

Integrated Mosquito and Vector  
Management Program Plan

APPENDIX

B

SMCMVCD  
PESTICIDE APPLICATION PLAN



## **San Mateo County Mosquito & Vector Control District (District) Pesticide Application Plan (PAP):**

- 1. Description of ALL target areas, if different from the water body of the target area, in to which larvicides and adulticides are being planned to be applied or may be applied to control vectors. The description shall include adjacent areas, if different from the water body of the target areas;**

Please see Agency Boundary Map. Typical and historically treated sites will include most if not all water bodies in San Mateo County, areas of high water marks along the San Francisco Bay, intermittent creeks, and other associated waterways and surface waters that could be affected by the Districts applications.

- 2. Discussion of the factors influencing the decision to select pesticide applications for vector control;**

A detailed description of the factors influencing the decision to use pesticides to control mosquito larvae can be found in the "Best Management Practices for Mosquito Control in California" and in "Statement of Best Management Practices for the San Mateo County Mosquito and Vector Control District". This district does not use temephos or any other organophosphate product to control mosquitoes in the larval or adult stage. The district focuses control efforts on the larval stage of mosquitoes and rarely finds it necessary to apply adulticides. The decision to treat mosquitoes in the adult stage is based on the following:

- 1) The presence of mosquitoes positive for West Nile virus
- 2) Adult floodwater mosquitoes detected by CO2 traps at high densities near places of human habitation AND a high volume of reports from members of the public experiencing high numbers of mosquito bites. These conditions are reflective of a failure of larval control to prevent emergence of adult mosquitoes from seasonal impounds (typically saltmarsh) causing a significant impact on the health and quality of life of the district's residents. This situation has occurred historically on 1 occasion in the past 11 years.

- 3. Pesticide products or types expected to be used and if known, their degradation by-products, the method in which they are applied, and if applicable, the adjuvants and surfactants used;**

The NPDES Permit for Biological and Residual Pesticide Discharges to Waters of the U.S. from Vector Control Applications was amended to list the approved active ingredients rather than having specific products named. All pesticide label restrictions and instructions will be followed for pesticides which contain the active ingredients listed below. In addition, pesticides which fall under the "minimum risk" category may be used. The minimum risk pesticides have been exempted from FIFRA requirements. Products will be applied by truck, backpack, hand can and helicopter.

Active Ingredients:

Bacillus sphaericus (Bs) (Lysinibacillus sphaericus)
Methoprene
Monomolecular Films
Petroleum Distillates
Spinosad
Deltamethrin
Etofenprox
Lambda-Cyhalothrin
N-octyl bicycloheptene dicarboximide (MGK-264)
Piperonyl butoxide (PBO)
Permethrin
Prallethrin
Pyrethrin
Resmethrin
Sumithrin
Any minimum risk category pesticides that are FIFRA exempt and registered for use in California and used in a manner specified in 40 C.F.R. section 152.25

**4. Description of ALL the application areas and the target areas in the system that are being planned to be applied or may be applied. Provide a map showing these areas;**

Any site that holds water for more than 96 hours (4 days) can produce mosquitoes. Table 1 contains a list of named waterways in which mosquito control applications could be made. In addition there are a far greater number of unnamed temporary water bodies which are treated. Source reduction is the District's preferred solution, and whenever possible the district works with property owners to effect long-term solutions to reduce or eliminate the need for continued applications as described in "Best Management Practices for Mosquito Control in California". The typical types of sources treated for larval mosquitoes by this district include those listed in Table 5.

**5. Other control methods used (alternatives) and their limitations;**

With any mosquito or other vector source, the district’s first goal is to look for ways to eliminate the source, or, if that is not possible, for ways to reduce the vector potential. The most commonly used methods and their limitations are included in the **“Best Management Practices for Mosquito Control in California”**.

Specific methods used by the District include stocking mosquito fish (*Gambusia affinis*), educating residents that mosquitoes develop in standing water and encouraging them to remove sources of standing water on their property, and working with property owners to find long-term water management strategies that meet their needs while minimizing the need for public health pesticide applications. However, each of these alternatives present significant limitations and cannot always be used. Introduction of fish is restricted to manmade sources such as backyard ornamental ponds and horse troughs in this county. Public education is helpful, but small sources of standing water in yards are only a fraction of the places where mosquito larvae develop in this county and cannot, in itself, remove the threat of vector-borne disease. The district works with property owners whenever possible to reduce sources, but there are many other environmental regulations which restrict a property owner’s ability to make physical changes to wetlands on their land or make such work a monumental undertaking. The district does not have the resources to carry out large physical control projects and under the Health and Safety code, such projects are the responsibility of property owners themselves. For a detailed description of the limitations of each type of alternative please see attached document **“Statement of Best Management Practices for the San Mateo County Mosquito and Vector Control District”**

**6. How much product is needed and how this amount was determined;**

<b>Material</b>	<b>Pounds</b>	<b>Gallons</b>
<b>Methoprene Liquid 20%</b>		<b>2.6</b>
<b>Methoprene Liquid 5%</b>		<b>6.16</b>
<b>Methoprene 120 day</b>	<b>.5</b>	
<b>Methoprene 30 day</b>	<b>1</b>	
<b>Methoprene granule 30 day</b>	<b>308</b>	
<b>Methoprene granule 21 day</b>	<b>500</b>	
<b>Spinosad Liquid</b>		<b>2.5</b>
<b>Spinosad 180 day</b>	<b>7</b>	
<b>Spinosad 30 day</b>	<b>147</b>	
<b>Bti Liquid</b>		<b>100</b>
<b>Bs</b>	<b>3675</b>	
<b>Bti/Bs granule</b>	<b>330</b>	
<b>BVA 2</b>		<b>7.7</b>
<b>Coco Bear</b>		<b>.1</b>

The above totals represent estimated pesticides applications within the District boundaries to Waters of the U.S. for 2015. These amounts will change from year to year due to annual variability in required pesticide applications for mosquito control. This data is provided as an example of the products and amounts used in

one year.

7. **Representative monitoring locations\* and the justification for selecting these locations;**

Please see the MVCAC NPDES Coalition Monitoring Plan.

8. **Evaluation of available BMPs to determine if there are feasible alternatives to the selected pesticide application project that could reduce potential water quality impacts:**

The District's Operations and Laboratory Management Department reviews post BMP implementation source pesticide application data to determine efficacy and compliance of BMP treatment. Examples that have resulted in the reduction of pesticide applications is

a. **Establish densities for larval and adult vector populations to serve as action threshold(s) for implementing pest management strategies**

Only those mosquito sources that District staff determine to represent imminent threats to public health or quality of life are treated. The presence of any mosquito may necessitate treatment, however, higher thresholds may be applied depending on the district's resources, disease activity, or local needs. Treatment thresholds are based on a combination of one or more of the following criteria:

- Mosquito species present
- Mosquito stage of development
- Pest, nuisance, or disease potential
- Disease activity
- Mosquito abundance
- Flight range
- Proximity to populated areas
- Size of source
- Presence/absence of natural enemies or predators
- Presence of sensitive/endangered species.

b. **Identify target vector species to develop species-specific pest management strategies based on developmental and behavioral considerations for each species;**

Please see Table 2 for a list of species controlled in San Mateo County. The strategies used for these species is described in the "Best Management Practices for Mosquito Control in California" and the "California Mosquito-borne Virus Surveillance and Response Plan".

c. **Identify known breeding areas for source reduction, larval control program, and habitat management; and**

Any site that holds water for more than 96 hours (4 days) can produce mosquitoes. Source reduction is the district's preferred solution, and whenever possible the District works with property owners to effect long-term solutions to reduce or eliminate the need for continued applications as described in "Best Management Practices for Mosquito Control in California". The district maintains a database of known sources of larval development and field technicians carry a copy of this database while recording larval control applications.

d. **Analyze existing surveillance data to identify new or unidentified sources of vector problems as well as areas that have recurring vector problems.**

This practice is included in the "Best Management Practices for Mosquito Control in

California”, the “California Mosquito-borne Virus Surveillance and Response Plan” and the “Statement of Best Management Practices for the San Mateo County Mosquito and Vector Control District” that describe the district’s control program. The district continually collects adult and larval mosquito surveillance data, dead bird reports, and sentinel chicken test results and uses them to guide mosquito control activities. The district maintains a computerized database of sources of mosquito development and work that has been carried out at each location. Vector control technicians carry laptop computers in the field with copies of this database and have access to records of all the work that has been done at each site. The schedule of inspections and decisions on the kind of control applied are based on information they obtain from this database. In addition, technicians continually search for new sites, sample water for larvae and answer requests for service from the public.

For a detailed explanation of other BMP's used by the District, please see the District's Mosquito Reduction Best Management Practices Document  
<http://www.fightthebite.net/download/ecomangement/SYMVCD> BMP Manual.

**9. Description of the BMPs to be implemented. The BMP's shall include, at the minimum:**

**a. measures to prevent pesticide spill;**

District staff monitors application equipment on a daily basis to ensure it remains in proper working order. Spill mitigation devices are placed in all spray vehicles and pesticide storage areas to respond to spills. Employees are trained on spill prevention and response annually.

**b. measures to ensure that only a minimum and consistent amount is used;**

Spray equipment is calibrated each year and is a part of the MOU with CDPH. However, the pesticide label and associated registration by USEPA and CDPR are the authority of how much product can be legally applied to control the target

**c. a plan to educate Coalition's or Discharger's staff and pesticide applicator on any potential adverse effects to waters if the U.S. from the pesticide application;**

Applicators are required to complete pesticide training on an annual basis. Records are kept of these training sessions for review by the local agricultural commissioner and/or CDPH. Employees certified by the CDPH must perform at least 20 hours of Continuing Education units to maintain their certification.

**d. descriptions of specific BMPs for each spray mode, e.g. aerial spray, truck spray, hand spray, etc.;**

The District will calibrate truck and hand larviciding equipment each year to meet application specifications. Supervisors review spray records daily to ensure appropriate amounts of material are being used. ULV equipment is calibrated for output and droplet size to meet label requirements. Aerial larviciding equipment is calibrated by the Contractor. applications are equipped with advanced guidance and drift management equipment to ensure the best available technology is being used to place product in the

intended spray area

- e. **descriptions of specific BMPs for each pesticide product used; and**  
Please see the Best Management Practices for Mosquito Control in California for general pesticide application BMPs, and the current approved pesticide labels for application BMPs for specific products.

10. **Identification of the problem. Prior to first pesticide application covered under this General Permit that will result in a discharge of biological and residual pesticides to waters of the U.S., and at least once each calendar year thereafter prior to the first pesticide application for that calendar year, the Discharger must do the following for each vector management area:**

- a. **If applicable, establish densities for larval and adult vector populations to serve as action threshold(s) for implementing pest management strategies;**

The District staff only applies pesticides to sources of mosquitoes that represent threats to public health or quality of life. The presence of any mosquito may necessitate treatment, however higher thresholds may be applied depending on the District's resources, disease activity, surveillance data, or local needs. Treatment thresholds are based on a combination of one or more of the following criteria:

- Mosquito species present
- Mosquito stage of development
- Pest, nuisance, or disease potential
- Disease activity
- Mosquito abundance
- Flight range
  
- Proximity to populated areas
- Size of source
- Presence/absence of natural enemies or predators
- Presence of sensitive/endangered species or habitats.

- b. **Identify target vector species to develop species-specific pest management strategies based on developmental and behavioral considerations for each species;**

Please see the Best Management Practices for Mosquito Control in California and the California Mosquito-borne Virus Surveillance and Response Plan.

- c. **Identify known breeding areas for source reduction, larval control program, and habitat management; and**

Any site that holds water for more than 96 hours (4 days) can produce mosquitoes. Source reduction is the District's preferred solution, and whenever possible the District works with property owners to implement long-term solutions to reduce or eliminate the need for continued pesticide applications as described in the Best Management Practices for Mosquito Control in California.

- d. **Analyze existing surveillance data to identify new or unidentified sources of vector problems as well as areas that have recurring vector problems.**

This is included in the Best Management Practices for Mosquito Control in California and the California Mosquito-borne Virus Surveillance and Response Plan that the District uses.

The District continually collects adult and larval mosquito surveillance data, dead bird reports, and sentinel chicken test results, and monitors regional mosquito-borne disease activity detected in humans, horses, birds, and/or other animals, and uses these data to guide mosquito control activities.

**11. Examination of Alternatives. Dischargers shall continue to examine alternatives to pesticide use in order to reduce the need for applying larvicides that contain temephos and for spraying adulticides. Such methods include:**

- a. Evaluating the following management options, in which the impact to water quality, impact to non-target organisms, vector resistance, feasibility, and cost effectiveness should be considered:
- No action
  - Prevention
  - Mechanical or physical methods
  - Cultural methods
  - Biological control agents
  - Pesticides

**If there are no alternatives to pesticides, dischargers shall use the least amount of pesticide necessary to effectively control the target pest.**

Implementing preferred alternatives depends on a variety of factors including availability of agency resources, cooperation with stakeholders, coordination with other regulatory agencies, and the anticipated efficacy of the alternative. If a pesticide-free alternative does not sufficiently reduce the risk to public health, pesticides are considered, beginning with the least amount necessary to effectively control the target vector.

**b. Applying pesticides only when vectors are present at a level that will constitute a nuisance**

The District follows an existing IVM program which includes practices described in the California Mosquito-borne Virus Surveillance and Response Plan and Best Management Practices for Mosquito Control in California.

A “nuisance” is specifically defined in California Health and Safety Code (HSC) §2002(j).

This definition allows vector control agencies to address situations where even a low number of vectors may pose a substantial threat to public health and quality of life. In practice, the definition of a “nuisance” is generally only part of a decision to apply pesticides to areas covered under this permit. As summarized in the California Mosquito-borne Virus Surveillance and Response Plan, the overall risk to the public when vectors and/or vector-borne disease are present is used to select an available and appropriate material, rate, and application method to address that risk in the context of our IVM program

**12. Correct Use of Pesticides**

**Coalition's or Discharger's use of pesticides must ensure that all reasonable precautions are taken to minimize the impacts caused by pesticide applications.**

**Reasonable precautions include using the right spraying techniques and equipment, taking account of weather conditions and the need to protect the environment.**

This is an existing practice of the District, and is required to comply with the Department of Pesticide Regulation's (DPR) requirements and the terms of our California Department of Public Health (CDPH) Cooperative Agreement. All pesticide applicators receive annual safety and spill training in addition to their regular continuing education.

### **13. Website for Public Notice**

The District's public notices are available on the District's website at [www.smcinvcd.org](http://www.smcinvcd.org)

#### **References:**

Best Management Practices for Mosquito Control in California. July 2012. [Note: this document is updated regularly by CDPH]. Available by download from the California Department of Public Health—Vector-Borne Disease Section at <http://www.westnile.ca.gov/resources.php> under the heading Mosquito Control and Repellent Information. Copies may be also requested by calling the California Department of Public Health—Vector-Borne Disease Section at (916) 552-9730 or the San Mateo County Mosquito Vector Control District at (650) 344-8592.

California Mosquito-borne Virus Surveillance and Response Plan. 2015. [Note: this document is updated annually by CDPH]. Available by download from the California Department of Public Health—Vector-Borne Disease Section at <http://www.westnile.ca.gov/resources.php> under the heading Response Plans and Guidelines. Copies may be also requested by calling the California Department of Public Health—Vector-Borne Disease Section at (916) 552-9730 or the San Mateo County Mosquito Vector Control District at (650) 344-8592.

MVCAC NPDES Coalition Monitoring Plan. 2011. Copies may be requested by calling the Mosquito and Vector Control Association of California (MVCAC).