides.

Other sections of the law also refer broadly to the use of pesticides in a variety of settings including but not limited to agricultural and utility rights-of-way uses. Section 6B-J are specific to school settings per the Children and Family Protection Act and provide additional IPM planning requirements for those settings, but do not supersede the general definition in Section 2 which applies to all pesticide uses throughout the Commonwealth. That definition specifically cites the use of monitoring and natural pest enemies to reduce reliance on pesticides, and the judicious use of the lowest risk pesticide when necessary.

The response to comments cites the role of the Pesticide Board, which is also part of MGL Ch. 132B, and concludes that "labeling and regulatory requirements ensure that pesticides do not represent unreasonable adverse effects to the public or environment...the label is the law." While it is true that all pesticides must be applied only as provided on the label, this does not supersede other legal requirements including the duty of state agencies to utilize IPM in their activities.

The important point with regard to IPM for mosquito control is that quantifiable monitoring and thresholds for action must be established. The mere reliance on a variety of methods is not IPM unless the choice of those methods is selected through monitoring of the pest and manipulation of its habitat to maximize predators and minimize the use of pesticides.

Since the filings to date indicate the districts do perform monitoring and use the results of the monitoring in their work, Mass Audubon requests that information on the existing monitoring protocols, results, and thresholds for actions be provided in the next round of MEPA review.

Freshwater BMPs

The 2007 Annual Reports for the nine mosquito districts indicate that approximately 106 linear miles of streams/ditches were cleaned that year. Some of this work was performed with hand tools, others with machinery. This work is exempt from the Massachusetts Wetlands Protection Act and involves significant alterations to waterways including the removal of shading vegetation and natural debris that is part of the natural

aquatic ecosystem and habitat for fish and other mosquito predators. In response to comments on the Freshwater BMP guidance manual the following paragraph was added to the document:

In addition to monitoring the stability of the BMPs, the MCDs will survey the project site during their standard site inspections to insure the BMP practice is effective in the short and long term. The MCDs and other state agencies will continue to work towards augmenting the post-project monitoring data they currently collect to addresses environmental concerns.

The spring 2009 MEPA filing should include specific information on post-project monitoring and a summary of results.

There is a great deal of potential for stream restoration work to be undertaken to enhance habitat for fish and other mosquito predators. Historic straightening and deepening of streams/ditches and removal of streambank vegetation impairs fish habitat and causing stream incising and sedimentation. Culverts restrict fish access to many headwater stream reaches, and municipal and highway stormwater systems discharge sediments into streams and wetlands, creating blockages and reducing water quality. All of these conditions can contribute to mosquito habitat. While projects to restore these impairments may be challenging to plan and undertake, the potential for benefits to both mosquito control and the environment is extensive. We encourage mosquito districts to work with the Division of Fisheries and Wildlife, local officials, watershed associations, and others to develop new and innovative approaches to freshwater management that are based on ecological restoration in support of fish and other mosquito predators.

Open Marsh Water Management

Massachusetts Audubon has been participating in meetings organized by the Massachusetts Office of Coastal Zone Management (CZM) on monitoring protocols for Open Marsh Water Management (OMWM) projects on salt marshes. The impetus for these meetings was comments from CZM and other groups about the lack of statistical validity of monitoring being carried out by the Northeast Massachusetts Mosquito Control and Wetlands Management District. This has made it difficult for agencies and the public to assess whether OMWM is as effective at controlling mosquitoes and as ecologically benign as generally touted. The District is currently in the process of applying for a renewal of their ACOE permit for OMWM work. A number of other mosquito control districts and state agencies are also participating in these meetings. The goal is to agree upon a set of monitoring protocols that are statistically valid and can be carried out within the budget and staff constraints of the mosquito control districts that use OMWM.

The current MEPA filing indicates that an OMWM update will be filed with MEPA this winter, presenting proposed protocols for monitoring. Mass Audubon looks forward to reviewing that filing.

Operational Plans

Two separate but related plans were filed with this GEIR update: the DPH 2008 Massachusetts Arbovirus Surveillance and Response Plan, and the SRMCB Operational Response Plan to Reduce the Risk of Mosquito-Borne Disease in Massachusetts. It is important that the mosquito control program be focused on protection of human health from mosquito-borne diseases, and the fact that these plans exist represents progress in defining the protocols for the agencies to follow. It is also helpful that the SRMCB plan utilizes the same Risk Category tiers as those designated by DPH.

However, the SRMCB operational plan contains language that is too vague and generalized to ensure consistent responses to similar levels of health threat. Subjective terms such as “where necessary” or “where needed” and “if feasible” are used to indicate where and when source reduction, larvaciding, or adulticiding should take place. Specific, measurable thresholds should be included in the plan. The DPH plan indicates specific thresholds that

trigger escalation from one tier of risk category to the next (e.g. "Sustained WNV activity for 2 or more weeks in birds and/or mosquitoes (<15 mosquito isolates from routine collections)"). Responses in both the DPH and SRMCB plans are not so clearly defined. How do staff determine where larvicide or adulticide applications are "necessary" as per the plan? An example threshold would be something like, if X # of WNV positive mosquitoes are found then truck based ULV spraying will be conducted within Y distance of the positive detections in areas where human population density is at or above Z. This is just an example and the exact parameters of monitoring protocols and action thresholds can be proposed by the SRMCB and the districts. The plans already indicate that the districts use monitoring to make their decisions, so what is needed is documentation of how those decisions are made

Rare Species and Massachusetts Endangered Species Act

The Freshwater BMP guidance manual acknowledges that mosquito control work within Priority Habitat of state-listed species requires review by the Massachusetts Natural Heritage and Endangered Species Program (NHESP) under the Massachusetts Endangered Species Act (MESA). MESA also applies to other mosquito control activities in Priority Habitat such as pesticide applications. In July, 2007, a Memorandum of Understanding was signed between the Division of Fisheries and Wildlife and the Department of Agricultural Resources describing their respective legal authorities and responsibilities and providing for procedures to facilitate the appropriate reviews of mosquito control work in areas subject to MESA.

The next MEPA update should include a copy of this MOU, or if it is no longer in effect, information on the current procedures. Information should also be presented regarding filings of mosquito district plans for work in areas subject to MESA and a summary of the outcome, e.g. # and % of proposed activities allowed vs. denied, and typical conditions imposed for various applicable categories of rare species (e.g. fish, odonates, lepidoptera, mussels, etc.). At a minimum this data should be provided for the period beginning July 2007 through the end of 2008, earlier if available and later if the MEPA filing is delayed beyond the presently anticipated March 2009 timeframe.

2006 Aerial Spraying

Mass Audubon supports the DPH *Massachusetts Arbovirus Surveillance and Response Plan*. DPH, as the state public health authority, should be the primary lead agency in making decisions regarding aerial spraying. We appreciate the cooperative approach they have taken in working with the SRMCB and other state agencies in evaluating disease risk levels and appropriate responses. DPH also provides substantial support to the mosquito control program in testing of mosquito samples.

The two memos attached to the current MEPA update regarding the 2006 aerial spraying program refer to a few reports of human illnesses associated with the aerial spraying. I am attaching a DPH memo providing further details. The memo concludes:

In summary, MDPH received twelve plausible reports of pesticide-related illnesses during August 2006. All twelve of the incidents were self reported and acute health outcomes including: rashes, respiratory irritation, sore throat, nausea and temporary facial numbness. No emergency room visits and or hospitals admissions were reported in relation to the aerial applications. If aerial applications are warranted in the future, application schedules must be consistent with disseminated public messages.

The SRMCB memos on the aerial spraying concluded that there were no objective or significant impacts to the environment observed due to the spraying. However, the monitoring that was conducted was very limited and did not include monitoring for the types of effects most likely to be expected from such a spraying operation. Mass Audubon received several calls from concerned citizens regarding effects they believed were associated with the spraying. Our attempts to contact agencies for follow up indicated that there was no plan or staff in place to

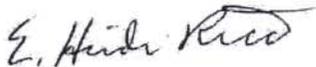
immediately respond to such concerns or to gather samples and have them tested. Organic farmers expressed concerns to us regarding the adequacy of exclusion areas and the lack of follow up testing to confirm that they had not received drift. Furthermore, the SRMCB memos indicate that in at least one instance a rare species habitat that had been designated for exclusion was inadvertently sprayed. It is unclear whether there was any monitoring or follow up regarding potential effects of that spraying.

Mass Audubon recognizes that there will always be limitations on resources available for environmental monitoring. Nevertheless, we strongly recommend that the protocols for environmental monitoring during aerial spraying events be reviewed, that the Division of Fisheries and Wildlife provide recommendations for monitoring, and that the public be afforded an opportunity to review the entire monitoring protocol through the MEPA process. The information presented in the current MEPA update is not packaged in a way that enables an understanding of what all the aerial spraying monitoring protocols are, so it is difficult to comment at this time. Meanwhile, no conclusions regarding the environmental impacts or lack thereof from the 2006 aerial spraying can be reached based on the limited information presented.

Conclusion

Mass Audubon appreciates this opportunity to review and comment on the latest update regarding mosquito control program plans and activities. We support the continuation of the review process, including the OMWM committee and report that will be filed soon, and the SRMCB's hiring of a consultant to assist with preparation of materials in response to the February 15, 2008 Certificate. We recommend that the focus of the review be on documenting existing monitoring protocols and action thresholds, and refining these in regards to the ongoing work of the program. We also support continued filing of annual reports and posting of that information on the SRMCB website. We recommend that there be an ongoing mechanism for public input into the program.

Sincerely,



E. Heidi Ricci
Senior Policy Analyst

Attachment: DPH memo, Sept. 26, 2006, Pesticide Related Illness Surveillance: Summary Report

cc: Mark Buffone, SRMCB
Alisha Bouchard, SRMCB
Gary Gonyea, DEP/SRMCB
Ann Monnelly, DCR/SRMCB
Scott Soares, DAR
Tom French, Dept. of Fish and Game
Suzanne Condon, DPH



MassWildlife

Division of Fisheries & Wildlife

Wayne F. MacCallum, *Director*

14 January 2009

Ian A. Bowles, Secretary
Executive Office of Environmental Affairs
Attention: MEPA Office
EOEA No. 5027
100 Cambridge St.
Boston, Massachusetts 02114

Project Name: Massachusetts Best Management Practices and Guidance for Freshwater Mosquito Control
Proponent: MA Department of Agricultural Resources, State Reclamation and Mosquito Control Board
Location: Statewide
NHESP Tracking No. 07-23830

Dear Secretary Bowles:

The Natural Heritage & Endangered Species Program (NHESP) of the Massachusetts Division of Fisheries & Wildlife has reviewed the MA Department of Agricultural Resources' draft Massachusetts Best Management Practices (BMPs) and Guidance for Freshwater Mosquito Control, the additional materials sent on 10/24/08 to the Secretary as part of the Updated EIR and would like to offer the following comments.

The additional materials from 10/24/08 commit to providing the NHESP's amended paragraph relative to the MESA, included again with this letter for efficiency. However, the EIR Update, the NHESP finds that there remain substantive materials lacking. We repeat our comments from our letter dated January 22, 2008 to this end:

In response to the 1998 Generic Environmental Impact Report, the Secretary of EOEA stated, "The SRMCB and, the GEIR acknowledge that additional study and research work is necessary to truly document the effectiveness of mosquito control techniques and their impact on the environment, particularly as they relate to freshwater project[s]." The NHESP finds that this lack of research and study remains nine years after the GEIR was completed. It is still unclear if the proposed methods are effective at controlling mosquito populations, rather than simply mitigating nuisance issues. The BMP's section "E. Monitoring Project Effectiveness" is only focused on whether or not the soil stability of the site has been maintained after project work. There continues to be a lack of effort to document the post-project mosquito populations that can be tied to the project work, no effort to monitor invasive plant community responses to the disturbance (as needed), and no monitoring at sufficiently frequent or long-term periods to understand the actual effectiveness of the mosquito control effort nor the environmental impacts. We think there is a necessary and important role for the MCDs to implement monitoring programs that help refine and inform mosquito control practices in Massachusetts that can be

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Division of Fisheries and Wildlife

Field Headquarters, One Rabbit Hill Road, Westborough, MA 01581 (508) 389-6300 Fax (508) 389-7891

An Agency of the Department of Fish & Game

demonstrated to affect mosquito populations in ways relevant to human health and the health of the Commonwealth's biodiversity.

The NHESP notes that our staff member Misty-Anne R. Marold (formerly Ralston), when at the University of Massachusetts-Amherst, helped develop an earlier draft version of these BMPs.. We appreciate the opportunity to comment on this project.

Sincerely,

Thomas W. French, Ph.D.
Assistant Director

Revised Section 2. b.

The Massachusetts Endangered Species Act (M.G.L. c. 131A) and its implementing regulations (MESA, 321 CMR 10.00) establish procedures for the listing and protection of state-listed plants and animals. The MESA regulations include project review filing requirements for projects or activities that are located within a *Priority Habitat of State-listed Rare Species* ("*Priority Habitat*"). The MESA is administered by the Natural Heritage and Endangered Species Program (NHESP) of the MA Division of Fisheries & Wildlife, and prohibits the "take" of state-listed species. The "take" of state-listed species is defined as "in reference to animals, means to harass, harm, pursue, hunt, shoot, hound, kill, trap, capture, collect, process, disrupt the nesting, breeding, feeding or migratory activity or attempt to engage in any such conduct, or to assist such conduct, and in reference to plants, means to collect, pick, kill, transplant, cut or process or attempt to engage or to assist in any such conduct. Disruption of nesting, breeding, feeding or migratory activity may result from, but is not limited to, the modification, degradation or destruction of Habitat" (321 CMR 10.02).

MCDs should consult the most recent edition of the *MA Rare & Endangered Species Habitat Atlas* to determine if a proposed project will occur within *Priority Habitat* and the relevant NHESP guidance information to determine if direct filing with pursuant to the MESA is required.

If a filing with the NHESP is required, filing should consider access, egress, spoil/soil deposition or spreads or other activities related to the project occur within *Priority Habitat*, then the MCD should send the required information to the NHESP for review pursuant to the MESA. In general, the Site Plan should include sufficient detail and mapping to clarify the location of all work areas and the form of work (eg, mechanical work or hand work).

- Within 30 days of receiving a filing, the NHESP will provide a response letter indicating whether or not the submission is complete. If the submission is complete, the NHESP will provide a letter determining if the project will result in a "take" within 60 days of the date of posting of the first letter. (321 CMR 10.18)
- In this letter, the NHESP will determine whether or not a project, as currently proposed, will (a) avoid a "take" as proposed, or with conditions and may proceed without further review; or (b) will result in a "take" of State-listed Rare Species and cannot proceed as proposed (321 CMR 10.18).
- If a project is determined to result in a "take" then it may be possible to redesign the project to avoid a "take". If such revisions are not possible, then projects resulting in a "take" may only be permitted if they qualify for a MESA Conservation & Management Permit (321 CMR 10.23).
- The *MA Rare & Endangered Species Habitat Atlas* is currently available as a bound book, a compact disk with electronic viewer technology, as downloadable data for ArcView from MassGIS, and online using the MassGIS viewer. Details are available at:
http://www.mass.gov/dfwele/dfw/nhesp/publications/nhesp_pubs.htm
- The NHESP's mailing address for MESA reviews can be found at:
http://www.mass.gov/dfwele/dfw/nhesp/regulatory_review/reg_review_contacts.htm

Zavolas, Nicholas (EEA)

From: Laura Mattei [lmattei@svtweb.org]
Sent: Monday, December 29, 2008 9:12 AM
To: Zavolas, Nicholas (ENV)
Cc: Bouchard, Alisha (AGR)
Subject: Mosquito Control

December 29, 2008

Secretary Ian A. Bowles
EOEA, Attn: MEPA Office
Nicholas Zavolas, EOEA No.5027
100 Cambridge Street, Suite 900
Boston MA 02114

Dear Mr. Bowles:

As a regional land trust in MetroWest Boston, we have been very concerned about mosquito control activities that have known and potential environmental and health impacts. Mosquito control activities should be held to the same regulatory standards and environmental review as other activities, and; even more so, since their impacts can be so far reaching. Too often within our communities, we observe people using human health concerns of mosquito born illness as an excuse to spray (control mosquitos) principally because they find them to be a nuisance. Granted, mosquitos are a nuisance and can be annoying. However, the human health risks of mosquito-born illness are extremely low - based on information found on the Mosquito Control District Website.

Sudbury Valley Trustees (SVT) supports the ongoing review process and the hiring of a consultant to enable SRMCB to complete the required update.

We believe that it is important to implement standardized monitoring systems along with Best Management Practices that optimize effectiveness and minimize environmental side effects. This requires funding and tools such as GIS based mapping to analyze management techniques applied and trends over time on a geographic basis. Additionally, we support inland stream restoration projects such as culvert widening, restoration of channelized streams, and stormwater system upgrades to reduce mosquito breeding areas and improve habitat for fish and other mosquito predators.

Sincerely,

Laura Mattei
Director of Stewardship
Sudbury Valley Trustees
18 Wolbach Road Sudbury, MA 01776
978-443-5588, ext. 34

12/29/2008

Zavolas, Nicholas (EEA)

From: Tim Fohl [tfohl@tigco.com]
Sent: Thursday, December 04, 2008 8:46 AM
To: Zavolas, Nicholas (ENV); Bouchard, Alisha (AGR)
Cc: Warren Lyman; Nancy Fohl
Subject: mosquito control comments

Secretary Ian A. Bowles.

Although I am a member of a committee of the Carlisle Conservation Commission the following comments are my personal opinion and do not represent a position of the Commission.

In my opinion spraying for mosquitos is a mistake unless there is a clear epidemic. We have lived adjacent to a large swamp for about forty years. We have watched the ecology change soon after spraying was halted until the present. There has been a dramatic change but it has taken many years and is still going on. My sense is that we are at the stage where some species come and some go for various reasons but earlier there was a very clear evolution toward greater diversity and quantity of the animal life. I haven't followed the vegetable department as closely. One striking effect was that at first the mosquitoes were unbearable but fairly suddenly about ten years ago the mosquito population collapsed. They aren't completely absent and this past year they were worse than usual but it is a lot better than the spray days and their aftermath. It took thirty years to achieve a natural control for them and I would be very reluctant to go back.

Best regards,

Tim Fohl

tfohl@tigco.com
Carlisle, MA
978 371 0194

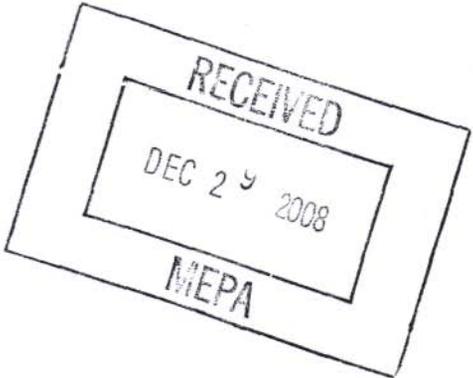
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WRENTHAM CONSERVATION COMMISSION
79 SOUTH STREET, WRENTHAM, MASSACHUSETTS 02093
508-384-5417

December 18, 2008

Secretary Ian A. Bowles
EOEA, Attn: MEPA Office
Nicholas Zayolas
100 Cambridge Street, Suite 900
Boston MA 02114



Re: EOEA No. 5027: GEIR update for SRMCB program

Dear Sirs,

The Wrentham Conservation Commission would like to recommend the hiring of a consultant to enable SRMCB to complete the required update to the Generic Environment Impact Report (GEIR), which would generate more information on the effects of mosquito control practices on mosquitoes, human health, and the environment. The Commission also suggests that MEPA work to develop appropriate monitoring based upon Best Management Practices so as to minimize environmental side effects. Finally, with new stormwater regulations coming online, the Commission would like to see recommendations supporting inland stream restoration projects which would reduce mosquito breeding areas while improving habitat for fish and wildlife.

With ever-increasing technical information becoming available, as well as an increase in the incidence of mosquito-borne disease, we believe that such an update is important to protect the health and safety of the Commonwealth's citizens, as well as that of its environment.

Respectfully submitted,

Wrentham Conservation Commission
Leo Immonen, Chairman

RESPONSE TO COMMENTS

This Response to Comments is submitted as requested by the Certificate of the Secretary of Environmental Affairs issued on January 16, 2009 for the Mosquito Control Program GEIR update EOEEA# 5027. A copy of the Secretary's Certificate is included at the end of this document.

The following Section responds to comment letters from state government agencies, local municipal officials, private organizations and individuals received by the Secretary regarding the materials filed on October 24, 2008

All letters have been assigned an abbreviation, listed below in Table 2-1. Specific comments within each letter specific to the materials filed on October 24, 2008 are noted in the margin with this abbreviation and a sequential numbering. Preceding each letter is a listing of comments accompanied by a response.

Table 2-1 Comment Letters Received after Oct 24, 2008 Filing

| Commenter | Abbreviation |
|---|---------------------|
| MassAudubon | MA |
| Jones River Watershed Association, Inc. | JRWA |
| Alexandra Dawson | AD |
| Massachusetts Association of Conservation Commission | MACC |
| Massachusetts Coastal Zone Management | CZM |
| Manomet Center for Conservation Services | MCCS |
| Town of Wrentham, Conservation Commission | WCC |
| Tim Fohl | TF |
| Martha Dansdill | MD |
| Sudbury Valley Trustees | SVT |
| Curtis Turner | CT |
| Natural Heritage and Endangered Species Program | NHESP |

MASSAUDUBON

MA.01 The responses to comments, operational plans, and freshwater Best Management Practices (BMP) guidance indicate that the mosquito control districts/projects (hereafter "districts") regularly perform monitoring and that they utilize the results of that monitoring in guiding their activities. Mass Audubon recommends that the next phase of MEPA review include documentation of what monitoring takes place, how results are measured, and the thresholds applied in determining what activities to undertake in response to monitoring results. This should include a summary of all forms of monitoring that the districts undertake, including Larval sampling, Adult trapping, Disease testing in cooperation with the Department of Public Health (DPH), and any other monitoring that the districts presently conduct.

The Board supports the rationale that any intervention is based upon objective indicators. Monitoring is currently documented by the MCPs. A monitoring document has been completed that includes and addresses many of the concerns stated above which is submitted in this filing to MEPA.

MA.02 The important point with regard to IPM for mosquito control is that quantifiable monitoring and thresholds for action must be established. The mere reliance on a variety of methods is not IPM unless the choice of those methods is selected through monitoring of the pest and manipulation of its habitat to maximize predators and minimize the use of pesticides.

As defined by Mass General Law Chapter 132 B MCPs are using IPM. Further, thresholds have been established pursuant to the approved current GEIR. The Board disagrees that stricter thresholds are necessary; however, the method and timing of interventions are by necessity based upon complex ecological and epidemiological considerations, and tempered by economic, geographical, seasonal parameters, and the values of local communities. Hence, an ideal IPM program would stress flexibility over a steadfast formulaic approach using rigid thresholds.

MA.03 Since the filings to date indicate the districts do perform monitoring and use the results of the monitoring in their work, Mass Audubon requests that information on the existing monitoring protocols, results, and thresholds for actions be provided in the next round of MEPA review.

As indicated above, the Board supports the rationale that any intervention is based upon objective indicators. Monitoring is currently documented by the MCPs. A monitoring document has been completed that includes and addresses many of the concerns stated above which is submitted in this filing to MEPA. In addition, such data are available from the MCPs upon request.

MA.04 *The spring 2009 MEPA filing should include specific information on post-project monitoring and a summary of results.*

The Board agrees that the MCPs should summarize the kinds of post-project monitoring undertaken, and indicate the goals they hope to attain. A monitoring document has been completed that includes and addresses many of the concerns stated above which is submitted in this filing to MEPA.

MA.05 *We encourage mosquito districts to work with the Division of Fisheries and Wildlife, local officials, watershed associations, and others to develop new and innovative approaches to freshwater management that are based on ecological restoration in support of fish and other mosquito predators.*

MCPs do, indeed, work with DFW, Army Corps of Engineers, local conservation commission representatives and others to pursue activities that are ecologically sound. Planning boards, Boards of Health, DPWs and various municipal officials are also consulted. In fact, these organizations and agencies have relied upon the expertise of the MCPs and officials from many of the aforementioned groups serve on the MCPs Commissions. The Board and the MCPs continually reached out to these organizations and others; such as, the American Mosquito Control Association (AMCA) to find new and innovative approaches.

MA.06 *It is important that the mosquito control program be focused on protection of Human health from mosquito-borne diseases.*

The Board does not agree that mosquito control programs be focused exclusively on the protection of human health from mosquito-borne diseases. Quality of life is important to many citizens in Massachusetts and annoyance alleviation from mosquitoes is important to them. It is important to recognize that the line between nuisance and vector (disease carrier) is very close due to the fact that many of the perceived nuisance mosquitoes have been scientifically shown to harbor and vector infectious pathogens such as West Nile virus (WNV) and Eastern Equine Encephalitis virus (EEEV). It should be pointed out that the time of the year when mosquitoes create the greatest “nuisance” is also the time of year when viral transmission may occur. The fact of the matter is that no matter what program activity is utilized by the MCPs; these programs serve a vital public health function.

MA.07 *However, the SRMCB operational plan contains language that is too vague and generalized to ensure consistent responses to similar levels of health threat. Subjective terms such as "where necessary" or "where needed" and; "if feasible" are used to indicate where and when source reduction, larviciding, or adulticiding should take place. Specific, measurable thresholds should be included in the plan. The DPH plan indicates specific thresholds that trigger escalation from one tier of risk category to the next (e.g. "Sustained WNV activity for 2 or more weeks in birds and/or mosquitoes (<15 mosquito isolates from routine collections")). Responses in both the DPH and SRMCB plans are not so clearly defined. How do staffs determine where larvicide or adulticide applications are "necessary" as per the plan? An example threshold would be something like, if X # of WNV positive mosquitoes are found then truck based ULV spraying will be conducted within Y distance of the positive detections in areas where human population density is at or above Z. This is just an example and the exact parameters of monitoring protocols and action thresholds can be proposed by the SRMCB and the districts. The plans already indicate that the districts use monitoring to make their decisions, so what is needed is documentation of how those decisions are made.*

The Board needs to point out that in both non-emergency and emergency situations (similar to the scenario above), no recipe or finite plan exist; that especially in an emergency situation, the plan(s) need to be flexible enough to permit prudent and appropriate responses as the situation unfolds. The Board plan is in fact an operation plan that kicks in after the DPH plan triggers risk category. These thresholds or triggers are illustrative, not set in stone. The expectation that action levels should be rigidly defined is unwise and inappropriate. Whereas a simplistic ‘if X then Y’ approach may be fine for defining certain activities; such as, temperature and wind thresholds for application of adulticides, it is inadequate for directing actions when weighing complex issues such as responding to high virus levels in biting adult mosquito populations. This is particularly true when the full desired complement of data are lacking, as is often the case due to the fast evolving nature of an arbovirus epidemic.

MA.08 *The next MEPA update should include a copy of this MOU (between Mass DFW and DAR), or if it is no longer in effect, information on the current procedures. Information should also be presented regarding filings of mosquito district plans for work in areas subject to MESA and a summary of the outcome, e.g. # and % of proposed activities allowed vs. denied, and typical conditions imposed for various applicable categories of rare species (e.g. fish, odonates, Lepidoptera, mussels, etc.). At a minimum this data should be provided for the period beginning July 2007 through the end of 2008, earlier if available and later if the MEPA filing is delayed beyond the presently anticipated March 2009 timeframe.*

The Division of Fisheries and Wildlife (“DFW”) and the Department of Agricultural Resources (“DAR”) entered into a Memorandum of Understanding (“MOU”) in July 2007. The purpose of the MOU was to identify the separate and overlapping jurisdictions of the two agencies relative to activities associated with mosquito control. The MOU established a cooperative communication pathway between the agencies and identified timelines for the production of several items. The MOU is attached with the 2nd EIR update.

For the purposes of the MOU, the DFW committed to the annual production of a GIS mapping product indicating areas where particular mosquito control activities could harm state-listed species subject to the MA Endangered Species Act (the “MESA”). For each mosquito control activity, conditions are generated that would ensure that the work could proceed without a “take” and which species/site require site-specific review. For example, the DFW would require adherence to certain timing restrictions for work in rare turtle habitat tailored to each turtles particular life-history or require site specific review for certain rare plants.

The DFW and DAR have implemented the GIS mapping component of the MOU for the 2007, 2008 and 2009 mosquito control season. Activities considered in the GIS mapping products include adult & larval mosquito monitoring and surveillance, *Bacillus thuringiensis* var. *israelensis* “BTI” application, methoprene application within storm-water structures, hand or truck-based adulticide use, and hand or machine ditch maintenance. Activities addressed only through individual site-specific review includes any work on a coastal beach, any work where nesting state-listed shore birds are observed, any aerial application of adulticide, and all culvert replacement/repair. For a small number of endangered state-listed species, any work must be individually reviewed by the Division. For certain activities, work on roads not found in the April 2007 MassGIS Road Layer must be individually reviewed

Prior to creating the annual GIS mapping product, the DFW consults with the Mosquito Control projects to determine if there will be any changes to the standard methods for control, timing or frequency of control, use of new pesticide, or other factors necessary to be considered as part of the MESA review of Mosquito Control activities.

MA.09 *We strongly recommend that the protocols for environmental monitoring during aerial spraying events be reviewed, that the Division of Fisheries and Wildlife provide recommendations for monitoring, and that the public be afforded an opportunity to review the entire monitoring protocol through the MEPA process. The information presented in the current MEPA update is not packaged in a way that enables an understanding of what all the aerial spraying monitoring protocols are, so it is difficult to comment at this time. Meanwhile, no conclusions regarding the environmental impacts or lack thereof from the 2006 aerial spraying can be reached based on the limited information presented.*

The Board has developed a comprehensive operational plan. This document describes the role and activities of the State Reclamation and Mosquito Control Board (SRMCB) to respond operationally to the threat of mosquito-borne diseases in Massachusetts such as EEEv and West Nile Virus (WNV).

This plan serves as a companion document to the MDPH Arbovirus Surveillance and Response Plan, both of which were submitted to MEPA. Currently, these documents categorize the roles of the key agencies responsible for characterizing risk and planning operational response. Moreover, the operational plan provides protocols for evaluating efficacy and environmental impacts of an intervention such as aerial adulticide applications. These protocols include, but are not limited to, water quality sampling, honeybee monitoring, biocontrol sampling for macro invertebrates, and cranberry residue monitoring. In addition, both MassDFW and MassDMF can conduct field observations to document any fish kills.

Additional and more detailed monitoring protocols for these events could be considered for adoption and improvement if they are valid, justifiable and attainable. With this in-mind, the Board strongly believes that adequate environmental monitoring data were gathered after the 2006 emergency aerial applications and that this data clearly indicate that no significant environmental impacts occurred.

JONES RIVER WATERSHED ASSOCIATION

JRWA.01 *The documents submitted by the SRMCB do not provide any cost/benefit analysis to show that the \$7+ million spent by the districts in 2007 provide the best alternative for managing mosquitoes in the Commonwealth.*

The Board agrees that there is no formal cost/benefit analysis in place; however, over 50% (193 municipalities) are member communities. This

participation level attests to the public's desire and need for mosquito control. In fact, if a municipality decides not to participate, they can vote out of membership which is quite rare. Additionally, the funds for mosquito control services originate from state local aid distributions and assessments are defined by a formula via the enabling acts of legislation that established the MCP.

Member communities recognize the importance of mosquito control services which can enhance the quality of life and protect the public health.

In addition, there is public scrutiny of the MCP budgets which are reviewed and approved by their respective Commissions along with further oversight conducted through the Board.

JRWA .02 *An alternative expenditure to a round of truck mounted or helicopter spraying might be helping the schools to set up dragonfly larvae nursery and begin a biological control program that would serve two functions—education and inclusion of biologically integrated controls. Or, alternatively, the town could be assisted with implementing a trapping program surrounding its Blackwater swamp Opachinski playing fields (as an example)—to set up more sustainable and long lasting controls rather than engage in a program of repeated spraying of a sensitive ecological area.*

The suggestion [that release of dragonflies could measurably reduce mosquito populations regionally] is not supported by science. Nonetheless, the educational value to students is undeniable; however, it is unclear as to what JRWA anticipates from a trapping program. Additional traps might be of some value for surveillance purposes, but these monitoring devices (traps) would not be expected to serve as a meaningful means of intervention.

JRWA .03 *We are concerned that PCMCP utilizes pesticides (Altosid XR briquets for catch basin control) and Anvil 10 + 10 in our area. EPA expresses concern that the briquet form of Altosid can harm estuarine systems; and Anvil 10 + 10 should not be used near water or when bees are flying. Yet we really know nothing about how and where these products are used, and we request a public repository for easy access.*

The Board would point out to the commenter statement that there are concerns that PCMCP utilizes pesticides such as Altosid XR briquets for catch basin control is inaccurate. The Plymouth County Mosquito Control Project does not utilize Altosid XR briquets that last 150 days in the basin. The project treats each basin in the county once a year using 7 grams of Altosid WSP that last 30 days or the majority of basins are treated with Altosid Pellets (less than 7 grams) that lasts 30 days in the basin.

Also, the EPA concerns mentioned in the JRWA.03 comments are difficult to address without actually seeing the context in which they were made. One can state; however, that U.S. EPA's concerns did not prevent the Agency from registering its use in these natural water systems. The Agency conducts extensive risk assessments and modeling in order to register such products and did indeed register Altosid products for use in estuaries. In Massachusetts, Altosid is not commonly applied directly to these brackish water systems. It is commonly used in catch basins and it is one of the least intrusive; most effective and economical means of reducing the larval development of mosquitoes that are suspected to vector WNV. Methoprene, the active ingredient in Altosid products, is an extremely short-lived chemical and use in catch basins does not pose a significant risk to bodies of water receiving such outflow. It is legal to use for this purpose, and the overwhelming body of data supports its continued use. As far as the request for a public repository records, MCPs upon reasonable request can provide this information. Over the past 2 years, the Board has requested that MCPs complete annual reports and are posted on the Board's website for public review.

Anvil 10 +10 is typically applied when bees are least active. Furthermore, in Massachusetts, mosquito control adulticides are primarily used in residential and urban settings via specialized ground application equipment; therefore, reducing exposure over and around water bodies. Nonetheless, analytical results of waters tested for the presence of Sumithrin, after the 2006 aerial spray, confirm that this material was below the limits of detection.

JRWA .04 *More importantly, however, we request that the Water Quality Sampling and Biomonitoring Plans that DEP has prepared for aerial chemical applications be employed on a seasonal basis during routine chemical applications to water environments such as Blackwater Pond, Stony Brook and Jones River; and in stream/wetland environments that receive drainage from treated catch basins.*

Extensive field and laboratory work document that the movement of methoprene does not move in detectible or significant amounts.

In the past, water quality and biological sampling conducted by MassDEP has been initiated and targeted in areas where spraying activities were known to be targeted. Developing and carrying out a plan without this knowledge is resource intensive even without the added burden of expanding the program to year round/seasonal analysis in multiple areas.

Presently MassDEP has only one biologist in its monitoring program that is charged with conducting statewide sampling to meet federal commitments. As such, sufficient resources are not available to conduct existing field work and testing let alone an expansion of the program on a regular basis. If it is determined that an on-going program is necessary to achieve the goals of the program, the Board agrees with MassDEP who suggests that an alternative means to fund activities, such as a contingency fund, be established to either hire the necessary personnel or alternatively hire a consultant to conduct these activities.

JRWA .05 *In Appendix 5 (of the SRMCB Operation Response Plan October submission to MEPA) Water Quality sampling for Mosquito control Aerial Chemical Application DEP takes note (#3) "our review of sumithrin (Anvil 10+10) has a high non-target toxicity potential to aquatic life, particularly fish." We also note that following the August 8th 2006 aerial application that PBO (synergist) levels in Jones River were found at 0.10 ug/L indicating that with the ULV application reportable concentrations were found. Further, despite SRMCB claims to the contrary, JRWA reported a significant die-off of mud crabs in the Jones River estuary the morning of August 9th 2006, and two of our members reported overnight loss of one bee hive each.*

The Board strongly disagrees with this comment. Based on the risk assessment described above for aquatic toxicity of PBO, it can be concluded with great certainty that the PBO concentration level of 0.1 µg/L (which is 2,300 times lower than the most sensitive acute lethal toxicity level for invertebrates) could not have caused a die-off of mud crabs as observed in the Jones River estuary. The occurrence of this die-off event one day after the aerial application should therefore be considered to be a coincident. See description of risk characterization by DAR chemist below.

Risk Characterization for piperonyl butoxide (PBO) at the observed levels in the Jones River

1. Acute toxicological endpoint values for aquatic organisms ¹:

Fish: LC₅₀ = 3.94 – 6.12 mg/L

Invertebrates: LC₅₀ = 0.23 – 0.51 mg/L

2. Risk characterization by Risk Quotient (RQ) method:

$$RQ = \text{Exposure} / \text{Toxicity} = \text{Environmental concentration} / LC_{50} \text{ value}$$

Using the most sensitive endpoint values and the measured environmental concentration of 0.1 µg/L, the following RQ values can be calculated:

Fish: RQ = 0.000025

Invertebrates: RQ = 0.00043

Expressed in another way: The level of 0.1 µg/L PBO is **2300 times** lower than the level that would be lethal to 50% of the most sensitive population of invertebrates.

Comparison of RQ values to Levels of Concern (LOC) as used by US EPA to indicated potential risk to non-target aquatic organisms:

| Organism | RQ | LOC for Acute Risk | LOC for Acute Risk Endangered Species |
|---------------|----------|--------------------|---------------------------------------|
| Fish | 0.000025 | 0.5 | 0.05 |
| Invertebrates | 0.000430 | 0.5 | 0.05 |

This comparison shows that the RQ values are far below the LOC for aquatic animals in general and endangered aquatic species, indicating that a PGO level of 0.1 µg/L would not pose significant risk to these organisms.

A conservative uncertainty factor of 10 can be applied to account for interspecies and intraspecies variation in sensitivity. Applying a factor of 10 would not change the final conclusions of this risk characterization for other aquatic species.

¹ NPIC Technical Factsheet for PBO,
<http://npic.orst.edu/factsheets/pbotech.pdf>

In conclusion, JRWA report of a significant die-off of mud crabs in the Jones River estuary the morning of August 9, 2006 and insinuation that application of Anvil 10+10 was responsible is an allegation only. Without objective data or evidence, the comment is clearly an opinion and speculative as to the cause of an alleged mud crab die-off. The response in JRWA.03 can address the comments regarding non-targets such as bees and fish. The use of Anvil 10+10 ULV was selected only after careful cross state agency review by the MDPH, MDEP, and MDAR. It was concluded that it would not cause significant unreasonable adverse effects on the environment while at the same time reducing the number of mosquitoes infected with EEEV.

JRWA .06 *We are particularly dismayed by the lack of objective analysis of that program and offer the following comment on the SRMCB "Final Report for EPA File Symbol: 06-MA-06" dated March 6, 2007. (7 bullets are highlighted)*

The Board strongly disagrees with this comment. Objective analyses of the intervention by MDPH and MCPs argue that the program was effective in suppressing adult mosquito populations and abated multiple human cases of EEEv. Because this intervention was performed as an emergency operation, efforts were focused mainly upon ensuring that the adulticide was applied as planned and on measuring the reduction in mosquito populations. Nonetheless, the operation did include assessment to environmental exposure including but not limited to water sampling, cranberry residue analysis, notification to beekeepers, and exclusion of specific areas including priority habitats, certified organic farms and aquaculture operations. Additionally, no fish kills were observed by MassDFW in their surveys of lakes and ponds in the treatment area.

JRWA .07 *In the response to our comment relative to the water chemistry of Blackwater pond, SRMCB misses our question relative to the loss of oxygen and low pH of pond water in the summer. Our question exists because no one is doing water quality monitoring during routine mosquito control activities. It seems entirely possible that the application of Anvil 10 + 10 might throw a stressed habitat over the edge, reduce available oxygen for fish, lower pH and have a negative cumulative impact on the environment. Our comment (JRWA 06) did not refer only to bioaccumulation—but to the accumulation of stresses on degraded environments. JRWA performed a biological assessment of Blackwater pond with DMF to measure feasibility of restoring a herring run. Can PCMCP objectively state that its activities in 2007 applying (how much ?) chemical to the pond environment, when added to the many other existing stresses, did not negatively impact the ecology of the pond or the survival of the young fish we saw gulping air on the surface? With no monitoring, there can be no answer. With no answers, there can be no progress. To have a single purpose of controlling mosquitoes without measuring impact on rest of the environment is a disservice to the Commonwealth.*

Once again the Board disagrees with the comment and did not miss the point of the previous comment. The comment alludes to the precautionary principle that mosquito control activities must be proven not to have any adverse effect before being implemented. This principle is not realistic and contrary to the mandate and accepted methods of mosquito control. One can argue that any activity in that area could be an additional stressor, including the biological assessment of the Blackwater Pond by DMF and JRWA.

The Board would point out that routine monitoring of water quality is not within the scope of any mosquito control mandate in Massachusetts. None-the-less the use of mosquito larvicides e.g. Vectobac (a.i. Bti), Vectolex (a.i. Bs) and Altosid (a.i. methoprene), is not associated with effects on dissolved oxygen levels in the treated water body. The concerns presented by JRWA are suppositions and any association with mosquito activities in general including the emergency adulticiding effort is likely a mere coincidence.

JRWA .08 *Regarding freshwater BMP, it remains a concern that although there is an attempt to provide site conditions prior to work in wetland areas that the site conditions sheet does not inventory existing conditions or reflect an understanding of the site in relation to the environment or biological function.*

JRWA does not define the kinds of data they believe are lacking or the justification for collecting those data. Many MCPs inventory conditions on site, which this information is available upon request.

JRWA .09 *JRWA believes that not enough time, money and effort is expended on public education and recruiting the public in good housekeeping to reduce the incidence of mosquito breeding. This should be the first line of defense and should be **LOUD and INESCAPABLE**. The efforts at education and source reduction appear lame and uncommitted, and is a waste of a precious resource—an informed body politic. The exception to this is the DPH efforts when an emergency impends.*

The Board agrees that public education is important; however, public education may only be useful locally in that some people will expend efforts to inspect and remove sources of mosquito develop on their own properties. One would hope the public would reduce their own contributions to mosquito abundance. The Board would point out that individuals are neither able nor empowered to perform interventions such as to apply mosquito larvicides to natural surface water system on their property or of others or on a region-wide basis in comparison to regional mosquito control programs. Hence, while education and good housekeeping are important, supported, and carried out by MCPs annually, they cannot measurably reduce risk on a regional basis. This is especially poignant when environmental conditions come together to create critical risk of mosquito-borne disease to the public.

JRWA .10 *We ask that the Secretary take a hard look at the report ("Final Report March 2007, p. 3 & 4) that discusses the effectiveness of the aerial spray program when it states: "**In non-sprayed areas, the numbers of mosquitoes increased**" p.3...the SRMCB in consultation with MMAG "speculate that this increase was due to either/both immigration from outside the spray zone and /or emergence of new*

mosquitoes." While this report is in reference to the aerial spray program of 2006, it should cause us to evaluate such broad scale programs on the regional and the local level. After all, the incidence of EEE and WNV is moving north.

The Board strongly points out that the purpose of the emergency aerial application was to truncate the mosquito population that carried the EEEv especially older mosquitoes that had opportunity to acquire the infection. The result of this intervention is to temporarily halt or disrupt the transmission dynamics of the epizootic taking place in order to protect human and animal health. The material being used is very unstable in the environment and not designed to provide residual mosquito control, in part to minimize adverse environmental effects. The Board could advise and use other more residual products which are legal for use in MA in order to provide sustained control of mosquito populations to negate the concern expressed by JRWA such as the use of Malathion in 1990.

As a result, it was not unexpected that non-sprayed areas would have mosquitoes and in fact increase due to the result of the daily emergence of mosquitoes on a site as well as dispersal of adults from adjacent areas. The Board questions the concern express by JRWA [that mosquito adulticiding somehow spreads the range of EEEv and WNV] since this constitutes speculation and is without a biological basis.

ALEXANDRA DAWSON

AD.01 *This brief note is only to encourage you to continue to monitor the work of the Mosquito Control districts and to obtain much more definitive information about what is being done and where and some proof of effectiveness. Although the districts are no doubt sincere in thinking their work is necessary, I personally doubt they would have received the total free pass under the 1972 wetlands act if more had been known about chemistry at the time. My own experience with their work was actually frightening. They were spraying uplands at night right up the walls of a religious retreat house where I was staying where the doors were open because of the summer heat and the customers were mostly elderly women. This proved to me that there are worse things in the country than saltwater mosquitoes!*

The Board appreciates the comment. MCP activities are monitored by their Commissions, the local BOH/DOH and by the Board. MCPs and the Board strive to pursue strategies and rely on products that are justified by the best available objective data and are legally acceptable. Hence, activities pursued, and products used, in 1972 have been supplanted by more acceptable ones. The Board has been informed that the area noted above is a

not an area that is routinely sprayed. In this particular case, the property owner specifically requested to be sprayed because of concern for the well-being of elderly attendees of the religious retreat. Although the Board understands that it was hot, keeping doors and windows open should not pose an unreasonable risk due to both the technology of a ULV operation and application rate of the chemical. However, the recommendation to close windows and doors and turn off air conditioners is a conservative recommendation to allay the concerns of the most sensitive people in any population. In this situation, it would have been prudent that the owner notify the retreat attendees of the impending operation that s/he requested.

MASSACHUSETTS ASSOCIATION OF CONSERVATION COMMISSIONS

MACC.01 *MACC supports the continuation of this MEPA review process in support of a science-based approach to mosquito control that focuses on protecting humans from mosquito-borne diseases while simultaneously minimizing the environmental impacts of mosquito control through the use of Integrated Pest Management (IPM)*

The Board would remind the commenter that the current MEPA process is really a special review process that brings up to date the currently approved GEIR for mosquitoes. Further, the Board does not dispute the fact that mosquito control should be based on science and believes that the current tactics and methods used by MCPs in Massachusetts are based in science. As a result, the MCPs approach ultimately ensures that mosquitoes will be controlled in an effective and environmentally sound manner.

MACC.02 *According to the 2007 annual reports for the nine mosquito control districts, over 106 linear miles of streams were "cleaned" and thousands of pounds of pesticides were applied. However, no information has been presented documenting the effects of these activities (except some limited information provided from the 2006 aerial spraying).*

MACC may be misinterpreting the information in the reports. Much of the 'cleaning' is simple hand-removal of debris, such as brush, trash, and sand. This work is done to "maintain" the flow and remove impediments in order to prevent conditions conducive for mosquito development. There certainly may be "thousands of pounds of pesticides applied"; however, such usage surely is pointing to solid formulations of mosquito larvicides. While these application rates can appear quite significant, it is important to understand

that these materials have the lowest risks for toxic effects to non-target species; such as, birds, fish, crustaceans, etc. While the MCPs do not conduct specific research on impacts to non-target species; which, is not within the scope of their mandate, it's important to note that these uses have undergone an extensive risk assessment by U.S. EPA prior to their registration. Moreover, to the best of the Board's knowledge there are no peer-reviewed/published scientific studies which document significant long-term detriment to the environment from materials and methods used by Massachusetts MCPs.

Much of the MCP "wetland management work" occurs within upland habitat. The Board is uncertain if all 106-miles cited above did indeed occur exclusively in stream habitat; however, it's important to note that MCPs do extensive maintenance work in existing ditches; which, may or may not be associated with wetlands, e.g. drainage systems, run-off, irrigation, storm water control, etc.

MACC.03 *However, minimal information has been presented regarding what monitoring is taking place, or exactly how that information is being utilized in making operational decisions For example, the SRMCB Operational Response Plan to Reduce the Risk of Mosquito-Borne Disease in Massachusetts provides for a tiered system of responses depending on the level of health risk corresponding to DPH risk categories. However, the responses identified in the plan are written in such vague and generalized language as to be entirely open to subjective interpretation. Terms such as "where necessary" or "where needed" are used to identify where and when source reduction, larviciding, or adulticiding should take place.*

The nature of arbovirus outbreaks in any year is complex and many cases unpredictable even when weather patterns and mosquito densities indicate that an outbreak is imminent. As a result, the Board works very closely with the MDPH to monitor weekly mosquitoes and conditions.

The complexity and nature of mosquito intervention activities make it difficult to offer prescribed action thresholds that would be appropriate in every condition. Flexibility is critical to ensure that efforts may be sufficiently efficacious without unnecessarily posing risk to humans or the environment. A narrowly defined menu-driven approach would fail to protect human health, and may likely initiate interventions that might have otherwise been countermanded for other reasons.

MACC.04 *Monitoring and measurement of program efficacy are essential to the IPM approach. Designation of measurable thresholds triggering actions is another key element of IPM. The SRMCB and mosquito districts have indicated that they utilize monitoring to guide their activities. MACC requests that the next round of MEPA documents filed include specific information regarding the monitoring that is being done and what triggers are employed to make decisions regarding implementation of source reduction, larviciding, and adulticiding.*

The Board has employed the services of Tufts University to address this issue. However, the Board agrees that the special review update via MEPA should summarize the surveillance strategies employed by MCPs as well as by MDPH. Nonetheless, the expectation by MACC that strict action thresholds or triggers should be defined and adopted is unrealistic in light of the laws establishing mosquito control and current levels of funding.

MACC.05 *"Cleaning" of streams and ditches by mosquito control districts is a longstanding practice based on a belief that enhancing the flow of water through a waterway will reduce stagnant water and therefore mosquito breeding habitat. This is an overly simplified perspective of the functioning of wetlands and streams. Removal of stream bank vegetation and natural detritus also has other effects, including impairment of habitat for fish and other mosquito predators.*

The Board disagrees and would request objective data to support the comment. Again, the Board would remind the commenter that the purpose of mosquito control as currently mandated is to mitigate conditions that cause the development and emergence of mosquitoes. This is a basic tenet of IPM in that the causes of the pest problem are corrected versus treating only the symptoms. IPM is based also on the principle of prevention. Therefore, the activities of the MCPs are in full compliance with these IPM fundamentals. Often, the most environmentally and economical solution is to clear the debris (e.g. IPM).

The Board feels that MACC may be misinterpreting MCP activities regarding the stream cleaning operations. The impression that MACC paints is that MCPs seek to channelize streams. To the contrary, MCP personnel strive to enhance the health of the stream as they remove brush and other wastes dumped or accumulating in these watercourses. When impediments to flow cause impoundments, mosquito developmental habitats are thereby created. The resulting mosquito problem may be abated in a non-insecticidal manner by 'cleaning' the debris, by application of larvicides to the site or utilizing adulticides to the area once mosquito adults have taken to the air.

MACC.06 *This indicates that monitoring is being done, but provides no information regarding what that monitoring consists of or what the results have been. Considering the fact that over*

100 miles of streams are being altered annually; quantitative information should be provided explaining what forms of monitoring take place and summarizing the results.

The Board would disagree with the comment that no information regarding what monitoring consists of or what results have been achieved is available. Individual MCPs collect information and this information is available upon reasonable demand. For example, some MCPs increasingly are recording digital imagery (with GPS coordinates) of the sites before and after the intervention to document the extent of the problem and the impact of the activity on the site.

However, the Board needs to point out that this type of work is, in the majority of cases, based on other information. For example, the site may not be assessed only based on larval counts but on the history of the local site in terms of flooding, and potential to become a developmental site. In many cases, this activity takes place before flooding occurs or at a time of year when mosquitoes are not developing and MCPs operationally can focus their attention and resources to it. The extent of the alteration is misinterpreted by MACC. In any mile of ‘altered’ stream, the MCP may have, in actuality, simply removed debris from a few isolated locations, some just a few linear feet long.

MACC.07 *MACC is concerned that some of the annual reports indicate that mosquito districts do not remove tire dumps and instead annually apply pesticides to these areas. Similarly, much more could be done to work with local officials to improve storm water sedimentation and enhance fish access through streams at culverts.*

The Board appreciates MACC’s concern but the enabling acts of legislation and overall mandate of mosquito control in MA does not equip or necessarily empower MCPs to handle solid waste problems including tire dumps. They may report the sites to municipal DPWs, but MCPs may merely be able to monitor and treat the sites. The Board encourages MACC to work with MCPs, local DPWs and other agencies to eliminate tire dumps, improve storm water sediment removal and enhance fish access through streams at culverts. The Board anticipates that MACC may find that MCP culvert cleaning operations actually enhance fish access at such sites. In fact, MCPs have on many occasions provided assistance and personnel to conduct such operations – though perhaps not at a scale to MACC liking. In any of the MCPs “cleaning” projects, the MCPs carry out all tires, car batteries etc. and stockpile for town removal.

MACC.08 *MACC also requests that the next round of information filed document the extent of mosquito control activities in Priority Habitats and how that is being reviewed and conditioned under the Massachusetts Endangered Species Act (MESA). The BMP manual describes the proper procedures. We request a summary of the number of filings conducted under MESA since the BMP manual was developed, and the outcomes of those reviews, such as the number and percent of projects that were allowed or conditioned, and typical conditions applied.*

The Board understands that the DFW does not require annual reporting by the MCPs or DAR of the number of projects that are conducted within the conditions supplied by the DFW. The DFW can only provide statistics on the outcome of projects that could not, initially, comply with the conditions provided since 2008 or required up-front individual site-specific review (See Table 1 below).

In order to answer the comment as to the number of projects within DFW mapped area conducted and where, each MCP would need to provide this data to the Board.

For clarity, this description uses “MCPs” to refer to all such agencies; the word “project” is used to refer to a particular proposed activity in a particular site.

The MCPs identify the physical area of a proposed project and determine if it occurs within an area requiring rare-species measures by the DFW. If so, they use the annotation in the DFW-generated GIS product in conjunction with a DFW-authored guidance document to identify the concerns and conditions for work. For example, for hand or machine ditch maintenance, the Districts would be required to comply with all timing windows specified in the DFW generated GIS product for work in wetlands. There would be no restrictions on hand maintenance of ditches except in a limited number of rare species habitats, certain areas of rare plant occurrences, and certain turtle nesting areas. There is no placing of materials in areas that appear to be turtle nesting habitat (open, sandy areas within 300 feet of wetland/river/stream) during the months of June, July, August, and September (inclusive). Spoils must be visually inspected and spoil before spreading or moving off-site.

- If the MCP *can* comply with all the conditions found within the electronic data, the project proceeds without further DFW-consultation.**

- **If the MCP *cannot* comply with all the conditions, they can contact the DFW to discuss the proposed work and alternatives, or they may choose to not pursue the project.**
- **For any project or activity requiring direct, site-specific review, the MCP would send a letter or email to the DFW with all the relevant information [a detailed map showing the access routes, travel routes, work areas,, timing of work (preferred and effective window), methods (e.g., hand cleaning, machine cleaning, backpack sprayer), staging areas, etc.]. The DFW then determines if the project can proceed and, if so, under what conditions.**

Table 1: Summary of requests and outcomes for site-specific reviews. Site-specific review is required when the proposed mosquito control project can not comply with the annual conditions to work provided to the DAR by the DFW as GIS mapping product *or* when site-specific review is always required regardless of the type of project. The information below reflects the outcome of DFW consultation with the District. The below numbers exclude state-wide aerial spraying requests and Open Water Marsh Management. *Note:* Data for 2009 is preliminary as it was generated in May 2009, well before the conclusion of the mosquito control season.

| Year | | No Impact/ No Conditions Imposed | Conditioned | Not Within Priority or Estimated Habitat |
|--|--|--|-------------|---|
| 2007 | Newbury, Site Specific Review of Salt Marsh Ditches | 2 | 0 | |
| | Bristol County Annual | 7 | 2 | |
| | Central Mass Annual | 1 | 0 | |
| | Northeastern Mass Salt Marsh Ditch Maintenance | 3 | 0 | |
| | 2007 Norfolk County Annual | 0 | 0 | 1 |
| 2007 Site Specific Reviews | | 13 | 2 | 1 |
| 2008 | Bristol County Annual | 2 | 0 | |
| | Plymouth County Annual | 1 | 0 | 1 |
| | Bristol County - Work on behalf of Town of Dartmouth | 0 | 1 | |
| | 2008 Site Specific Reviews | 3 | 1 | 1 |
| 2009 | Bristol County Annual | 1 | 0 | |
| 2009 Site Specific Reviews as of May 18, 2009 | | | | |
| Grand Total 2007, 2008, & 2009 Site Specific Reviews <i>to date</i> | | 18 | 4 | 2 |

MASSCHUSETTS COASTAL ZONE MANAGEMENT

CZM.01 *CZM's specific interest is in the information contained in the 10-year review and evaluation of OMWM and in the specifics of revisions to monitoring practices and procedures contained in the standard operating protocols. CZM believes the 10-year review and evaluation of OMWM should contain information adequate to determine if past OMWM alterations have had the desired effects on mosquito populations and document corresponding effects on coastal resources (including fish numbers and densities, changes to salt marsh vegetation, hydrology, and birds). The report should detail the number of sites assessed, frequency monitored, parameters measured, the methods for analyzing and presenting quantitative and qualitative data, and specific findings. The report should 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.*

The Board agrees that MCPs should document the short- and long-term efficacy of OMWM interventions. However, data relating to the diversity and abundance of fish and birds is not within the scope of MCPs mandate from an expertise, legislative, and funding perspective. Accordingly, the Board would petition other agencies such as CZM and others to collect and record this information to obtain corresponding effects, if any, on coastal resources.

Finally, the Board has received and attached in this 2nd filing from the Northeast Massachusetts Mosquito and Wetland Management District a document titled Open Marsh Water Management in Northeast Massachusetts from 1998-2008: A Ten Year Review.

Along with this document a working group formed in September 2008, is approaching consensus on protocols for analyzing and presenting quantitative and qualitative data and specific findings to evaluate future OMWM projects. The Board anticipates the group's collaborative effort to result in revised Standards for OMWM which will be incorporated into Massachusetts' programs.

MANOMET CENTER FOR CONSERVATION SERVICES

MCCS.01 *Please continue the MEPA review of mosquito control to ensure that the best possible, safest, and most effective processes are used while protecting our biodiversity to the fullest extent possible. This review allows for comment and is transparent for all concerned parties. Communication, planning and discussion are necessary for the best solutions concerning mosquito control. We are*

concerned that this is the first update in ten years, whereas annual updates were required.

The Board agrees that public review of these activities is important. The Board has sought to come into compliance with MEPA through the Special Review Process (SRP) in lieu of annual updates. However, from this point forward, if and when new or significant information becomes available, the Board will update as needed and anticipates that these updates will be posted on the Board's website and presented at public meetings.

MCCS should be assured that the Board, MCPs, MDPH, and other state agencies fully support the desire to ensure that the best possible, safest and most effective processes are pursued while also protecting biodiversity and the environment. The intervention strategies are reassessed by the aforementioned agencies as new information becomes available and in response to comments that are offered by other stakeholders.

TOWN OF WRENTHAM, CONSERVATION COMMISSION

WCC.01 *The Wrentham Conservation Commission would like to recommend the hiring of a consultant to enable SRMCB to complete the required update to the Generic Environment Impact Report (GEIR), which would generate more information on the effects of mosquito control practices on mosquitoes, human health, and the environment.*

The Board has contracted with Tufts University to complete and update the GEIR approved in 1998. Although it has been a little over 10 years without updates, little change may have taken place regarding the effects of mosquito control practices on mosquitoes, human health, and the environment. However, the Board would like to continue to have an agent or agents assist the Board and study mosquito control for the foreseeable future but this will be dependent on available funding sources.

WCC.02 *The Commission also suggests that MEPA work to develop appropriate monitoring based upon Best Management Practices so as to minimize environmental side effects.*

The Board points out that current MCP practices are designed to minimize environmental side effects. The Board would encourage WCC to direct their questions, concerns, and specific recommendations directly with the Norfolk County Mosquito Control Project.

WCC.03 *Finally, with new storm water regulations coming online, the Commission would like to see recommendations supporting inland stream restoration projects which would reduce mosquito breeding areas while improving habitat for fish and wildlife.*

MCP's use procedures to reduce mosquito habitat while improving fish and wildlife habitat, as appropriate and practical.

TIM FOHL

TF.01 *In my opinion spraying for mosquitoes is a mistake unless there is a clear epidemic. We have lived adjacent to a large swamp for about forty years. We have watched the ecology change soon after spraying was halted until the present. There has been a dramatic change but it has taken many years and is still going on. My sense is that we are at the stage where some species come and some go for various reasons but earlier there was a very clear evolution toward greater diversity and quantity of the animal life. I haven't followed the vegetable department as closely. One striking effect was that at first the mosquitoes were unbearable but fairly suddenly about ten years ago the mosquito population collapsed. They aren't completely absent and this past year they were worse than usual but it is a lot better than the spray days and their aftermath. It took thirty years to achieve a natural control for them and I would be very reluctant to go back.*

The Board believes that the commenter is suggesting that insecticidal applications targeting mosquitoes have affected biodiversity and dramatically changed the ecology of the large swamp during the past four decades. The Board would state that the products used against mosquitoes and the manner of their use would not likely account for any such dramatic change in the local ecology. Larvicides and adulticides are not applied so intensively or extensively to exert such a profound effect. The Board would suggest to the commenter that the changes observed are likely attributable to other causes such as weather patterns and development.

MARTHA DANSDILL

MD.01 *Specifically regarding the Operational Response Plan document, Page 6, Paragraph 2, I suggest the addition of 'and local policy' following 'applicable laws' to recognize policies regarding mosquito control that may be specific to cities and towns, i.e. the Swampscott Board of Health has a 'no-spray' policy, except in the event of an emergency situation.*

The MCPs operating under the Board already adhere to local policies and individual “no spray” exclusion requests for activities that focus mainly on

annoyance alleviation. The MCP and their commission work hard to identify these areas or other sensitive areas that require exclusion. The paragraph you refer to states *“The MCP Commissions strive to insure that the member communities receive services that are consistent with applicable laws and justified by tenets of Integrated Pest Management (IPM), public health, vector control, environmental safety, and fiscal responsibility. The MCP Commissions consider the input and respond to questions from community official and residents”.*

The last line of the paragraph is clear in intent and practice to provide services in line with the values and concerns of any community. The Board’s Operational Response Plan addresses emergency situations and therefore the additional wording would be redundant. The Board works closely with the Department of Public Health and any actions taken would trump the local municipal policy per the directives of the Massachusetts Department of Public Health.

MD.02

Also I suggest, replacing the last sentence in the abovementioned paragraph - 'The MCP Commissions consider the input and respond to questions from community official and residents' - and clarify it with 'The MCP Commissions work with the local Boards of Health to implement best practices of mosquito control to protect people from mosquito borne disease, while at the same time weighing the hazardous risk factors of pesticide exposure to persons and the environment. The MCP Commissions will provide services corresponding to a town's assessment and records of such services will be available to local Health Departments upon request.' It is my experience that the local Boards of Health oversee mosquito control in their communities and it is important to make this distinction. Record keeping is imperative in tracking successes or unanticipated problems that may arise due to control measures.

Statutorily, the Board oversees mosquito control in Massachusetts. The Board appoints Commissioners to carry out improvements on behalf of the Board at the local level. MCPs already work closely with local BOH and usually provide annual reports. Any additional questions or requests by the BOH usually is addressed and responded to by the MCP in a timely and complete manner.

SUDBURY VALLEY TRUSTEES

SVT.01

As a regional land trust in Metro West Boston, we have been very concerned about mosquito control activities that have known and potential environmental and health impacts. Mosquito control activities should be held to the same regulatory standards and environmental review as other activities, and; even more so, since their impacts can be so far reaching. Too often within our

communities, we observe people using human health concerns of mosquito borne illness as an excuse to spray (control mosquitoes) principally because they find them to be a nuisance. Granted, mosquitoes are a nuisance and can be annoying. However, the human health risks of mosquito-borne illness are extremely low - based on information found on the Mosquito Control District Website.

The Board is not aware of any evidence to suggest that mosquito control activities result in far reaching human health or environmental impacts. More importantly, and it must be pointed out that MCP's activities are held to rigorous regulatory standards and environmental review. MCP personnel must be appropriately credentialed to legally use pesticides in the Commonwealth and must comply with all state pesticide laws. Additionally, MCP's work under the aegis of the Board carrying out policies and Best Management Practices as well as base their activities on a comprehensive GEIR. The products and methods utilized by the MCP's are approved and accepted based upon literature and time tested experience of expert personnel.

Whether mosquitoes are a nuisance or otherwise, the overwhelming majority of the public support this activity which is validated by the fact that over 50% of the municipalities in Massachusetts are members of a regional mosquito control project. MCPs are mandated to abate mosquitoes using legal and standard procedures.

Ultimately, MCP activities are driven largely in response to surveillance-based data and cooperate with the local values of the communities they provide services. Today, unlike the past, with the addition of WNV which is now endemic in Massachusetts, the line between nuisance and disease vector is slim; meaning that many of the so called nuisance species are in fact capable of transmitting arboviruses. Mosquitoes in Massachusetts certainly can affect the health and quality of life for many citizens.

SVT.02 *Sudbury Valley Trustees (SVT) supports the ongoing review process and the hiring of a consultant to enable SRMCB to complete the required update.*

We believe that it is important to implement standardized monitoring systems along with Best Management Practices that optimize effectiveness and minimize environmental side effects. This requires funding and tools such as GIS based mapping to analyze management techniques applied and trends over time on a geographic basis. Additionally, we support inland stream restoration projects such as culvert widening, restoration of channelized streams, and stormwater system upgrades to reduce mosquito breeding areas and improve habitat for fish and odier mosquito predators.

MCPs and MDPH currently apply GIS-based methods for surveillance, interventions and data management whenever possible. The wetland management activities mentioned are all embraced by MCPs. Certain of these activities (e.g. culvert widening) may best be pursued by local DPWs. MCPs

advocate for the implementation of upgraded infrastructure. Many of the wetland management projects MCPs are requested to implement would benefit from these kinds of improvements.

CURTIS TURNER

CT.01 *Support inland stream restoration projects such as culvert widening, restoration of channelized streams, and storm water system upgrades to reduce mosquito breeding areas and improve habitat for fish and other mosquito predators. I strongly agree with the need for these activities, however, they cannot be accomplished without their first being a resolution of the beaver problem. Beaver activity, and an inability to timely interdict their affects with minimal delay and red tape, is the direct cause of the bulk of the problems noted or implied in this bullet. I understand on hearsay evidence (without confirmation) that New York State had various restrictions protecting beavers, but that they have been withdrawn or modified due to the deleterious impact of beavers and their ability to be self-sustaining without special protections. It is time for Massachusetts to take similar steps. I understand that the geography and size of New York is different than Massachusetts; however, Massachusetts has its own vast tracts of wilderness where beavers are, and will be, self-sustaining with little or no impact on human activity. They do not otherwise need to be protected.*

In some circumstances, beaver-created impoundments may contribute to mosquito problems, and in others they seem to be of little significance. Beaver management issues are in the purview of DFW, and the Board suggests that the commenter directly correspond with that agency.

NATURAL HERITAGE AND ENDANGERED SPECIES PROGRAM

NHESP.01 *In response to the 1998 Generic Environmental Impact Report, the Secretary of EOEA stated, "The SRMCB and, the GEIR acknowledge that additional study and research work is necessary to truly document the effectiveness of mosquito control techniques and their impact on the environment, particularly as they relate to freshwater project[s]." The NHESP finds that this lack of research and study remains nine years after the GEIR was completed. It is still unclear if the proposed methods are effective at controlling mosquito populations, rather than simply mitigating nuisance issues. The BMP's section "E. Monitoring Project Effectiveness" is only focused on whether or not the soil stability of the site has been maintained after project work. There continues to be a lack of effort to document the post-project mosquito populations that can be tied to the project work, no effort to monitor invasive plant community responses to the disturbance (as needed), and no monitoring at sufficiently frequent or long-term periods to understand the actual effectiveness of the mosquito control effort nor the environmental impacts. We think there is a necessary and important role for the MCPs to implement monitoring demonstrated to affect mosquito populations*

in ways relevant to human health and the health of the Commonwealth's biodiversity.

The Board agrees that additional study and research work is necessary. However, what agencies and how this activity is funded remains the question.

MCPs are limited in that they are funded to carry out an operational mandate. They are not established or funded as research institutions. The methods that are employed in Massachusetts are consistent with methods used nationally. Research to improve mosquito management and reduce potential environmental impacts is ongoing and the Board welcomes and adopts such advances when practical. The Board would welcome input and assistance from other agencies whose mandate is to perform environmental monitoring to assist in monitoring activities.