



1555 Yosemite Ave #46
San Francisco, Ca 94124
p: 415.671.0300
f: 415.671.0305
www.pestec.com

AUG 22 2014

July 16, 2014

Lewis Harrison
SF PUC
525 Golden Gate
San Francisco, CA 94102

Dear Mr. Harrison,

This letter is to inform you of our intent to apply for a Statewide National Pollutant Discharge Elimination System Permit for Biological and Residual Pesticide Discharges to Waters of the United States from Vector Control Applications for the catch basin mosquito abatement program.

If you have any questions please contact Luis Agurto with Pestec (luis@pestecipm.com), Debra Lutske with The SF PUC (DLutske@swater.org), or Gil Vasquez with The California Division of Water Quality (gil.vazquez@waterboards.ca.gov).

Sincerely,

Luis Agurto
President
Pestec

CC:

Nader Shatara, SF DPH
Chris Geiger, SF Department of the Environment
Mabel Chow, SF PUC

ATTACHMENT G – NOTICE OF INTENT

AUG 22 2014

WATER QUALITY ORDER NO. 2011-0002-DWQ
 GENERAL PERMIT NO. CAG 990004

STATEWIDE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT
 FOR BIOLOGICAL AND RESIDUAL PESTICIDE DISCHARGES
 TO WATERS OF THE UNITED STATES
 FROM VECTOR CONTROL APPLICATIONS

I. NOTICE OF INTENT STATUS (see Instructions)

Mark only one item A. New Applicator B. Change of Information: WDID# _____
 C. Change of ownership or responsibility: WDID# _____

II. DISCHARGER INFORMATION

A. Name Ajurto Corporation dba Pestec			
B. Mailing Address 1555 Yosemite Ave # 40			
C. City San Francisco	D. County San Francisco	E. State CA	F. Zip Code 94124
G. Contact Person Luis Ajurto	H. Email address luis@pestecipm.com	I. Title President	J. Phone 415 671 0300

III. BILLING ADDRESS (Enter information only if different from Section II above)

A. Name			
B. Mailing Address			
C. City	D. County	E. State	F. Zip Code
G. Email address	H. Title	I. Phone	

IV. RECEIVING WATER INFORMATION

A. Biological and residual pesticides discharge to (check all that apply)*:

- Canals, ditches, or other constructed conveyance facilities owned and controlled by Discharger.
 Name of the conveyance system: _____
- Canals, ditches, or other constructed conveyance facilities owned and controlled by an entity other than the Discharger.
 Owner's name: _____
Name of the conveyance system: _____
- Directly to river, lake, creek, stream, bay, ocean, etc.
 Name of water body: San Francisco Bay, Lake Merced, Pacific Ocean

* A map showing the affected areas for items 1 to 3 above may be included.

B. Regional Water Quality Control Board(s) where application areas are located (REGION 1, 2, 3, 4, 5, 6, 7, 8, or 9): Region 2
(List all regions where pesticide application is proposed.)

A map showing the locations of A1-A3 in each Regional Water Board shall be included.

V. PESTICIDE APPLICATION INFORMATION

A. Target Organisms: Vector Larvae _____ Adult Vector

B. Pesticides Used: List name, active ingredients and, if known, degradation by-products
VECTOMAX FG - Bacillus sphaericus / Bacillus Thuringiensis
VECTOMAX NSP - Bacillus sphaericus / Bacillus Thuringiensis
AGNIQUE G-PAK 35 - Poly(ox-1,2etandiyli), a- β 14-20 branched + linear alkyl)- ω -hydroxy
BVA OIL 13 - refined petroleum distillate.

C. Period of Application: Start Date February 15th End Date October 31st

D. Types of Adjuvants Added by the Discharger:

VI. PESTICIDES APPLICATION PLAN

A. Has a Pesticides Application Plan been prepared?*

Yes No

If not, when will it be prepared? _____

* A copy of the PAP shall be included with the NOI.

B. Is the applicator familiar with its contents?

Yes No

VII. NOTIFICATION

Have potentially affected governmental agencies been notified?

Yes No

* If yes, a copy of the notifications shall be attached to the NOI.

VIII. FEE

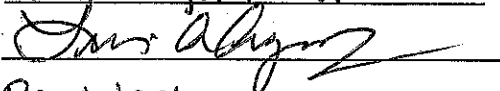
Have you included payment of the filing fee (for first-time enrollees only) with this submittal?

Yes NO NA

IX. CERTIFICATION

"I certify under penalty of law that this document and all attachments were prepared under my direction and supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment. Additionally, I certify that the provisions of the General Permit, including developing and implementing a monitoring program, will be complied with."

A. Printed Name: Luis Aguayo Jr

B. Signature: 

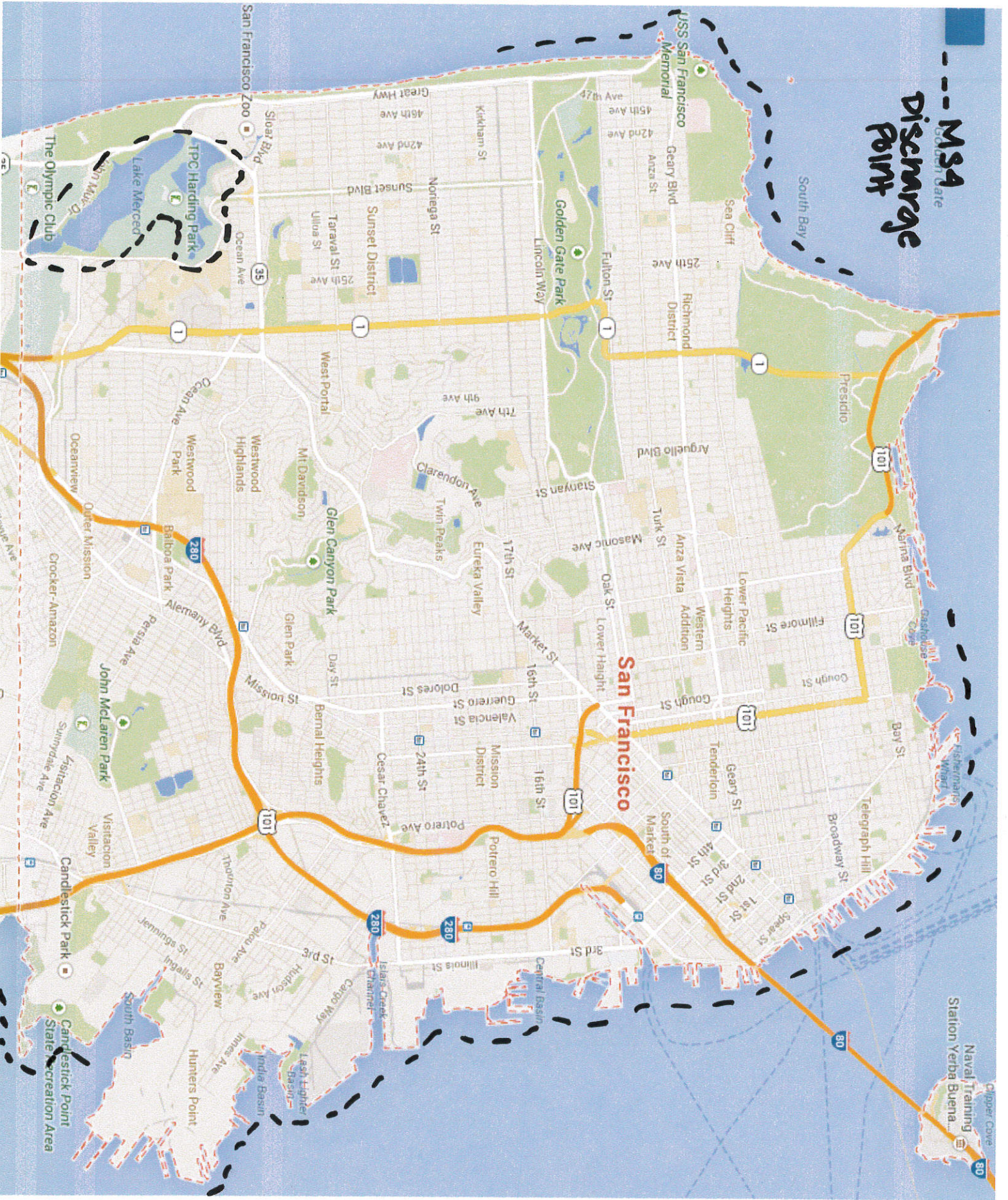
Date: 7-18-14

C. Title: President.

X. FOR STATE WATER BOARD USE ONLY

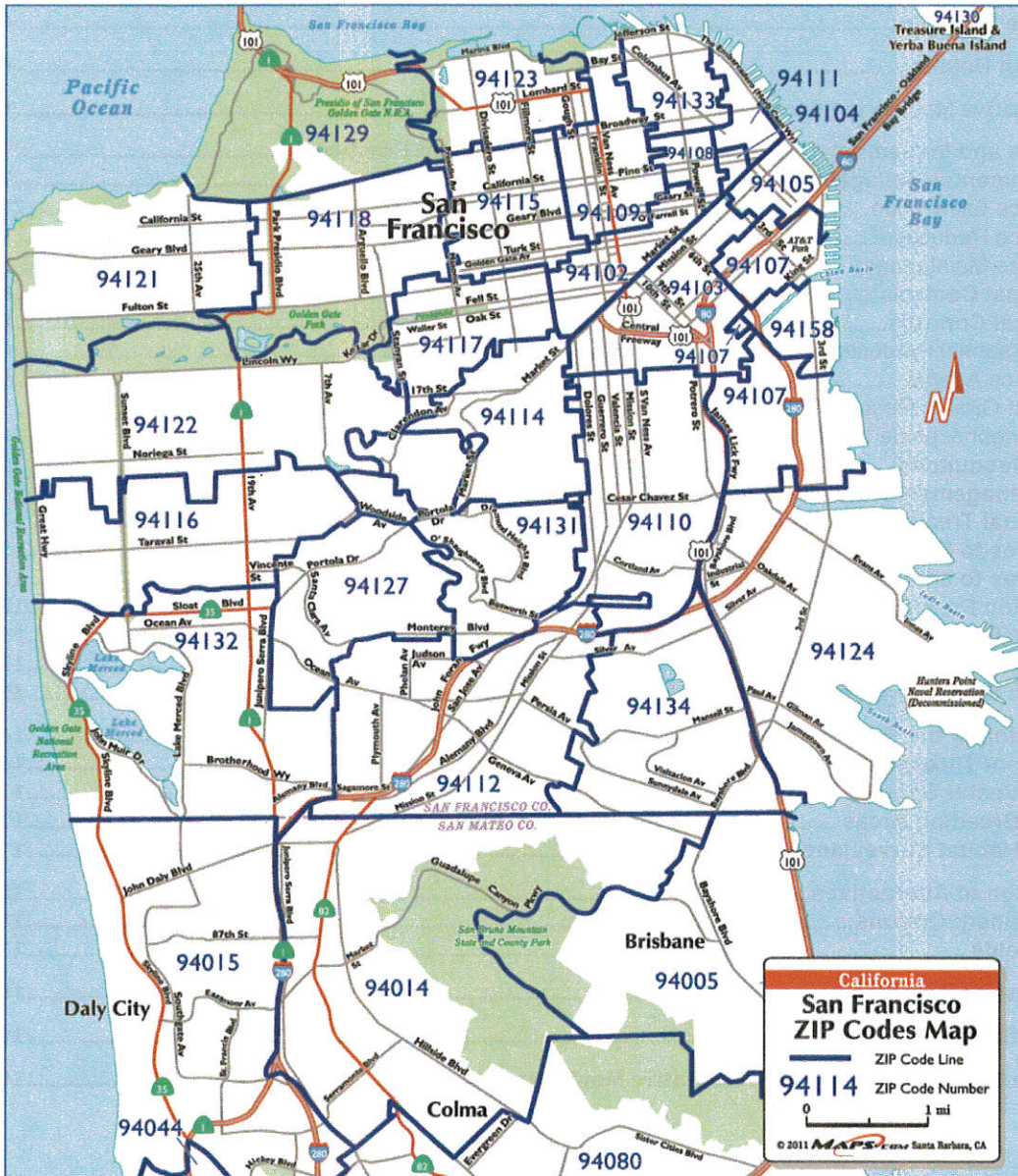
WDID:	Date NOI Received:	Date NOI Processed:
Case Handler's Initial:	Fee Amount Received: \$	Check #:

MS4 500th Gate Discharge Point



San Francisco Mosquito Abatement Courier (SF MAC Team) Pesticide Action Plan

Developed by Pestec Integrated Pest Management



1555 Yosemite Ave #46
San Francisco, Ca 94124
p: 415.671.0300
f: 415.671.0305
www.pestec.com

Table of Contents

Target Areas..... 3

Application Decision Making Process 3

Pesticide Information 4

Application Area(s) 5

Alternative Methods..... 6

Application Details 6

Representative Monitoring Locations 6

Evaluation and Implementation of Available Best Management Practices 7

 Environmental Management 7

 Source Elimination 7

 Source Reduction..... 7

 Source Maintenance..... 8

 Biological Controls 8

 Chemical Controls..... 8

 Bio-Rational Products 9

 Surface Agents 9

 Insect Growth Regulators..... 9

 Organophosphate Larvicides 10

 Adult Mosquitoes..... 10

 Pest Management Actions Reduced Risk Spectrum 11

 Additional Treatment Considerations..... 14

 Measures to Prevent Pesticide Spill..... 15

 Measures to ensure minimum and consistent applications..... 15

 Education Program..... 15

 Specific Best Management Practices by Application Mode 15

 Specific Best Management Practices by Product..... 15

 Specific Best Management Practices by Environmental Setting..... 15

Identification of the Problem..... 16

 Treatment Threshold Mosquito Densities 16

 Target Vector Species 17

 Target Breeding Areas 17

 Target Habitat Surveillance..... 17

Examination of Alternatives 18

 Management Options..... 18

 Thresholds 18

Correct Use of Pesticides..... 18

Public Notification 19

MAC Team PURS Reports and Representative Monitoring Locations..... 20



1555 Yosemite Ave #46
 San Francisco, Ca 94124
 p: 415.671.0300
 f: 415.671.0305
 www.pestec.com

Target Areas

Pestec is responsible for the inspection and treatment of all San Francisco Public Utilities Commission's (SFPUC), Waste Water Enterprise (WWE), catch basins and storm drains located on City streets and public property in the City and County of San Francisco during the mosquito abatement season. Over 23,000 catch basins are located within City and County limits. A majority of San Francisco's catch basins are part of a combined sewer system that discharge into publicly owned treatment works. These treatments works are currently covered under NPDES permits for the Oceanside (Southwest Ocean Outfall) and Westside Wet Weather Facilities. Larvicide applications to catch basins that drain into the City and County's combined sewer systems do not constitute point source discharges, and therefore do not require coverage under the State of California general permit for vector control applications. Some Municipal Separate Storm Sewer Systems (MS4) catch basins drain directly to the San Francisco Bay. Please see **Appendix A: Target Areas** for a map of combined sewer system and MS4 catch basins within City and County limits.

Application Decision Making Process

The San Francisco Department of Health (SFPDH) has established a monitoring program for City catch basins that begins on February 15th and ends on October 31st of each year. Pestec and its' San Francisco Mosquito Abatement Courier Team (MAC Team) execute the program. The purpose of this monitoring and abatement program is to decrease the risks associated with the West Nile Virus and other health threats posed by mosquito activity in the City and County. The program is capable of inspecting (and if necessary, treating) all of the City's catch basins every 6 weeks. The primary monitoring activity carried out in this program is the routine inspection of each catch basin to identify conditions conducive to mosquito breeding, i.e. water and decaying organic matter (leaf litter), and the presence of mosquito larvae and adults. Ongoing mosquito larvicide treatments are made to catch basins identified as having water. When pupae are suspected or adults confirmed the basins are treated with a pupicide. Pestec technicians record inspection results and pest management actions taken, including any pesticide applications, mosquito activity observed, and conditions conducive to mosquito activity discovered during inspection. These findings are input to a GPS mapping service and reported to the SFPUC and SFPDH in accordance to the requirements of the San Francisco Integrated Pest Management Ordinance.¹ SFPDH will also treat a small number of catch basins under this permit when their investigations to public reports of mosquito activity identify sources of breeding mosquitoes or otherwise undetermined activity in catch basins.

¹ *San Francisco Integrated Pest Management Ordinance* Sec. 306 "Record Keeping and Recording"
[http://www.amlegal.com/nxt/gateway.dll/California/environment/chapter3integratedpestmanagementprogram?f=templates\\$fn=default.htm\\$3.0\\$vid=amlegal:sanfrancisco_ca\\$anc=JD_306](http://www.amlegal.com/nxt/gateway.dll/California/environment/chapter3integratedpestmanagementprogram?f=templates$fn=default.htm$3.0$vid=amlegal:sanfrancisco_ca$anc=JD_306) (last accessed May, 2014)

Pesticide Information

Pestec may use the following list of products for larval or adult control. This list is taken directly from the *San Francisco Department of the Environment 2014 Reduced Risk Pesticide List*² which regulates the types of pesticides allowed for use on City property. All of these products are used according to label directions and are applied by hand to treatment areas.

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

² <http://www.sfenvironment.org/download/2014-reduced-risk-pesticide-list> (last accessed May 2014)



1555 Yosemite Ave #46
San Francisco, Ca 94124
p: 415.671.0300
f: 415.671.0305
www.pestec.com

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 Extended Residual Briquets	2724-421
Zoecon Altosid Liquid Larvicide Concentrate	2724-446
Zoecon Altosid XR-G	2724-451
BVA 2 Mosquito Larvicide Oil	70589-1
Agnique MMF G	53263-30
Agnique MMF G PAK 35	53263-30
Mosquito Dunks	6218-47

Application Area(s)

For a description of the areas Pestec regularly monitors and treats please see the "Application Decision Making Process" section above. For a map of monitoring and treatment locations see **Appendix A: Target Areas**



Alternative Methods

With any source of mosquitoes or other vectors, Pestec'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. Pestec does this by providing ongoing surveillance data to the City and County of San Francisco on conditions in catch basins that are conducive to mosquito breeding. The most commonly used methods for mosquito control and their limitations are included in the *Best Management Practices for Mosquito Control in California*.³ For a more in depth look at the BMPs Pestec has implemented in San Francisco see the "Evaluation and Implementation of Available Best Management Practices" section below (page 8).

Application Details

The need to apply pesticides is determined by the ongoing MAC Team surveillance program and data collected on mosquito activity by the SFDPH through inspection and reports made by the public. Actual pesticide use varies annually depending on mosquito abundance. The pesticide amounts presented **below in MAC Team PURS Reports and Representative Monitoring Locations** were taken from Pestec's 2011, 2012, and 2013 MAC Team pesticide use reports.

Representative Monitoring Locations

Pestec provides visual monitoring at sewer discharge areas after major storm events during the mosquito abatement season when the combined sewer system overflows and discharges to the San Francisco Bay. Monitoring data is collected according to State *Water Resources Control Board order 2014-0038-EXEC*.⁴ See diagram below **in MAC Team PURS Reports and Representative Monitoring Locations** for an overview of monitoring locations.

³ http://www.cdph.ca.gov/HealthInfo/discond/Documents/CDPHBMPMosquitoControl6_08.pdf (last accessed May 2014)

⁴ http://www.waterboards.ca.gov/water_issues/programs/npdes/pesticides/docs/vectorcontrol/2012-0003-dwq/vcp_amended_mrp.pdf (last accessed May 2014)



1555 Yosemite Ave #46
San Francisco, Ca 94124
p: 415.671.0300
f: 415.671.0305
www.pestec.com

Evaluation and Implementation of Available Best Management Practices

Below are examples of the spectrum of methods and products for preventing adult mosquito emergence from catch basins in the City and County of San Francisco.

Environmental Management

Managing mosquito-breeding environments by altering factors conducive to mosquito breeding is the foundation of IPM and is mandated through the *San Francisco Integrated Pest Management Ordinance*.⁵ *The Best Management Practices for Mosquito Control in California* outline three methods for managing mosquito environments: source elimination, source reduction and source maintenance.⁶

Source Elimination

Catch basins are the gateways into the sewers. They are the main entryway for rainwater and street runoff into San Francisco's combined sewer system. Not only do catch basins drain away run-off, they are designed to hold some of the water and act as a seal to prevent noxious gases from escaping the sewer system. As such, larvicide treatments are considered long-term solutions for mosquito control in lieu of costly retrofits, replacements, or redesigns. However, sole reliance on larvicides is *not* a long-term solution for preventing mosquito production. Completely eliminating the source of mosquito breeding in catch basins can be difficult, since they are designed to hold standing water, however, regular maintenance operations do help eliminate unnecessary blockage in catch basin. Catch basins clogged with debris created ideal breeding sources for mosquitoes. Eliminating these sources through regular maintenance is key to reducing mosquito populations.

Source Reduction

Source reduction aims to alter and sometimes eliminate available habitat for larvae that substantially reduces mosquito breeding and the need for repeatedly applying pesticides. Unlike source elimination, standing water may exist, but the total amount of water, or the time the water is left standing, is greatly reduced. Source reduction may require some maintenance to prevent further mosquito breeding (see below). Examples of source reduction in catch basins include the use of the *San Francisco Storm water Design Guideline*⁷ recommendations for reducing storm water pollution by using source controls such as covering the catch basins to prevent adult mosquito access to the catch basin water. This best management practice (BMP) for

⁵ <http://www.sfbos.org/ftp/uploadedfiles/bdsupvrs/ordinances11/o0007-11.pdf> page 2 (last accessed May 2014)

⁶ http://www.cdph.ca.gov/HealthInfo/discond/Documents/CDPHBMPMosquitoControl6_08.pdf page 12 (last accessed May 2014)

⁷ <http://www.sfwater.org/Modules/ShowDocument.aspx?documentID=2779> page 82 (last accessed May 2014)



1555 Yosemite Ave #46
San Francisco, Ca 94124
p: 415.671.0300
f: 415.671.0305
www.pestec.com

storm water management is also recommended by the *University of California, Division of Agriculture and Natural Resources (UC ANR) Publication 8125*.⁸ UC ANR recommends, completely sealing structures that retain water permanently or longer than 72 hours to prevent entry of adult mosquitoes. Adult female mosquitoes may penetrate openings as small as 1/16 inch (2 mm) to gain access to water for egg laying. Screening can exclude mosquitoes, but it is subject to damage and is not the preferred method of exclusion....If using covers, they should be tight fitting with maximum allowable gaps or holes of 1/16 inch (2 mm) to exclude entry of adult mosquitoes. The use of gaskets can provide a much more effective barrier when used properly.⁹

Source Maintenance

When source elimination is infeasible or prohibitive, catch basin maintenance activities can make catch basins less suitable to mosquitoes and allow for other controls to work more effectively. The SFPUC currently has the capability to clean out, or remove the entire contents of approximately 6,000 catch basins a year with a vacuum truck. The EPA recommends that catch basins be cleaned out at least once or twice per year.¹⁰ Although after clean out the effect on the residing population will be immediate, the re-entry of water and the re-population of catch basins by mosquitoes is likely to occur in a short period of time, depending on precipitation, local water usage/runoff and temperature. However, the removal of leaf litter from catch basins may improve inspections and the efficacy of larvicides. This strategy is therefore paramount to effective IPM for mosquitoes in San Francisco catch basins.

Biological Controls

The use of predators, parasites, or pathogens to reduce populations of mosquitoes is commonly employed throughout California and many of San Francisco's natural bodies of water already benefit from these biological controls. The use of mosquito eating fish, parasitic nematodes, crustaceans such as "tad pole shrimp," copepods, and dragonfly nymphs must be further explored for use in catch basins. It is unlikely that the heavily polluted catch basin water could support these organisms and there is also a risk of introducing invasive species into fragile microenvironments in and around the City.

Chemical Controls

Pesticides that control mosquito larvae are called larvicides. Four types of larvicides (biorational, surface oil, growth regulating, and chemical products) encompassing seven active ingredients are registered for use in California. The San Francisco Department of the Environment has four standing exemptions for larvicides currently on *the San Francisco Reduced-Risk Pesticide List*.

⁸ <http://www.ipm.ucdavis.edu/PDF/MOSQ/mosquitostormwater.pdf> page 4 (last accessed May 2014).

⁹ Page 5

¹⁰ http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm?action=factsheet_results&view=specific&bmp=77



Bio-Rational Products

Bio-rational products exploit insecticidal toxins found in certain naturally occurring bacteria. These bacteria are cultured in mass and packaged in various formulations. The bacteria must be ingested by mosquito larvae to ensure the toxin is released. Therefore biorational products are only effective against larvae since pupae do not feed. The bacteria used to control mosquito larvae have no significant effects on non-target organisms. Two products that are used against mosquito larvae singly or in combination are *Bacillus thuringiensis israelensis* (Bti) and *Bacillus sphaericus* (Bs). Manufactured Bti contains dead bacteria and remains effective in the water for 24 to 48 hours; some slow release formulations provide longer control. In contrast, Bs products contain live bacteria that in favorable conditions remain effective for more than 30 days. Both products are safe enough to be used in water that is consumed by humans. Although field studies have shown that both microbial larvicides are efficacious in the control of mosquito larva "serious resistance, as high as 50,000 fold, has evolved where *B. sphaericus* is used against *Culex* mosquitoes."¹¹ Studies have shown however that pesticide resistance can be managed through rotation or combination of active ingredients of Bti and Bs respectively.¹²

Surface Agents

Mosquito larvae and pupae breathe through siphons that extend above the water surface. Surface agents such as highly refined mineral oils or monomolecular films (alcohol derivatives) can spread across the entire surface of the water and prevent mosquitoes from breathing. Depending on the product, the film may remain on the water's surface from a few hours to a few days. 4 Using surface agents may be restricted in sensitive habitats or where runoff may enter sensitive habitats.

The two surface agents currently approved for use by the San Francisco Department of the Environment are BVA2 oil, a highly refined mineral oil and Agnique MMF. Agnique MMF has a longer residual control, however may be discontinued by the manufacturer and will no longer be available.

Insect Growth Regulators

Insect growth regulators (IGRs) disrupt the physiological development of larvae thus preventing adults from emerging. The two products currently used for controlling mosquito larvae are methoprene and diflubenzuron. The effective life of these products varies with the formulation. Methoprene can be applied in granular, liquid, pellet, or briquette formulation. Diflubenzuron is used selectively because it may be toxic to non-target aquatic invertebrates. There are no such restrictions to using methoprene. IGRs for mosquito control can be used in sources of water that

¹¹ <http://faculty.ucr.edu/~walton/Wirth%20et%20al%202010%20EM.pdf> page 1155 (last accessed May 2014).

¹² http://webdb.dmsc.moph.go.th/ifc_nih/applications/files/13_Entomo%20E.pdf page 181 (last accessed May 2014).

are consumed by humans.

The SF Reduced-Risk Pesticide list recognizes that bio-rational mosquito controls are preferred to IGR's, since methoprene may pose a risk to non-target organisms such as crustaceans in the Bay.

Organophosphate Larvicides

Risk related pesticides are rarely used to control mosquito larvae and would represent a drastic departure from San Francisco's toxics reduction initiatives. Given the readily available and efficacious alternatives, the use of organophosphate larvicides in the City and County is indefensible.

Adult Mosquitoes

Adult mosquitoes are controlled with pesticides known as adulticides. These pesticides fall into two categories- barrier applications and ultra-low volume (ULV) applications. ULV applications have been approved for adult mosquito control in the past for outbreaks of mosquitoes at the SFPUC wastewater treatment plants. A threshold must be set by the SFDPH for determining when, if ever, it would be appropriate to apply a ULV pesticide to catch basins in San Francisco. Barrier adulticides are not appropriate for the control of adult mosquitoes in catch basins.

Pest Management Actions Reduced Risk Spectrum

The following chart details mosquito management techniques from least to most risk.

<i>Management Tactics</i>	<i>Duration of Control</i>	<i>Monitoring Requirements</i>	<i>Environmental Considerations</i>
<i>Re-design</i>	<i>Life of the System</i>	<i>At minimum once per year depending on design. Could be potentially carried by operations and maintenance staff.</i>	<i>Helps reduce trash from entering system and meet EPA storm water regulations and SF Storm water guidelines</i>
<i>Retro-fit with insert</i>	<i>Unknown, possibly several years though vandalism could reduce the lift</i>	<i>At minimum quarterly to remove trash build-up and check for vandalism.</i>	<i>Helps reduce trash from entering system and meets EPA storm water regulations and SF Storm water guidelines</i>
<i>Flush or vacuum out</i>	<i>No residual, 7-10 days before possible adult mosquito emergence</i>	<i>Weekly</i>	<i>Increased maintenance reduces trash entering the storm water system, however, does not prevent chemical pollutants and increased carbon pollution.</i>

Larvasonic	No residual, 7-10 days before possible adult mosquito emergence	Weekly	Non-chemical, can potentially be delivered via cyclist.
Vectolex WSP* (Bs.)	Up to 30 days unless larvae are resistant.	3 week cycle	Risk of pest resistance
Vectobac (Bti.)	2-3 days, 7-14 days before possible adult mosquito emergence	Weekly cycle	Low-risk of pesticide resistance, target specific.
Vectomax (Bti. and Bs.)	Up to 30-52* days of control	4-6 week cycle	Manages pest resistance to Bs. (and same as above)

<i>BVA2 Oil</i>	<i>3 days</i>	<i>Weekly</i>	<i>Low risk</i>
<i>Agnique MMF</i>	<i>5-22 days</i>	<i>1-2 week cycle</i>	<i>Tier II larvicide, elevated risk.</i>
<i>Altosid (IGR)</i>	<i>30-150 days</i>	<i>3-18 week cycle</i>	<i>Risk to non-targets and pest resistance</i>

Additional Treatment Considerations

The frequency of treatment and monitoring should be determined through monitoring observations for larva development, pupae, and adult mosquito emergence and according to *the SFDPH WNV Response Plan*¹³. The Response Plan calls for increased levels of monitoring based on Tiered levels of WNV detection. See table below:

Priority Site	Tier I Environmental Controls	Tier I Larvicide Controls	Tier II (Positive bird) Environmental & Larvicide Controls	Tier III (Human case) Environmental Controls	Tier III (Human case) Larvicide Controls	Tier IV Emergency Controls
Storm water, catch basins and sewage system (Internal Facilities)	Routine Maintenance Possible monthly trapping and monitoring at areas of past infestation.	Monthly monitoring of traps. Larvicide application * in response to complaints or if infestation activity is directly observed.	Bi-weekly observation and application * to infestation location.	Weekly inspection and monitoring of traps. Flush (frequency depending on breeding activity).	Weekly monitoring of traps. Frequency of control applications	As directed by DPH.

With the occurrence of a locally acquired human case of WNV the SFDPH action plan calls for weekly monitoring of catch basins. This increased level of monitoring assures that in a case of catch basin “wash-out” or product failure that mosquito activity will be abated prior to adult emergence. Catch basin wash-outs occur when rain or wash water enters the catch basin at an amount sufficient enough to: dilute the larvicides in the basins to a level that is no longer effective, or completely remove the larvicides. A treatment strategy that relies on the a longer residual period, and does not include more frequent monitoring increases the risk that product failure or wash-out will go unnoticed and will allow for adult mosquitoes to develop unhindered.

¹³ http://www.sfdph.org/dph/EH/WestNile/DPH_Activities.pdf (last accessed May 2014).

Measures to Prevent Pesticide Spill

All mosquito abatement courier pesticide applicators receive annual spill prevention and response training. Pestec employees ensure daily that application equipment is in proper working order. The granular formulation of the major larvicide used makes clean-up very simple and possible to do with a dust pan and broom. Trucks that apply liquid larvicides are equipped with spill mitigation equipment, and only hand tanks are used to deliver liquid larvicides.

Measures to ensure minimum and consistent applications

Application equipment is calibrated at least weekly, meeting the annual requirement of the Department of Pesticide Regulations (DPR) and the terms of a cooperative agreement with the California Department of Public Health (CDPH) and according to the San Francisco DPH, PUC and the SF IPM Ordinance.

Education Program

Before the beginning of the SF Mosquito Abatement Courier Season, all applicators/couriers complete a rigorous pesticide application safety and information training course. The course includes information about the adverse effects of pesticide discharges into the San Francisco Bay and information about the NPDES permit. Training is reviewed throughout the year, at end of day, weekly calibration meetings, and 6 week end of round meetings.

Specific Best Management Practices by Application Mode

Pestec calibrates all larviciding equipment weekly to meet application specifications. MAC Team supervisors review application records daily to ensure appropriate amounts of material are being used.

Specific Best Management Practices by Product

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.

Specific Best Management Practices by Environmental Setting

Please see the "Evaluation and Implementation of Available Best Management Practices" section above (page 8) for information about the best management practices Pestec implements for mosquito abatement in San Francisco.

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, Pestec reviews and develops the following:

Treatment Threshold Mosquito Densities

Densities for larval and adult vector populations to serve as action threshold(s) for implementing pest management strategies;

Only those mosquito sources that Pestec determines to represent imminent threats to public health or quality of life are treated. Thresholds for public health pests are very low and given the environmental justice goals of the SFCC and the SFPUC, the travel range of adult mosquitoes of several miles and the relatively small size of the City and County, the threshold remains constant throughout the City's catch basins.

The threshold of mosquitoes in City catch basins is defined as:

- Less than one (<1) - This threshold means that measures are taken to prevent pest activity and will require service to monitor and treat to prevent the emergence of adult mosquitoes.
- One or more (1+) - When adult activity is identified through inspection, trapping or sighting reports, then an action ranging along the risk-reduction spectrum outlined below will be implemented starting with the lowest risk option.

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 (determined by SFPDH and CDPH)**
- **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.**

Target Vector Species

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

Aedes dorsalis

Aedes squamiger

Aedes washinoi

Aedes sierrensis

Anopheles freborni

Anopheles hermsi

Culex erythrothorax

Culex pipens

Culex stigmatosoma

Culex tarsalis

Culex inornata

Culex incidens

Target Breeding Areas

Known breeding areas for source reduction, larval control program, and habitat management:

Pestec's target breeding areas include all of the City and County of San Francisco catch basins. Over 23, 000 catch basins are located within City and County limits. A majority of San Francisco's catch basins are part of a combined sewer system that discharge into publicly owned treatment works. Some target areas are MS4 catch basins drain directly to the San Francisco Bay. Please see **Appendix A: Target Areas** for a detailed map of these target breeding areas.

Target Habitat Surveillance

The SFDPH continually collects public reports of mosquito activity and investigates through inspection properties in neighborhoods where mosquitoes are reported. SFDPH also monitors regional mosquito-borne disease activity detected in humans, birds, and/or other animals, and uses these data to guide mosquito control activities. These activities are outlined in the *San Francisco Department of Public Health Mosquito-Borne Virus Surveillance and Response*

*Activities.*¹⁴ Pestec also reviews past season MAC Team surveillance data to review trouble spots found during the previous years mosquito abatement activities.

Examination of Alternatives

Pestec continues 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

Management Options

- No action
- Prevention
- Mechanical or physical methods
- Cultural methods
- Biological control agents
- Pesticide if there are no alternatives to pesticides, dischargers shall use the least amount of pesticide necessary to effectively control the target pest.

Please see above for specific information about the best management practices Pestec implements in the City and County of San Francisco.

Implementing preferred alternatives depends a variety of factors including availability of Pestec resources, cooperation with City 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.

Thresholds

Please see above for Pestec's specific vector management program that includes treatment thresholds for mosquito activity.

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 Pestec and the MAC Team. Pestec is required to comply with the Department of Pesticide Regulation's (DPR) requirements and the terms of our California

¹⁴ http://www.sfdph.org/dph/EH/WestNile/DPH_Activities.pdf page 2



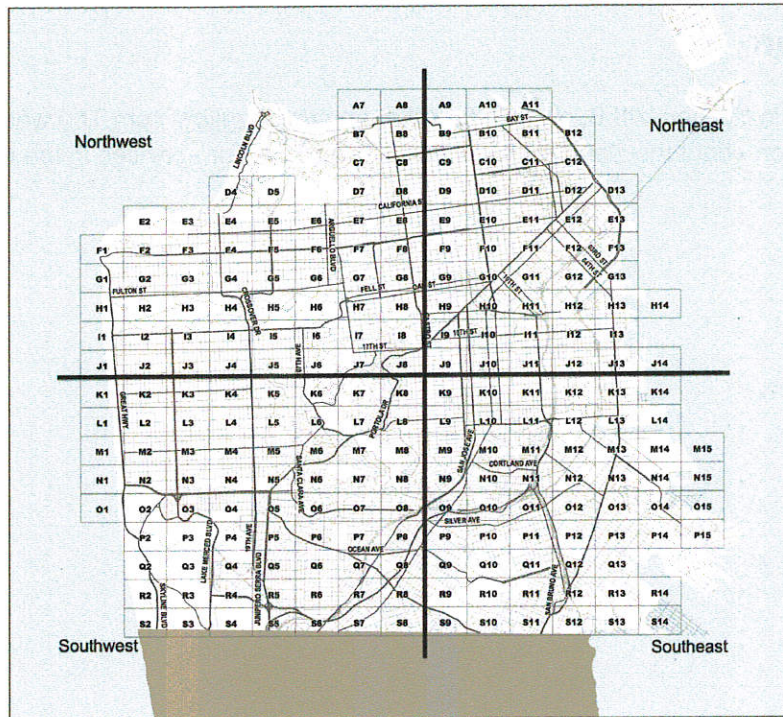
Department of Public Health (CDPH) Cooperative Agreement. All pesticide applicators receive annual safety and spill training in addition to their regular continuing education.

Public Notification

All public notices required in Section VIII.B, may be found at <http://mosquitosf.com>. The website acts a source for information about the San Francisco MAC Team and our activities in the City from Spring to Fall.



MAC Team PURS Reports and Representative Monitoring Locations



Index to Citywide Sewer Map

Prepared for PE/STEC
by SCDPW Hydraulic
Engineering Section
January 2013



Projected product usage for 2014:

- 10 grams Vectomax granules per basin
 - Approximately 36% of the basins inspected are dry and are not treated
- Approximately 6 treatments total for 2014/ basins
 - MS4 basins were not treated 1st half of 2014

Estimated usage per quadrant:

- First Half of 2014 (not including MS4 basins):
 - Northeast: $6053 \text{ basins} \times 10 \text{ grams} \times 3 \text{ rounds} = 181,590 / 453.592 = 400.34 \text{ lbs}$
 - Northwest: $4357 \times 10 \text{ grams} \times 3 \text{ rounds} = 130,710 / 453.592 = 288.17 \text{ lbs}$
 - Southeast: $5794 \times 10 \text{ grams} \times 3 \text{ rounds} = 173,820 / 453.592 = 383.20 \text{ lbs}$
 - Southwest: $5607 \times 10 \text{ grams} \times 3 \text{ rounds} = 168,210 / 453.592 = 370.84 \text{ lbs}$
- Second Half of 2014 (includes MS4 basins):
 - Northeast: $6827 \text{ basins} \times 10 \text{ grams} \times 3 \text{ rounds} = 204,810 / 453.592 = 451.53 \text{ lbs}$
 - Northwest: $4405 \times 10 \text{ grams} \times 3 \text{ rounds} = 132,150 / 453.592 = 291.34 \text{ lbs}$
 - Southeast: $5942 \times 10 \text{ grams} \times 3 \text{ rounds} = 178,260 / 453.592 = 393 \text{ lbs}$

- Southwest: $5768 \times 10 \text{ grams} \times 3 \text{ rounds} = 173,580 / 453.592 = 382.68 \text{ lbs}$
- Total estimated usage per quadrant (less estimated % of dry, untreated basins):
 - Northeast: $400.34 \text{ lbs} + 451.53 \text{ lbs} = 852 \times 64\% = 545 \text{ lbs}$
 - Northwest: $288.17 \text{ lbs} + 291.34 \text{ lbs} = 580 \text{ lbs} \times 64\% = 371 \text{ lbs}$
 - Southeast: $383.20 \text{ lbs} + 393 \text{ lbs} = 776 \text{ lbs} \times 64\% = 497 \text{ lbs}$
 - Southwest: $370.84 \text{ lbs} + 382.68 \text{ lbs} = 754 \text{ lbs} \times 64\% = 483 \text{ lbs}$

Quadrant	Total Combined	Total MS4	Total Basins	Total Projected Pounds of Vectomax*
Northeast	6053	774	6827	545 lbs
Northwest	4357	48	4405	371 lbs
Southeast	5794	148	5942	497 lbs
Southwest	5607	161	5768	483 lbs
Total	21,811	1131	22,942	1,896 lbs

Catch Basin Product Usage 2011-2013

2011

- Vectolex WSP: 3,710 lbs
- Vectomax WSP: 95 lbs
- Agnique MMF G Pak: 1.425 lbs

2012

- Vectolex WSP: 2,731 lbs
- Vectomax WSP: 19 lbs
- Agnique MMF G-Pak: 16.275 lbs
- Agnique MMF: 1 oz

2013

- Vectolex WSP: 183 lbs
- Vectomax WSP: 176 lbs
- Agnique MMF G-Pak: 10.44 lbs
- Vectomax FG: 600 lbs
- Vectolex CG/FG: 80 lbs
- Altosid Xr: 20 ingots

See Also:

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 by calling Pestec Integrated pest management at 415-671-0300MVCAC NPDES Coalition Monitoring Plan. 2011.

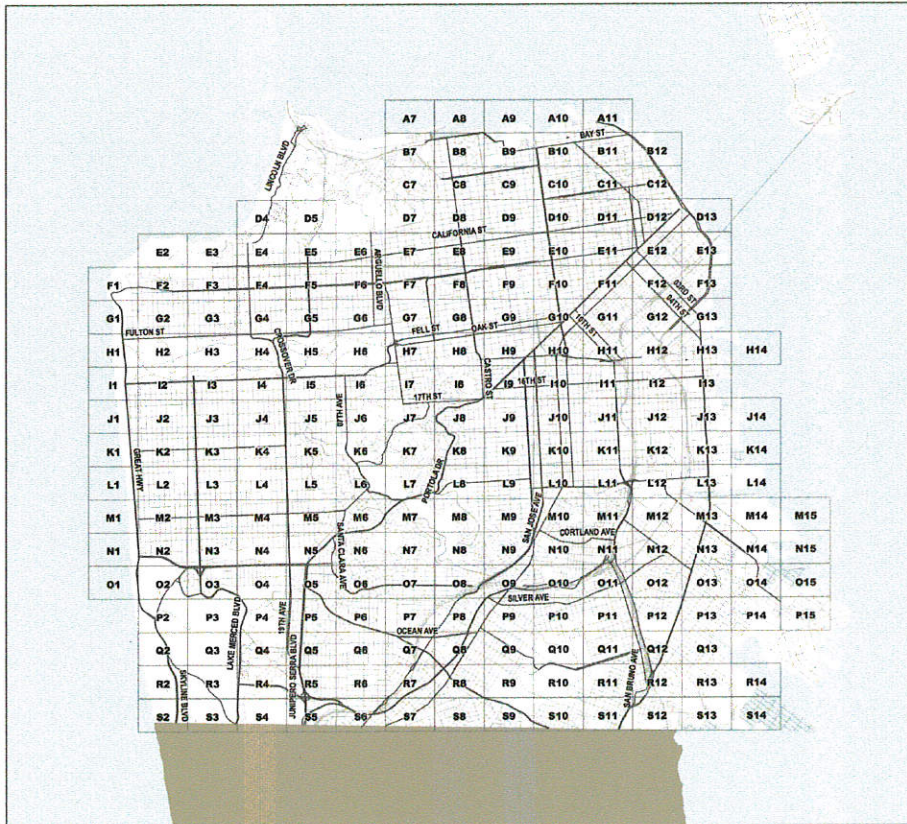


1555 Yosemite Ave #46
San Francisco, Ca 94124
p: 415.871.0300
f: 415.671.0305
www.pestec.com

Appendix A: Target Areas

(See attached PDF)





Index to Citywide Sewer Map

Prepared for PEETEC
by SFDPW Hydraulic
Engineering Section
January 2013



RECEIPT

DATE 8/25/2014No. **758862**RECEIVED FROM VCP Pestec\$ 24600

DOLLARS

- FOR RENT
 FOR

Check # 18025

ACCOUNT	
PAYMENT	
BAL. DUE	

- CASH
 CHECK
 MONEY ORDER
 CREDIT CARD

FROM _____ TO _____

BY Handwritten Signature