

Mosquito and Vector Management District of Santa Barbara County 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;**

The Mosquito and Vector Management District of Santa Barbara County (MVMD) services all of Santa Barbara County with the exception of the five Northern County Cities: Guadalupe, Santa Maria, Solvang, Buellton and Lompoc. In addition, the MVMD contracts with the City of Pismo Beach in San Luis Obispo County. Please see attachment A.

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

In order to accomplish long-range, intelligent, and environmentally sound mosquito control, the management and manipulation of mosquitoes must be accomplished using not just one but all available pest control methods. This dynamic combination of methods into one thoughtful, ecologically-sensitive program is referred to as Integrated Pest Management (IPM). The District's mosquito control program employs IPM principles by first determining the species list and abundance of mosquitoes through larval and adult surveys and then using the most efficient, effective and environmentally sensitive means of control. In some situations, water management or source reduction programs can be instituted to reduce breeding areas. The District also considers biological control such as the planting of mosquito fish. When these approaches are not practical or otherwise appropriate, then a pesticide program is used so that specific breeding areas and/or adult mosquitoes can be treated. Although the MVMD is equipped to perform adulticiding as a means of chemical control we have not utilized this method in over twenty years. Our District focuses on larviciding when all other means of control have proven unsuccessful. In addition, we utilize the lowest toxicity larvicides available that have demonstrated efficacy in our environments.

The MVMD utilizes the following components in their IPM strategy:

- Public Education
- Vector Surveillance
- Disease Surveillance
- Threshold Measures
- Methods of Control
- Continuing Education/Certification

Public Education

The MVMD utilizes an aggressive public education program to inform constituents of the ways in which they can help reduce the potential for breeding of nuisance and public health vectors. Presentations are given to schools, civic groups, homeowner associations, business entities and other public agencies. In addition the MVMD maintains a website with didactic materials which can be downloaded at the user's convenience. The MVMD also works with local organizations to mitigate breeding source issues through proper water and vegetation management.

Vector Surveillance

The MVMD has a well established surveillance program which targets larval and adult mosquito populations. Larval sources are routinely inspected by technicians in the field in addition to seeking out the location of new breeding sources. Technicians or the MVMD biologist will collect adult mosquito samples via overnight trapping both on a routine basis and as warranted by direct observation of adult abundance or through service requests from constituents.

Disease Surveillance

The MVMD maintains five sentinel chicken flocks throughout the District boundaries. Blood samples from these flocks are regularly tested for the presence of disease. In addition, adult mosquitoes are regularly collected and tested. The MVMD also participates in dead bird collection via the West Nile virus hotline maintained by the California Department of Public Health.

Threshold Measures

The MVMD utilizes the California Department of Public Health's Best Management Practices for Mosquito Control and the Mosquito-Borne Virus Surveillance and Response Plan to ascertain the appropriate action based on a number of factors including but not limited to: abundance, species, life stage, disease potential, range, distance to human populations, source size.

Control Methods

First and foremost the MVMD attempts to minimize the use of pesticides as a means of control. Pesticides are utilized as a last resort when all other methods have failed or are not feasible. The MVMD seeks to reduce breeding sources through physical and biological methods such as: debris and vegetation management, water quality improvements and biological control. Following these methods the MVMD will use insecticides that utilize a target specific bacterium to reduce mosquito populations in their larval form. These insecticides typically do not affect non-target species within the water body. Finally chemical control will be utilized when all other measures fail.

Continuing Education/Certification

All staff that interacts with pesticides at the MVMD are certified by the State of California Department of Public Health in all four vector control categories. In addition, regular

continuing education is provided to keep our staff apprised of changes and alternatives in vector management.

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 following products may be used by the District for larval or adult mosquito control. This list is excerpted from Attachment E and F within the NPDES Permit for Biological and Residual Pesticide Discharges to Waters of the U.S. for Vector Control Applications. All of these products are used according to label directions and may be applied by ground (hand, truck, ATV, backpack, etc) or by air (helicopter or fixed wing aircraft).

List of Permitted Larvicide Products

| Larvicide Product Name | Registration Number |
|---|----------------------------|
| Vectolex CG Biological Larvicide | 73049-20 |
| Vectolex WDG Biological Larvicide | 73049-57 |
| Vectolex WSP Biological Larvicide | 73049-20 |
| Vectobac Technical Powder | 73049-13 |
| Vectobac-12 AS | 73049-38 |
| Aquabac 200G | 62637-3 |
| Teknar HP-D | 73049-404 |
| Vectobac-G Biological Mosquito Larvicide Granules | 73049-10 |
| Vectomax CG Biological Larvicide | 73049-429 |
| Vectomax WSP Biological Larvicide | 73049-429 |
| Vectomax G Biological Larvicide/Granules | 73949-429 |
| Zoecon Altosid Pellets | 2724-448 |
| Zoecon Altosid Briquets | 2724-375 |
| Zoecon Altosid Liquid Larvicide Mosquito Growth Regulator | 2724-392 |
| Zoecon Altosid XR Entended Residual Briquets | 2724-421 |
| Zoecon Altosid Liquid Larvicide Concentrate | 2724-446 |
| Zoecon Altosid XR-G | 2724-451 |
| Zoecon Altosid SBG Single Brood Granule | 2724-489 |
| Mosquito Larvicide GB-1111 | 8329-72 |
| BVA 2 Mosquito Larvicide Oil | 70589-1 |

| Larvicide Product Name | Registration Number |
|---|----------------------------|
| BVA Spray 13 | 55206-2 |
| Agnique MMF Mosquito Larvicide & Pupicide | 53263-28 |
| Agnique MMF G | 53263-30 |
| Abate 2-BG | 8329-71 |
| 5% Skeeter Abate | 8329-70 |
| Natular 2EC | 8329-82 |
| Natular G | 8329-80 |
| Natular XRG | 8329-83 |
| Natular XRT | 8329-84 |
| Natular T30 | 8329-85 |
| FourStar Briquets | 83362-3 |
| FourStar SBG | 85685-1 |
| Aquabac xt | 62637-1 |
| Spheratax SPH (50 G) WSP | 84268-2 |
| Spheratax SPH (50 G) | 84268-2 |

List of Permitted Adulticide Products

| Adulticide Product Name | Registration Number |
|--|----------------------------|
| Pyroicide Mosquito Adulticiding Concentrate for ULV Fogging 7395 | 1021-1570 |
| Evergreen Crop Protection EC 60-6 | 1021-1770 |
| Pyrenone Crop Spray | 432-1033 |
| Prentox Pyronyl Crop Spray | 655-489 |
| Pyroicide Mosquito Adulticiding Concentrate for ULV Fogging 7396 | 1021-1569 |
| Aquahalt Water-Based Adulticide | 1021-1803 |
| Pyroicide Mosquito Adulticide 7453 | 1021-1803 |
| Pyrenone 25-5 Public Health Insecticide | 432-1050 |
| Prentox Pyronyl Oil Concentrate #525 | 655-471 |
| Prentox Pyronyl Oil Concentrate or 3610A | 655-501 |
| Permanone 31-66 | 432-1250 |
| Kontrol 30-30 Concentrate | 73748-5 |
| Aqualuer 20-20 | 769-985 |
| Aqua-Reslin | 432-796 |

| Adulticide Product Name | Registration Number |
|--|----------------------------|
| Aqua-Kontrol Concentrate | 73748-1 |
| Kontrol 4-4 | 73748-4 |
| Biomist 4+12 ULV | 8329-34 |
| Permanone RTU 4% | 432-1277 |
| Prentox Perm-X UL 4-4 | 655-898 |
| Allpro Evoluer 4-4 ULV | 769-982 |
| Biomist 4+4 | 8329-35 |
| Kontrol 2-2 | 73748-3 |
| Scourge Insecticide with Resmethrin/Piperonyl Butoxide 18%+54% MF Formula II | 432-667 |
| Scourge Insecticide with Resmethrin/Piperonyl Butoxide 4%+12% MF Formula II | 432-716 |
| Anvil 10+10 ULV | 1021-1688 |
| AquaANVIL Water-based Adulticide | 1021-1807 |
| Duet Dual-Action Adulticide | 1021-1795 |
| Anvil 2+2 ULV | 1021-1687 |
| Zenivex E20 | 2724-791 |
| Trumpet EC Insecticide | 5481-481 |
| Fyfanon ULV Mosquito | 67760-34 |

4. Description ALL of 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. Source reduction is the MVMD’s preferred solution, and whenever possible the agency works with property owners to affect long-term solutions to reduce or eliminate the need for continued applications as described in Item 2 above. Mosquito breeding sources and areas that require adult mosquito control are difficult to predict from year to year based on the weather and variations in local environmental conditions. However, the typical sources treated by this agency include:

Please refer to map provided in Item 1 above; regularly treated water bodies include:

1. Andree Clark Bird Refuge
2. Atascadero Creek
3. Carpinteria Salt Marsh
4. Chumash Park (City of Pismo Beach)

5. Cienguitas Creek
6. Devereux Lagoon
7. Lake Los Carneros
8. Mission Creek
9. Pismo Creek
10. Tecolote Creek
11. Santa Barbara Airport salt marshes

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

With any source of mosquitoes or other vectors, the MVMD’s first goal is to look for ways to eliminate the source, or if that is not possible, for ways to reduce the potential for vectors. 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 agency 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.

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

The need to apply product is determined by surveillance. Actual use varies annually depending on mosquito abundance. The pesticide amounts presented below were taken from the MVMD’s 2015 NPDES Annual Report. Other public health pesticides in addition to those listed below may be used as part of the agency’s best management practices.

| Product | Registration Number | Total Amount (lbs.) | Number Applications |
|---------------------|---------------------|---------------------|---------------------|
| Altosid Briquets | 2724-375 | 12.0119 | 2 |
| Altosid Pellets | 2724-448 | 100 | 4 |
| Altosid XR Briquets | 2724-421 | 637.56 | 5 |
| VectoBac G | 73049-10 | 5488.802 | 767 |
| VectoLex FG | 73049-20 | 70 | 1 |
| Natular T30 | 8329-85 | 24.611 | 15 |
| Natular XRT | 8329-84 | 8.272 | 33 |

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

The MVMD utilizes BMP criteria as stated in the Best Management Practices for Mosquito Control in California. In summary the MVMD utilizes the criteria listed in item #2 above.

9. Description of the BMPs to be implemented. The BMPs shall include at a minimum:

The MVMD's BMPs are described in Item 2 above. Specific elements have been highlighted below under items a-f:

a. measures to prevent pesticide spill;

All pesticide applicators receive annual spill prevention and response training. Agency employees ensure daily that application equipment is in proper working order. Spill mitigation devices are placed in all vehicles and pesticide storage areas.

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

Application equipment is calibrated at least annually as required by the California Department of Pesticide Regulation (DPR) and the terms of a cooperative agreement with the California Department of Public Health (CDPH).

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

This will be included in our pesticide applicators annual pesticide application and safety training, continuing education programs, and/or regional NPDES Permit training programs.

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

The MVMD calibrates truck-mounted and handheld larviciding equipment each year to meet application specifications. Supervisors review application records daily to ensure appropriate amounts of material are being used. Ultra-low volume (ULV) application equipment is calibrated for output and droplet size to meet label requirements. Aerial larviciding equipment is calibrated by the Contractor. Aerial

adulticide equipment is calibrated regularly and droplet size will be monitored by the agency to ensure droplets meet label requirements. Airplanes used in urban ULV applications and the primary airplane used for rural ULV application is equipped with advanced guidance and drift management equipment to ensure the best available technology is being used to place product in the intended area. If a secondary airplane is used in rural ULV applications it will be equipped with an advanced guidance system.

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.

f. descriptions of specific BMPs for each type of environmental setting (agricultural, urban, and wetland).

Please see the Item 2 above

The following environmental settings are of interest to the MVMD, BMPs for each can be found in the Best Management Practices for Mosquito Control in California:

- Residential and Landscaped Properties
- Rural Properties
- Wetlands
- Stormwater Management
- Right of Ways and Easements
- Wastewater Treatment Facilities
- Wildlands and Undeveloped Areas

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 US, 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 MVMD staff only applies pesticides to sources of mosquitoes that represent imminent 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 agency'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 Item 2 above.

Specific species of concern for the MVMD are:

- *Culex tarsalis*
- *Culex quinquefasciatus*
- *Culex erythrothorax*
- *Aedes squamiger*
- *Culiseta incidens*
- *Culiseta inornata*
- *Anopheles hermsi*
- *Anopheles fran iscanus*
- *Aedes washinoi*
- *Culiseta particeps*
- *Aedes taeniorhynchus*

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 agency's preferred solution, and whenever possible the agency works with property owners to implement long-term solutions to reduce or eliminate the need for continued pesticide applications as described in Item 2 above.

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 provided in the Item 2 above that the agency uses. The MVMD 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.

The MVMD uses the principles and practices of Integrated Vector Management (IVM) as described on pages 26 and 27 of the Best Management Practices for Mosquito Control in California and as discussed in item 2 above. As stated in item #10 above, locations where vectors may exist are assessed, and the potential for using alternatives to pesticides is determined on a case-by-case basis. Commonly considered alternatives include: 1) Eliminate artificial sources of standing water; 2) Ensure temporary sources of surface water drain within four days (96 hours) to prevent adult mosquitoes from developing; 3) Control plant growth in ponds, ditches, and shallow wetlands; 4) Design facilities and water conveyance and/or holding structures to minimize the potential for producing mosquitoes; and 5) Use appropriate biological control methods that are available. Additional alternatives to using pesticides for managing mosquitoes are listed on pages 4-19 of the Best Management Practices for Mosquito Control in California (See previous comment.).

Implementing preferred alternatives is dependent 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 MVMD follows an existing IVM program, which includes practices described in the Item 2 above.

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 MVMD, 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. If applicable, specify a website where public notices, required in Section VIII.B, may be found.

<http://www.mvmdistrict.org>

References:

Best Management Practices for Mosquito Control in California. 2011. 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 Mosquito and Vector Management District of Santa Barbara County at (805) 969-5050.

California Mosquito-borne Virus Surveillance and Response Plan. 2010. [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 Mosquito and Vector Management District of Santa Barbara County at (805) 969-5050.

MVCAC NPDES Coalition Monitoring Plan. 2011. [In development at the time of this draft]