

**MASSACHUSETTS MOSQUITO CONTROL  
ANNUAL OPERATIONS REPORT**

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**2011** Year of Report

Date of Report: 01/10/12

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

Address: 39 Industrial Dr.

City/Town: Hyde Park, MA

Zip: 02136

Phone: 617-361-4954

Fax: SAME

E-mail: BALSCMCP1974@yahoo.com

**Report prepared by: Bruce A. Landers**

If you have a mission statement, please include it here: Provide a scientifically based, cost effective program to control mosquitoes and the diseases they transmit.

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**ORGANIZATION SETUP:**

Please list your Commissioner's names:

Anna Todesca  
Rebecca Robich

Please list the Supt./Director's name: Bruce A. Landers

Please list the Supt./Director's contact phone number: 617-361-4954

Please list your Asst. Supt./Asst. Director's name:

Do you have a website? No

If yes, please list the web address here: http://

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

Full time: 2

Part time:

Seasonal: 3.5

Other: (please describe)

Please break these down into the following areas:

Administrative staff: 1.5

Field staff: 4

Please check off all that apply, and list employee name(s) next to each category:

- Public relations Bruce A. Landers
- Information technology
- Entomologist Same
- Wetland Scientist
- Biologist Same
- Education Same
- Laboratory Same
- Operations Same
- Facilities Same
- Other (please list)

For the year of this report, we maintained:

2 vehicles

modified wetland equipment (list type)

2 ULV sprayers (list type) Cougar truck mounted; Leco handheld

3 Larval control equipment (list type) Backpack sprayers

Other (please be specific): 1 Motorized backpack mistblower

**Comments:** \_\_\_\_\_

How many cities & towns in your service area? 2

Please list: Boston; Chelsea

**\*Please attach a link to a map of your service area if possible.**

### **INTEGRATED PEST MANAGEMENT (IPM):**

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

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

- Larval mosquito control
- Adult mosquito control

- Source reduction**
- Ditch maintenance**
- Open Marsh Water Management**
- Adult mosquito surveillance**
- Education, Outreach & Public education**
- Research**
- Other (please list):**

**Comments:** \_\_\_\_\_

**LARVAL MOSQUITO CONTROL:**

Do you have a larval mosquito suppression program? Yes

If yes, please describe the purpose of this program: To keep the mosquito population as low as possible. The lower the population the less adulticiding is needed.

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

Describe the areas that this program is used: Freshwater wetlands, saltmarshes, and various manmade structures.

Do you use:

- Ground applied (includes hand, portable and/or backpack)**
- Helicopter applications**
- Other (please list):**

**Comments:** \_\_\_\_\_

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

**Wetlands:** TeknarHPD#73049-404; VectolexWSP#73049-20; Altosid PelletsWSP#2724-448

**Catch basins:** Vectolex WSP#73049-20; Altosid Pellets WSP#2724-448; FourStar Briquets#83362-3

**Containers:** TekknarHPD#73049-404; VectolexWSP#73049-404; Altosid PelletsWSP#2724-448

**Other (please list):**

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

**Wetlands:** 1 pint TeknarHPD/2.5gals.water/acre; VectolexWSP/50square feet; Altosid WSP/135square feet

**Catch basins:** VectolexWSP/basin; Altosid PelletsWSP/basin; FourStarBriquet/basin  
**Containers:** squirt of TeknarHPD 1pt./2.5gals.water/container;1 Altosid pelletsWSP or 1 VectolexWSP

**Other:**

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

- Larval dip counts – please list trigger for application: Minimum of 1/dip. Usually there is either less than 1/dip or 4-40/dip. In practice it is usually black and white, not many greys.
- Historical records
- Best professional judgment

**Comments:** Spring hatch starts in April. Daily rainfall and monthly high tides are listed right in the weather section of the newspaper. All natural sites get larval sampling dip counts following water events. Catchbasins are sampled and when 6/10 are positive for larvae, treatment begins. Once it gets to 6/10,it goes to near 99% of wet basins in about a week. The 6/10 occurred later this season. This could be because there were plenty of above ground breeding areas to utilize due to more rainstorms.

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

**ADULT MOSQUITO CONTROL:**

Do you have an adult mosquito suppression program? Yes

If yes, please describe the purpose of this program: To control mosquitoes at a level where residents can utilize their outdoor environment and to control disease vectors to protect public health.

Please give the time frame for this program: May-September

Describe the areas that this program is used: Parks, cemeteries, and residential areas.

Do you use:

- Truck applications**
- Portable applications**
- Aerial applications**
- Other (please list):**

**Comments:** \_\_\_\_\_

Please list the names of the products used with EPA #:

- 1). Anvil 10+10 #1021-1688-8329
- 2).
- 3). SuspendSC #432-763
- 4).
- 5).
- 6).

Please list your application rates for each product:

- 1). 1 gal. Anvil 10+10 plus 2 gals. soybean oil in Cougar ULV sprayer. Setting #1 for 150ft. swath is 0.31 fluid ounces/acre, actual 0.11fl.oz./acre. Setting#2 for 300ft. swath is 0.62 fluid ounces/acre, actual 0.21 fl.oz./acre
- 2). 1 gal. Anvil 10+10 plus 2gals. soybean oil applied by handheld Leco ULV
- 3). Suspend SC .8fl.ounces/gal. water applied to foliage by Backpack Solo mistblower.
- 4).
- 5).
- 6).

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

More rain events this season than last lead to the use of more larvicide on freshwater and saltwater marshes. Last season we had a wet spring, but the rest of the year was fairly dry. Therefore more larviciding and adulticiding was done this season. More adulticiding by hand kept the amount of truck spraying lower than would be expected from the rainfall events. Many of our worst areas cannot be treated by truck unless we get a favorable wind from the right direction. This year we either put down a barrier or were able to get the right wind direction by entering the area on foot carrying a handheld

ULV sprayer. Our objective is to restrict as much as possible the exposure of residents to mosquito adulticides.

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

- Landing rates - please list trigger for application 10 mosquitoes/10min.
- Light trap data - please list trigger for application 100/trap night minimum. These traps can capture up to 2,000/trap in our Project.
- Complaint calls - please list trigger for application There is a followup inspection before treatment unless the cause is known to Project Staff from having visited the site to larvicide,place traps,etc.
- Arbovirus data
- Best professional judgment

**Comments:** \_\_\_\_\_

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

### **SOURCE REDUCTION**

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

If yes, please describe your program: No tires were removed this year, but they were during prior years.

What time frame during the year is this method employed? April-October

**Comments:** \_\_\_\_\_

### **DITCH MAINTENANCE**

Do you have a ditch maintenance program? Yes

Please check all that apply:

- Inland/freshwater
- Saltmarsh

If yes, please describe:

Please check off all that apply INLAND DITCH MAINTENANCE:

- Hand tools**
- Mechanized equipment**

**Other (please list):**

**Comments:** \_\_\_\_\_

Please check off all that apply SALT MARSH DITCH MAINTENANCE:

**Hand cleaning**

**Mechanized cleaning**

**Other (please list):**

**Comments:** \_\_\_\_\_

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

**Hand cleaning 500 ft.**

**Mechanized cleaning**

**Other (please list):**

**Comments:** \_\_\_\_\_

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

**Hand cleaning none**

**Mechanized cleaning**

**Other (please list):**

What time frame during the year is this method employed?

**Comments:** \_\_\_\_\_

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

### **MONITORING (Measures of Efficacy)**

Please describe monitoring efforts for each of the following:

**Aerial Larvicide – wetlands:**

**Larvicide – catch basins:** Sampling device used to check treated basins over the summer to see if still below 6/10 positive basins.

**Larvicide-hand/small area treatment.** Usually check and retreat areas where breeding is heavy. Most retreats Recheck a percentage of areas post treatment.

that have larvae on followup are of a pattern showing missed spots not partial kills.

**Ground ULV Adulticide:** When applied by handheld, the number of mosquitoes attacking you drops right off when the job is completed. The ULV chases the mosquitoes up into the air above the vegetation. You can see the air is no longer full of mosquitoes. Adult populations are monitored weekly with CDC light traps and dry ice.

**Source Reduction:** Remove fallen tree limbs from ditch, water drops in swamp. Turn over breeding containers, larvae die.

**Open Marsh Water Management:**

**Other (please list):**

Provide or list standard steps, criterion, or protocols regarding the documentation of efficacy, (pre and post data) and resistance testing (if any): **Check new employees' work the day following application. Have a different employee check another's work. Check the effectiveness of larvicide that comes from any container opened last season. Other county mosquito projects that are doing more adulticiding are running resistance tests. Our extensive larviciding program would tend to minimize the chance of resistance to adulticides. However, so many pyrethroids are used by the private sector that mosquitoes are being exposed by these other groups.**

## **OPEN MARSH WATER MANAGEMENT**

Do you have an OMWM program? No

If yes, please describe:

Please give an estimate of total square feet or acreage:

What time frame during the year is this method employed?

**Comments:** \_\_\_\_\_

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

## **ADULT MOSQUITO SURVEILLANCE**

Do you have an adult mosquito surveillance program? Yes

Please list the number (not location) of MDPH traps in your service area: SCMCP has 4 CDC light trap sites and 16 gravid trap sites. The MDPH also has gravid trap sites in Boston.

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

- |   |                                 |
|---|---------------------------------|
| <input checked="" type="checkbox"/> Gravid traps                      |                                 |
| <input type="checkbox"/> Resting boxes                                |                                 |
| <input type="checkbox"/> CDC light traps                              | <input type="checkbox"/> Canopy |
| <input checked="" type="checkbox"/> CDC light traps w/CO <sub>2</sub> | <input type="checkbox"/> Canopy |
| <input type="checkbox"/> ABC light traps                              | <input type="checkbox"/> Canopy |
| <input type="checkbox"/> ABC light traps w/CO <sub>2</sub>            | <input type="checkbox"/> Canopy |
| <input type="checkbox"/> NJ light traps                               | <input type="checkbox"/> Canopy |
| <input type="checkbox"/> NJ light traps w/CO <sub>2</sub>             | <input type="checkbox"/> Canopy |

Other (please describe):

Please describe the purpose of this program: The CDC traps are near freshwater marshes and are used to determine both the number and species distribution of human nuisance mosquitoes. Gravid traps are to provide the MDPH with mosquitoes they can test for disease and if positive, notify SCMCP's member cities.

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

If yes, please describe how you chose these long-term sites. The CDC traps are near freshwater swamps and floodplains. The gravids run north to south along the Project's border with Brookline, Newton, and Dedham. This is where WNV usually shows up first. The other traps run along the southern border and up the eastern side of Boston.

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

- |   |   |
|---|---|
| <input type="checkbox"/> <i>Ae. albopictus</i>            | <input checked="" type="checkbox"/> <i>Oc. cantator</i>     |
| <input type="checkbox"/> <i>Ae. cinereus</i>              | <input checked="" type="checkbox"/> <i>Oc. excrucians</i>   |
| <input checked="" type="checkbox"/> <i>Ae. vexans</i>     | <input type="checkbox"/> <i>Oc. fitchii</i>                 |
| <input type="checkbox"/> <i>An. punctipennis</i>          | <input checked="" type="checkbox"/> <i>Oc. j. japonicus</i> |
| <input type="checkbox"/> <i>An. quadrimaculatus</i>       | <input type="checkbox"/> <i>Oc. punctor</i>                 |
| <input checked="" type="checkbox"/> <i>Cq. perturbans</i> | <input checked="" type="checkbox"/> <i>Oc. sollicitans</i>  |
| <input checked="" type="checkbox"/> <i>Cx. pipiens</i>    | <input type="checkbox"/> <i>Oc. stimulans</i>               |
| <input checked="" type="checkbox"/> <i>Cx. restuans</i>   | <input type="checkbox"/> <i>Oc. taeniorhynchus</i>          |
| <input type="checkbox"/> <i>Cx. salinarius</i>            | <input type="checkbox"/> <i>Oc. triseriatus</i>             |
| <input type="checkbox"/> <i>Cs. melanura</i>              | <input type="checkbox"/> <i>Oc. trivittatus</i>             |
| <input type="checkbox"/> <i>Cs. morsitans</i>             | <input checked="" type="checkbox"/> <i>Ps. ferox</i>        |
| <input checked="" type="checkbox"/> <i>Oc. abserratus</i> | <input type="checkbox"/> <i>Ur. sapphirina</i>              |
| <input checked="" type="checkbox"/> <i>Oc. canadensis</i> |   |

Other (please list):

Do you participate in the MDPH Arboviral Surveillance program? Yes

How many pools do you submit weekly on average? 286 pools were submitted this summer. Normal level would be 200.

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

- West Nile Virus
- Eastern Equine Encephalitis
- Other Please list:

Did the above listed diseases cause human or horse illnesses? No

Please explain:

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

**WNV: Moderate**

**EEE:**

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

**WNV: High**

**EEE:**

What time frame during the year is this method employed? July-September

**Comments:** \_\_\_\_\_

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

### **EDUCATION, OUTREACH & PUBLIC RELATIONS**

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

If yes, please describe: Meet with BPHC prior to and during the season to impliment their catchbasin treatment program. This is a program carried out as a cooperative effort by the Boston ISD, Boston Housing Authority, and SCMCP.

Please check off all that apply:

- School based program
- Website
- PR brochures/handouts
- Community events
- Science fairs
- Meeting presentations

Other (please describe): We have received requests in previous years, but not in the 2011 season.

Please give an estimate of attendance/participants in this program: 20

Please list some events you participated in for the year of this report:

What time frame during the year is this method employed? When requested.

Have you performed any research projects, efficacy, bottle assays, etc.? Yes

If yes, please elaborate on your research projects: Checked catchbasins over the summer to see if they recovered to pretreatment levels. They did not.

Are you involved in any collaboration with academia, industry, environmental groups, etc.? Not at this time

If yes, please elaborate on your collaborations this past year:

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

Does your staff participate in educational opportunities? Yes

If yes, please list the training and education your staff received this year: Three attended a Pesticide License educational session and one attended the NMCA Annual Meeting.

Please list the certifications and degrees held by your staff: Superintendent has Master's in Entomology; Secretary a Bachelor's. Seasonals: two with Bachelor's, one a senior in engineering, and one with landscaping experience.

**Comments:** \_\_\_\_\_

## **BIOLOGICAL CONTROL EFFORTS**

Do you have a biological control program? No

If yes, please describe:

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

Please check off all that apply:

- Predatory fish
- Predatory invertebrates
- Other (please describe):

What time frame during the year is this method employed?

**Comments:** \_\_\_\_\_

### **INFORMATION TECHNOLOGY**

Does your program use (check all that applies):

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

Please describe your capabilities in these areas: Moderate

Please describe your current GIS abilities: Beginner

Give details if possible on your GIS abilities:

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

**Comments:** \_\_\_\_\_

### **REVENUES & EXPENDITURES**

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

Revenue: \$230,283 Expended: \$272,901 (\$42,618 in rollover funds)

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

**Comments: Boston:\$221,566 plus Reclamation Board:\$6,503 Total \$228,069  
Chelsea:\$8,717 plus Reclamation Board:\$256 Total:\$8,973**

## PESTICIDE USAGE

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

Product Name: Teknar HP-D  
EPA Reg. #: 73049-404  
Application method: Manuel backpack  
Targeted life stage: Larvae  
Total amount of concentrate applied: 21.62 gals  
Comments: \_\_\_\_\_

Product Name: Vectolex WSP  
EPA Reg. #: 73049-20  
Application method: By hand.  
Targeted life stage: Larvae  
Total amount of concentrate applied: 13,043 plus 160 to DCR for Harbor Is. and 5,600 to Boston ISD.  
Comments:

Product Name: Altosid Pellets WSP  
EPA Reg. #: 2724-448  
Application method: By hand.  
Targeted life stage: Larvae  
Total amount of concentrate applied: 1143 plus 360 to Franklin Park Zoo Exterminator, 1600 to Boston ISD, and 1600 to Boston Housing Authority.  
Comments: \_\_\_\_\_

Product Name: FourStar Briquets  
EPA Reg. #: 83362-3  
Application method: By hand.  
Targeted life stage: Larvae  
Total amount of concentrate applied: 740  
Comments: \_\_\_\_\_

Product Name: Altosid XR Briquet  
EPA Reg. #: 2724-421  
Application method: By hand  
Targeted life stage: Larvae  
Total amount of concentrate applied: 409  
Comments: \_\_\_\_\_

Product Name: Anvil10+10  
EPA Reg. #: 1021-1688-8329  
Application method: ULV

Targeted life stage: Adult  
Total amount of concentrate applied: 9.1gal.  
Comments: \_\_\_\_\_

Product Name: Suspend SC  
EPA Reg. #: 432-763  
Application method: Motorized backpack mistblower  
Targeted life stage: Adult  
Total amount of concentrate applied: 1.1gals.  
Comments: \_\_\_\_\_

Product Name:  
EPA Reg. #:  
Application method:  
Targeted life stage: Choose one  
Total amount of concentrate applied:  
Comments: \_\_\_\_\_

Product Name:  
EPA Reg. #:  
Application method:  
Targeted life stage: Choose one  
Total amount of concentrate applied:  
Comments: \_\_\_\_\_

## **LARGE AREA EXCLUSIONS**

Do you have large areas of pesticide exclusion, such as estimated or priority habitats?  
Yes

If yes, please explain, and attach maps or a web link if possible. Both habitats are in State parks. Both sites impact W. Roxbury. One site also impacts Roslindale and Hyde Park as well.

## **SPECIAL PROJECTS**

Do you perform any inspectional services such as inspections at sewage treatment facilities or review sub division plans? No

If yes, please elaborate

Do you work with DPW departments or other local or state officials to address stormwater systems, clogged culverts or other areas that you have identified as man-made mosquito problem areas? No

If yes, please elaborate: Not in the 2011 season.

Have you worked with these departments on long term solutions? No

If yes, please elaborate:

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

If yes, please elaborate:

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

If yes, please elaborate:

### **CHILDREN AND FAMILIES PROTECTION ACT**

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

If yes, please explain: City of Boston wants to treat catchbasins at schools but decided would have to wait for next year.

If you have data on compliance with this Act and your program, please list here:

If you had difficulties with implementation of your program due to this law, please elaborate here:

Comments:

### **GENERAL COMMENTS**

Please list any comments not covered in this report: \_\_\_\_\_

Suffolk County Mosquito Control Project Pesticide Discharge Plan  
39 Industrial dr., Hyde Park, MA 02136 Tel 617-361-4954

A. Pesticide Discharge Management

1. Management of Pest: Bruce A. Landers, Supt. and Entomologist (M.Ag.)
2. PDMP Development and Revision: Bruce A. Landers, Supt. (37 years)
3. Developing, Revising and Implementing Corrective Action: Bruce A. Landers, Superintendent
4. Persons Responsible for Pesticide Applications (mix, load, and apply):  
Bruce A. Landers, Supt. determines the mixes which are usually the lowest rates on the label for that type of application. These mixes are on the back of the applicator's daily report. The only mix made in the field would be made by Supt. or one of our licensed seasonal employees. That mix is 1pt.Bti with 2.5 gals. water. The other mixes are done at the Project's building. Those two mixes would be 2oz. Suspend SC plus 2.5gals. water and 1gal. Anvil 10+10 plus 2 gals. soybean oil.

Pesticide Management Area Description

Suffolk County Mosquito Control Project controls mosquitoes in Boston (48.43 sq. miles) and Chelsea (2.19 sq. miles). Boston has freshwater swamps, river flood plains ,and saltmarshes. Boston is almost entirely bounded by the Charles and Neponset Rivers and by Boston Harbor. The only drinking water source is the Chestnut Hill Res.in Brighton.

i. Natural Environments

Saltmarshes breed mosquitoes in the neighborhoods of E. Boston and S. Dorchester. Freshwater swamps and river floodplains produce the same species of spring and summer mosquitoes as they do in the suburbs. These affect the neighborhoods of W. Roxbury, Hyde Park , Roslindale, Mattapan, and the Harbor Is. The remaining 10 Boston neighborhoods and the City of Chelsea have a WNV disease problem due to Culex sp. which live in man-made structures such as catchbasins (street drains).

ii. Man-made Environments

This would include catchbasins, abandoned tires, ditches, swimming pool covers, as well as almost anything you can think of that can hold water. This is a problem in all neighborhoods of Boston and in Chelsea.

2. Pest Problem Description

- a. Starting in April there are rains and often rivers overflow. Areas that are usually dry are now covered with water and start breeding mosquitoes. Monthly high tides flood saltmarshes and saltmarsh sp. hatch. As we move into summer other species of mosquitoes start to hatch after rainstorms and man-made structures start to be used by yet other species of mosquitoes. Starting in the middle of June another species that breeds attached to roots of aquatic plants starts to emerge. At some point Culex sp., the species that breeds mainly in man-made structures, bites a bird and picks up the disease WNV.

### 3. Action Threshold

#### a. Larvicide Applications

1. Swamp or marsh is sampled with mosquito dipper (12oz.). Dips are made every 5 sq. ft. until it is determined whether there is enough breeding to justify treatment. Sampling is done until an area is found that will require a tank full i.e., 2.5 gals. mix. When that load has been applied further sampling is undertaken looking for another section requiring another tank load. The last load can be only half a load. An average dip count of at least 11 larvae/dip needed to qualify for treatment. However, in most cases either zero to 1/ dip or 5+/dip so decision usually black or white not grey. If breeding areas get enough water, they usually breed big.
2. Catchbasins are treated when at least 6 of 10 test positive for breeding in that neighborhood. When two neighborhoods test positive, the City of Boston can all be treated. Once breeding reaches 6/10 in a neighborhood it goes to 9/10 usually in about a week.

#### b. Adulticide Applications

##### 1. Freshwater Swamps and Marshes

- a. Light trap plus dry ice catch is at least 100 specimens. Traps often catch 1000+. Traps are next to main breeding areas in W. Roxbury and Hyde Park.
- b. Trip to area usually to inspect for larvae results in the need to apply repellent due to high adult activity.
- c. Gravid trap catches 40+ mosquitoes and those mosquitoes are testing positive for WNV.
- d. A request is made by City Health Department and the Superintendent of SCMCP agrees.

### 4. Water Quality Standards

Chestnut Hill Res. is in Brighton right on Newton/ Brookline border. No adulticiding takes place near this location. In Allston/Brighton larvicide is applied only to catchbasins. Only small sections of the Neponset saltmarsh in S. Dorchester and the Bell Isle saltmarsh in E. Boston need to be treated with larvicide because those elevated sections were created by dredging nearby waterways. SCMCP is aware that catchbasins collect runoff and pipe it to the nearest river, wetland, or ocean.

### C. Control Measure Description

1. Use larvicides extensively to keep the population of mosquitoes at a low enough level so that the amount of adulticide treatments can be held to the lowest amount possible. This minimizes both the exposure of the residents of the Cities of Boston and Chelsea and also the environment to adulticides that have to be applied by truck in residential neighborhoods. Larviciding of fresh and saltwater marshes is done with a mix of Bti and water and applied with a non-motorized backpack. Some small breeding sites are sometimes treated with WSP( water soluble pouches) containing B. sphaericus or Altosid pellets. Majority of catchbasins get one 30 day treatment, while some get treated all season. Endangered species areas get Bti treatments ONLY.

Adulticides are applied by hand to further cut the exposure of the public to adulticides applied by truck. Applications are made using motorized hand equipment for ULV and mistblowing.

Adulticiding by truck is done both to alleviate the higher numbers of mosquitoes at residences closer to the breeding sites but also to eliminate the need for spray applications in residential areas that are farther away from breeding areas. Product is diluted with soybean oil so that when roads are only 150 ft. apart every street can be treated with half a dose. Otherwise only every other street would be treated as the label is based on a 300ft. swath. This gives better coverage of the same amount of area. Diluting the pesticide with soybean makes it easier to use the lowest label rate as the ULV machine works best at slightly higher rates. When an area has a 300 ft. swath is available, the machine is adjusted to a second higher setting.

## 2. Reducing Pesticide Discharge

Use the least amount of insecticides as you can. You have to treat saltmarsh hatches as your number one priority. Second, if you can't treat all your freshwater breeding before they can hatch, prioritize by treating swamps that will eliminate an entire section from needing any truck spraying. Use telephone calls from public as additional data, but don't treat unless backed up by trap data or data gleaned from inspecting site. If a site can be effectively treated with adulticide by hand then do that. If you are watching the rainfall and tides and out checking for larvae, you know when the adults are coming out and in what numbers. The traps tell you when they are starting to search for food. The field mixing requires that we transport a 2.5 gal. jug of Teknar 12AS. When we find a sufficient amount of breeding, we put 1pt. of that material and 2.5 gals. water in a backpack. The idea is to use all of the material at that site, but if on a very rare occasion the amount is overestimated, then plan to use it up as soon as possible. Treatment of larvae by hand is pretty much self regulating. The applicator on the one hand is working hard to kill the larvae, but if that person doesn't do a very thorough job, they will be making future trips to do more hard work to solve the problem and the Supt. will be unhappy with the work. The truck mounted sprayer is removed from the truck during the day so that insecticide is not being driven around the district when the sprayer isn't needed. The truck mounted sprayer tank is usually kept half full. Truck has a spill kit.

## D. Schedules and Procedures

### 1. Comply with Effluent Limitations in Part 2

#### i. Application Rate Determination

SCMCP uses 1pt. Teknar 12 AS / 2.5 gals. water / acre as larvicide. In tests ½ pt. doesn't do a good enough job. SCMCP uses a quart jar. It can be filled to one quart and used to fill two backpacks at the same time.

Adulticide rates are chosen to be close to the lowest amount for the range specified by the label. Since the lowest rate is in the 90+% efficient in killing caged mosquitoes but only kills about 70% in practice. The 70% is caused by the number of mosquitoes not contacted by the spray

#### ii. Frequency Determination

Breeding areas inspected after every rain or tide event. All areas that are breeding heavily are rechecked to determine the effectiveness of application whenever possible. Upon re-inspection very rarely is there a mix of live and dead larvae. The

pattern could be lots of dead larvae with patches of live larvae which most probably were totally missed by the applicator.

Larvicide is applied to survivors as they could possibly have some resistance.

Adulticiding can take place as often as once per week. Most areas of the Project get zero adulticiding. The closer your property is to a breeding site the higher the chance that you will receive an application.

### iii. Resistance

Not much choice in larvicides. No real replacement for Bti that doesn't have side effects. Altosid, *B. sphaericus*, and FourStar can be used for catchbasins.

SCMCP only treats catchbasins once per season in most of Project. Many mosquito species have one generation per year and therefore get only one application. In a normal year no species would receive more than a max of three treatments, with the exception of *Ae. vexans* and *Oc. sollicitans* which could receive 5 treatments.

Adulticides are both pyrethroids. Couldn't use organophosphates in SCMCP unless there was a declared health emergency at a minimum.

### B. Spill Prevention

Carry the least amount of insecticide on trucks. Mix all adulticides at Project site. Mix only larvicide in field. Maximum larvicide amount on truck would be a full 2.5 gal. and an almost empty jug. Larvicide is locked in the cab of truck while application is taking place. Adulticiding equipment is placed on truck only when truck is going to be truck spraying. There is a spill kit in cab of truck.

### C. Application Equipment Procedures

Visual inspection is made of tanks and hoses for leaks. Truck mounted ULV machine is calibrated for correct dosage per minute. This truck mounted ULV machine receives a droplet size test once per year.

### D. Pest Surveillance

#### i. Adult Surveillance

1. Four CDC light traps plus dry ice monitor the Project's large freshwater swamps. They sample weekly. Complaints from residents receive an inspection. Rainfall data and high tides are monitored daily. Inspection for larvae yields information about how many adults are biting at those swamps and marshes.

Sixteen gravid traps are set weekly. The *Culex* sp. mosquitoes are sent to the State Labs for WNV testing.

#### ii. Swamps, marshes, man-made structures, and catchbasins are checked regularly.

Two or three days after a rainfall event, a sampling of sites are checked and if they have larvae, the remainder of sites are checked and treated as needed.

Catchbasins are treated with *B. sphaericus* when a minimum of 6/10 basins test positive for larvae. Altosid applications are sometimes made earlier.

#### iii. Disease Surveillance

Sixteen trap sites are sampled weekly with gravid traps to capture *Culex* sp.

These mosquitoes are pooled in tubes of 50 and sent to State Labs for WNV testing. The Project funds the testing of a minimum of 200 pools/ season.

### 2. Other Actions to Minimize Discharges

A. SCMCP does work requiring boots, backpacks, plenty of reeds, mud, biting mosquitoes, stinging bees and wasps, WNV throughout the Project, high heat and

humidity, etc. This means that nobody wants to put any more product out than they have to as it just creates more work. It is necessary to hire self motivated people who want to do the job. We have found that people like checking other applicator's work for missed larvae. Saltmarshes are good areas to test the work of applicators. This is because the larvae are in such high numbers, it is easy to see any misses from the previous day.

**B. No PPE Requirements Products Used by SCMCP**

None of the insecticides used at SCMCP have any PPE required for mixing or for cleaning up after a spill.