

STATE WATER RESOURCES CONTROL BOARD

1001 I Street, Sacramento, California 95814

http://waternet.epanet.ca.gov/

WATER QUALITY ORDER NO. 2010-XXXX-DWQ

GENERAL PERMIT NO. CAG XXXXXX

STATEWIDE GENERAL NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT FOR PESTICIDES SPRAY APPLICATIONS TO WATERS OF THE UNITED STATES TO CONTROL ADULT MOSQUITOES

GENERAL PERMIT NO. CAG XXXXXX

The following Dischargers may apply for coverage under this Order in compliance with the waste discharge requirements as set forth in this Order:

Table 1. Discharger Information

Dischargers	Dischargers of residual pesticides to waters of the United States to control adult mosquitoes.
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Table 2. Administrative Information

This Order was adopted by the State Water Resources Control Board (hereinafter State Water Board) on:	<Adoption Date>
This Order shall become effective on:	<Effective Date>
This Order shall expire on:	<Expiration Date>
Those enrollees who are covered under this Order at the time of expiration will continue to be covered until coverage becomes effective under a reissued Order. Upon reissuance of this Order by the State Water Board, Dischargers seeking coverage under the reissued Order shall file a revised application.	
The U.S. Environmental Protection Agency (USEPA) and the State Water Board have classified this discharge as a minor discharge.	

I, Jeanine Townsend, Clerk to the Board, do hereby certify that this Order with all attachments is a full, true, and correct copy of an Order adopted by the State Water Board on <Adoption Date>.

AYE: _____

NO: _____

ABSENT: _____

ABSTAIN: _____

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I. DISCHARGE INFORMATION

Pesticide formulations may include “active ingredients”¹ and “inert ingredients”². Adjuvants³ or surfactants may be added to the ingredients in the application equipment that is used in the delivery of the pesticide. As part of the registration process of pesticides for use in California, USEPA and the Department of Pesticide Regulation (DPR) evaluate data submitted by registrants to ensure that a product used according to label instructions will cause no harm or adverse impact on non-target organisms that cannot be reduced or mitigated with protective measures or use restrictions. The Clean Water Act (CWA), at section 301(a), broadly prohibits the discharge of any pollutant to waters of the United States, except in compliance with an NPDES permit. Pesticides discharged into surface waters may constitute pollutants within the meaning of the CWA even if the discharge is in compliance with the registration requirements of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), thus requiring coverage under a valid NPDES permit.

The discharge of residual pesticides to surface waters from spray applications to control adult mosquitoes throughout the State of California may pose a threat to existing and potential beneficial uses of waters of the United States if not properly controlled and regulated.

This Order covers the discharge to waters of the United States of residual pesticides related to the spray application of products containing malathion, naled, pyrethrin, permethrin, resmethrin, sumithrin, prallethrin, and piperonyl butoxide (PBO). Users of these products are required to obtain coverage under this Order prior to application. The California Department of Public Health (CDPH, formerly Department of Health Services or DHS) has provided the State Water Board with a list of mosquito adulticide products used in California that will be included as Attachment G of this Order.

II. PERMIT COVERAGE/APPLICATION REQUIREMENTS

A. General Permit Coverage

This Order covers the point source discharge of pesticide residues resulting from spray applications to control adult mosquitoes. Spray applications may result in residues which include any pesticide breakdown product or pesticide ingredient that is present after the use of the pesticide. This Order covers the point source discharge of only the pesticide products identified in Attachment G of this Order.

B. General Permit Requirements

The basic requirements of this Order include:

¹ Active ingredients are manufacturer disclosed ingredients that yield toxic effects on target organisms.
² Inert ingredients are additional ingredients and are often trade secrets; therefore, they are not always disclosed by the manufacturer.
³ Adjuvants are ingredients that are added to pesticides during an application event. These ingredients are chosen by the Discharger, based on site characteristics, and typically increase the effectiveness of pesticides on target organisms.

1. Pollutant concentrations in the discharge shall not cause, have a reasonable potential to cause, or contribute to an excursion above any applicable federal water quality criterion established by USEPA pursuant to CWA section 303 or any water quality objective adopted by the Regional Water Quality Control Boards (Regional Water Boards) or State Water Board, including prohibitions of discharge to receiving waters;
2. The Discharger must follow all pesticide label instructions and any Use Permits issued by a County Agricultural Commissioner (CAC);
3. Vector control technicians must be certified by the CDPH to apply pesticides for public health vector control.;
4. The Discharger must comply with effluent limitations and must develop and implement a Pesticide Application Plan (PAP);
5. The Discharger must comply with applicable receiving water limitations;
6. The Discharger must comply with monitoring and reporting requirements;
7. The Discharger must comply with all the terms and provisions of this Order; and
8. The Discharger must obtain approval from the Regional Water Board before proceeding with the application activities.

C. General Permit Application

To obtain authorization under this Order, Dischargers must submit a complete application as described below to the appropriate Regional Water Quality Control Board (Regional Water Board):

1. A Notice of Intent (NOI shown as Attachment H) signed in accordance with the signatory requirements of the Standard Provisions in Attachment D;
2. A vicinity map;
3. An application fee; and
4. A Pesticide Application Plan (PAP).

These items constitute a complete application package unless the Regional Water Board requests additional information necessary to determine the applicability of the discharge to this Order. Additionally, the Regional Water Board may issue a Notice of Exclusion (NOE)⁴, which either terminates permit coverage or requires submittal of an application for an individual permit or alternative general permit.

Each enrollment will cover all discharges by that entity occurring within the boundaries of that Regional Water Board. Separate NOIs are required for discharges located within more than one Regional Water Board's boundary, as defined in section 13200

⁴ An NOE is a one-page notice that indicates that the discharger or proposed discharger is not eligible for coverage under this Order and states the reason why. This justification can include, but is not limited to, necessity to comply with a total maximum daily load or to protect sensitive water bodies.

of the California Water Code (CWC). Only one annual fee is required for all applicable discharges from one entity.

Permit coverage will be effective when all of the following have occurred:

1. The Discharger has submitted a complete permit application;
2. Receipt of a complete application is noticed by the appropriate Regional Water Board for a minimum of 30 days; and
3. The PAP has been approved by the Regional Water Board Executive Officer.

D. Fees

Under this Order, pesticide discharges require minimal or no treatment systems to meet limits and pose no significant threat to water quality. As such, they are eligible for Category 3 in section 2200(b)(8) of Title 23, California Code of Regulations (CCR). This category is appropriate because pesticide applications incorporate best management practices (BMPs) to control potential impacts to beneficial uses, and this Order prohibits residual pesticides from causing exceedance of water quality objectives. The annual fee associated with this rating can be found in section 2200(b)(8) of Title 23, CCR. Fee information can be found at <http://www.waterboards.ca.gov/resources/fees/>.

E. Termination of Coverage

Authorization to discharge under this Order is terminated upon receipt by the Discharger, from the appropriate Regional Water Board(s), of an NOE, or upon the adoption of either an individual or another general NPDES permit covering the discharge. Alternatively, the Discharger may initiate termination under this Order by submitting a letter to the appropriate Regional Water Board explaining why coverage under the Order is no longer necessary. The Discharger is subject to the terms and conditions of this Order and is responsible for submitting the annual fee associated with this Order until the Discharger submits a written request for official termination of coverage.

III. FINDINGS

The State Water Board finds:

A. Background

On March 12, 2001, the Ninth Circuit Court of Appeals held that discharges of pollutants from the use of pesticides in waters of the United States require coverage under an NPDES permit. (*Headwaters, Inc. v. Talent Irrigation District*⁵.)

Because of the serious public health, safety, and economic implications of delaying pesticide applications, in 2001 the State Water Board adopted Water Quality Order (Order) No. 2001-12-DWQ, Statewide General National Pollutant Discharge

⁵ *Headwaters, Inc. v. Talent Irrigation District*, (9th Cir. 2001) 243 F.3d 526.

Elimination System (NPDES) Permit for Discharges of Aquatic Pesticides to Waters of the United States, on an emergency basis to provide immediate NPDES permit coverage for broad categories of aquatic pesticide use in California.

In November 2002, the Ninth Circuit issued another opinion concerning the need for an NPDES permit for pesticide application. (*League of Wilderness Defenders v. Forsgren.*) In this case, the court held that the U.S. Forest Service must obtain an NPDES permit before it sprays insecticides from an aircraft directly into rivers as part of silviculture activities.

Also in 2002, the Second Circuit issued an unpublished decision regarding the need for an NPDES permit for application of pesticides for mosquito control in federal wetland areas. (*Altman v. Town of Amherst.*) The lower court held that pesticides, when used for their intended purpose, do not constitute a “pollutant” for purposes of the CWA, and are more appropriately regulated under Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). The appeals court vacated the trial court’s decision and remanded the matter.

Order No. 2001-12-DWQ expired on January 31, 2004. In May 2004, it was replaced by two general permits: a vector control permit for larvicides and a weed control permit. The vector control permit does not cover spray applications of pesticides to control adult mosquitoes. The State Water Board found that these two permits were adopted consistent with the Ninth Circuit decisions.

In 2005, the Ninth Circuit held that a pesticide that is applied consistent with FIFRA is not a “chemical waste” (*Fairhurst v. Hagerer*), but also stated that it would not change its decision in *Headwaters*. The court stated that whether an NPDES permit was required depends on if there was any “residue or unintended effect” from application of the pesticide. In *Fairhurst*, the court found neither residue nor unintended effect was present. Therefore, it did not require an NPDES permit.

USEPA’s Final Rule: On November 20, 2006, USEPA adopted a final regulation which codified that NPDES permits are not required for pesticide applications as long as the discharger follows FIFRA label instructions. According to the regulation, pesticides applied under the following two circumstances are not pollutants and therefore, are not subject to NPDES permitting requirements:

1. The application of pesticides directly to waters of the United States in order to control pests. Examples of such applications include applications to control mosquito larvae, aquatic weeds, or other pests that are present in waters of the United States; and
2. The application of pesticides to control pests that are present over waters of the United States, including near such waters, where a portion of the pesticides will unavoidably be deposited to waters of the United States in order to target the pests effectively; for example, when insecticides are aerially applied to a forest canopy where waters of the United States may be present below the canopy or when pesticides are applied over or near water for control of adult mosquitoes or other pests.

Lawsuits Against USEPA's Final Rule: After USEPA's new regulation was adopted in 2006, lawsuits were filed by both the pesticide industry and environmental groups in 11 of the 13 Circuits, including the Ninth Circuit Court, challenging USEPA's Final Rule.

The National Cotton Council of America v. USEPA: The petitions for review were consolidated in the Sixth Circuit Court by an order of the Judicial Panel on Multidistrict Litigation.

On January 7, 2009, the Sixth Circuit Court determined that USEPA's Final Rule is not a reasonable interpretation of the CWA and vacated the Final Rule. USEPA did not request reconsideration of the decision, but did file a motion for a two-year stay of the effect of the decision in order to provide agencies time to develop, propose, and issue NPDES general permits for pesticide applications covered by the ruling. On June 8, 2009, the Sixth Circuit granted the motion, such that the USEPA exemption will remain in place until April 9, 2011.

In February 2009, State Water Board staff met with members of the Mosquito and Vector Control Association of California (MVCAC), which represents the vast majority of governmental mosquito control programs in the state. DPR and CDPH representatives were also present at the meeting, the purpose of which was to discuss MVCAC's need for a mosquito adulticide permit as a result of the Sixth Circuit Court's ruling. In subsequent meetings, representatives of these groups, including State Water Board staff, formed a technical committee to facilitate drafting of the adulticide permit. Representatives of USEPA Headquarters and Region 9 joined the technical committee after its initial formation. Before the Sixth Circuit granted USEPA's motion for a stay, there was an urgency to expedite the permitting process. Thus, the technical committee agreed to screen adulticide products qualitatively using the following procedures:

1. Permit only the most commonly used adulticide products in California. CPDH and MVCAC provided staff with a list of 30 products;
2. Exclude from the permit all adulticide products that contain priority pollutants as active ingredients and inert ingredients because having priority pollutants would add more complicated requirements; and
3. Exclude products with inert ingredients that have water quality concerns.

To determine whether water quality concerns exist, State Water Board staff reviewed water quality criteria or objectives for inert ingredients. Thus, if there are water quality criteria or objectives for an inert ingredient, any product containing that inert ingredient was removed from the list. For inert ingredients that do not have a water quality criterion or objective, State Water Board staff used the presence of toxicity information such as the lowest 50 percent lethal concentration (LC50) to protect the most sensitive freshwater aquatic life species from USEPA (Office of Pesticides, *Ecotoxicity Database*) as the basis for screening out the products.

Note: This version of the Order provides limitations and requirements only for the most commonly used adulticide products in California. Since the Sixth Circuit granted USEPA's motion for a stay, staff has been reviewing all of the currently registered adulticide products in California and will add other products as appropriate. The revised Order that will be noticed for a 30-day public comment period in Summer 2010 will include staff's results of the review of the remaining products.

B. Discharge Description

1. The residual pesticides covered by this Order result from spraying, either by ground or aerial application, to control adult mosquitoes that are present at, over, or near waters of the United States where the residual pesticides are deposited to waters of the United States and impact aquatic life or affect the beneficial uses of the waters of the United States.. Residual pesticides are breakdown products or other pesticide ingredients that are present after the use of the pesticide for controlling adult mosquitoes.
2. A study by Weston, et al. (*Aquatic Effects of Aerial Spraying for Mosquito Control over an Urban Area*, Environ. Sci. Technol. 2006, 40, 5817-5822) has shown the accumulation of pyrethroids, which are chemically similar to pyrethrin, in sediments in amounts that can be toxic to invertebrates. The study indicated that PBO concentrations from spray applications were high enough to enhance toxicity of pyrethroids already existing in creek sediments from general urban pesticide use. The study also states that risk assessments for mosquito control agents have focused on the active ingredients but have failed to recognize the potential for interactions with pesticides previously existing in the environment, which in this case appeared to represent a risk to aquatic life greater than that of the active ingredients themselves.

Another study by Lawler, et. al [*Does Synergized Pyrethrin Applied Over Wetlands for Mosquito Control Affect Daphnia Magna Zooplankton or Callibaetis Californicus Mayflies? Pest Manag Sci* 64:843-847, (2008)] tested whether repeated applications of synergized pyrethrin over wetlands caused mortality of two aquatic invertebrates: the zooplankton *Daphnia magna* Straus and a mayfly, *Callibaetis californicus* Banks. The results showed there were no detectable effects of synergized pyrethrin on 36-hour survival of *Daphnia* or mayflies, but some exposed sediments yielded pyrethrin and most showed PBO.

Due to the potential for toxicity resulting from the synergistic effect of PBO on pyrethroids and the additive effects of adulticide products on pesticides that are already in creek sediments or in the water column, this Order requires toxicity monitoring of spray applications.

3. Dischargers who submit a complete application under this Order are not required to submit an individual permit application for these pesticide discharges. The Regional Water Board may request additional information and determine that the Discharger is not eligible for coverage under this Order and

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would be better regulated under an individual or other general NPDES permits. If the Regional Water Board issues an individual NPDES permit, the applicability of this Order to the specified discharge is immediately terminated on the effective date of the NPDES permit.

C. Legal Authorities

States may request authority to issue general NPDES permits pursuant to Title 40, Code of Federal Regulations (CFR) section 122.28. On June 8, 1989, the State Water Board submitted an application to USEPA requesting revisions to its NPDES program in accordance with 40 CFR sections 122.28, 123.62, and 403.10. The application included a request to add general permit authority to its approved NPDES program. On September 22, 1989, USEPA Region 9, approved the State Water Board's request and granted authorization for the State to issue general NPDES permits.

Section 122.28(a)(1) of 40 CFR allows NPDES permits to be written to cover a category of discharges within State political boundaries.

According to CWA section 301(a), discharges of pollutants from point sources to waters of the United States are prohibited unless they are in compliance with an NPDES permit.

D. Background and Rationale for Requirements

The State Water Board developed the requirements in this Order based on information submitted as part of the applications for several like agencies, through monitoring and reporting programs, and through special studies. The Fact Sheet (Attachment F), which contains background information and rationale for Order requirements, is hereby incorporated into this Order and constitutes part of the Findings for this Order. Attachments A through H are also incorporated into this Order.

E. California Environmental Quality Act (CEQA)

Pursuant to CWC section 13389, State and Regional Water Boards are exempt from the requirement to comply with Chapter 3, Division 13 of the Public Resources Code when adopting NPDES permits.

F. Related Pesticide Regulations

DPR and CACs regulate the sale and use of pesticides in California. The use of pesticides must be consistent with the FIFRA pesticide label instructions and any Use Permits issued by the CACs.

DPR regulates the use of pesticide-treated commodities and sites where necessary to ensure that pesticide residuals do not pose a hazard to human health or the environment. DPR also regulates the use of pesticides to reduce the release of residuals from target areas. This includes regulation of wastes generated by

applications not in accordance with all laws and regulations, including drift from applications.

The State's pesticide regulation laws provide special procedures for vector control agencies operating under a cooperative agreement. The application of pesticides by vector control agencies is regulated by a special and unique arrangement among the CDPH, DPR, CACs, and vector control agencies. Vector control agencies are not directly regulated by DPR. CDPH provides regulatory oversight for vector control agencies that are signatory to the cooperative agreement and individuals working for those agencies. DPR also licenses individuals and companies for public health pest control. Pesticide use by vector control agencies is reported to the CACs in accordance with a 1995 Memorandum of Understanding among DPR, CDPH, and the CACs for the Protection of Human Health from the Adverse Effects of Pesticides and with cooperative agreements entered into between CDPH and vector control agencies pursuant to Health and Safety Code Section 116180.

G. Technology-Based Effluent Limitations (TBELs)

Section 301(b) of the CWA and implementing USEPA permit regulations at section 122.44, title 40 of the Code of Federal Regulations (40 CFR 122.44), require that permits include conditions meeting applicable technology-based requirements at a minimum, and any more stringent effluent limitations necessary to meet applicable water quality standards.

H. Water Quality-Based Effluent Limitations (WQBELs)

Section 301(b) of the CWA and 40 CFR 122.44(d) require that permits include limitations more stringent than applicable federal technology-based requirements where necessary to achieve applicable water quality standards.

Section 122.44(d)(1)(i) of 40 CFR mandates that permits include effluent limitations for all pollutants that are or may be discharged at levels that have the reasonable potential to cause or contribute to an excursion of a water quality standard, including numeric and narrative objectives within a standard. Where reasonable potential has been established for a pollutant, but there is no numeric criterion or objective for the pollutant, WQBELs must be established using: (1) USEPA criteria under CWA section 304(a), supplemented where necessary by other relevant information; (2) an indicator parameter for the pollutant of concern; or (3) a calculated numeric water quality criterion, such as a proposed state criterion or policy interpreting the state's narrative criterion, supplemented with other relevant information, as provided in 40 CFR 122.44(d)(1)(vi).

Section 122.44(k)(3) of 40 CFR allows effluent limits to be in the form of BMP requirements, if numeric effluent limits are infeasible. Numeric effluent limits for pollutant discharges associated with the application of pesticides are infeasible because: 1) The application of pesticides is not necessarily considered a discharge of pollutants according to the *National Council Cotton of America v. USEPA* decision by the Sixth Circuit Court and other applicable case law. The Sixth Circuit Court ruled that residual pesticides associated with the spray application of pesticides at, over, or

near water are pollutants and must be regulated under an NPDES permit. This Order regulates residual pesticides which are breakdown products or other pesticide ingredients that are present after the use of the pesticide for controlling adult mosquitoes. At what point the pesticide becomes a residue is not precisely known and varies depending the type of spray system, wind speed and direction, temperature, droplet size distribution, droplet drift, water chemistry, etc. Therefore, in the spray application of pesticides, the exact effluent is unknown; and 2) It would be impractical to treat the numerous short duration intermittent pesticide releases to surface waters from many different locations. Therefore, the effluent limitations contained in this Order are narrative and include requirements to develop and implement a PAP that describes appropriate BMPs, including compliance with all pesticide label instructions, and to comply with receiving water limitations. The BMPs required herein constitute Best Available Technology Economically Achievable (BAT) and Best Conventional Pollutant Control Technology (BCT) and will be implemented to minimize the area and duration of impacts caused by the discharge of pesticides in the target area and to allow for restoration of water quality and protection of beneficial uses of the receiving waters to pre-application quality following completion of an application event.

I. Receiving Water Monitoring Triggers

In spraying pesticides, it is reasonable to conclude that some concentrations will be deposited in the surface waters. These residual pesticides may cause both acute and chronic toxicity to aquatic life. Regional Water Boards in their Water Quality Control Plans (Basin Plans) include a narrative toxicity objective, which specifically prevents toxic substances to be present, individually or in combination, in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life (no toxics in toxic amounts). Since information regarding residual pesticides deposited in the receiving water as a result of spray applications to control adult mosquitoes is not adequate to develop receiving water limitations for individual and combinations of pesticide, this Order only contains receiving water monitoring triggers for residual pesticides of concern. The monitoring triggers will be used to assess compliance with the narrative toxicity receiving water limitation and initiate additional investigations for the causes of toxicity caused by the adulticides used and their additive or synergistic effects. If monitoring data for residual pesticides of concern indicate that concentrations of these residual pesticides exceed the monitoring trigger, this Order will be re-opened and Receiving Water Limitations for these pesticide ingredients will be added. This Order includes a Daily Maximum Receiving Water Monitoring Trigger for residual pesticides of concern.

Where USEPA Ambient Water Quality Criteria are available, they have been used in this Order to develop Receiving Water Monitoring Triggers. If USEPA Ambient Water Quality Criteria are unavailable, USEPA's Office of Pesticides' *Ecotoxicity Database* was used to develop Receiving Water Monitoring Triggers for individual and combinations of pesticides.

For constituents that do not have Ambient Water Quality Criteria, the Daily Maximum Receiving Water Monitoring Trigger is based on one-tenth of the lowest 50 percent

Lethal Concentration (LC50) obtained from USEPA's Office of Pesticides' *Ecotoxicity Database* for the protection of the most sensitive freshwater aquatic species. This approach is consistent with the approach identified in the Central Valley Regional Water Board's Basin Plan for developing the Daily Maximum limitation for pesticides that do not have water quality criteria or objectives.

J. Beneficial Uses in Basin Plans

The typical beneficial uses identified in the Regional Water Boards' Basin Plans include: municipal and domestic supply, agricultural irrigation, stock watering, process supply, service supply, hydropower supply, water contact recreation, canoeing and rafting recreation, other non-contact water recreation, warm freshwater aquatic habitat, cold freshwater habitat, warm fish migration habitat, cold fish migration habitat, warm and cold spawning habitat, wildlife habitat, navigation, rare, threatened, or endangered species habitat, groundwater recharge, and freshwater replenishment. Requirements of this Order implement the applicable Basin Plans.

K. National Toxics Rule (NTR) and California Toxics Rule (CTR)

USEPA adopted the NTR on December 22, 1992, and later amended it on May 4, 1995 and November 9, 1999. About 40 criteria in the NTR were applicable in California. On May 18, 2000, USEPA adopted the CTR. The CTR promulgated new toxics criteria for California and, in addition, incorporated the previously adopted NTR criteria that were applicable in the state. The CTR was amended on February 13, 2001. These rules contain water quality standards for priority pollutants.

L. State Implementation Policy (SIP)

On March 2, 2000, the State Water Board adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (State Implementation Policy or SIP). The SIP became effective on April 28, 2000 with respect to the priority pollutant criteria promulgated for California by USEPA through the NTR and to the priority pollutant objectives established by the Regional Water Board in the Basin Plans. The SIP became effective on May 18, 2000 with respect to the priority pollutant criteria promulgated by USEPA through the CTR. The State Water Board adopted amendments to the SIP on February 24, 2005 that became effective on July 13, 2005. The SIP establishes implementation provisions for priority pollutant criteria and objectives and provisions for chronic toxicity control.

M. Antidegradation Policy

Section 131.12 of 40 CFR requires that the state water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy in State Water Board Resolution No. 68-16. Resolution No. 68-16 incorporates the federal antidegradation policy where the federal policy applies under federal law. Resolution No. 68-16 requires that existing quality of waters be maintained unless degradation is justified based on specific findings. The Regional Water Board's Basin Plans implement, and incorporate by reference, both the state and federal antidegradation policies. The

conditions of this Order require pesticide discharges to meet applicable water quality objectives. Waters of exceptional quality may be degraded due to the application of pesticides; however, it would only be temporary and in the best interest of the people of the State. While surface waters may be temporarily degraded; water quality standards and objectives will not be exceeded. The nature of pesticides is to be toxic in order to protect beneficial uses such as human health. However, compliance with receiving water limitations must be maintained. Therefore, this Order is consistent with State and federal antidegradation policies.

N. Endangered Species Act

This Order does not authorize any act that results in the taking of a threatened or endangered species or any act that is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish and Game Code sections 2050 to 2097) or the Federal Endangered Species Act (16 U.S.C.A. sections 1531 to 1544). This Order requires compliance with effluent limitations, receiving water limitations, and other requirements to protect the beneficial uses of waters of the state. The Discharger is responsible for meeting all requirements of the applicable Endangered Species Act.

O. Monitoring and Reporting

Section 122.48 of 40 CFR requires that all NPDES permits specify requirements for recording and reporting monitoring results. CWC sections 13267 and 13383 authorize the Regional Water Board to require technical and monitoring reports. The Monitoring and Reporting Program establishes monitoring and reporting requirements to implement federal and State requirements. The Monitoring and Reporting Program is provided in Attachment E.

P. Standard and Special Provisions

Attachment D provides the Standard Provisions which apply to all NPDES permits in accordance with 40 CFR 122.41, and additional conditions applicable to specified categories of permits in accordance with 40 CFR 122.42. The Discharger must comply with all standard provisions and with those additional conditions that are applicable under 40 CFR 122.42. The State Water Board has also included in this Order special provisions applicable to the discharge.

Q. Notification of Interested Parties

The State Water Board has notified interested agencies and persons of its intent to prescribe WDRs and has provided them with an opportunity to submit comments. Details of the notifications are provided in the Fact Sheet of this Order.

R. Consideration of Public Comment

The State Water Board, in a public meeting, heard and considered all comments pertaining to discharges to be regulated by this Order. Details of the Public Hearing are provided in the Fact Sheet of this Order.

THEREFORE, IT IS HEREBY ORDERED, that in order to meet the provisions contained in Division 7 of the CWC (commencing with section 13000) and regulations adopted thereunder, and the provisions of the federal CWA and regulations and guidelines adopted thereunder, the Discharger shall comply with the requirements in this Order.

IV. DISCHARGE PROHIBITIONS

- A. The discharge of residual pesticides at a location or in a manner different from that described in this Order is prohibited.
- B. The discharge of residual pesticides shall not create a nuisance as defined in section 13050 of the CWC.
- C. The discharge shall not cause, have a reasonable potential to cause, or contribute to an in-stream excursion above any applicable standard or criterion promulgated by USEPA pursuant to Section 303 of the CWA, or water quality objective adopted by the State or Regional Water Boards.

V. EFFLUENT LIMITATIONS

The Discharger shall implement BMPs when applying pesticides. The BMPs must be provided in the PAP which is described in Section VII. E.

VI. RECEIVING WATER LIMITATIONS

The discharge shall not result in any of the following:

- A. **Floating Material.** Floating material to be present in amounts that cause nuisance or adversely affect beneficial uses.
- B. **Settleable Substances.** Substances to be present in concentrations that result in the deposition of material that causes nuisance or adversely affects beneficial uses.
- C. **Suspended Material.** Suspended material to be present in concentrations that cause nuisance or adversely affect beneficial uses.
- D. **Taste and Odors.** Taste- or odor-producing substances to be present in concentrations that impart undesirable tastes or odors to fish flesh or other edible products of aquatic origin, or that cause nuisance, or otherwise adversely affect beneficial uses or domestic or municipal water supplies.
- E. **Toxic Pollutants.** Toxic pollutants to be present in the water column, sediments, or biota in concentrations that adversely affect beneficial uses; that produce detrimental response in human, plant, animal, or aquatic life; or that bioaccumulate in aquatic resources at levels which are harmful to human health.
- F. **Temperature.** The ambient temperature to increase more than 5°F.
- G. **Color.** Esthetically undesirable discoloration.

H. Aquatic Communities. Aquatic communities and populations, including vertebrates, invertebrates, and plant species to be degraded.

VII. RECEIVING WATER MONITORING TRIGGERS

The Receiving Water Monitoring Triggers shown in Table 3 below will be used to assess compliance with the narrative toxicity receiving water limitation and initiate additional investigations for the causes of toxicity caused by the adulticides used and their additive or synergistic effects.

Table 3. Receiving Water Monitoring Triggers

Ingredient	Units	Daily Maximum Monitoring Trigger	Basis ¹
Malathion	µg/L	0.1	USEPA's Ambient Water Quality Criteria
Naled	µg/L	16	USEPA's Office of Pesticides' <i>Ecotoxicity Database</i>
Pyrethrin	µg/L	0.32	USEPA's Office of Pesticides' <i>Ecotoxicity Database</i>
Permethrin	µg/L	0.03	California Department of Fish and Game's Ambient Criterion
Resmethrin	µg/L	0.028	USEPA's Office of Pesticides' <i>Ecotoxicity Database</i>
Sumithrin	µg/L	0.14	USEPA's Office of Pesticides' <i>Ecotoxicity Database</i>
Prallethrin	µg/L	1.2	USEPA's Office of Pesticides' <i>Ecotoxicity Database</i>
Piperonyl Butoxide (PBO)	µg/L	180	USEPA's Office of Pesticides' <i>Ecotoxicity Database</i>
PBO (in PBO/Resmethrin Mixture)	µg/L	0.24	USEPA's Office of Pesticides' <i>Ecotoxicity Database</i>
PBO (in PBO/Pyrethrin Mixture)	µg/L	0.34	USEPA's Office of Pesticides' <i>Ecotoxicity Database</i>

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¹ Basin Plans' narrative toxicity objective, USEPA's *Ambient Water Quality Criteria*, USEPA's Office of Pesticides' *Ecotoxicity Database*, and California Department of Fish and Game's *Ambient Criterion*.

VIII. PESTICIDE USE REQUIREMENTS

- A. License Requirements:** Dischargers must be licensed by DPR or CDPH if such licensing is required for the pesticide application project.
- B. Application Requirements.** The pesticide use must be consistent with FIFRA pesticide label instructions and any Use Permits issued by CACs.
- C. Application Schedule (If Applicable).** When requested, the Discharger shall provide a phone number to persons who request the Discharger's application schedule. The Discharger shall provide the requester with the most current application schedule and inform the requester if the schedule is subject to change. Information may be made available by electronic means.
- D. Public Notice Requirements (If Applicable).** Every calendar year, prior to the first application of pesticides, the Discharger shall notify potentially affected governmental agencies. The notification shall include the following information:
 - 1. A statement of the Discharger's intent to apply pesticide(s);

2. Name of pesticide(s);
3. Purpose of use;
4. General time period and locations of expected use;
5. Any water use restrictions or precautions during treatment; and
6. A phone number that interested persons may call to obtain additional information from the Discharger.

E. Pesticides Application Plan (PAP). The Discharger shall develop a PAP that contains the following elements:

1. Description of the nearby surface water to an area in which pesticides are being applied;
2. Discussion of the factors influencing the decision to select spray applications for the control of mosquitoes;
3. Type(s) of pesticides used, the method in which they are applied, and the adjuvants used;
4. Description of the application area and the target area in the system;
5. Other control methods used (alternatives) and what their limitations are;
6. How much product is needed and how this is determined;
7. Monitoring Plan (see Attachment E), including the location of representative area(s);
8. Off-target Drift Management Plan, including the following:
 - a. Procedures used when spraying pesticides;
 - b. Procedures used when off-target drift is anticipated due to the nature of the application and environmental conditions;
 - c. Procedures used when off-target drift is not anticipated, but does occur;
 - d. Review record sheet; and
 - e. Site record sheet.
9. If applicable, describe details of the buffer zone that will be used to prevent off-target spray drift;
10. 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
11. Description of the BMPs to be implemented.

F. Pesticide Application Log. The Discharger shall maintain a log for each pesticide application. The application log shall contain, at a minimum, the following information:

1. Date of application;
2. Location of application;

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3. Name of applicator;
4. Application details, such as time application started and stopped, pesticide application rate and concentration, wind speed and direction, vehicle speed, temperature, pH, turbidity, and electrical conductivity;
5. Visual monitoring assessment; and
6. Certification that applicator(s) followed the PAP.

IX. PROVISIONS

A. Standard Provisions

1. All Dischargers authorized to discharge under this Order shall comply with the applicable Standard Provisions included in Attachment D of this Order.
2. In accordance with the PAP, Section VII.E.11, the Discharger shall implement the identified alternative measures to the selected pesticide application project that could reduce potential water quality impacts.
3. All Dischargers authorized to discharge under this Order shall comply with the following provisions:
 - a. After notice and opportunity for a hearing, this Order may be terminated or modified for cause, including, but not limited to:
 - i. violation of any term or condition contained in this Order;
 - ii. obtaining this Order by misrepresentation or by failing to disclose fully all relevant facts;
 - iii. a change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge; and
 - iv. a material change in the character, location, or volume of discharge (if applicable).
 - b. The provisions of this Order are severable. If any provision of this Order is found invalid, the remainder of this Order shall not be affected.
 - c. A copy of this Order shall be maintained at the Discharger's facility and be available at all times to operating personnel. Key operating personnel shall be familiar with its content.
 - d. To demonstrate compliance with Title 16, CCR, sections 415 and 3065, all technical reports must contain a statement of the qualifications of the responsible registered professional(s). As required by these laws, completed technical reports must bear the signature(s) and seal(s) of the registered professional(s) in a manner such that all work can be clearly attributed to the professional responsible for the work.
 - e. Laboratories that perform sample analyses must be identified in all monitoring reports submitted to the Regional Water Board and State Water Board.

- f. All monitoring and analysis instruments and devices used by the Discharger to fulfill the prescribed monitoring program shall be properly maintained and calibrated as necessary, at least yearly, to ensure their continued accuracy.
- g. Each Discharger shall file with the Regional Water Board technical reports on self-monitoring performed according to the detailed specifications contained in the Monitoring and Reporting Program attached to this Order.
- h. The Regional Water Board is authorized to enforce the terms of this Order under several provisions of the CWC, including, but not limited to, sections 13385, 13386, and 13387.

B. Monitoring and Reporting Program Requirements

The Discharger shall comply with the MRP, and future revisions thereto, in Attachment E of this Order.

C. Special Provisions

1. Reopener Provisions

- a. This Order may be reopened for modification, or revocation and reissuance in accordance with the provisions contained in 40 CFR 122.62.
- b. Conditions that necessitate a major modification of a permit are described in 40 CFR 122.62, including:
 - i. If new or amended applicable water quality standards are promulgated or approved pursuant to section 303 of the CWA, or amendments thereto, this permit may be reopened and modified in accordance with the new or amended standards.
 - ii. When new information, that was not available at the time of permit issuance, would have justified different permit conditions at the time of issuance.
- c. **Chronic Toxicity.** If the State Water Board revises the SIP's toxicity control provisions that would require the establishment of numeric chronic toxicity limitations, this Order may be reopened to include numeric chronic toxicity receiving limitations based on the new provisions.
- d. **Receiving Water Limitations.** This Order will be re-opened to add receiving water limitations if the monitoring result for residual pesticides specified in the Table 3 exceeded the associated monitoring trigger.

2. Special Studies, Technical Reports, and Additional Monitoring Requirements

This Order requires the Discharger to conduct additional investigations for compliance with the narrative toxicity Receiving Water Limitation when the monitoring results for pesticides listed in Table 3 exceed their monitoring triggers.

3. Pesticide Application Plan (PAP)

Dischargers that apply for this Order before December 31, 2010 shall submit their PAP to the appropriate Regional Water Board by December 31, 2010.

Dischargers that apply for this Order after December 31, 2010 shall submit their PAP to the appropriate Regional Water Board with their NOI application. The Discharger must submit a PAP for approval by the Executive Officer of the Regional Water Board before proceeding with the application.

4. Discharge to Impaired Surface Waters

If proposing to discharge into impaired surface waters, the Discharger must provide wastewater analysis of the 303(d) listed constituents as part of the application.

5. Other Special Provisions (If Applicable)

In the event of any change in control or ownership of land or waste discharge facilities presently owned or controlled by the Discharger, the Discharger shall notify the succeeding Discharger of the existence of this Order by letter, a copy of which shall be immediately forwarded to the appropriate Regional Water Board.

To assume operation under this Order, the succeeding Discharger must apply in writing to the Regional Water Board Executive Officer requesting transfer of the Order. The request must contain the requesting entity's full legal name, the State of incorporation if a corporation, address and telephone number of the persons responsible for contact with the Regional Water Board and a statement. The statement shall comply with the signatory and certification requirements in the federal Standard Provisions (Attachment D) and state that the new Discharger assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the CWC.

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ATTACHMENT A – DEFINITIONS

Adulticides

Insecticides used to kill adult mosquitoes.

Application Area

The application area is the area to which pesticides are directly sprayed. It is the responsibility of the Discharger to define the application area. The application area may be synonymous with the target area.

Application Event

The application event is the time that introduction of the pesticide to the application area takes place. The application event is the time that the product is applied, not the length of time that it releases pesticide to the environment.

Cold Freshwater Habitat (COLD)

Uses of water that support cold water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.

Discharger

The Discharger is the agency responsible for controlling adult mosquitoes. Additionally, the Discharger may be the pesticide applicator, but it may also contract with a separate entity that does the actual pesticide application. In either case, however, the Discharger must ensure that the discharge is in compliance with this Order.

Enclosed Bays

Enclosed Bays means indentations along the coast that enclose an area of oceanic water within distinct headlands or harbor works. Enclosed bays include all bays where the narrowest distance between the headlands or outermost harbor works is less than 75 percent of the greatest dimension of the enclosed portion of the bay. Enclosed bays do not include inland surface waters or ocean waters.

Estuaries

Estuaries means waters, including coastal lagoons, located at the mouths of streams that serve as areas of mixing for fresh and ocean waters. Coastal lagoons and mouths of streams that are temporarily separated from the ocean by sandbars shall be considered estuaries. Estuarine waters shall be considered to extend from a bay or the open ocean to a point upstream where there is no significant mixing of fresh water and seawater. Estuaries do not include inland surface waters or ocean waters.

Half-Life

Half-life is the time required for half of the compound to degrade.

Inland Surface Waters

All surface waters of the State that do not include the ocean, enclosed bays, or estuaries.

Municipal and Domestic Supply (MUN)

Uses of water for community, military, or individual water supply systems including, but not limited to, drinking water supply.

Pollutants Associated with Pesticide Application

Pollutants associated with pesticide application are the residual pesticides which are being regulated by this Order.

Priority Pollutants

Priority pollutants are listed in 40 Code of Federal Regulations, section 131.38(b)(1). Limits are set for priority pollutants in the California Toxics Rule.

Representative Area

Representative area is an area within and near the application area that is typical of the hydrologic and vegetative conditions present at the application area.

Residual Pesticides

Residual pesticides are pesticide breakdown products or other pesticide ingredients that are present after the use of the pesticide to control adult mosquitoes.

Source of Drinking Water

Any water designated as municipal or domestic supply (MUN) in a Regional Water Board Basin Plan and/or as defined in SWRCB Resolution 88-63.

Off-target Spray Drift

Off-target spray drift is the physical movement of a pesticide through air at the time of application or soon thereafter, to any area other than that intended for application. Pesticide applications for adult mosquito control are generally intended to drift through the application and target areas. The Discharger is responsible to calculate the distance from the path (or point) of application in which off-target spray drift may occur.

Off-target Area

The off-target area is the area adjacent to the target area where off-target spray drift may occur. It is the responsibility of the Discharger to define the off-target area for each specific location that it discharges to.

Target Area

The target area is the area designated for the adult mosquito control. This may be synonymous with the application area. It is the responsibility of the Discharger to define the target area for each specific location that it discharges to.

Warm Freshwater Habitat (WARM)

Uses of water that support warm water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.

ATTACHMENT B – MAP

Each Discharger shall include a map of each application area, target area, and off-target area in the Pesticide Application Plan. The map shall clearly show all surface waters that could be affected by the pesticide application and all sampling locations.

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ATTACHMENT C – FLOW SCHEMATIC

This attachment shall include a diagram(s) showing the prevailing wind directions and receiving water flows during applications. The attachment shall indicate the discharge points from the applications and monitoring locations.

To be added later.

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ATTACHMENT D – STANDARD PROVISIONS

I. STANDARD PROVISIONS – PERMIT COMPLIANCE (IF APPLICABLE)

A. Duty to Comply

1. The Discharger must comply with all of the conditions of this Order. Any noncompliance constitutes a violation of the CWA and the California Water Code and is grounds for enforcement action, for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application. (40 C.F.R. § 122.41(a).)
2. The Discharger shall comply with effluent standards or prohibitions established under Section 307(a) of the CWA for toxic pollutants and with standards for sewage sludge use or disposal established under Section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions, even if this Order has not yet been modified to incorporate the requirement. (40 C.F.R. § 122.41(a)(1).)

B. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for a Discharger in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this Order. (40 C.F.R. § 122.41(c).)

C. Duty to Mitigate

The Discharger shall take all reasonable steps to minimize or prevent any discharge in violation of this Order that has a reasonable likelihood of adversely affecting human health or the environment. (40 C.F.R. § 122.41(d).)

D. Proper Operation and Maintenance

The Discharger shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Discharger to achieve compliance with the conditions of this Order. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems that are installed by a Discharger only when necessary to achieve compliance with the conditions of this Order. (40 C.F.R. § 122.41(e).)

E. Property Rights

1. This Order does not convey any property rights of any sort or any exclusive privileges. (40 C.F.R. § 122.41(g).)
2. The issuance of this Order does not authorize any injury to persons or property or invasion of other private rights, or any infringement of state or local law or regulations. (40 C.F.R. § 122.5(c).)

F. Inspection and Entry

The Discharger shall allow the Regional Water Board, State Water Board, United States Environmental Protection Agency (USEPA), and/or their authorized representatives (including an authorized contractor acting as their representative), upon the presentation of credentials and other documents, as may be required by law, to (40 C.F.R. § 122.41(i); Wat. Code, § 13383):

1. Enter upon the Discharger's premises where a regulated facility or activity is located or conducted, or where records are kept under the conditions of this Order (40 C.F.R. § 122.41(i)(1));
2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Order (40 C.F.R. § 122.41(i)(2));
3. Inspect and photograph, at reasonable times, any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order (40 C.F.R. § 122.41(i)(3)); and
4. Sample or monitor, at reasonable times, for the purposes of assuring Order compliance or as otherwise authorized by the CWA or the Water Code, any substances or parameters at any location. (40 C.F.R. § 122.41(i)(4).)

G. Bypass

1. Definitions
 - a. "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility. (40 C.F.R. § 122.41(m)(1)(i).)
 - b. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities, which causes them to become inoperable, or substantial and permanent loss of natural resources that can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production. (40 C.F.R. § 122.41(m)(1)(ii).)
2. Bypass not exceeding limitations. The Discharger may allow any bypass to occur which does not cause exceedances of effluent limitations, but only if it is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions listed in Standard Provisions – Permit Compliance I.G.3, I.G.4, and I.G.5 below. (40 C.F.R. § 122.41(m)(2).)
3. Prohibition of bypass. Bypass is prohibited, and the Regional Water Board may take enforcement action against a Discharger for bypass, unless (40 C.F.R. § 122.41(m)(4)(i)):
 - a. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage (40 C.F.R. § 122.41(m)(4)(i)(A));
 - b. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of

reasonable engineering judgment to prevent a bypass that occurred during normal periods of equipment downtime or preventive maintenance (40 C.F.R. § 122.41(m)(4)(i)(B)); and

- c. The Discharger submitted notice to the Regional Water Board as required under Standard Provisions – Permit Compliance I.G.5 below. (40 C.F.R. § 122.41(m)(4)(i)(C).)
4. The Regional Water Board may approve an anticipated bypass, after considering its adverse effects, if the Regional Water Board determines that it will meet the three conditions listed in Standard Provisions – Permit Compliance I.G.3 above. (40 C.F.R. § 122.41(m)(4)(ii).)
5. Notice
 - a. Anticipated bypass. If the Discharger knows in advance of the need for a bypass, it shall submit a notice, if possible at least 10 days before the date of the bypass. (40 C.F.R. § 122.41(m)(3)(i).)
 - b. Unanticipated bypass. The Discharger shall submit notice of an unanticipated bypass as required in Standard Provisions - Reporting V.E below (24-hour notice). (40 C.F.R. § 122.41(m)(3)(ii).)

H. Upset

Upset means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the Discharger. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation. (40 C.F.R. § 122.41(n)(1).)

1. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of Standard Provisions – Permit Compliance I.H.2 below are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review. (40 C.F.R. § 122.41(n)(2).)
2. Conditions necessary for a demonstration of upset. A Discharger who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs or other relevant evidence that (40 C.F.R. § 122.41(n)(3)):
 - a. An upset occurred and that the Discharger can identify the cause(s) of the upset (40 C.F.R. § 122.41(n)(3)(i));
 - b. The permitted facility was, at the time, being properly operated (40 C.F.R. § 122.41(n)(3)(ii));
 - c. The Discharger submitted notice of the upset as required in Standard Provisions – Reporting V.E.2.b below (24-hour notice) (40 C.F.R. § 122.41(n)(3)(iii)); and

- d. The Discharger complied with any remedial measures required under Standard Provisions – Permit Compliance I.C above. (40 C.F.R. § 122.41(n)(3)(iv).)
- 3. Burden of proof. In any enforcement proceeding, the Discharger seeking to establish the occurrence of an upset has the burden of proof. (40 C.F.R. § 122.41(n)(4).)

II. STANDARD PROVISIONS – PERMIT ACTION

A. General

This Order may be modified, revoked and reissued, or terminated for cause. The filing of a request by the Discharger for modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any Order condition. (40 C.F.R. § 122.41(f).)

B. Duty to Reapply

If the Discharger wishes to continue an activity regulated by this Order after the expiration date of this Order, the Discharger must apply for and obtain a new permit. (40 C.F.R. § 122.41(b).)

C. Transfers

This Order is not transferable to any person except after notice to the Regional Water Board. The Regional Water Board may require modification or revocation and reissuance of the Order to change the name of the Discharger and incorporate such other requirements as may be necessary under the CWA and the Water Code. (40 C.F.R. § 122.41(l)(3); § 122.61.)

III. STANDARD PROVISIONS – MONITORING

- A. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. (40 C.F.R. § 122.41(j)(1).)
- B. Monitoring results must be conducted according to test procedures under Part 136 unless otherwise specified in Part 503 unless other test procedures have been specified in this Order. (40 C.F.R. § 122.41(j)(4); § 122.44(i)(1)(iv).)

IV. STANDARD PROVISIONS – RECORDS

- A. The Discharger shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this Order, and records of all data used to complete the application for this Order, for a period of at least three (3) years from the date of the sample, measurement, report or application. This period may be extended by request of the Regional Water Board Executive Officer at any time. (40 C.F.R. § 122.41(j)(2).)
- B. Records of monitoring information shall include:

1. The date, exact place, and time of sampling or measurements (40 C.F.R. § 122.41(j)(3)(i));
 2. The individual(s) who performed the sampling or measurements (40 C.F.R. § 122.41(j)(3)(ii));
 3. The date(s) analyses were performed (40 C.F.R. § 122.41(j)(3)(iii));
 4. The individual(s) who performed the analyses (40 C.F.R. § 122.41(j)(3)(iv));
 5. The analytical techniques or methods used (40 C.F.R. § 122.41(j)(3)(v)); and
 6. The results of such analyses. (40 C.F.R. § 122.41(j)(3)(vi).)
- C. Claims of confidentiality for the following information will be denied (40 C.F.R. § 122.7(b)):
1. The name and address of any permit applicant or Discharger (40 C.F.R. § 122.7(b)(1)); and
 2. Permit applications and attachments, permits and effluent data. (40 C.F.R. § 122.7(b)(2).)

V. STANDARD PROVISIONS – REPORTING (IF APPLICABLE)

A. Duty to Provide Information

The Discharger shall furnish to the Regional Water Board, State Water Board, or USEPA within a reasonable time, any information which the Regional Water Board, State Water Board, or USEPA may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Order or to determine compliance with this Order. Upon request, the Discharger shall also furnish to the Regional Water Board, State Water Board, or USEPA copies of records required to be kept by this Order. (40 C.F.R. § 122.41(h); Wat. Code, § 13267.)

B. Signatory and Certification Requirements

All applications, reports, or information submitted to the Regional Water Board, State Water Board, and/or USEPA shall be signed and certified in accordance with Standard Provisions – Reporting V.B.2, V.B.3, V.B.4, and V.B.5 below. (40 C.F.R. § 122.41(k).)

1. **For a corporation:** All permit applications shall be signed by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means: (i) A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or (ii) the manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary

systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures. (40 C.F.R. § 122.22(a)(1).)

2. **For a partnership or sole proprietorship:** All permit applications shall be signed by a general partner or the proprietor, respectively. (40 C.F.R. § 122.22(a)(2).)
3. **For a municipality, State, federal, or other public agency:** All permit applications shall be signed by either a principal executive officer or ranking elected official. For purposes of this provision, a principal executive officer of a federal agency includes: (i) the chief executive officer of the agency, or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of USEPA). (40 C.F.R. § 122.22(a)(3).)
4. All reports required by this Order and other information requested by the Regional Water Board, State Water Board, or USEPA shall be signed by a person described in Standard Provisions – Reporting V.B.2 above, or by a duly authorized representative of that person. A person is a duly authorized representative only if:
 - a. The authorization is made in writing by a person described in Standard Provisions – Reporting V.B.2 above (40 C.F.R. § 122.22(b)(1));
 - b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.) (40 C.F.R. § 122.22(b)(2)); and
 - c. The written authorization is submitted to the Regional Water Board and State Water Board. (40 C.F.R. § 122.22(b)(3).)
5. If an authorization under Standard Provisions – Reporting V.B.3 above is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Standard Provisions – Reporting V.B.3 above must be submitted to the Regional Water Board and State Water Board prior to or together with any reports, information, or applications, to be signed by an authorized representative. (40 C.F.R. § 122.22(c).)
6. Any person signing a document under Standard Provisions – Reporting V.B.2 or V.B.3 above shall make the following certification:

“I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure 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 and imprisonment for knowing violations.” (40 C.F.R. § 122.22(d).)

C. Monitoring Reports

1. Monitoring results shall be reported at the intervals specified in the Monitoring and Reporting Program (Attachment E) in this Order. (40 C.F.R. § 122.22(l)(4).)
2. Monitoring results must be reported on a Discharge Monitoring Report (DMR) form or forms provided or specified by the Regional Water Board or State Water Board for reporting results of monitoring of sludge use or disposal practices. (40 C.F.R. § 122.41(l)(4)(i).)
3. If the Discharger monitors any pollutant more frequently than required by this Order using test procedures approved under Part 136 or, in the case of sludge use or disposal, approved under Part 136 unless otherwise specified in Part 503, or as specified in this Order, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Regional Water Board. (40 C.F.R. § 122.41(l)(4)(ii).)
4. Calculations for all limitations, which require averaging of measurements, shall utilize an arithmetic mean unless otherwise specified in this Order. (40 C.F.R. § 122.41(l)(4)(iii).)

D. Compliance Schedules

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this Order, shall be submitted no later than 14 days following each schedule date. (40 C.F.R. § 122.41(l)(5).)

E. Twenty-Four Hour Reporting

1. The Discharger shall report any noncompliance that may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the Discharger becomes aware of the circumstances. A written submission shall also be provided within five (5) days of the time the Discharger becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. (40 C.F.R. § 122.41(l)(6)(i).)
2. Any upset that exceeds any effluent limitation in this Order (40 C.F.R. § 122.41(l)(6)(ii)(B).) The following shall be included as information that must be reported within 24 hours under this paragraph (40 C.F.R. § 122.41(l)(6)(ii)):

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- a. Any unanticipated bypass that exceeds any effluent limitation in this Order. (40 C.F.R. § 122.41(l)(6)(ii)(A).)
- b. Any upset that exceeds any effluent limitation in this Order. (40 C.F.R. § 122.41(l)(6)(ii)(B).)
3. The Regional Water Board may waive the above-required written report under this provision on a case-by-case basis if an oral report has been received within 24 hours. (40 C.F.R. § 122.41(l)(6)(iii).)

F. Planned Changes

The Discharger shall give notice to the Regional Water Board as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required under this provision only when (40 C.F.R. § 122.41(l)(1)):

1. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in section 122.29(b) (40 C.F.R. § 122.41(l)(1)(i)); or
2. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants that are subject neither to effluent limitations in this Order nor to notification requirements under section 122.42(a)(1) (see Additional Provisions—Notification Levels VII.A.1). (40 C.F.R. § 122.41(l)(1)(ii).)
3. The alteration or addition results in a significant change in the Discharger's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan. (40 C.F.R. § 122.41(l)(1)(iii).)

G. Anticipated Noncompliance

The Discharger shall give advance notice to the Regional Water Board or State Water Board of any planned changes in the permitted facility or activity that may result in noncompliance with General Order requirements. (40 C.F.R. § 122.41(l)(2).)

H. Other Noncompliance

The Discharger shall report all instances of noncompliance not reported under Standard Provisions – Reporting V.C, V.D, and V.E above at the time monitoring reports are submitted. The reports shall contain the information listed in Standard Provision – Reporting V.E above. (40 C.F.R. § 122.41(l)(7).)

I. Other Information

When the Discharger becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Regional Water Board, State Water Board, or USEPA, the Discharger shall promptly submit such facts or information. (40 C.F.R. § 122.41(l)(8).)

VI. STANDARD PROVISIONS – ENFORCEMENT

The Regional Water Board is authorized to enforce the terms of this permit under several provisions of the Water Code, including, but not limited to, sections 13385, 13386, and 13387

VII. ADDITIONAL PROVISIONS – NOTIFICATION LEVELS (IF APPLICABLE)

A. Non-Municipal Facilities

Existing manufacturing, commercial, mining, and silvicultural Dischargers shall notify the Regional Water Board as soon as they know or have reason to believe (40 C.F.R. § 122.42(a)):

1. That any activity has occurred or will occur that would result in the discharge, on a routine or frequent basis, of any toxic pollutant that is not limited in this Order, if that discharge will exceed the highest of the following "notification levels" (40 C.F.R. § 122.42(a)(1)):
 - a. 100 micrograms per liter (µg/L) (40 C.F.R. § 122.42(a)(1)(i));
 - b. 200 µg/L for acrolein and acrylonitrile; 500 µg/L for 2,4-dinitrophenol and 2-methyl-4,6-dinitrophenol; and 1 milligram per liter (mg/L) for antimony (40 C.F.R. § 122.42(a)(1)(ii));
 - c. Five (5) times the maximum concentration value reported for that pollutant in the Report of Waste Discharge (40 C.F.R. § 122.42(a)(1)(iii)); or
 - d. The level established by the Regional Water Board in accordance with section 122.44(f). (40 C.F.R. § 122.42(a)(1)(iv).)
2. That any activity has occurred or will occur that would result in the discharge, on a non-routine or infrequent basis, of any toxic pollutant that is not limited in this Order, if that discharge will exceed the highest of the following "notification levels" (40 C.F.R. § 122.42(a)(2)):
 - a. 500 micrograms per liter (µg/L) (40 C.F.R. § 122.42(a)(2)(i));
 - b. 1 milligram per liter (mg/L) for antimony (40 C.F.R. § 122.42(a)(2)(ii));
 - c. Ten (10) times the maximum concentration value reported for that pollutant in the Report of Waste Discharge (40 C.F.R. § 122.42(a)(2)(iii)); or
 - d. The level established by the Regional Water Board in accordance with section 122.44(f). (40 C.F.R. § 122.42(a)(2)(iv).)

B. Publicly-Owned Treatment Works (POTWs)

All POTWs shall provide adequate notice to the Regional Water Board of the following (40 C.F.R. § 122.42(b)):

1. Any new introduction of pollutants into the POTW from an indirect discharger that would be subject to sections 301 or 306 of the CWA if it were directly discharging those pollutants (40 C.F.R. § 122.42(b)(1)); and

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2. Any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of adoption of the Order. (40 C.F.R. § 122.42(b)(2).)

Adequate notice shall include information on the quality and quantity of effluent introduced into the POTW as well as any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW. (40 C.F.R. § 122.42(b)(3).

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ATTACHMENT E – MONITORING AND REPORTING PROGRAM

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ATTACHMENT E – MONITORING AND REPORTING PROGRAM

Title 40 of the Code of Federal Regulations (CFR), Part 122.48 (40 CFR 122.48) requires that all NPDES permits specify monitoring and reporting requirements. California Water Code (CWC) sections 13267 and 13383 also authorize the Regional Water Quality Control Board (Regional Water Board) to require technical and monitoring reports. This Monitoring and Reporting Program establishes monitoring and reporting requirements, which implement federal and California laws and regulations.

I. GENERAL MONITORING PROVISIONS

- A.** Samples and measurements taken as required herein shall be representative of the nature of the monitored discharge. All samples shall be taken at the monitoring locations specified in the PAP submitted by the Discharger, unless otherwise specified. Monitoring locations shall not be changed without notification to and the approval of appropriate Regional Water Boards.
- B.** All analyses shall be conducted at a laboratory certified for such analyses by the Department of Public Health (CDPH, formerly Department of Health Services). A manual containing the steps followed in this program must be kept in the laboratory and shall be available for inspection by the appropriate Regional Water Board staff. The Quality Assurance-Quality Control Program must conform to USEPA guidelines or to procedures approved by the appropriate Regional Water Board.
- C.** All analyses shall be conducted in accordance with the latest edition of “Guidelines Establishing Test Procedures for Analysis of Pollutants” (Guidelines), promulgated by the USEPA (Title 40 Code of Federal Regulations, Part 136).
- D.** Records of monitoring information shall include the following:
 - 1. The date, exact place, and time of sampling or measurements;
 - 2. The individuals who performed the sampling or measurements;
 - 3. The dates analysis were performed;
 - 4. The individuals who performed the analyses;
 - 5. The analytical techniques or methods uses; and
 - 6. The results of such analyses.
- E.** All analyses shall be performed in a laboratory certified to perform such analyses by CDPH. Laboratories that perform sample analyses shall be identified in all monitoring reports.
- F.** All monitoring instruments and devices used by the Discharger to fulfill the prescribed monitoring program shall be properly maintained and calibrated as necessary to ensure their continued accuracy.

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- G. Monitoring results, including noncompliance, shall be reported at intervals and in a manner specified in this Monitoring and Reporting Program.
- H. Laboratories analyzing monitoring samples shall be certified by CDPH, in accordance with the provision of CWC section 13176, and must include quality assurance/quality control data with their reports.

II. MONITORING LOCATIONS

Each Discharger shall establish monitoring locations specified in the PAP to demonstrate compliance with the receiving water limitations, discharge specifications, and other requirements in this Order.

III. TOXICITY TESTING REQUIREMENTS

- A. **Toxicity Testing.** Each Discharger shall conduct toxicity testing to determine whether residual pesticides are contributing toxicity to the receiving water. The Discharger shall meet the following toxicity testing requirements:
 1. Monitoring Frequency –The Discharger shall perform the toxicity testing at 10 percent of all application areas for each type of mosquito adulticide used. The 10 percent sampling areas shall be representative areas. A Discharger with 20 application areas or less shall perform the toxicity testing at a minimum of two areas. A Discharger with greater than 20 application areas shall perform the toxicity testing at 10 percent of all areas. The number of representative areas shall be rounded to the nearest whole number using scientific number protocol. For example, if the number of application areas is 25, the Discharger must perform the toxicity testing at three representative areas.
 2. Sample Types – Receiving water samples shall be grab samples, shall be taken at receiving water monitoring locations specified in the PAP submitted by the Discharger, and shall be taken in conjunction with the Event Monitoring for constituents/parameters specified in Tables E-1 or E-2. The receiving water control shall be a grab sample obtained from a receiving water sampling location (outside of the spray influence) specified in the PAP.
 3. Sample Volumes – Volume of sample determined by specific test methods to be used. Sufficient sample volume shall be collected to perform the required toxicity tests.
 4. Test Species – The Discharger shall conduct chronic toxicity tests with *Ceriodaphnia dubia* to measure survival and reproduction endpoints to *C. dubia* exposed to the receiving water that contains residual pesticides from the spray application of organophosphate pesticides compared to that of the control organisms.

The Discharger shall conduct acute toxicity tests with *Hyalella aztec* exposed to the receiving water that contains residual pesticides from the spray application of pyrethrin and pyrethroid products compared to that of the control organisms.

5. **Methods** – The presence of chronic toxicity shall be estimated as specified in Short-term Method for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition, EPA/821-R-02-013, October 2002; Table IA, 40 CFR Part 136 and its subsequent amendments or revisions. The test endpoint data are analyzed using a standard t-test approach. Statistical analysis methods shall be consistent with USEPA test method manuals (see EPA/821/R-02/012, page 86).

The presence of acute toxicity shall be estimated as specified in Methods for Measuring the Acute Toxicity of Effluent and Receiving Waters to Freshwater and Marine Organisms, Fifth Edition, EPA/821-R-02-012, October 2002, Table 1A, 40 CFR Part 136 and its subsequent amendments or revisions. The test endpoint data are analyzed using a standard t-test approach. Statistical analysis methods shall be consistent with USEPA test method manuals (see EPA/821/R-02/012, page 86).

6. **Quality Assurance** – The toxicity test must meet all test acceptability criteria as specified in the Short-term Method for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition, EPA/821-R-02-013, October 2002.
7. **Dilution Series** – None. The tested sample must be 100% receiving water of the representative areas.

B. Toxicity Testing Notification Requirements. The Discharger shall notify the appropriate Regional Water Board within 24-hours after the receipt of any test result indicating a “fail” result.

1. **Chronic Toxicity Reporting.** Chronic toxicity monitoring results shall be reported to the appropriate Regional Water Board within 30 days following completion of the test, and shall contain, at minimum:
 - a. The results expressed as either pass or fail using the standard t-test statistics;
 - b. The dates of sample collection and initiation of each toxicity test;
 - c. The results compared to the numeric toxicity monitoring trigger, in which the numeric monitoring trigger is any sample that shows a statistically significant difference compared to the control.
 - d. Any toxicity test result indicating toxicity within the receiving stream must be immediately reported to the appropriate Regional Water Board as a potential violation of this Order

Additionally, the annual discharger self-monitoring reports shall contain the following:

- a. A full laboratory report for all toxicity testing and monitoring frequency;
- b. The dates of sample collection and initiation of each toxicity test; and
- c. All results for receiving water parameters monitored concurrently with the toxicity test(s).

2. **Quality Assurance (QA).** The Discharger must provide the following information for QA purposes:
 - a. Toxicity data with the statistical output page giving the species, statistical endpoints, dilution water used, and dates tested.
 - b. Any information on deviations or problems encountered and how they were dealt with.

IV. RECEIVING WATER MONITORING REQUIREMENTS – SURFACE WATER

A. Watershed Monitoring. The State Water Board and Regional Water Boards have been implementing a Watershed Management Approach (WMA) to address water quality protection in the state following USEPA’s guidance in *Watershed Protection: A Project Focus* (EPA841-R-95-003, August 1995). The objective of the WMA is to provide a more comprehensive and integrated strategy resulting in water resource protection, enhancement, and restoration while balancing economic and environmental impacts within a hydrologically-defined drainage basin or watershed. The WMA emphasizes cooperative relationships between regulatory agencies, the regulated community, environmental groups, and other stakeholders in the watershed to achieve the greatest environmental improvements with the resources available. To foster the implementation of the WMA approach, this Order encourages MVCAC, its member organizations, and other mosquito abatement agencies to participate in the development and implementation of a watershed-wide monitoring program to determine the water quality impacts of their mosquito abatement activities. Whether conducting monitoring through the WMA approach, where Dischargers would form monitoring coalitions with others doing similar applications within a given watershed, or individually, Dischargers must submit a PAP for approval by the Regional Water Boards before they can proceed with their application activities.

The monitoring program is designed to address two key questions on a watershed basis:

Question No. 1: Does the pesticide residue from spray applications cause an exceedance of receiving water limitations or monitoring triggers?

Question No. 2: Does the pesticide residue, including active ingredients, inert ingredients, and degradates, in any combination cause or contribute to an exceedance of the “no toxics in toxic amount” narrative toxicity objective?

Each coalition’s PAP must demonstrate how this will be accomplished by including the following information:

- Evaluation of the coalition’s ability to answer the two key questions listed above with the information presently available, with the understanding that the ability to answer may vary from waterbody to waterbody.
- Identification of critical gaps in knowledge (e.g., inability to document impacts, lack of knowledge about potential sources, absence of trend monitoring components) relevant to the coalition’s circumstances.

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- Description of how the PAP will be used as a framework for filling in the data gaps and for developing monitoring components suited to the coalition’s circumstances, documenting how the two key questions will be answered.

1. Requirements for Monitoring Area Information

The PAP shall include an approach for the monitoring design needed to answer the two key questions. The PAP shall describe the tasks and time schedule in which the two key questions identified above will be addressed. Selection of monitoring areas must be scientifically based and sufficiently representative to characterize water quality for all surface waters of the State that may be affected by spray applications within coalition boundaries.

The PAP must consider watershed specific attributes and waste constituents, based on the natural characteristics of spray applications within the coalition’s area, as well as the receiving water quality conditions. Watershed specific requirements will include follow-up sampling and analyses on exceedances that may be unique for specific pesticides.

Monitoring area information shall include a description of the study area, GPS coordinates, and pesticides being applied. The numbers and locations of the monitoring areas must be sufficient to characterize water quality, based on specific watershed characteristics, and be supported by a detailed discussion of these characteristics.

Monitoring areas shall be selected for water bodies in order to answer the two key questions. Water bodies that carry residual pesticides as a result of spray applications must be represented in selection of monitoring areas.

The following monitoring is required for each sampling:

- Background Monitoring.** Background samples shall be collected at the application area or target area, just prior (up to 24-hours in advance of application) to the application event.
- Event Monitoring.** Event monitoring samples shall be collected in the application area or the target area immediately after the application event but shall not exceed 24 hours after the application event.
- Post-Event Monitoring.** Post-event samples shall be collected within the application area or the target area within one week after the application event.

The monitoring design shall include the following:

Developing the details of a monitoring design requires clearly defining several inputs to the design and then organizing these in a logical framework that supports effective decision making about indicators, monitoring area locations, and monitoring frequency. The logical framework should describe:

- a. The basic geographic and hydrographic features of the area, particularly application points and the pathway(s) of residue flows;
- b. Pesticide application practices and how they are distributed in space and time;
- c. Relevant knowledge about the transport, fates, and effects of pesticides, including best- and worst-case scenarios;
- d. Description of the designated uses in each water body;
- e. Relevant knowledge about the action of cumulative and indirect effects, and of other sources of impact;
- f. Mechanisms through which pesticide applications could lead to designated use impacts, given the basic features of the area;
- g. Known and potential impacts of pesticide applications on water quality, ranked in terms of relative risk, based on factors such as magnitude, frequency and duration;
- h. Sufficient number of sampling areas to assess the entire coalition's area of influence; and
- i. The approach, including a schedule, to sample monitoring areas

Monitoring shall also be used to provide supporting data that may allow considerations for the use of monitoring areas to be representative of other locations within the coalition's boundaries. In order to be considered "representative", each coalition must provide technically valid justification for the representative nature of the monitoring locations to include similarities in hydrology, pesticide use, and other factors that affect the discharge of residual pesticides to surface waters as a result of spray applications. Each coalition must provide technical justification and identify which areas are to be considered representative in a subsequent technical report that must be approved by the appropriate Regional Water Board Executive Officer. When representative areas are approved, the monitoring data collected shall be considered to represent conditions at the referenced designated sites.

2. Monitoring Parameters and Schedule

Monitoring shall take place at locations that are described and scheduled in the coalition's PAP.

Monitoring areas must include frequent and routine monitoring on a pre-determined schedule, as summarized in the Table E-1 below:

Table E-1. Watershed Monitoring Requirements

Sample Type	Constituent/Parameter	Units	Sample Method	Minimum Sampling Frequency	Monitoring Requirement	Required Analytical Test Method
Visual	1. Monitoring area description (pond, lake, open waterway, channel, etc.) 2. Appearance of waterway (sheen, color, clarity, etc.) 3. Weather conditions (fog, rain, wind, etc.)	Not applicable	Visual Observation	All applications at all application areas	Background, Event, and Post-Event Monitoring	Not applicable
Physical	1. Temperature ²	°F	Grab ⁴	10 percent of all application areas	Background, Event, and Post-Event Monitoring	1
	2. pH ³	Number				
	3. Turbidity ³	NTU				
	4. Electrical Conductivity ³ @ 25°C	µmhos/cm				
Chemical	1. Active Ingredient	µg/L	Grab ⁴	10 percent of all application areas	Background, Event, and Post-Event Monitoring	1
	2. Dissolved Oxygen ³	mg/L				
Toxicity	Toxicity	Pass/Fail	Grab ⁴	10 percent of all application areas	Event Monitoring	1

¹ Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136.

² Field testing.

³ Field or laboratory testing.

⁴ Samples shall be collected at three feet below the surface, or mid-depth if water body is less than six feet deep.

B. Individual Monitoring

A Discharger which does not belong to a coalition must fulfill monitoring requirements as described below:

1. For each application, the Discharger shall prepare a map with a convenient scale showing the application area, target area, and off-target area where off-target spray drift may occur. The Discharger is responsible for calculating the distance from the path (or point) of application in which off-target spray drift may occur. The Discharger shall also provide information on surface area of the application area and target area and any other information used to calculate dosage, concentration, and quantity of each pesticide used at each application area. The Discharger shall also identify sampling locations described in 4.a through 4.c below and provide global positioning systems (GPS) coordinates for each sampling area.

2. The Dischargers shall collect samples at 10 percent of all application areas for each type of mosquito adulticide used. The 10 percent sampling areas shall be representative areas.
3. A Discharger with 20 application areas or fewer shall collect samples at a minimum of two areas. A Discharger with greater than 20 application areas shall collect samples at 10 percent of all areas. The number of representative areas shall be rounded to the nearest whole number using scientific number protocol. For example, if the number of application areas is 25, the Discharger must sample three representative areas.
4. The following monitoring is required for each sampling:
 - a. **Background Monitoring.** Background samples shall be collected at the application area, just prior (up to 24-hours in advance of application) to the application event.
 - b. **Event Monitoring.** Event monitoring samples shall be collected in the application area or the target area immediately after the application event but shall not exceed 24 hours after the application event
 - c. **Post-Event Monitoring.** Post-event samples shall be collected within the application area or the target area within one week after the application event.
5. The Discharger shall monitor for the following parameters/constituents:

Table E-2. Individual Monitoring Requirements

Sample Type	Constituent/Parameter	Units	Sample Method	Minimum Sampling Frequency	Monitoring Requirement	Required Analytical Test Method
Visual	1. Monitoring area description (pond, lake, open waterway, channel, etc.) 2. Appearance of waterway (sheen, color, clarity, etc.) 3. Weather conditions (fog, rain, wind, etc.)	Not applicable	Visual Observation	All applications at all application areas	Background, Event, and Post-Event Monitoring	Not applicable
Physical	1. Temperature ²	°F	Grab ⁴	10 percent of all application areas	Background, Event, and Post-Event Monitoring	1
	2. pH ³	Number				
	3. Turbidity ³	NTU				
	4. Electrical Conductivity ³ @ 25°C	µmhos/cm				
Chemical	1. Active Ingredient	µg/L	Grab ⁴	10 percent of all application areas	Background, Event, and Post-Event Monitoring	1
	2. Dissolved Oxygen ³	mg/L				

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Sample Type	Constituent/Parameter	Units	Sample Method	Minimum Sampling Frequency	Monitoring Requirement	Required Analytical Test Method
Toxicity	Toxicity	Pass/Fail	Grab ⁴	10 percent of all application areas	Event Monitoring	1

¹ Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136.

² Field testing.

³ Field or laboratory testing.

⁴ Samples shall be collected at three feet below the surface, or mid-depth if water body is less than six feet deep.

In conducting the receiving water sampling, a log shall be kept of the receiving water conditions throughout the reach bounded by the treatment area. Attention shall be given to the presence or absence of:

1. Floating or suspended matter;
2. Discoloration;
3. Bottom deposits;
4. Aquatic life;
5. Visible films, sheens, or coatings;
6. Fungi, slimes, or objectionable growths; and
7. Potential nuisance conditions.

Notes on receiving water conditions shall be summarized in the monitoring report.

V. REPORTING REQUIREMENTS

A. General Monitoring and Reporting Requirements

1. The Discharger shall inform the appropriate Regional Water Board 24 hours before the start of the spray application.
2. The Discharger shall comply with all Standard Provisions (Attachment D) related to monitoring, reporting, and recordkeeping.
3. Upon written request of the appropriate Regional Water Board, the Discharger shall submit a summary monitoring report.
4. The Discharger shall report to the appropriate Regional Water Board any toxic chemical release data it reports to the State Emergency Response Commission within 15 days of reporting the data to the Commission pursuant to section 313 of the "Emergency Planning and Community Right to Know Act" of 1986 (42 U.S.C. § 11001 et. seq.)
5. Monitoring frequencies may be adjusted by the appropriate Regional Water Board Executive Officer to a less frequent basis if the Discharger makes a request and the request is backed by statistical trends of monitoring data submitted.

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6. Additional monitoring and reporting requirements to the PAP may be added by the Regional Water Board Executive Officer.

B. Annual Reports

1. Annual reports shall contain the following information:
 - a. An Executive Summary discussing compliance or violation of this Order and the effectiveness of the PAP to reduce or prevent the discharge of pollutants associated with pesticide applications;
 - b. A summary of monitoring data, including the identification of water quality improvements or degradation, and recommendations for improvements to the PAP (including proposed BMPs) based on the monitoring results. All receiving water monitoring data shall be compared to applicable water quality standards;
 - c. Identification of BMPs and a discussion of their effectiveness in meeting this requirements in this Order;
 - d. A discussion of BMP modifications addressing violations of this Order;
 - e. A map showing the location of each application area, the target area, and the off-target area where off-target spray drift may occur;
 - f. Types and amounts of pesticides used at each application event during each application;
 - g. Information on surface area and/or volume of application and target areas and any other information used to calculate dosage, concentration, and quantity of each pesticide used;
 - h. Sampling results shall indicate the name of the sampling agency or organization, detailed sampling location information (including latitude and longitude or township/range/section if available), detailed map or description of each sampling area (i.e., address, cross roads, etc.), collection date, name of constituent/parameter and its concentration detected, minimum levels, method detection limits for each constituent analysis, name or description of water body sampled, and a comparison with applicable water quality standards, description of analytical QA/quality control plan. Sampling results shall be tabulated so that they are readily discernible;
 - i. Recommendations to improve the monitoring program, BMPs, and PAP to ascertain compliance with this Order; and
 - j. Proposed changes to the PAP and monitoring program.
2. At any time during the term of this Order, the State Water Board or the appropriate Regional Water Board may notify Dischargers to electronically submit Self-Monitoring Reports (SMRs) using the State Water Board's California Integrated Water Quality System (CIWQS) Program Web site (<http://www.waterboards.ca.gov/ciwqs/index.html>). Until such notification is given, each Discharger shall submit hard copy SMRs. The CIWQS Web site will provide additional directions for SMR submittal in the event there will be service interruption for electronic submittal.

3. Dischargers shall report in the SMR the results for all monitoring specified in this Monitoring and Reporting Program. Dischargers shall submit annually SMRs including the results of all required monitoring using USEPA-approved test methods or other test methods specified in this Order. If a Discharger monitors any pollutant more frequently than required by this Order, the results of this monitoring shall be included in the calculations and reporting of the data submitted in the SMR.
4. Monitoring reports shall be submitted to the appropriate Regional Water Board Executive Officer in accordance with the following schedule:

Table E-3. Reporting Schedule

Reporting Frequency	Reporting Period	Annual Report Due
Annual	1 January through 31 December	1 March

C. Reporting Protocols

Dischargers shall report with each sample result the applicable reported Minimum Level (ML) and the current Method Detection Limit (MDL), as determined by the procedure in 40 CFR Part 136.

The Discharger shall report the results of analytical determinations for the presence of chemical constituents in a sample using the following reporting protocols:

1. Sample results greater than or equal to the reported ML shall be reported as measured by the laboratory (i.e., the measured chemical concentration in the sample).
2. Sample results less than the RL, but greater than or equal to the laboratory’s MDL, shall be reported as “Detected, but Not Quantified,” or DNQ. The estimated chemical concentration of the sample shall also be reported.

For the purposes of data collection, the laboratory shall write the estimated chemical concentration next to DNQ as well as the words “Estimated Concentration” (may be shortened to “Est. Conc.”). The laboratory may, if such information is available, include numerical estimates of the data quality for the reported result. Numerical estimates of data quality may be percent accuracy (+ a percentage of the reported value), numerical ranges (low to high), or any other means considered appropriate by the laboratory.

3. Sample results less than the laboratory’s MDL shall be reported as “Not Detected,” or ND.
4. Dischargers are to instruct laboratories to establish calibration standards so that the ML value (or its equivalent if there is differential treatment of samples relative to calibration standards) is the lowest calibration standard. At no time is the Discharger to use analytical data derived from extrapolation beyond the lowest point of the calibration curve.

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- 5. Multiple Sample Data.** If two or more sample results are available, each Discharger shall compute the arithmetic mean unless the data set contains one or more reported determinations of “Detected, but Not Quantified” (DNQ) or “Not Detected” (ND). In those cases, the Discharger shall compute the median in place of the arithmetic mean in accordance with the following procedure:
- a. The data set shall be ranked from low to high, ranking the reported ND determinations lowest, DNQ determinations next, followed by quantified values (if any). The order of the individual ND or DNQ determinations is unimportant.
 - b. The median value of the data set shall be determined. If the data set has an odd number of data points, then the median is the middle value. If the data set has an even number of data points, then the median is the average of the two values around the middle unless one or both of the points are ND or DNQ, in which case the median value shall be the lower of the two data points where DNQ is lower than a value and ND is lower than DNQ.
- 6.** Dischargers shall submit the Annual Report in accordance with the following requirements:
- a. The Discharger shall arrange all reported data in a tabular format. The data shall be summarized to clearly illustrate whether the facility is operating in compliance with effluent and receiving water limitations. The Discharger is not required to duplicate the submittal of data that is entered in a tabular format within CIWQS. When electronic submittal of data is required and CIWQS does not provide for entry into a tabular format within the system, the Discharger shall electronically submit the data in a tabular format as an attachment.
 - b. Each Discharger shall attach a cover letter to the Annual Report. The information contained in the cover letter shall clearly identify violations of the permit; discuss corrective actions taken or planned; and the proposed time schedule for corrective actions. Identified violations must include a description of the requirement that was violated and a description of the violation.
 - c. Annual Report must be submitted to the appropriate Regional Water Board, signed and certified as required by the Standard Provisions (Attachment D).

ATTACHMENT F – FACT SHEET

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ATTACHMENT F – FACT SHEET

As described in the Findings in section III of this Order, this Fact Sheet includes the legal requirements and technical rationale that serve as the basis for the requirements of this Order.

This Order has been prepared under a standardized format to accommodate a broad range of discharge requirements for Dischargers in California.

I. PERMIT INFORMATION

A. Background

1. The Regulatory Background

In 1972, the Federal Water Pollution Control Act (also referred to as the Clean Water Act) was amended to provide that the discharge of pollutants to waters of the United States from any point source is effectively prohibited unless the discharge is in compliance with a National Pollutant Discharge Elimination System (NPDES) Permit.

On September 22, 1989, the United States Environmental Protection Agency (USEPA) granted the State of California, through the State Water Resources Control Board (State Water Board) and the Regional Water Quality Control Boards (Regional Water Boards), the authority to issue general NPDES permits pursuant to 40 Code of Federal Regulations (CFR) Parts 122 and 123.

Section 122.28 of 40 CFR provides for issuance of general permits to regulate a category of point sources if the sources involve the same or substantially similar types of operations; discharge the same type of waste; require the same type of effluent limitations or operating conditions; require similar monitoring; and are more appropriately regulated under a general order rather than individual orders.

On March 12, 2001, the Ninth Circuit Court of Appeals held that discharges of pollutants from the use of aquatic pesticides in waters of the United States require coverage under an NPDES permit. (*Headwaters, Inc. v. Talent Irrigation District*). The *Talent* decision was issued just prior to the major season for applying aquatic pesticides.

Because of the serious public health, safety, and economic implications of delaying pesticide applications, in 2001 the State Water Board adopted Water Quality Order (Order) No. 2001-12-DWQ, Statewide General NPDES Permit for Discharges of Aquatic Pesticides to Waters of the United States, on an emergency basis to provide immediate NPDES permit coverage for broad categories of aquatic pesticide use in California.

Order No. 2001-12-DWQ imposed requirements on any discharge of aquatic pesticides from public entities to waters of the United States in accordance with the State Water Board's *Policy for Implementation of Toxics Standards for Inland*

Surface Waters, Enclosed Bays, and Estuaries of California (Policy). The Policy establishes procedures for implementing water quality standards for priority pollutants in NPDES permits.

Section 5.3 of the Policy allows for short-term or seasonal exceptions from its requirements for resource or pest management conducted by public entities. In order to qualify for an exception from meeting priority pollutant standards, a public entity must fulfill the requirements listed in section 5.3 and the State Water Board must decide to grant the exception. Among other requirements, entities seeking an exception to complying with water quality standards for priority pollutants must submit California Environmental Quality Act (CEQA) documents. Because of the emergency adoption of Order No. 2001-12-DWQ, the State Water Board invoked an exemption to the requirements of section 5.3 and issued the permit incorporating a categorical exception to water quality standards for priority pollutants.

Order No. 2001-12-DWQ required that Dischargers develop a best management practices (BMPs) plan that minimizes adverse impacts to receiving waters and a monitoring and reporting plan that is representative of each type of aquatic pesticide application.

In August 2001, Waterkeepers Northern California (Waterkeepers) filed a lawsuit against the State Water Board challenging several aspects of Order No. 2001-12-DWQ. Major aspects of the challenge included the emergency adoption of the Order without compliance with the California Environmental Quality Act (CEQA) and other exception requirements of the State Water Board's *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (SIP); failure to address cumulative impacts; and failure to comply with the California Toxics Rule (CTR).

In a settlement of the Waterkeepers' lawsuit, the State Water Board agreed to fund a comprehensive aquatic pesticide monitoring program that would assess receiving water toxicity caused by aquatic pesticide residues. Pesticide formulations may include "active ingredients" and "inert ingredients". Adjuvants or surfactants may be added to the active ingredients in the application equipment that is used in the delivery of the pesticide. In November 2002, the Ninth Circuit issued another opinion concerning the need for an NPDES permit for pesticide application. (*League of Wilderness Defenders v. Forsgren.*) In this case, the court held that the U.S. Forest Service must obtain an NPDES permit before it sprays insecticides from an aircraft directly into rivers as part of silviculture activities. The court found that the insecticides are pollutants under the CWA. The court also defined the exemption for silvicultural pest control from the definition of "point source" in USEPA's regulations to be limited to pest control activities from which there is natural runoff.

Also in 2002, the Second Circuit issued an unpublished decision regarding the need for an NPDES permit for application of pesticides for mosquito control in federal wetland areas. (*Altman v. Town of Amherst.*) The lower court had dismissed a citizens' suit, holding that pesticides, when used for their intended

purpose, do not constitute a “pollutant” for purposes of the CWA, and are more appropriately regulated under Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). The appeals court vacated the trial court’s decision and remanded the matter. In its unpublished decision, the Second Circuit expressed concern that: [u]ntil the EPA articulates a clear interpretation of current law - among other things, whether properly used pesticides released into or over waters of the United States can trigger the requirements for NPDES permits - the question of whether properly used pesticides can become pollutants that violate the [Clean Water Act] will remain open.

Order No. 2001-12-DWQ expired on January 31, 2004. In May 2004, it was replaced by two general permits: a vector control permit for larvicides (Order No. 2004-0008-DWQ) and a weed control permit (Order No. 2004-0009-DWQ). The vector control permit does not cover spray applications of pesticides to control adult mosquitoes. The State Water Board found that these two permits were adopted consistent with the Ninth Circuit decisions.

In 2005, the Ninth Circuit held that a pesticide that is applied consistent with FIFRA is not a “chemical waste” (*Fairhurst v. Hagener*), but also stated that it would not change its decision in *Headwaters*. The court stated that whether an NPDES permit was required depends on whether there was any “residue or unintended effect” from application of the pesticide. In *Fairhurst*, the court found neither residue nor unintended effect is present. Therefore, it did not require an NPDES permit.

USEPA’s Final Rule: On November 20, 2006, USEPA adopted a final regulation which codified that NPDES permits are not required for pesticide applications as long as the discharger follows FIFRA label instructions. According to this new regulation, pesticides applied under the following two circumstances are not pollutants and, therefore, are not subject to NPDES permitting requirements:

- (1) The application of pesticides directly to waters of the United States in order to control pests. Examples of such applications include applications to control mosquito larvae, aquatic weeds, or other pests that are present in waters of the United States.
- (2) The application of pesticides to control pests that are present over waters of the United States, including near such waters, where a portion of the pesticides will unavoidably be deposited to waters of the United States in order to target the pests effectively; for example, when insecticides are aerially applied to a forest canopy where waters of the United States may be present below the canopy or when pesticides are applied over or near water for control of adult mosquitoes or other pests.

Lawsuits Against USEPA’s Final Rule: After USEPA’s new regulation was adopted in 2006, lawsuits were filed by both the pesticide industry and environmental groups in 11 of the 13 Circuits, including the Ninth Circuit Court, challenging USEPA’s Final Rule.

The National Cotton Council of America v. USEPA: The petitions for review were consolidated in the Sixth Circuit Court by an order of the Judicial Panel on Multidistrict Litigation.

On January 7, 2009, the Sixth Circuit Court determined that USEPA's Final Rule is not a reasonable interpretation of the CWA and vacated the Final Rule. USEPA did not request reconsideration of the decision, but did file a motion for a two-year stay of the effect of the decision in order to provide agencies time to develop, propose, and issue NPDES general permits for pesticide applications covered by the ruling. On June 8, 2009, the Sixth Circuit granted the motion, such that the USEPA exemption will remain in place until April 9, 2011.

In February 2009, State Water Board staff met with members of the Mosquito and Vector Control Association of California (MVCAC) which represents the vast majority of governmental mosquito control programs in the state. The California Department of Pesticide Regulation (DPR) and California Department of Public Health (CDPH) representatives were also present at the meeting, the purpose of which was to discuss MVCAC's need for a mosquito adulticide permit as a result of the Sixth Circuit Court's ruling. In subsequent meetings, representatives of these groups including State Water Board staff formed a technical committee to facilitate drafting of the adulticide permit. Representatives of USEPA Headquarters and Region 9 joined the technical committee after its initial formation. Before the Sixth Circuit granted USEPA's motion for a stay, there was an urgency to expedite processing of the permit. Thus, the technical committee agreed to screen adulticide products qualitatively using the following procedures:

- Permit only the most commonly used adulticide products in California. CDPH and MVCAC provided staff with a list of 30 products;
- Exclude from the permit all adulticide products that contain priority pollutants as active ingredients and inert ingredients because having priority pollutants would add more complicated requirements; and
- Exclude products with inert ingredients that have water quality concerns.

To determine whether potential water quality problems exist, State Water Board staff reviewed water quality criteria or objectives for inert ingredients. If there are water quality criteria or objectives, any product containing that inert ingredient was removed from the list. For inert ingredients that do not have water quality criteria or objectives, State Water Board staff used the presence of toxicity information such as the LC50 to protect the most sensitive freshwater aquatic life species from USEPA's Office of Pesticides (*Ecotoxicity Database*) as the basis for screening out the products.

Note: This version of the Order provides numeric triggers and requirements only for the most commonly used adulticide products in California. Since the Sixth Circuit granted USEPA's motion for a stay, staff has been reviewing all of the currently registered adulticide products in California and

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will add other products as appropriate. The revised Order that will be noticed for a 30-day public comment period in Summer 2010 will include staff's results of the review of the remaining products.

2. Related Aquatic Pesticide Regulations

Pesticide formulations may include "active ingredients"⁶ and "inert ingredients"⁷. Adjuvants⁸ or surfactants may be added to the ingredients in the application equipment that is used in the delivery of the pesticide.

As part of the registration process of pesticides for use in California, USEPA and DPR evaluate data submitted by registrants to ensure that a product used according to label instructions will cause no harm or adverse impact on non-target organisms that cannot be reduced or mitigated with protective measures or use restrictions. The Clean Water Act (CWA), at section 301(a), broadly prohibits the discharge of any pollutant to waters of the United States, except in compliance with an NPDES permit. Pesticides discharged into surface waters may constitute pollutants within the meaning of the CWA even if the discharge is in compliance with the registration requirements of FIFRA, thus, requiring coverage under a valid NPDES permit.

DPR and the County Agricultural Commissioners (CACs) regulate the sale and use of pesticides in California. Pesticide applications subject to this Order must be consistent with permits issued by CACs and the pesticide label instructions approved by USEPA under FIFRA. According to federal law, pesticide label language is under the sole jurisdiction of USEPA. Label language and any changes thereto must be approved by USEPA before the product can be sold in this country. DPR cannot require manufacturers to make changes on labels; however, DPR can refuse to register products unless manufacturers address unmitigated hazards by amending the pesticide label.

As part of the pesticide registration process, USEPA and DPR evaluate data submitted by registrants to ensure that a product used according to label instructions will cause no harm (or "adverse impact") on non-target organisms that cannot be reduced (or "mitigated") with protective measures or use restrictions. Registrants are required to submit data on the effects of pesticides on target pests (efficacy) as well as non-target effects. Data on non-target effects include plant effects (phytotoxicity), fish and wildlife hazards (ecotoxicity), impacts on endangered species, effects on the environment, environmental fate, breakdown products, leachability, and persistence. Requirements that are specific to use in California are included in many pesticide labels that are approved by USEPA.

⁶ Active ingredients are manufacturer disclosed ingredients that yield toxic effects on target organisms.

⁷ Inert ingredients are additional ingredients and are often trade secrets; therefore, they are not always disclosed by the manufacturer.

⁸ Adjuvants are ingredients that are added to pesticides during an application event. These ingredients are chosen by the Discharger, based on site characteristics, and typically increase the effectiveness of pesticides on target organisms.

Use must be reported to the CAC where required by law or by agreement with DPR.

State regulations require that the CAC determine if a substantial adverse environmental impact will result from the proposed use of a restricted material. If the CAC determines that this is likely, the commissioner may deny the Use Permit or may issue it under the condition that site-specific use practices be followed (beyond the label and applicable regulations) to mitigate potentially adverse effects. DPR conducts scientific evaluations of potential health and environmental impacts and provides commissioners with information in the form of suggested permit conditions. DPR's suggested permit conditions reflect minimum measures necessary to protect people and the environment. CACs use this information and its evaluation of local conditions to set site-specific limits in permits.

The State's pesticide regulations provide special procedures for vector control agencies operating under cooperative agreements [For example, see Food and Agricultural Code § 11408(e)]. The application of pesticides by vector control agencies is regulated by a special arrangement among the CDPH, DPR, CACs, and vector control agencies. Vector control agencies are not directly regulated by DPR. Instead, supervisors or applicators are licensed by CDPH. Pesticide use by vector control agencies is reported to the CAC in accordance with a 1995 Memorandum of Understanding among DPR, DHS, and CACs for the *Protection of Human Health from the Adverse Effects of Pesticides* and with cooperative agreements entered into between CDPH and vector control agencies, pursuant to Health and Safety Code section 116180.

3. Mosquito Life Cycle

There are several species of mosquito that readily attack people, and domestic animals, and some species are capable of transmitting microbial organisms that cause diseases such as malaria and encephalitis in people, domestic animals, and wildlife.

Mosquitoes are classified as Insects of the Order Diptera. They undergo a complete metamorphosis, which involves four stages of development: egg, larva, pupa, and adult. The first three stages occur in water, but the adult female is an active flying insect that feeds upon the blood of humans and/or animals. The female mosquito lays her eggs directly on water or on moist substrates that may later be flooded with water. The eggs later hatch into larvae, the focus of most vector agencies control programs. The larvae go through four growth stages called instars. During these stages, the larvae continue to feed and grow in size. Once the larvae have developed to the fourth instar, they stop feeding and pupate. This is a resting (i.e., non-feeding) period. At this point, biological control (larvicides) and growth regulators no longer work as control measures because they require ingestion by the organisms. Draining or emptying the water, predation by fish and other aquatic predators, surface film larvicides, waves, or currents sufficient to flush pupae to open or moving water will kill the pupae.

Once larvae transform into pupae, internal changes occur and the adult mosquitoes take form. After a few hours to a few days in the pupae stage, the adult mosquitoes emerge at the water surface and seek shelter in shady, moist areas. Adult mosquitoes must find shelter during the heat to avoid dehydration and are generally most active during the hours around dusk and dawn, although some species are active throughout daylight hours or during the night. After a brief period of rest, adult females go in search of blood meals and the cycle continues. The time frame for this is highly variable, anywhere from less than a week to several months, depending primarily on the species and the temperature of the water. The warmer the water, the quicker the development will be. A very small amount of water in a container in the sun may produce a batch of adult mosquitoes very quickly.

Mosquito biology can follow two general scenarios. The first involves those species that lay their eggs in masses or rafts on the water's surface. Some of these species, which are found throughout the United States, often lay their eggs in natural or artificial water-holding containers found in the domestic environment, or in naturally occurring pools. In summer, the entire life cycle, from egg to adult, may be completed in a week or less.

The second scenario includes *Aedes* and *Ochlerotatus* mosquitoes that lay their eggs on moist soil or other substrates in areas that will be flooded with water later. After a few days, these eggs are ready to hatch but, if not flooded, can withstand drying for months and longer. In inland areas of the United States where these mosquitoes breed, heavy rains, irrigation, or other simultaneous flooding can produce millions of mosquitoes in a short time. Similar situations occur along coastal areas with mosquitoes adapted to salt marsh habitats, where high tides can initiate simultaneous development of large mosquito populations. Some salt marsh mosquitoes are strong fliers and can sometimes travel up to 50 miles from the breeding site.

Only female mosquitoes require a blood meal and bite animals, warm or cold blooded, and birds. Stimuli that influence biting (blood feeding) include a combination of carbon dioxide, temperature, moisture, smell, color and movement. Male mosquitoes do not bite, but feed on the nectar of flowers or other suitable sugar source. Acquiring a blood meal (protein) is essential for egg production, but mostly both male and female mosquitoes are nectar feeders. Female *Toxorhynchites* actually cannot obtain a bloodmeal and are restricted to a nectar diet. Of those female mosquitoes capable of blood feeding, human blood meals are seldom first or second choices. Horses, cattle, smaller mammals and/or birds are preferred.

Aedes and *Ochlerotatus* mosquitoes are painful and persistent biters. They search for a blood meal early in the morning, at dusk (crepuscular feeders), and in the evening. Some are diurnal (daytime biters) especially on cloudy days and in shaded areas. They usually do not enter dwellings, and they prefer to bite mammals like humans. *Aedes* and *Ochlerotatus* mosquitoes are strong fliers and are known to fly many miles from their breeding sources.

Culex mosquitoes are painful and persistent biters also, but prefer to attack at dusk and after dark. They readily enter dwellings for blood meals. Domestic and wild birds usually are preferred over man, cows, and horses. *Culex nigripalpus* is known to transmit St. Louis encephalitis to man in Florida. *Culex* mosquitoes are generally weak fliers and do not move far from home, although they have been known to fly up to two miles. *Culex* mosquitoes usually live only a few weeks during the warm summer months. Those females that emerge in late summer search for sheltered areas where they "hibernate" until spring. Warm weather brings them out again in search of water on which to lay their eggs.

Culiseta mosquitoes are moderately aggressive biters, attacking in the evening hours or in the shade during the day. *Psorophora*, *Coquillettidia*, and *Mansonia* mosquitoes are becoming more pestiferous as an ever-expanding human population invades their natural habitats. *Anopheles* mosquitoes are persistent biters and are the only mosquitoes which transmit malaria to man.

4. Public Health Impacts

Female mosquitoes of nearly all species require blood from vertebrate animals to develop eggs, and bite people, pets, and livestock for this purpose. Mosquitoes are found throughout the world and many transmit pathogens, which may cause disease. These diseases include mosquito-borne viral encephalitis, dengue, yellow fever, malaria, and filariasis. Most of these diseases have been prominent as endemic or epidemic diseases in the United States in the past, but today, only the insect-borne (arboviral) encephalitides occur annually and dengue occurs periodically in this country. The most important consequence of this is the transmission of microorganisms that cause diseases such as western equine encephalomyelitis and St. Louis encephalitis. Both of these diseases can cause serious, sometimes fatal neurological ailments in people. (Western equine encephalomyelitis virus also causes disease in horses.) Western equine encephalomyelitis infections tend to be more serious in infants while St. Louis encephalitis can be a problem for older people. These viruses are normally infections of birds or small mammals. During such infections, the level of the virus may increase in these infected animals facilitating transmission to humans by mosquitoes.

Human cases of encephalitis range from mild to very severe illnesses that, in a few cases, can be fatal. Other pathogens transmitted by mosquitoes include a protozoan parasite, which causes malaria, and *Dirofilaria immitis*, a parasitic roundworm and the causative agent of dog heartworm. Disease carrying mosquito species are found throughout the United States, especially in urban areas and coastal or inland areas where flooding of low lands frequently occurs. Even when no infectious diseases are transmitted by mosquitoes, they can be a health problem to people and livestock. Mosquito bites can result in secondary infections, allergic reactions, pain, irritation, redness, and itching.

5. West Nile Virus

West Nile virus (WNV) is a mosquito-borne disease that has been found in parts of Asia, Eastern Europe, Africa, and the Middle East. WNV, which can also cause

encephalitis, was found in the northeastern United States for the first time in 1999 and is a good example of infected animals facilitating transmission to humans by mosquitoes. Since then, more than 13,000 cases of infection with WNV have been detected in 45 states, including California. Most people and horses that are infected with WNV do not become ill or have only mild to moderate symptoms. In some cases, the virus can cause a more serious condition called encephalitis, an inflammation of the brain, which is potentially fatal.

West Nile virus is spread by an infected mosquito to a bird which travels or migrates. The bird in turn gets bitten by an uninfected mosquito, which then carries the virus to other birds. Those infected mosquitoes will occasionally bite other hosts such as horses and people, and transmit the virus to them. People typically develop symptoms between 3 and 14 days after they are bitten by an infected mosquito.

Numerous local agencies throughout California routinely conduct surveillance and control of mosquitoes and the diseases they transmit. In 2000, the statewide surveillance program added WNV to the list of diseases monitored. Extensive information on WNV in California, including current and historic activities throughout the state, can be found at <http://westnile.ca.gov>.

According to the Centers for Disease Control and Prevention (CDC), 1,356 human cases were reported in the "*Final 2008 West Nile Virus Activity in the United States.*" These numbers reflected both mild and severe human disease cases occurring between January 1, 2008 to December 31, 2008 as reported through April 10, 2009 to ArboNET by state and local health departments. ArboNET is the national, electronic surveillance system established by CDC to assist states in tracking West Nile virus and other mosquito-borne viruses. Information regarding 2008 virus/disease activity is posted when such cases are reported to CDC. Of the 1356 cases, 687 (51%) were reported as West Nile meningitis or encephalitis (neuroinvasive disease), 624 (46%) were reported as West Nile fever (milder disease), and 45 (3%) were clinically unspecified at this time.

6. Other Public Health Impacts

In addition to transmitting pathogenic disease, vectors also can cause significant impacts to the public in general, to farm workers and other outdoor workers in particular, to outdoor recreation and tourism, and to real estate values, etc., and therefore are recognized as public nuisances under the law. (California Health and Safety Code section 2002(j).) Specifically, the California Legislature also has recently found that, "the protection of Californians and their communities against the discomforts and economic effects of vector-borne diseases is an essential public service that is vital to public health, safety, and welfare." (Health and Safety Code section 2001(b)(3); Senate Bill No. 1588 (2002)).

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B. General Criteria

1. This Order serves as a general NPDES Permit for the discharge of residual pesticides to surface waters as a result of spray applications to control adult mosquitoes.
2. Dischargers who submit a complete application under this Order are not required to submit an individual permit application. The Regional Water Board may request additional information and determine that a Discharger is not eligible for coverage under this Order and would be better regulated under an individual or other general NPDES permits. If the Regional Water Board issues an NPDES permit, the applicability of this Order to the specified discharge is immediately terminated on the effective date of the NPDES permit.

II. NOTIFICATION REQUIREMENTS

A. General Permit Application

Dischargers enrolling for coverage under this General Order are required to submit a complete application which includes:

1. An NOI (Attachment H) signed in accordance with the signatory requirements of Standard Provisions in Attachment D;
2. A vicinity map; and
3. An application fee; and
4. A Pesticide Application Plan (PAP)

These items constitute a complete application package, the submittal of which authorizes the discharge of pollutants associated with the application of pesticides in compliance with this Order, unless the Regional Water Board requests additional information necessary to determine the applicability of the discharge to this Order. Additionally, the Regional Water Board may issue a Notice of Exclusion, which either terminates permit coverage or requires submittal of an application for an individual permit or alternative general permit.

Each enrollment will cover all discharges by that entity occurring within the boundaries of that Regional Water Board. Separate NOIs are required for discharges located within more than one Regional Water Board's boundary, as defined in section 13200 of the CWC. Only one annual fee is required for all applicable discharges from one entity.

Permit coverage will be effective when all of the following have occurred:

1. The Discharger has submitted a complete permit application;
2. Receipt of a complete application is noticed by the appropriate Regional Water Board for a minimum of 30 days; and
3. The PAP has been approved by the Regional Water Board Executive Officer.

B. Fees

Under this Order, pesticide residue discharges require minimal or no treatment systems to meet limits and pose no significant threat to water quality. As such, they are eligible for Category 3 in section 2200(b)(8) of Title 23, California Code of Regulations (CCR). This category is appropriate because pesticide applications incorporate BMPs to control potential impacts to beneficial uses, and this Order prohibits pollutant discharge associated with pesticide spray applications from causing exceedance of CTR criteria or water quality objectives. Information concerning the applicable fees can be found at <http://www.waterboards.ca.gov/resources/fees/>.

C. Public Notification

The public commenting period is generally limited to 30 days upon notice of the Discharger's proposed action. The State Water Board notified interested agencies and persons of its intent to prescribe waste discharge requirements in this Order and provided them with an opportunity to submit their written comments and recommendations.

III. DISCHARGE DESCRIPTION

A. Discharge Description

The presence of pesticides in surface waters from spray applications to control adult mosquitoes at various areas throughout the State of California may pose a threat to existing and potential beneficial uses of waters of the United States if not properly controlled and regulated. This Order covers the discharge to waters of the United States of residual pesticides related to the spray application, either ground application or aerial application, of products containing naled, malathion, pyrethrin, permethrin, sumithin, resmethrin, piperonyl butoxide (PBO), and prallethrin.

B. Spray Applications

There are three basic techniques for applying adulticides:

1. Barrier Application

Adulticides are sprayed onto vegetation or other surfaces to leave a residual adulticide intended to kill mosquitoes that land on that surface. Barrier application is typically done with backpack sprayers that produce large droplets that immediately fall out of the air onto the intended surface. Barrier type adulticides can kill "non-target" insects.

2. ULV (Ultra Low Volume) Application

Adulticides are sprayed into the air with the intent of killing mosquitoes that are flying in the sprayed area. ULV application is typically done with truck-mounted sprayers, but can be done with aircraft. ULV produces very small droplets that hang in the air for a few hours. Droplet sizes range from 8 to 30 microns. According to CDPH, spray drift may occur for a distance of up to a half mile via truck-mounted applications and more than a mile for aerial applications from the

path or point of application. Most spray applications occur in the evening or early morning when female mosquitoes are seeking a blood meal and many other arthropods, particular pollinators, are inactive. By definition, ULV uses that smallest possible amount of adulticide that will kill adult mosquitoes. ULV applied adulticides can also kill “non-target” insects.

3. Thermal Fogging Application

Fog can be effective as a space treatment to control adult mosquitoes. The insecticides are usually mixed in oil and apply in late evening, at night, or early morning when the air is calm. Fogging is effective as a contact application with no residual effect.

IV. APPLICABLE PLANS, POLICIES, AND REGULATIONS

The requirements contained in this Order are based on the applicable plans, policies, and regulations identified in the Findings in section III. This section provides supplemental information, where appropriate, for the plans, policies, and regulations relevant to the discharge.

A. Legal Authorities

This Order is issued pursuant to section 402 of the federal Clean Water Act (CWA) and implementing regulations adopted by the U.S. Environmental Protection Agency (USEPA) and chapter 5.5, division 7 of the California Water Code (CWC; commencing with section 13370). It shall serve as an NPDES permit for point source discharges of pesticides to surface waters. This Order also serves as WDRs pursuant to article 4, chapter 4, division 7 of the CWC (commencing with section 13260).

B. California Environmental Quality Act (CEQA)

Under CWC section 13389, this action to adopt an NPDES permit is exempt from the provisions of CEQA, Public Resources Code sections 21100 through 21177.

C. State and Federal Regulations, Policies, and Plans

1. Water Quality Control Plans

The Regional Water Boards have adopted Water Quality Control Plans (hereinafter Basin Plans) that designate beneficial uses, establish water quality objectives, and contain implementation programs and policies to achieve those objectives for all waters addressed through the plans. In addition, the Basin Plans implement State Water Board Resolution No. 88-63, which established state policy that all waters, with certain exceptions, should be considered suitable or potentially suitable for municipal or domestic supply. The Basin Plans identify typical beneficial uses as follows: municipal and domestic supply, agricultural irrigation, stock watering, process supply, service supply, hydropower supply, water contact recreation, canoeing and rafting recreation, other non-contact water recreation, warm freshwater aquatic habitat, cold freshwater habitat, warm fish migration habitat, cold fish migration habitat, warm and cold spawning

habitat, wildlife habitat, navigation, rare, threatened, or endangered species habitat, groundwater recharge, and freshwater replenishment.

Requirements of this Order implement the applicable Basin Plans.

2. National Toxics Rule (NTR) and California Toxics Rule (CTR)

USEPA adopted the NTR on December 22, 1992, and later amended it on May 4, 1995 and November 9, 1999. About 40 criteria in the NTR applied in California. On May 18, 2000, USEPA adopted the CTR. The CTR promulgated new toxics criteria for California and, in addition, incorporated the previously adopted NTR criteria that were applicable in the state. The CTR was amended on February 13, 2001. These rules contain water quality criteria for priority pollutants.

3. State Implementation Policy (SIP)

On March 2, 2000, the State Water Board adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (State Implementation Policy or SIP). The SIP became effective on April 28, 2000 with respect to the priority pollutant criteria promulgated for California by USEPA through the NTR and to the priority pollutant objectives established by the Regional Water Board in the Basin Plans. The SIP became effective on May 18, 2000 with respect to the priority pollutant criteria promulgated by USEPA through the CTR. The State Water Board adopted amendments to the SIP on February 24, 2005 that became effective on July 13, 2005. The SIP establishes implementation provisions for priority pollutant criteria and objectives and provisions for chronic toxicity control. Requirements of this Order implement the SIP.

4. Antidegradation Policy

Section 131.12 of 40 CFR requires that the state water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy in State Water Board Resolution No. 68-16. Resolution No. 68-16 incorporates the federal antidegradation policy where the federal policy applies under federal law. Resolution No. 68-16 requires that existing water quality be maintained unless degradation is justified based on specific findings. The Basin Plans implement, and incorporate by reference, both the state and federal antidegradation policies. The permitted discharge must be consistent with the antidegradation provision of 40 CFR 131.12 and Resolution No. 68-16. The conditions of this Order require residual pesticide discharges to meet applicable water quality objectives. Waters of exceptional quality may be degraded due to the application of pesticides; however, it would only be temporary and in the best interest of the people of the State. While surface waters may be temporarily degraded; water quality standards and objectives will not be exceeded. The nature of pesticides is to be toxic in order to protect beneficial uses such as human health. However, compliance with receiving water limitations must be maintained. Therefore, this Order is consistent with State and federal antidegradation policies.

5. Endangered Species Act

This Order does not authorize any act that results in the taking of a threatened or endangered species or any act that is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish and Game Code sections 2050 to 2097) or the Federal Endangered Species Act (16 U.S.C.A. sections 1531 to 1544). This Order requires compliance with effluent limitations, receiving water limitations, and other requirements to protect the beneficial uses of waters of the state. The Discharger is responsible for meeting all requirements of the applicable Endangered Species Act.

D. Impaired Water Bodies on CWA 303(d) List

Under section 303(d) of the 1972 CWA, states, territories, and authorized tribes are required to develop lists of water quality limited segments. The waters on these lists do not meet water quality standards, even after point sources of pollution have installed the minimum required levels of pollution control technology. On November 30, 2006 USEPA gave final approval to California's 2006 section 303(d) List of Water Quality Limited Segments. The Basin Plans reference this list of Water Quality Limited Segments (WQLSs), which are defined as "...those sections of lakes, streams, rivers or other fresh water bodies where water quality does not meet (or is not expected to meet) water quality standards even after the application of appropriate limitations for point sources (40 CFR Part 130, et seq.)." The Basin Plans also state, "Additional treatment beyond minimum federal standards will be imposed on dischargers to [WQLSs]. Dischargers will be assigned or allocated a maximum allowable load of critical pollutants so that water quality objectives can be met in the segment." Impaired waters do not support beneficial uses. If proposing to discharge into impaired surface waters, the Discharger must provide wastewater analysis of the 303(d) listed constituents of concern as part of the application.

E. Other Plans, Policies, and Regulations

The State Water Board adopted the *Water Quality Control Policy for the Enclosed Bays and Estuaries of California*. The requirements within this Order are consistent with the Policy.

V. RATIONALE FOR EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

Effluent limitations and toxic and pretreatment effluent standards established pursuant to sections 301 (Effluent Limitations), 302 (Water Quality Related Effluent Limitations), 304 (Information and Guidelines), and 307 (Toxic and Pretreatment Effluent Standards) of the CWA and amendments thereto are applicable to the discharge.

The CWA mandates the implementation of effluent limitations that are as stringent as necessary to meet water quality standards established pursuant to state or federal law [33 U.S.C., §1311(b)(1)(C); 40 CFR 122.44(d)(1)]. NPDES permits must incorporate discharge limits necessary to ensure that water quality standards are met. This requirement applies to narrative criteria as well as to numeric criteria specifying maximum amounts of particular pollutants. Pursuant to 40 CFR 122.44(d)(1)(i), NPDES permits must contain limits that control all pollutants that "*are or may be discharged at a level*

which will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard, including state narrative criteria for water quality.” Section 122.44(d)(1)(vi) of 40 CFR further provides that “[w]here a state has not established a water quality criterion for a specific chemical pollutant that is present in an effluent at a concentration that causes, has the reasonable potential to cause, or contributes to an excursion above a narrative criterion within an applicable State water quality standard, the permitting authority must establish effluent limits.”

The CWA requires point source dischargers to control the amount of conventional, non-conventional, and toxic pollutants that are discharged into the waters of the United States. The control of pollutants discharged is established through effluent limitations and other requirements in NPDES permits. There are two principal bases for effluent limitations in 40 CFR: Section 122.44(a) requires that permits include applicable technology-based limitations and standards; and Section 122.44(d) requires that permits include WQBELs to attain and maintain applicable numeric and narrative water quality criteria to protect the beneficial uses of the receiving water where numeric water quality objectives have not been established.

With respect to narrative objectives, the State Water Board must establish effluent limitations using one or more of three specified sources: (1) USEPA’s published water quality criteria; (2) a proposed state criterion (i.e., water quality objective) or an explicit state policy interpreting its narrative water quality criteria (i.e., 40 CFR 122.44(d)(1)(vi)(A), (B) or (C)); or (3) an indicator parameter. Basin Plans contain a narrative objective requiring that: *“All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.”* Basin Plans require the application of the most stringent objective necessary to ensure that surface water and groundwater do not contain chemical constituents, discoloration, toxic substances, radionuclides, or taste and odor producing substances that adversely affect beneficial uses. Basin Plans state that material and relevant information, including numeric criteria, and recommendations from other agencies and scientific literature will be utilized in evaluating compliance with the narrative toxicity objective. Basin Plans also limit chemical constituents in concentrations that adversely affect surface water beneficial uses. Basin Plans further state that, to protect all beneficial uses, the Regional Water Board may apply limits more stringent than MCLs.

A. Discharge Prohibitions

1. The discharge of residual pesticides at a location or in a manner different from that described in the Findings is prohibited.
2. The discharge of residual pesticides shall not create a nuisance as defined in section 13050 of the CWC.
3. The discharge shall not cause, have a reasonable potential to cause, or contribute to an in-stream excursion above any applicable criterion promulgated by USEPA pursuant to Section 303 of the CWA, or water quality objective adopted by the State or Regional Water Boards.

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B. Effluent Limitations

NPDES permits for discharges to surface waters must meet all applicable provisions of sections 301 and 402 of the CWA. These provisions require controls that utilize BAT, BCT, and any more stringent controls necessary to reduce pollutant discharge and meet water quality standards.

Title 40, CFR section 122.44 states that if a discharge causes, has the reasonable potential to cause, or contributes to an excursion of a numeric or narrative water quality criterion, the permitting authority must develop effluent limits as necessary to meet water quality standards. Section 122.44(k)(3) of 40 CFR allows these effluent limits to be requirements to implement BMPs if numeric effluent limits are infeasible. It is infeasible for the State Water Board to establish numeric effluent limitations in this Order because:

1. The application of pesticides is not necessarily considered a discharge of pollutants according to the *National Cotton Council of America v. USEPA* decision by the Sixth Circuit Court and other applicable case law. The Sixth Circuit Court ruled that residual pesticides associated with the spray application of pesticides at, over, or near water are pollutants and must be regulated under an NPDES permit;
2. This Order regulates residual pesticides which are breakdown products or other pesticide ingredients that are present after the use of the pesticide for controlling adult mosquitoes. At what point the pesticide becomes a residue is not precisely known and varies depending on the type of spray system, wind speed and direction, temperature, droplet size distribution, droplet drift, water chemistry, etc. Therefore, in the application of pesticides, the exact effluent is unknown;
3. It would be impractical to treat the numerous short duration intermittent pesticide residue releases to surface waters from many different locations; and
4. Treatment, in many cases, may render the pesticide useless for pest control.

Therefore, the effluent limitations contained in this Order are narrative and include requirements to develop and implement a PAP that describes appropriate BMPs, including compliance with all pesticide label instructions, and to comply with narrative receiving water limitations.

The BMPs required herein constitute BAT and BCT and will be implemented to minimize the area and duration of impacts caused by the discharge of pesticides in the target area and to allow for restoration of water quality and protection of beneficial uses of the receiving waters to pre-application quality following completion of an application event.

C. Best Management Practices

1. Scope and Authority

The development of BMPs provides the flexibility necessary to establish controls to minimize the area extent and duration of impacts caused by the discharge of

pesticides. This flexibility allows dischargers to implement appropriate BMPs for different types of applications and different types of waters.

Much of the BMP development has been incorporated in the pesticide regulation process by the USEPA, DPR, CDPH, and CACs. The Dischargers must be licensed by DPR or CDPH if such licensing is required for the pesticide application project. The pesticide use must be consistent with the pesticide label instructions and any Use Permits issued by CACs.

A pesticide label has been reviewed by both USEPA and DPR scientists to ensure that a product used according to label instructions will cause no harm (or “adverse impact”) on non-target organisms that cannot be reduced (or “mitigated”) with protective measures or use restrictions. Many of the label directions constitute BMPs to protect water quality and beneficial uses. Label directions may include: precautionary statements regarding toxicity and environmental hazards; directions for proper handling, dosage, application, and disposal practices; prohibited activities; spill prevention and response measures; and restrictions on type of water body and flow conditions.

A Use Permit issued by the CAC incorporates applicable suggested permit conditions from DPR and local site-specific conditions necessary to protect the environment. State regulations require that specific types of information be provided in an application to the CACs for a pesticide use permit. The CACs review the application to ensure that appropriate alternatives were considered and that any potential adverse effects are mitigated. The CACs also conduct pre-project inspections on at least five percent of projects.

This Order requires that Dischargers implement BMPs when implementing vector control programs to mitigate effects to water quality resulting from pesticide applications. Dischargers are required to consider alternative control measures to determine if there are feasible alternatives to the selected pesticide application project that could reduce potential water quality impacts. If the Discharger identifies alternative control measures to the selected pesticide application project that could reduce potential water quality impacts and that are also feasible, practicable, and cost-effective, the discharger shall implement the identified alternative measures. The selection of control measures that use non-toxic and less toxic alternatives is an example of an effective BMP.

2. Examine the Possibility of Alternatives

Dischargers should continue to examine the possibility of alternatives to reduce the need for spraying mosquito adulticides. Such methods include:

- a. Applying pesticide only when adult mosquitoes are present at a level that will constitute a nuisance.
- b. Using the least intrusive method of pesticide application.
- c. All errors in application and spills are reported to the proper authority.
- d. Public education efforts to reduce potential vector breeding habitat.
- e. Applying a decision matrix concept to the choice of the most appropriate formulation.

- f. Staff training in the proper application of pesticides and handling of spills.

3. Correct Use of Pesticides

Users of pesticides must ensure that all reasonable precautions are taken to prevent off-target spray drift. Reasonable precautions include using the right spraying techniques and equipment, taking account of weather conditions and the need to protect the environment.

a. Consider Buffer Zone

When spraying near water with certain pesticides, it might be necessary to leave an unsprayed area at the margin to prevent spray drifting out of the target area. This unsprayed area is called a buffer zone. The size of the margin is dependent upon the type of sprayer used, e.g. aerial application will require a larger buffer zone than ground application.

b. Prevent Off-Target Spray Drift

Users of pesticides must ensure that all reasonable precautions are taken to prevent off-target spray drift. A combination of factors may affect off-target spray drift, including wind velocity at spray nozzle height, stability of the local atmospheric conditions, wrong nozzles or pressure choice affecting spray quality, vehicle speed, boom height, poor equipment maintenance, and incorrect equipment setting.

It is important that the appropriate environmental or conservation agency is contacted before spraying, in case there are particularly susceptible areas that the spray operator is not aware of. The following should be considered to avoid off-target spray drift:

- i. Check the weather forecast before starting the spray application;
- ii. Do not spray if the wind direction and speed would cause spray to drift onto sensitive areas;
- iii. If applicable, release of the pesticide as close as possible to the target;
- iv. Check spray angles and adjust height accordingly; and
- v. Use of the lowest effective rates of application.

D. Water Quality-Based Effluent Limitations (WQBELs)

1. Scope and Authority

Section 122.44(d)(1)(i) of 40 CFR mandates that permits include effluent limitations for all pollutants that are or may be discharged at levels that have the reasonable potential to cause or contribute to an exceedance of a water quality standard, including numeric and narrative objectives within a standard. Where reasonable potential has been established for a pollutant, but there is no numeric criterion or objective for the pollutant, WQBELs must be established using: (1) USEPA criteria under CWA section 304(a), supplemented where necessary by other relevant information; (2) an indicator parameter for the pollutant of concern; or (3) a calculated numeric water quality criterion, such as a proposed state

criterion or policy interpreting the state's narrative criterion, supplemented with other relevant information, as provided in 40 CFR 122.44(d)(1)(vi).

The process for determining reasonable potential and calculating WQBELs when necessary is intended to protect the designated uses of the receiving water as specified in the Basin Plans, and achieve applicable water quality objectives and criteria that are contained in other state plans and policies, or any applicable water quality criteria contained in the CTR and NTR.

2. Receiving Water Beneficial Uses

Spray applications to control adult mosquitoes may potentially deposit residual pesticides to surface waters. Beneficial uses of receiving waters are as follows: municipal and domestic supply, agricultural irrigation, agricultural stock watering, process water supply, service water supply, and hydropower supply, water contact recreation, canoeing and rafting recreation, other non-contact water recreation, warm freshwater aquatic habitat, cold freshwater aquatic habitat, warm fish migration habitat, cold fish migration habitat, warm and cold spawning habitat, wildlife habitat, navigation, groundwater recharge, and freshwater replenishment.

3. Determining the Need for WQBELs

- a. Water quality standards include Regional Water Board Basin Plan beneficial uses and narrative and numeric water quality objectives, State Water Board-adopted standards, and federal standards, including the CTR and NTR, and antidegradation policies. The Basin Plans include numeric site-specific water quality objectives and narrative objectives for toxicity, chemical constituents, and tastes and odors. The narrative toxicity objective states: *"All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life."* With regards to the narrative chemical constituents objective, the Basin Plans state that waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses. At minimum, *"...water designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs)" in Title 22 of CCR.* The narrative tastes and odors objective states: *"Water shall not contain taste- or odor-producing substances in concentrations that impart undesirable tastes or odors to domestic or municipal water supplies or to fish flesh or other edible products of aquatic origin, or that cause nuisance, or otherwise adversely affect beneficial uses."*
- b. Federal regulations require effluent limitations for all pollutants that are or may be discharged at a level that will cause or have the reasonable potential to cause, or contribute to an in-stream excursion above a narrative or numerical water quality standard.

4. Satisfaction of Antidegradation Policy

The permitted discharge is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution No. 68-16. Compliance with these requirements will result in the use of best practicable treatment or control of the discharge. Due to the low volume of discharge expected from discharges regulated under this Order, the impact on existing water quality will be insignificant. Dischargers seeking authorization to discharge under this Order are required to demonstrate compliance with receiving water limitations during the application. If, however, the appropriate Regional Water Board, subsequent to review of any application, finds that the impact of a discharge will not be insignificant, then authorization for coverage under this Order will be denied and coverage under an individual permit will be required (including preparation of an anti-degradation analysis).

VI. RATIONALE FOR RECEIVING WATER LIMITATIONS AND MONITORING TRIGGERS

A. Groundwater

[Not Applicable]

B. Surface Water

CWA section 303(a-c), requires states to adopt water quality standards, including criteria necessary to protect beneficial uses. Regional Water Boards adopted water quality criteria as water quality objectives in the Basin Plans. The Basin Plans state that “[t]he numerical and narrative water quality objectives define the least stringent standards that the Regional Water Board will apply to regional waters in order to protect the beneficial uses.” The Basin Plans include numeric and narrative water quality objectives for various beneficial uses and water bodies. This Order contains receiving surface water limitations based on the Basin Plans’ numerical and narrative water quality objectives for biostimulatory substances, chemical constituents, color, temperature, floating material, settleable substances, suspended material, tastes and odors, and toxicity. This Order also requires compliance with any amendment or revision to the water quality objectives contained in the Basin Plans adopted by Regional Water Boards subsequent to adoption of this Order.

Once a mosquito adulticide has been sprayed to an application area, the pesticide product can actively control adult mosquitoes within the application area. Discharge to surface water of residual pesticides produced by the application must meet applicable water quality criteria and objectives. The receiving water limitations ensure that an application event does not result in an exceedance of a water quality standard in the receiving water. Receiving water is defined as any surface water or drainage courses where the pesticide may be deposited as a result of spray applications.

In recognition of the variability in the temporal extent of an application event, this Order does not require it to be discretely defined. Instead, post-event monitoring of the water is required no more than a week from the time of pesticide application.

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To protect all designated beneficial uses of the receiving water, the most protective (lowest) and appropriate (to implement the CTR criteria and WQOs in the *Water Quality Control Plans*) limit should be selected as the water quality limit for a particular water body and constituent. In many cases, water quality standards include narrative, rather than numerical, water quality objectives. In such cases, numeric water quality limits from the literature or publicly available information may be used to ascertain compliance with these standards.

Pesticide formulations contain disclosed “active” ingredients that yield toxic effects on target organisms and may also have toxic effects on non-target organisms. Residual active ingredients that do not contain pollutants for which there are applicable numeric CTR criteria may still have toxic effects on receiving water bodies. In addition, the inactive or “inert” ingredients of pesticides, which are trade secrets and have not been publicly disclosed, may also contain toxic pollutants or pollutants that could affect water quality.

DPR is responsible for reviewing toxic effects of product formulations and determining whether a pesticide is suitable for use in California’s waters. In this Order, inert ingredients are also considered on a constituent-by-constituent basis. USEPA regulates pesticide use through strict labeling requirements in order to mitigate negative impacts to human health and the environment, and DPR environmental and medical toxicologists review toxicity data on formulations and can deny registration or work with registrants or CACs to impose additional requirements in order to protect human health or the environment.

USEPA and DPR require that pesticides undergo toxicity testing and meet specific toxicity requirements before registering the pesticide for application to surface waters. USEPA has found that the application of properly registered pesticides pose a minimum threat to people and the environment. In addition, the effects of these pesticides on water quality will be mitigated through compliance with FIFRA label requirements, application of BMPs, and monitoring.

Basin Plan water quality objectives to protect the beneficial uses of surface water and groundwater include numeric objectives and narrative objectives, including objectives for chemical constituents, toxicity, and tastes and odors. The toxicity objective requires that surface water and groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in humans, plants, animals, or aquatic life. The chemical constituent objective requires that surface water and groundwater shall not contain chemical constituents in concentrations that adversely affect any beneficial use or that exceed the maximum contaminant levels (MCLs) in Title 22, CCR. The tastes and odors objective states that surface water and groundwater shall not contain taste- or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses. The Basin Plans require the application of the most stringent objective necessary to ensure that surface water and groundwater do not contain chemical constituents, toxic substances, radionuclides, or taste and odor producing substances in concentrations that adversely affect domestic drinking water supply, agricultural supply, or any other beneficial use.

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Establishing Receiving Water Monitoring Triggers

In spraying pesticides, it is reasonable to conclude that some residual pesticides will be deposited in surface waters, especially when it is sprayed aerially. These residual pesticides may cause toxicity to aquatic life. However, information regarding residual pesticides deposited in the receiving water as a result of spray applications to control adult mosquitoes is not adequate to develop receiving water limitations for individual and combinations of pesticides; therefore, this Order only contains Receiving Water Monitoring Triggers. The monitoring triggers will be used to assess compliance with the narrative toxicity receiving water limitation and initiate additional investigations for the causes of toxicity caused by the adulticides used and their additive or synergistic effects. This Order includes a Daily Maximum Receiving Water Monitoring Trigger for residual pesticides of concern

For malathion, USEPA has developed *Ambient Criteria for the Protection of Freshwater Aquatic Life* (Ambient Water Quality Criteria) which are directly applicable as a regulatory level to implement narrative toxicity limitations included in all Regional Water Board Basin Plans.

Where Ambient Water Quality Criteria are available, they have been used in this Order to develop Receiving Water Monitoring Triggers. Where Ambient Water Quality Criteria are unavailable, data from USEPA's Office of Pesticides' *Ecotoxicity Database* have been used to develop Receiving Water Monitoring Triggers for individual and combinations of pesticides.

For constituents that do not have Ambient Water Quality Criteria, the Daily Maximum Receiving Water Monitoring Trigger is based on one-tenth of the LC50 obtained from USEPA's Office of Pesticides' *Ecotoxicity Database* for the protection of the most sensitive freshwater aquatic species. This approach is consistent with the approach identified in the Central Valley Regional Water Board's Basin Plan for developing the Daily Maximum Limitation for pesticides that do not have water quality criteria or objectives. Using the lowest value of the LC50 as the basis for establishing receiving water monitoring trigger is appropriate since this is a general Order for all spray applications where mosquito adulticide residues have a potential to reach surface waters in the state, thus, generic receiving water monitoring triggers must be established to protect beneficial uses under all conditions.

The following is a detailed discussion of toxicity data, applicable water quality criteria, if available, and Receiving Water Monitoring Triggers for organophosphate insecticides (malathion and naled), pyrethrin, pyrethroids (permethrin, resmethrin, sumithrin, and prallethrin), and piperonyl butoxide (PBO). Among these pesticides, only malathion and permethrin have Ambient Water Quality criteria. Thus, the Daily Maximum Receiving Water Monitoring Trigger for naled, pyrethrin, resmethrin, sumithrin, prallethrin, and PBO is based on one-tenth of the lowest LC50.

This Order will be re-opened to add receiving water limitations if the monitoring result for malathion, naled, pyrethrin, permethrin, resmethrin, sumithrin, prallethrin, and PBO exceeded the associated monitoring trigger.

1. Organophosphate Insecticides

a. Malathion

Malathion is an organophosphate (OP) insecticide that has been registered for use in the United States since 1956. It is used in agriculture, residential gardens, public recreation areas, and in public health pest control programs.

Malathion is an adulticide, which is used to kill adult mosquitoes. In mosquito control programs conducted by state or local authorities, malathion is applied by truck-mounted or aircraft-mounted sprayers. Malathion is applied as an ultra-low volume (ULV) spray. ULV sprayers dispense very fine aerosol droplets that stay aloft and kill mosquitoes on contact.

Malathion is highly toxic to insects, including beneficial insects such as honeybees. For that reason, USEPA has established specific precautions on the label to reduce such risks. Malathion is classified as an Acute Toxicity Category III compound. Although it is less acutely toxic than other organophosphates, adverse health effects have been reported by exposed persons.

According to a Report from the CDC that summarizes investigations of illnesses associated with exposures to insecticides uses during 1999-2002 to control mosquito populations in nine states (including California), 133 cases of acute insecticide-related illness associated with mosquito control were identified. Of the 133 reported cases of pesticide-related illness, 95 (71.4%) cases were associated with organophosphates, mainly malathion. Malathion was associated with 64 (67.4%) of the 95 cases.

USEPA has also refined its characterization of the potential risk from *malaoxon*, a more toxic compound that is formed from malathion under certain conditions. For example, malathion runoff and spray drift may reach drinking water sources downstream from where the malathion was used. Malathion present in untreated water will form malaoxon during the chlorination process in water treatment facilities. Malaoxon can also form more slowly when malathion is deposited on hard, dry surfaces and exposed to air over time. USEPA's assessment shows that even when considering the presence of malaoxon on surfaces following applications of malathion for mosquito control, the relatively low application rates and small droplet sizes used in these types of applications result in minimal exposure to people in the treated area.

USEPA has established an ambient water quality criterion of 0.1 µg/l both as a continuous concentration (four-day average) and instantaneous maximum concentration for the protection of freshwater aquatic life for malathion. USEPA Aquatic Life Acute Benchmarks for freshwater fish and invertebrates are 0.295 µg/l and 0.005 µg/l, respectively. USEPA Aquatic Life Chronic Benchmarks for freshwater fish and invertebrates are 0.014 µg/l and 0.000026 µg/l, respectively. USEPA Aquatic Life Acute Benchmarks for nonvascular plants and vascular plants are 2,040 µg/l and 24,065 µg/l, respectively. The USEPA Integrated Risk Information System (IRIS) Reference Dose as a drinking water level for malathion is 140 µg/L. The

USEPA Suggested-No-Adverse-Response-Level (SNARL) for toxicity other than cancer risk for malathion is 100 µg/L.

Under Section 303(d) of the CWA, states, territories, and authorized tribes are required to develop a list of water quality limited segments. The waters on the list do not meet water quality standards, even after point sources of pollution have installed the minimum required levels of pollution control technology. The law requires for waters on the list that priority rankings be established for the development of action plans, called Total Maximum Daily Loads (TMDLs), to improve the water quality. As identified on the current 303(d) listing from the Central Valley Water Board, the Colusa Basin Drain has been listed as impaired water pursuant to Section 303(d) of the CWA because of malathion. Because the Colusa Basin Drain has been listed as an impaired water body for malathion, the residual pesticides left in surface waters after spray applications must not cause or contribute to increased malathion levels.

DPR collected water and sediment samples during the summer of 2003 for OP and pyrethroid pesticides in the San Joaquin River Watershed (Stanislaus County) and Salinas River Watershed (Monterey County). The purpose of this study was to determine the presence of pyrethroid insecticides in water and bed sediments and the presence of OP pesticides in water during the summer growing season. The Salinas and San Joaquin valleys were selected because they are important agricultural regions in California. Sampling sites were chosen on waterways whose flows are dominated by summer agricultural run-off. For Monterey County, malathion was detected in 17 of 64 samples with a maximum concentration of 0.544 µg/l, while 9 of 17 detected samples were reported as “trace,” which means the concentration was detected above the method detection limit (MDL) but below reporting limit (RL). The MDL and RL for malathion were reported at 0.0117 µg/l and 0.04 µg/l, respectively. For Stanislaus County, malathion was detected in 1 of 68 samples at a concentration of 0.0741 µg/l.

Since this is a general Order for all spray applications where residual mosquito adulticides have a potential to reach surface waters in the state, generic receiving water monitoring trigger must be established that is protective of beneficial uses under all conditions.

This Order contains a Daily Maximum Receiving Water Monitoring Trigger of 0.1 µg/l for malathion. The Receiving Water Monitoring Trigger is based on the Basin Plans’ narrative toxicity objective of no toxics in toxic amounts using USEPA’s Ambient Water Quality Criteria for the protection of freshwater aquatic life. This Receiving Water Monitoring Trigger is only applicable to spray applications using malathion-based adulticide products.

b. Naled

Naled is an OP insecticide that has been registered since 1959 for use in the United States. It is used primarily for controlling adult mosquitoes, but naled is also used on food and feed crops and in greenhouses.

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In mosquito control programs conducted by state or local authorities, naled is applied by truck-mounted or aircraft-mounted sprayers. Naled is applied as an ULV spray. ULV sprayers dispense very fine aerosol droplets that stay aloft and kill mosquitoes on contact.

At high doses, naled like other organophosphate pesticides, can overstimulate the nervous system causing nausea, dizziness, or confusion. Severe high-dose poisoning with any organophosphate pesticide can cause convulsions, respiratory paralysis, and death. There is potential for risks to invertebrates from the repeated use of naled. Naled is highly toxic to insects, including beneficial insects such as honeybees. For that reason, USEPA has established specific precautions on the label to reduce such risk.

According to a report from the CDC that summarizes investigations of illnesses associated with exposures to insecticides uses during 1999-2002 to control mosquito populations in nine states (including California), of 133 reported cases of pesticide-related illness associated with mosquito control, naled was associated with 23 cases. Naled is an acute toxicity level I organophosphate pesticide.

Since this is a general Order for all spray applications where mosquito adulticides have a potential to reach surface waters in the state, generic receiving water monitoring trigger must be established that is protective of beneficial uses under all conditions. Toxicity data for naled were obtained from USEPA's Office of Pesticides' *Ecotoxicity Database* to assess toxicity of naled to freshwater aquatic life. Table F-1 summarizes toxicity data for naled.

Table F-1. Summary of Toxicity Data for Naled

Test Species	Study Length	LC50 (µg/l)
Bluegill sunfish	96 hrs	2,200
Fathead minnow	96 hrs	3,300
Rainbow trout	96 hrs	195
Rainbow trout	96 hrs	345
Rainbow trout	96 hrs	160
Lowest LC50 = 160 µg/l		
Lowest LC50/10 = 16 µg/l		

The lowest LC50 value of 160 µg/l to protect the most sensitive freshwater aquatic life for naled was determined from toxicity testing to freshwater aquatic life.

Since this is a general Order for all spray applications where mosquito adulticides have a potential to reach surface waters in the state, generic receiving water monitoring trigger must be established that is protective of beneficial uses under all conditions.

Ambient Water Quality Criteria are unavailable for naled. Therefore, this Order contains a Daily Maximum Receiving Water Monitoring Trigger that is

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based on one tenth of the lowest LC50 obtained from the USEPA's Office of Pesticides' *Ecotoxicity Database*. The Receiving Water Monitoring Trigger for naled is 16 µg/l. This monitoring trigger is based on implementing the Basin Plans' narrative toxicity objective of no toxics in toxic amounts and is only applicable to spray applications using naled-based adulticide products.

2. Pyrethrin

Pyrethrin is an insecticide that is derived from the extract of chrysanthemum flowers. Pyrethrins have a soil half-life of 12 days. The plant extract, called pyrethrum contains pyrethrin I and pyrethrin II collectively, called pyrethrins.

A study from the UC Berkeley (*Aquatic Effects of Aerial Spraying for Mosquito Control over an Urban Area*, Weston, et al., Environ. Sci. Technol. 2006, 40, 5817-5822) on aquatic effects of aerial spraying for adult mosquito control found that a few hours after spraying, 35% of the water samples contained measurable pyrethrin residues (up to 3.8 µg/l), but pyrethrin was not detected in any water sample collected before or 10 to 34 hours after spraying. Water sampling results were similar to that conducted by the local mosquito control district in which none of 14 water samples was detected with pyrethrin prior to spraying. Pyrethrin was not detected in any sediment sample in two creeks before spraying for which pre-spray data were available; however, sediments in these two creeks were found to contain pyrethrin at a maximum concentration of 372 µg/kg immediately following the aerial application (8 days later). This study was conducted to evaluate effects of mosquito control agents on aquatic life within an urban setting due to aerial applications of insecticide containing pyrethrin and the synergist PBO over Sacramento in an effort to combat West Nile virus in 2005.

Toxicity data for pyrethrin were obtained from USEPA's Office of Pesticides' *Ecotoxicity Database* to assess toxicity of pyrethrin to freshwater aquatic life. Table F-2 summarizes toxicity data for pyrethrin.

Table F-2. Summary of Toxicity Data for Pyrethrin

Test Species	Study Length	LC50 (µg/l)
Bluegill sunfish	96 hrs	104
Bluegill sunfish	96 hrs	41
Bluegill sunfish	96 hrs	10
Fathead minnow	96 hrs	74
Rainbow trout	96 hrs	20
Rainbow trout	96 hrs	3.2
Rainbow trout	96 hrs	5.1
Lowest LC50 = 3.2 µg/l		
Lowest LC50/10 = 0.32 µg/l		

The lowest LC50 value of 3.2 µg/l to protect the most sensitive freshwater aquatic life for pyrethrin was determined from toxicity testing to freshwater aquatic life. Since this is a general Order for all spray applications where

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mosquito adulticides have a potential to reach surface waters in the state, generic receiving water monitoring trigger must be established that is protective of beneficial uses under all conditions.

Ambient Water Quality Criteria are unavailable for pyrethrin. Therefore, this Order contains a Daily Maximum Receiving Water Monitoring Trigger that is based on one tenth of the lowest LC50 obtained from the USEPA's Office of Pesticides' *Ecotoxicity Database*. The Receiving Water Monitoring Trigger for pyrethrin is 0.32 µg/l. This monitoring trigger is based on implementing the Basin Plans' narrative toxicity objective of no toxics in toxic amounts and is only applicable to spray applications using pyrethrin-based adulticide products.

3. Pyrethroids

Pyrethroids are synthetic (human-made) chemical insecticides that act in a similar manner to pyrethrins. They work by quickly paralyzing the nervous systems of insects, producing a quick "knockdown" effect on insect pest populations. Pyrethroids are widely used for controlling various insects. Permethrin, resmethrin, and sumithrin are synthetic pyrethroids commonly used in mosquito control programs to kill adult mosquitoes.

Most pyrethroid mosquito control products can be applied only by public health officials and trained personnel of mosquito control districts. Mosquito control professionals apply pyrethroids as an ULV spray. ULV sprayers dispense very fine aerosol droplets that stay aloft and kill adult mosquitoes on contact. Pyrethroids used in mosquito control are typically mixed with a synergist compound, such as PBO, which enhances the effectiveness of the active ingredient.

Pyrethroids are considered to pose slight risks of acute toxicity to humans, but at high doses, pyrethroids can affect the nervous system. Mosquito control formulations of permethrin break down in the environment, and high temperatures and sunlight accelerate this process. However, pyrethroids are toxic to fish and to bees.

Pyrethroids are designed to breakdown more slowly than the naturally occurring pyrethrin. While pyrethrin, extremely sensitive to light, heat and moisture, break down in a few hours, the synthetic pyrethroids are stable and persist in the environment much longer. With a few exceptions, pyrethroids break down most quickly in direct sunlight, usually just a few days after application. However, in areas with limited sunlight, pyrethroids can persist for months.

According to the Scientific Investigations Report (*Hladik M.L., Orlando J.L., and K.M. Kuivila. 2009. Collection of Pyrethroids in Water and Sediment Matrices: Development and Validation of a Standard Operating Procedure: U.S. Geological Survey Scientific Investigations Report 2009-5012, 22p.*) from U.S. Geological Survey prepared in cooperation with the USEPA, pyrethroids are challenging to measure accurately in environmental samples. Sample-collection devices, sample-collection and laboratory-container material, container size, holding conditions, and sample-handling procedures have been found to have significant influences on the losses of pesticides onto container walls. The

Report identifies the following techniques to minimize pyrethroid sorption to sample containers:

- a. Container composition affects the extent of pyrethroid loss:
 - i. Pyrethroids associate less to glass containers than plastic (HDPE or LDPE);
 - ii. Teflon has the greatest pyrethroid association;
- b. Containers should be agitated vigorously for at least one minute before transfer to another container;
- c. Use larger sample containers;
- d. When pumping through larger filtration apparatuses (plate filter, autosampler), pump speeds should be greater than 500 mL/min;
- e. Composition of the water affects the extent of association of pyrethroids to container surfaces: when adding higher amounts of dissolved organic carbon (DOC) or suspended sediments to a water matrix, less amount of pyrethroids associated to the container surfaces;
- f. Appreciable losses of pyrethroids were not found for sediment samples collected in glass containers; and
- g. When possible, water samples should be analyzed within three days of collection. Sediment samples can be frozen for up to six months.

The Report is available at <http://pubs.usgs.gov/sir/2009/5012/>.

Under Section 303(d) of the CWA, states, territories, and authorized tribes are required to develop a list of water quality limited segments. The waters on the list do not meet water quality standards, even after point sources of pollution have installed the minimum required levels of pollution control technology. The law requires for waters on the list that priority rankings be established for the development of action plans, called TMDLs, to improve the water quality. As identified on the current 303(d) listing for the Central Valley Water Board, the Del Puerto Drain and Ingram Creek have been listed as impaired water pursuant to Section 303(d) of the CWA because of pyrethroids. The pyrethroids of concern for this listing are bifenthrin, lambda cyhalothrin, efenvaterate/fedvalerate, and permethrin. Because the Del Puerto Creek and Ingram Creek (from confluence with Hospital Creek to Highway 33 crossing and from confluence with San Joaquin River to confluence with Hospital Creek) have been listed as an impaired water body for pyrethroids, residual pesticides left in surface waters after spray applications must not cause or contribute to increased pyrethroids levels.

a. **Permethrin**

Permethrin is an odorless, colorless crystalline solid or a viscous liquid that is white to pale yellow. Permethrin has been registered by USEPA since 1977. It is currently registered and sold in a number of products such as household insect foggers and sprays, tick and flea sprays for yards, flea dips and sprays for cats and dogs, termite treatments, agricultural and livestock products, and mosquito abatement products. The results of one study

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indicate that permethrin has a half- life of less than 2.5 days. When exposed to sunlight, the half-life was 4.6 days. Compared to other pyrethroids, permethrin is very stable, even when exposed to ultraviolet light. Permethrin is strongly absorbed to soil and other organic particles, with half-lives in soil of up to 43 days.

The California Department of Fish and Game (CDFG) developed the maximum concentration criterion of 0.03 µg/l as a one-hour average to protect the freshwater aquatic life for permethrin. USEPA Aquatic Life Acute Benchmarks for freshwater fish and invertebrates are 0.395 µg/l and 0.0106 µg/l, respectively. USEPA Aquatic Life Chronic Benchmarks for freshwater fish and invertebrates are 0.0515 µg/l and 0.0014 µg/l, respectively. USEPA Aquatic Life Acute Benchmark for nonvascular plants is 68 µg/l. The USEPA IRIS Reference Dose as a drinking water level for permethrin is 350 µg/L.

DPR conducted samplings from November 2002 through March 2003, in tributaries to the Sacramento and San Joaquin Rivers for the Surface Water Protection Program to determine if insecticides esfenvalerate and permethrin were moving off site into surface waters during winter storm events. All of four sites selected are dominated by agricultural inputs. During this monitoring period, permethrin was detected in 1 of 39 samples, at a concentration of 0.094 µg/l.

DPR also collected water and sediment samples during the summer of 2003 for organophosphate and pyrethroid pesticides in the San Joaquin River Watershed (Stanislaus County) and Salinas River Watershed (Monterey County). The purpose of this study was to determine the presence of pyrethroid insecticides in water and bed sediments and the presence of OP pesticides in water during the summer growing season. The Salinas and San Joaquin valleys were selected because they are important agricultural regions in California. Sampling sites were chosen on waterways whose flows are dominated by summer agricultural run-off. For the Monterey County, permethrin was detected in 13 of 64 samples with a maximum concentration of 162 µg/l. Four of 13 detected samples were reported as “trace,” which means the concentration was detected above the MDL but below RL. The MDL and RL for permethrin were reported at 0.0169 µg/l and 0.05 µg/l, respectively. For the Stanislaus County, permethrin was detected in 1 of 68 samples and was reported as “trace.”

Since this is a general Order for all spray applications where mosquito adulticides have a potential to reach surface waters in the state, generic receiving water monitoring trigger must be established that is protective of beneficial uses under all conditions. USEPA’s Ambient Water Quality Criteria are unavailable for permethrin. Therefore, this Order contains a Daily Maximum Receiving Water Monitoring Trigger of 0.03 µg/l. for permethrin. The Daily Maximum monitoring trigger is based on implementing the Basin Plans’ narrative toxicity objective of no toxics in toxic amounts utilizing the CDFG’s ambient water quality criterion for the protection of freshwater aquatic life. This monitoring trigger is only applicable to spray applications using permethrin-based adulticide products.

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b. Resmethrin

Resmethrin is a waxy, off-white to tan solid with an odor characteristic of chrysanthemums. It is stable under normal temperatures and pressures, but decomposes in the presence of alkalis and light. Resmethrin breaks down in the presence of light and humidity. Its half-life in the environment is 15 minutes. Degradation end-products reported for resmethrin are chrysanthemic acid, benzaldehyde, benzyl alcohol, benzoic acid, phenylacetic acid, and various esters. Resmethrin is considered slightly toxic to humans and is rated USEPA toxicity class III (I = most toxic, IV = least toxic), bearing the word CAUTION on its label.

Resmethrin has been registered by USEPA since 1971 and is used to control flying and crawling insects in the home, lawn, garden, and industrial sites. It can also be used to control insects on ornamental plants (outdoor and greenhouse use), on pets and horses, and as a mosquitocide. Because of its toxicity to fish, resmethrin is a restricted use pesticide (RUP) that is available for use only by certified pesticide applicators or persons under their direct supervision.

According to a report from the CDC that summarizes investigations of illnesses associated with exposures to insecticides uses during 1999-2002 to control mosquito populations in nine states (including California), of 133 reported cases of pesticide-related illness associated with mosquito control, resmethrin was associated with 10 cases. When combined with PBO, resmethrin is a highly effective insecticide that is of low-order toxicity to mammals, including humans.

Toxicity data for resmethrin were obtained from USEPA's Office of Pesticides' *Ecotoxicity Database* to assess toxicity of resmethrin to freshwater aquatic life. Table F-3 summarizes toxicity data for resmethrin.

Table F-3. Summary of Toxicity Data for Resmethrin

Test Species	Study Length	LC50 (µg/l)
Bluegill sunfish	96 hrs	0.75
Bluegill sunfish	96 hrs	1.7
Bluegill sunfish	96 hrs	8
Bluegill sunfish	96 hrs	2.6
Fathead minnow	96 hrs	2.9
Fathead minnow	96 hrs	6.6
Fathead minnow	96 hrs	2.7
Rainbow trout	96 hrs	0.28
Rainbow trout	96 hrs	0.45
Rainbow trout	96 hrs	1.8
Rainbow trout	96 hrs	0.82
Rainbow trout	96 hrs	3.1
Rainbow trout	96 hrs	2.4
Rainbow trout	96 hrs	5.6
Lowest LC50 = 0.28 µg/l		

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Test Species	Study Length	LC50 (µg/l)
Lowest LC50/10 = 0.028 µg/l		

The lowest LC50 value of 0.28 µg/l to protect the most sensitive freshwater aquatic life for resmethrin was determined from toxicity testings to freshwater aquatic life. Since this is a general Order for all spray applications where mosquito adulticides have a potential to reach surface waters in the state, generic receiving water monitoring trigger must be established that is protective of beneficial uses under all conditions.

Ambient Water Quality Criteria are unavailable for resmethrin. Therefore, this Order contains a Daily Maximum Receiving Water Monitoring Trigger that is based on one tenth of the lowest LC50 obtained from the USEPA's Office of Pesticides' *Ecotoxicity Database*. The Receiving Water Monitoring Trigger for resmethrin is 0.028 µg/l. This monitoring trigger is based on implementing the Basin Plans' narrative toxicity objective of no toxics in toxic amounts and is only applicable to spray applications using resmethrin-based adulticide products.

c. **Sumithrin**

Sumithrin has been registered by USEPA since 1975 and is used to control adult mosquitoes and as an insecticide in transport vehicles such as aircraft, ships, railroad cars, and truck trailers. It is also used as an insecticide and miticide in commercial, industrial, and institutional nonfood areas, in homes and gardens, in greenhouses, and in pet quarters and on pets. Sumithrin is a combination of two cis and two trans isomers.

Sumithrin is slightly toxic and is rated USEPA toxicity class IV (I = most toxic, IV = least toxic) bearing the word CAUTION on its label. Sumithrin degrades rapidly, with a half-life of 1-2 days under dry, sunny conditions. Under flooded conditions, the half-life increases to 2-4 weeks for the trans isomer and 1-2 months for the cis isomer. With no sunlight and little air circulation, most of the product still remains after one year (WHO, 1990). Symptoms of acute sumithrin poisoning include hyperexcitability, prostration, slow respiration, salivation, tremor, ataxia and paralysis.

According to a report from CDC that summarizes investigations of illnesses associated with exposures to insecticides uses during 1999-2002 to control mosquito populations in nine states (including California), of 133 reported cases of mosquito-control insecticide-related illness, sumithrin was associated with 24 cases. When combined with PBO, sumithrin is a highly effective insecticide that is of low-order toxicity to mammals, including humans.

Toxicity data for sumithrin were obtained from USEPA's Office of Pesticides' *Ecotoxicity Database* to assess toxicity of sumithrin to freshwater aquatic life. Table F-4 summarizes toxicity data for sumithrin.

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Table F-4. Summary of Toxicity Data for Sumithrin

Test Species	Study Length	LC50 (µg/l)
Bluegill sunfish	96 hrs	18
Bluegill sunfish	96 hrs	15.8
Rainbow trout	96 hrs	16.7
Rainbow trout	96 hrs	1.4
Lowest LC50 = 1.4 µg/l		
Lowest LC50/10 = 0.14 µg/l		

The lowest LC50 value of 1.4 µg/l for sumithrin to protect the most sensitive aquatic species was determined from toxicity testings to freshwater aquatic life. Since this is a general Order for all spray applications where mosquito adulticides have a potential to reach surface waters in the state, generic receiving water monitoring trigger must be established that is protective of beneficial uses under all conditions.

Ambient Water Quality Criteria are unavailable for sumithrin. Therefore, this Order contains a Daily Maximum Receiving Water Monitoring Trigger that is based on one-tenth of the lowest LC50 obtained from the USEPA’s Office of Pesticides’ *Ecotoxicity Database* for sumithrin. The Daily Maximum Receiving Water Monitoring Trigger for sumithrin is 0.14 µg/l. This monitoring trigger is based on implementing the Basin Plans’ narrative toxicity objective of no toxics in toxic amounts and is only applicable to spray applications using sumithrin-based adulticide products.

d. Prallethrin

Prallethrin is a synthetic pyrethroid with fast knock-down activity against household insect pests. It is used in household insecticide products against mosquitoes, houseflies, and cockroaches. Prallethrin also has veterinary uses in the treatment of domestic pets.

Prallethrin is very toxic to bees and fish but of low toxicity to birds. As it is not intended for use in agriculture, adverse environmental effects and human dietary exposure are not expected.

Toxicity data for prallethrin were obtained from USEPA’s Office of Pesticides’ *Ecotoxicity Database* to assess toxicity of prallethrin to freshwater aquatic life. Table F-5 summarizes toxicity data for prallethrin.

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Table F-5. Summary of Toxicity Data for Prallethrin

Test Species	Study Length	LC50 (µg/l)
Bluegill sunfish	96 hrs	22
Rainbow trout	96 hrs	12
Lowest LC50 = 12 µg/l		
Lowest LC50/10 = 1.2 µg/l		

The lowest LC50 value of 12 µg/l to protect the most sensitive freshwater aquatic species for prallethrin was determined from toxicity testing to freshwater aquatic life. Since this is a general Order for all spray applications where mosquito adulticides have a potential to reach surface waters in the state, generic receiving water monitoring trigger must be established that is protective of beneficial uses under all conditions.

Ambient Water Quality Criteria are unavailable for prallethrin. Therefore, this Order contains a Daily Maximum Receiving Water Monitoring Trigger that is based on one-tenth of the lowest LC50 obtained from the USEPA’s Office of Pesticides’ *Ecotoxicity Database*. The Daily Maximum Receiving Water Monitoring Trigger for prallethrin is 1.2 µg/l. This monitoring trigger is based on implementing the Basin Plans’ narrative toxicity objective of no toxics in toxic amounts and is only applicable to spray applications using prallethrin-based adulticide products.

4. Piperonyl Butoxide (PBO)

PBO is a synergist used to increase the potency of insecticides like pyrethrins and pyrethroids. According to USEPA, PBO is one of the most commonly used ingredients in household pesticide products.

PBO acts as a synergist by inhibiting the activity of a family of enzymes called P450s in the target organism that would otherwise detoxify the pyrethrin or pyrethroid. These enzymes have many functions, including breakdown of toxic chemicals and transformation of hormones. Symptoms of PBO poisoning include anorexia, vomiting, diarrhea, intestinal inflammation, pulmonary hemorrhage and perhaps mild central nervous system depression. Repeated contact may cause slight skin irritation. USEPA’s classification of PBO is “Group C,” a possible human carcinogen based on a study result on mice. The study found that PBO caused liver tumors and cancer.

In field tests of agricultural soils conducted in California by a manufacturers’ task force, PBO persisted (measured as the time required for all applied PBO to dissipate) up to 30 days. The manufacturers’ task force also measured PBO’s half-life (the time required for half of applied PBO to break down or move away from the application site) and persistence in water and aquatic sediments. In

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water tested in California, PBO's half-life is about a day. In sediment, the half-life is up to 24 days and PBO persisted up to 120 days.

A study from the UC Berkeley (Weston, Et Al.) on aquatic effects of aerial spraying for adult mosquitoes over Sacramento in 2005 found that PBO was detected in every creek sample at concentrations ranging from 0.44 µg/L to 3.92 µg/L after a completion of an aerial application. These results are similar to the local Mosquito Control District's post-application sampling that reported PBO was detected at about 4 µg/L in four of ten creeks and 20 µg/L in one creek. The study also found PBO detections after spraying in sediment samples at 16 to 61 µg/kg in 4 of 6 samples (these 4 samples also contains pyrethrin), where PBO was not detected in sediment samples collected just before aerial spraying. As indicated in this study, the greatest risk of aerial application to aquatic lives is the synergy between the PBO and insecticides already presented in the environment, or in this case, pre-existing pyrethroids. These insecticides may not be related to spray application to control adult mosquitoes. The synergistic effect is proportional to the logarithm of the PBO concentration.

Toxicity data for PBO, for the mixture of PBO and resmethrin, and for the mixture of PBO and pyrethrin were obtained from USEPA's Office of Pesticides' *Ecotoxicity Database* to assess the toxicity of PBO and its mixtures to freshwater aquatic life. Tables F-6, F-7, and F-8 below summarize the toxicity data for PBO and its mixtures.

Table F-6. Summary of Toxicity Data for PBO

Test Species	Study Length	LC50 (µg/l)
Bluegill sunfish	96 hrs	4,200
Bluegill sunfish	96 hrs	4,000
Bluegill sunfish	96 hrs	5,370
Fathead minnow	96 hrs	6,200
Rainbow trout	96 hrs	1,800
Rainbow trout	96 hrs	3,400
Rainbow trout	96 hrs	2,820
Rainbow trout	96 hrs	6,100
Lowest LC50 = 1,800 µg/l		
Lowest LC50/10 = 180 µg/l		

Table F-7. Summary of Toxicity Data for PBO (in the PBO/Resmethrin Mixture)

Test Species	Study Length	LC50 (µg/l)
Bluegill sunfish	96 hrs	13.4
Rainbow trout	96 hrs	2.4

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Lowest LC50 = 2.4 µg/l
Lowest LC50/10 = 0.24 µg/l

Table F-8. Summary of Toxicity Data for PBO (in the PBO/Pyrethrin Mixture)

Test Species	Study Length	LC50 (µg/l)
Bluegill sunfish	96 hrs	3.4
Lowest LC50 = 3.4 µg/l		
Lowest LC50/10 = 0.34 µg/l		

The lowest LC50 value of 1,800 µg/l to protect the most sensitive freshwater aquatic species for PBO was determined from toxicity testings to freshwater aquatic life. Since this is a general Order for all spray applications where mosquito adulticides have a potential to reach surface waters in the state, generic receiving water monitoring triggers must be established that are protective of beneficial uses under all conditions. Ambient Water Quality Criteria are unavailable for PBO. Therefore, this Order contains a Daily Maximum Receiving Water Monitoring Trigger that is based on one-tenth of the lowest LC50 obtained from USEPA’s Office of Pesticides’ *Ecotoxicity Database*. The Daily Maximum Receiving Water Monitoring Trigger for PBO is 180 µg/l. This monitoring trigger is established based on Basin Plans’ narrative toxicity objective of no toxics in toxic amounts and is only applicable to spray applications using PBO-based adulticide products.

For PBO in the PBO/Resmethrin mixture, the lowest LC50 of 2.4 µg/l to protect the most sensitive freshwater aquatic species was determined from toxicity testing to freshwater aquatic life. Ambient Water Quality Criteria are unavailable for PBO in the PBO/Resmethrin mixture. Therefore, this Order contains a Daily Maximum Receiving Water Monitoring Trigger that is based on one-tenth of the lowest LC50 obtained from USEPA’s Office of Pesticides’ *Ecotoxicity Database*. The Daily Maximum Receiving Water Monitoring Trigger for PBO in the PBO/Resmethrin mixture is 0.24 µg/l. This monitoring trigger is established based on Basin Plans’ narrative toxicity objective of no toxics in toxic amounts and is only applicable to spray applications using PBO/Resmethrin-based adulticide products.

For PBO in the PBO/Pyrethrin mixture, the lowest LC50 of 3.4 µg/l to protect the most sensitive freshwater aquatic species was determined from toxicity testing to freshwater aquatic life. Ambient Water Quality Criteria are unavailable for PBO in the PBO/Pyrethrin mixture. Therefore, this Order contains a Daily Maximum Receiving Water Monitoring Trigger that is based on one-tenth of the lowest LC50 obtained from the USEPA’s Office of Pesticides’ *Ecotoxicity Database*. The Daily Maximum Receiving Water Monitoring Trigger for PBO in the PBO/Pyrethrin mixture is 0.34 µg/l. This monitoring trigger is established based on the Basin Plans’ narrative toxicity objective of no toxics in toxic amounts and

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is only applicable to spray applications using PBO/Pyrethrin-based adulticide products.

Summary of Receiving Water Monitoring Triggers

Table F-9 below summarizes the Receiving Water Monitoring Triggers and controlling water quality criteria and standards for all active ingredients.

Table F-9. Summary of Receiving Water Monitoring Triggers

Ingredient	Units	Daily Maximum Monitoring Triggers	Basis ¹
Malathion	µg/L	0.1	USEPA's Ambient Water Quality Criteria
Naled	µg/L	16	USEPA's Office of Pesticides' Ecotoxicity Database
Pyrethrin	µg/L	0.32	USEPA's Office of Pesticides' Ecotoxicity Database
Permethrin	µg/L	0.03	California Department of Fish and Game's Ambient Criterion
Resmethrin	µg/L	0.028	USEPA's Office of Pesticides' Ecotoxicity Database
Sumithrin	µg/L	0.14	USEPA's Office of Pesticides' Ecotoxicity Database
Prallethrin	µg/L	1.2	USEPA's Office of Pesticides' Ecotoxicity Database
Piperonyl Butoxide (PBO)	µg/L	180	USEPA's Office of Pesticides' Ecotoxicity Database
PBO (in PBO/Resmethrin Mixture)	µg/L	0.24	USEPA's Office of Pesticides' Ecotoxicity Database
PBO (in PBO/Pyrethrin Mixture)	µg/L	0.34	USEPA's Office of Pesticides' Ecotoxicity Database

¹ Receiving Water Monitoring Triggers are established based on the Basin Plans' narrative toxicity objective utilizing USEPA's *Ambient Water Quality Criteria*, USEPA's Office of Pesticides' *Ecotoxicity Database*, and California Department of Fish and Game's Ambient Criterion.

Chronic Toxicity

For compliance with the Basin Plans' narrative toxicity objective of the Regional Water Boards, this Order requires each Coalition or Discharger to conduct toxicity testing as specified in the Monitoring and Reporting Program. This Order also contains a receiving water limitation for toxicity and requires the Coalition or Discharger to implement BMPs to identify corrective actions to reduce or eliminate the toxicity caused by residual pesticides from spray applications.

The Basin Plans contain a narrative toxicity objective that states, "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.*" The numeric monitoring trigger is any sample that shows a statistically significant difference compared to the control. The toxicity trigger is not a receiving water limitation. It is

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the toxicity threshold indicating that the discharge has a reasonable potential to cause or contribute to an exceedance of the Basin Plans' narrative toxicity objective.

The Monitoring and Reporting Program of this Order requires toxicity monitoring at 10 percent of all application areas for each type of mosquito adulticide used to demonstrate compliance with the narrative toxicity objective.

VII. RATIONALE FOR MONITORING AND REPORTING REQUIREMENTS

Section 122.48 of 40 CFR requires that all NPDES permits specify requirements for recording and reporting monitoring results. Water Code sections 13267 and 13383 authorizes the Regional Water Board to require technical and monitoring reports. The Monitoring and Reporting Program (Attachment E) of this Order, establishes monitoring and reporting requirements to implement federal and state requirements. The following provides the rationale for the monitoring and reporting requirements contained in the Monitoring and Reporting Program for discharges of pesticides from spray applications to control adult mosquitoes.

A. Effluent Monitoring

Pursuant to the requirements of 40 CFR 122.44(i)(2) effluent monitoring is required for all constituents with effluent limitations. Effluent monitoring is necessary to assess compliance with effluent limitations, assess the effectiveness of the treatment process, and to assess the impacts of the discharge on the receiving water and groundwater.

The application of pesticides to control adult mosquitoes is not necessarily considered a discharge of pollutants according to the *National Cotton Council of America v. USEPA* decision and other applicable case law. The regulated discharge is the discharge of residual pesticides. At what point the pesticide becomes a residue is not precisely known. Therefore, in the application of pesticides, the exact effluent is unknown. Thus, effluent monitoring requirement is not applicable for spray applications to control adult mosquitoes.

B. Toxicity Testing Requirements

Chronic Toxicity. Chronic toxicity testing at 10 percent of all application areas for each type of mosquito adulticide used is required in order to demonstrate compliance with the Basin Plans' narrative toxicity objective.

C. Receiving Water Monitoring

Receiving water monitoring is necessary to determine the impacts of the discharge on the receiving stream.

VIII. RATIONALE FOR PROVISIONS

A. Standard Provisions

Standard Provisions, which apply to all NPDES permits in accordance with 40 CFR 122.41, and additional conditions applicable to specified categories of permits

in accordance with 40 CFR 122.42, are provided in Attachment D. The Discharger must comply with applicable standard provisions and with those additional conditions that are applicable under 40 CFR 122.42.

Sections 122.41(a)(1) and (b) through (n) of 40 CFR establish conditions that apply to all State-issued NPDES permits. These conditions must be incorporated into the permits either expressly or by reference. If incorporated by reference, a specific citation to the regulations must be included in the Order. 40 CFR 123.25(a)(12) allows the state to omit or modify conditions to impose more stringent requirements. In accordance with 40 CFR 123.25, this Order omits federal conditions that address enforcement authority specified in 40 CFR 122.41(j)(5) and (k)(2) because the enforcement authority under the CWC is more stringent. In lieu of these conditions, this Order incorporates by reference CWC section 13387(e).

B. Special Provisions

Reopener Provisions

1. The reopener provisions allow the State Water Board to reopen the permit in accordance with 40 CFR 122.62.
2. **Chronic Toxicity.** This Order may be reopened if a numeric chronic toxicity water quality objective is adopted by the State Water Board. This Order may be reopened to include a numeric chronic toxicity limitation based on that objective.
3. **Receiving Water Limitations.** This Order will be re-opened to add receiving water limitations if the monitoring result for residual pesticides specified in the Table 3 exceeded the associated monitoring trigger.

IX. PUBLIC PARTICIPATION

The State Water Board is considering the issuance of WDRs that will serve as a general NPDES permit for spray applications of pesticides to control adult mosquitoes. As a step in the WDR adoption process, the State Water Board staff has developed tentative WDRs. The State Water Board encourages public participation in the WDR adoption process.

A. Notification of Interested Parties

The State Water Board has notified interested agencies, parties, and persons of its intent to prescribe general WDRs for spray applications of pesticides to control adult mosquitoes and has provided them with an opportunity to submit their written comments and recommendations. Notification was provided to interested parties through specific mailings, distribution through the State Water Board Lyris Email System and through publication in major newspapers for the following communities:

B. Written Comments

The staff determinations are tentative. Interested persons are invited to submit written comments concerning this tentative WDR. Comments must be submitted either in

person or by mail to the State Water Board at the address listed on the cover page of this Order.

To be fully responded to by staff and considered by the State Water Board, written comments must be received at the State Water Board offices by 5:00 p.m. on XXX XX, 2009.

C. Public Hearing

The State Water Board will hold a public hearing on the tentative WDRs during its regular Board meeting on the following date and time and at the following location:

Date: _____ 2010
Time: 10 a.m.
Location: State Water Resources Control Board
1001 I Street
Sacramento, CA 95814

Interested persons are invited to attend. At the public hearing, the State Water Board will hear testimony, if any, pertinent to the discharge, WDRs, and permit. Oral testimony will be heard; however, for accuracy of the record, important testimony should be in writing.

Please be aware that dates and venues may change. Our web address is www.waterboards.ca.gov where you can access the current agenda for changes in dates and locations.

D. Information and Copying

The tentative effluent limitations, receiving water limitations, and special provisions, comments received, and other information are on file and may be inspected at the address above at any time between 8:30 a.m. and 4:45 p.m., Monday through Friday. Copying of documents may be arranged through the State Water Board by calling (916) ____ ____.

E. Register of Interested Persons

Any person interested in being placed on the mailing list for information regarding this general WDRs and NPDES permit should contact the State Water Board, reference the general WDRs and NPDES permit, and provide a name, address, and phone number.

F. Additional Information

Requests for additional information or questions regarding this Order should be directed to Trinh Pham at (916) 327-8117.

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ATTACHMENT G – LIST OF ADULTICIDE PRODUCTS

To be added later.

ATTACHMENT H – NOTICE OF INTENT

To be added later.