

RECEIVED


Attachment E – Notice of Intent

**WATER QUALITY ORDER NO. 2013-0002-DWQ
 GENERAL PERMIT NO. CAG990005**

DIVISION OF WATER QUALITY

**STATEWIDE GENERAL NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
 (NPDES) PERMIT FOR RESIDUAL AQUATIC PESTICIDE DISCHARGES TO WATERS OF
 THE UNITED STATES FROM ALGAE AND AQUATIC WEED CONTROL APPLICATIONS**

I. NOTICE OF INTENT STATUS (see Instructions)

Mark only one item	A. <input type="checkbox"/> New Applicator	B. <input checked="" type="checkbox"/> Change of Information: WDID# <u>5B07NP00005</u>
	C. <input type="checkbox"/> Change of ownership or responsibility: WDID# _____	

II. DISCHARGER INFORMATION

A. Name Contra Costa Water District			
B. Mailing Address PO Box H2O			
C. City Concord	D. County Contra Costa	E. State CA	F. Zip 94524
G. Contact Person David Omoto	H. E-mail address daomoto@ccwater.com	I. Title Env. Compliance Officer	J. Phone 925-688-8023

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

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

IV. RECEIVING WATER INFORMATION

A. Algaecide and aquatic herbicides are used to treat (check all that apply):

1. Canals, ditches, or other constructed conveyance facilities owned and controlled by Discharger.
Name of the conveyance system: _____

2. Canals, ditches, or other constructed conveyance facilities owned and controlled by an entity other than the Discharger.
Owner's name: U. S. Bureau of Reclamation
Name of the conveyance system: Contra Costa Canal

3. Directly to river, lake, creek, stream, bay, ocean, etc.
Name of water body: Contra Loma, Martinez and Los Vaqueros Reservoirs

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

V. ALGAECIDE AND AQUATIC HERBICIDE APPLICATION INFORMATION

A. Target Organisms: _____ (see attached), Various Macrophytes (including: Egeria Densa, Water Hyacinth, Cattail, Oscillatoria, Eurasian Milfoil), and Cyanobacteria.

B. Algaecide and Aquatic Herbicide Used: List Name and Active ingredients
AquaMaster (Glyphosate)
Clearigate (Chelated Copper)
Cutrine Plus (Chelated Copper)
Cutrine Ultra (Chelated Copper)
Green Clean (Sodium Carbonate Peroxyhydrate)
Harpoon (Copper Ethylenediamine)
Komeme (Copper sulphate pentahydrate)
Nautique (Copper)
PAK27 (Sodium Carbonate Peroxyhydrate)
Phycomycin (Sodium Carbonate Peroxyhydrate)
Sonar (Fluridone)

C. Period of Application: Start Date About April End Date About October

D. Types of Adjuvants Used: Nonylphenol, D-Limonene

VI. AQUATIC PESTICIDE APPLICATION PLAN

Has an Aquatic Pesticide Application Plan been prepared and is the applicator familiar with its contents?
 Yes No

If not, when will it be prepared? _____

VII. NOTIFICATION

Have potentially affected public and governmental agencies been notified? Yes No

VIII. FEE

Have you included payment of the filing fee (for first-time enrollees only) with this submittal?
 YES NO NA

IX. CERTIFICATION

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

A. Printed Name: Stephen J. Welch

B. Signature: 

Date: 7/9/13

C. Title: Assistant General Manager - Engineering

XI. FOR STATE WATER BOARD STAFF USE ONLY

WDID:	Date NOI Received:	Date NOI Processed:
Case Handler's Initial:	Fee Amount Received: \$	Check #:
<input type="checkbox"/> Lyris List Notification of Posting of APAP	Date _____	Confirmation Sent _____

**Contra Costa Water District
Aquatic Pesticide Application Plan**

**Aquatic Pesticide General NPDES Permit
Water Quality Order No.-2013-0002DWQ**

July 2013



**P.O. Box H2O
1331 Concord Avenue
Concord, CA 94524**

**Contra Costa Water District
Aquatic Pesticides Application Plan
Aquatic Pesticides General NPDES Permit
Water Quality Order No. 20013-0002-DWQ
July 2013**

INTRODUCTION

On March 5, 2013, the State Water Resources Control Board (Water Board) adopted the Statewide General National Pollutant Discharge Elimination System (NPDES) Permit for Residual Aquatic Pesticide Discharges to Waters of the United States from Algae and Aquatic Weed Control Applications (permit). The permit requires that dischargers seeking permit coverage prepare and submit an Aquatic Pesticides Application Plan (APAP) with the permit application package to the Water Board (Reference: Section II.C.3. *Permit Coverage and Application Requirements, General Permit Application*). When the application package and the APAP are deemed complete, the Deputy Director of the Water Board will issue a Notice of Applicability allowing the discharger to apply aquatic pesticides in accordance with the requirements of the permit.

An APAP describes a discharger's methods and procedures to: determine the need for pesticide use; evaluate and use pesticide alternatives when practical; identify the appropriate pesticide, application method and formulation; assess treatment effectiveness; and monitor and document compliance with the permit requirements. Through these methods and procedures the APAP provides the discharger direction to ensure that pesticide applications to waters of the United States are in compliance with permit. The specific contents of the APAP are found in the permit's Section VIII.C. (*Aquatic Pesticide Use Requirements, Aquatic Pesticides Application Plan*).

As methods and procedures change during the permit term so will the APAP accordingly. Major changes to the APAP (e.g., change in pesticide, change in pesticide amount, addition or deletion of Best Management Practices, etc.) will be submitted to the Deputy Director of the Water Board for review and approval as required by the permit. Following is the Contra Costa Water District (CCWD) APAP.

DESCRIPTION OF THE WATER SYSTEM SUBJECT TO THE PERMIT

CCWD provides water to about 550,000 people, and numerous agricultural and industrial customers in north, central and east Contra Costa County. To provide this water CCWD operates raw water distribution facilities, water treatment plants, and treated water distribution facilities.

CCWD draws its water supply as a function of chloride levels, from four different intake plants along the Sacramento-San Joaquin Delta. These intake plants are: Mallard Slough,

Middle River, Old River, and Rock Slough. Following are brief descriptions of the intake plants:

Old River. The Old River Intake near Discovery Bay is owned and operated by CCWD. Water drawn from this intake is pumped to the Transfer Facility where it can be diverted to either Pumping Plant #4, where this water enters the Contra Costa Canal (Canal), or to the Los Vaqueros Reservoir west of Brentwood. The Old River Intake operates year round.

Mallard Slough. The Mallard Slough Intake is owned and operated by CCWD and is located in the Bay Point area of Contra Costa County. Due to high chlorides at this location this intake is only operated in late winter and spring when runoff from Sierra Nevada snow-melt provides significant flows of fresh water supplies throughout the Sacramento River to San Francisco Bay.

Rock Slough. Rock Slough Intake, located east of Oakley and south of Bethel Island, is the primary intake area for the Canal. Water is drawn through this intake by Pumping Plant #1. Rock Slough is owned by the Bureau of Reclamation.

Middle River. The Middle River Intake, which is owned and operated by CCWD, is located on Victoria Island in San Joaquin County. The Middle River Intake draws water when the salinity increases at the other three intakes. It pumps water to the Old River Intake plant where it is conveyed to the Transfer Facility for distribution to either the Canal or the Los Vaqueros Reservoir.

All of CCWD's raw water is conveyed through the Canal to either other raw water reservoirs for storage and potable water treatment, or directly to customers for end use. The total length of the Canal is about 48 miles.

About the first three and a half miles of the Canal is an unlined earthen conveyance that runs from the Rock Slough Intake to Marsh Creek. From Marsh Creek the Canal is encased in a buried pipeline of about 2,100 feet in length to the first pumping plant (Pumping Plant #1) in the canal system. The remainder of the Canal is mostly an open concrete lined conveyance. Four (4) pumping plants from Milepost 3.97 to 7.1 lift the water 124 feet to flow the remaining length of the Canal by gravity. At Milepost 35 the Ygnacio Relift Pump Station diverts water from the Loop Canal into the 5-mile Ygnacio Loop.

CCWD operates and maintains three (3) raw water storage reservoirs that are subject to the permit. These are: Contra Loma, Martinez and Los Vaqueros. These reservoirs are briefly described below.

Contra Loma Reservoir. Contra Loma Reservoir, located in Antioch, is used primarily as a regulating reservoir for peak demands and short-term (1 to 7 days) supplies and for emergency storage for CCWD's customers. The reservoir has a maximum capacity of 2,500 acre-feet. The East Bay Regional Park District manages the lands surrounding Contra Loma Reservoir for recreational purposes including fishing and boating activities at the reservoir itself.

Martinez Reservoir. Martinez Reservoir, located in Martinez, is at the terminus of the Canal and provides regulating storage to capture flows from canal operations, and directly supplies the City of Martinez Water Treatment Plant. Martinez Reservoir has a maximum capacity of about 270 acre-feet.

Los Vaqueros Reservoir. Los Vaqueros Reservoir, located eight miles south of Brentwood, was originally constructed in 1998. At that time the reservoir was built to a capacity of 100,000 acre-feet. In 2012 the capacity was increased to 160,000 acre-feet to meet future needs of District and its customers.

Los Vaqueros Reservoir stores higher quality Delta water for blending with the Delta supply during dry periods when sodium and chloride levels typically increase. Besides improving water quality for CCWD's approximately 550,000 customers, the reservoir stores water for emergency supply (up to 3 months) and for operational flexibility to protect fisheries. CCWD manages recreational access at Los Vaqueros Reservoir and this includes such activities as hiking and fishing.

CCWD's intake plants are the only raw water facilities that interact with open receiving waters of the Sacramento-San Joaquin Delta. While CCWD does not apply aquatic pesticides at any of these intakes, the Department of Boating and Waterways (DBW) does so under its Aquatic Weed Control Program. DBW aquatic pesticide use is allowed through its own NPDES permit.

Historically the Canal and reservoirs are considered to be terminal water delivery systems. The intent of these systems is to deliver water to the Randall-Bold Water Treatment Plant located in Oakley, the City of Brentwood Water Treatment Plant located in Oakley, and the Bollman Water Treatment Plant in Concord, as well as treatment plants operated by the District's municipal customers in Antioch, Pittsburg, Bay Point and Martinez, and various industrial and agricultural users.

TREATMENT AREA DESCRIPTION

Under the permit the "treatment area" is defined as "...the area being treated by the algaecide or aquatic herbicide for algae and aquatic weed controls and, therefore, the area being targeted to

receive an appropriate rate of application consistent with product label requirements of algaecide or aquatic herbicide.” With this definition in mind, the area targeted to receive “lethal doses” at CCWD depends on the specific aquatic pest (target organism). For example, if at the Martinez Reservoir the reason for pesticide treatment is due to *Anabaena* (Cyanobacteria) bloom, then the treatment area may be the entire reservoir as this aquatic pest would typically exist throughout the entire reservoir. On the other hand, if benthic Cyanobacteria treatment is necessary at Martinez Reservoir, the treatment area may be a specific isolated submerged area within the reservoir. Below is a table that presents the CCWD generalized treatment areas.

Contra Costa Water District Generalized Descriptions of Treatment Areas		
Water Body	Target Organism	Treatment Area
Unlined Canal	Macrophytes	Area containing the aquatic vegetation
Lined Canal	Macrophytes	Area containing the aquatic vegetation
Contra Loma Reservoir	Cyanobacteria	Entire reservoir
Contra Loma Reservoir	Macrophytes	Area containing the aquatic vegetation
Los Vaqueros Reservoir	Macrophytes	Area containing the aquatic vegetation
Martinez Reservoir	Cyanobacteria	Entire reservoir
Martinez Reservoir	Cyanobacteria (benthic)	Affected benthic growth area in reservoir
Martinez Reservoir	Cyanobacteria (fixed)	Affected fixed growth area in reservoir (e.g., outlet tower)
Martinez Reservoir	Macrophytes	Area containing the aquatic vegetation

WEEDS AND ALGAE SUBJECT TO CONTROL

Surface and submerged aquatic weeds, categorically referred to as macrophytes, and algae (e.g., *Anabaena* sp., *Egeria densa* sp., water hyacinth, cattail, *Oscillatoria* sp., and Eurasian milfoil), propagate in the Canal and reservoirs. Aquatic pests will affect the taste of and create odors in drinking water if left unabated. Aquatic pests can also impact treatment plant operations by increasing the need to backwash clogged filters. Finally, aquatic pests can affect the operation and integrity of conveyance and storage systems by clogging screens and pumps causing equipment malfunctions, and reducing storage capacity through excessive growth. For these reasons aquatic pesticides and/or other means of mitigation are necessary

in order to provide high quality drinking water, and maintain the functional operation of treatment plants and conveyance and storage systems.

FACTORS INFLUENCING PESTICIDE USE

The decision to use aquatic pesticides at CCWD is primarily based on e: Control tolerance methods findings; visual inspection and assessments; and the availability pesticide alternatives (Discussed in detail under APAP section titled *EXAMINATION OF POSSIBLE ALTERNATIVES*, page 15).

Control tolerance methods are used to identify the need for treatment to address potential and/or real taste and odor issues in drinking water. These include: Flavor Profile Analysis (FPA); geosmin and 2-methylisoborneol (MIB) analysis; visual assessment; and microscopic analysis. Following is a discussion of the respective control tolerances.

CCWD routinely conducts FPAs on the source waters that feeds its water treatment plants. The FPA evaluates the character and intensity of odors that may indicate odor forming algae. When the FPA finds potentially unacceptable water, treatment of the water may be warranted to minimize odor concerns.

Geosmin and 2-methylisoborneol (MIB) are chemical substances that are often associated with earthy, musty smelling or tasting water. Geosmin and MIB are natural byproducts of algal metabolism. These substances are produced in natural and manmade lakes and canals by certain types of algae. When geosmin and MIB levels are unacceptable, treatment of the water may be necessary to avoid taste problems.

Visual inspections are used to assess the type and density of macrophytes. When select algae at certain mass densities are observed, action might be necessary to prevent operational impacts that may result in equipment (e.g., pumps, gates, etc.) malfunctions. Some algae also serve to host and encourage the propagation of odor forming algae. As such, treatment may be essential to prevent operational and equipment issues.

Microscopic analysis is conducted for certain (algal) diatoms. When these diatom levels approaches certain mass densities, it may result in more frequent filter backwash cycles and higher operational costs. As a result treatment may be needed to avoid higher operational costs.

All of these factors need to be considered in deciding actual pesticide use. The pros and cons for control tolerance factors consider the actual or immediate need for pesticide use, the costs for pesticide application versus non-use, and the availability of alternatives.

PESTICIDES, INGREDIENTS, APPLICATION METHODS, AND DEGRADATION BY-PRODUCTS

Following is a table listing the current pesticides, active ingredients, adjuvants, and application methods used by CCWD.

Pesticides, Ingredients, and Degradation By-Products				
Pesticide	Active Ingredient	Degradation by-products	Adjuvant or Surfactant	Application Method
AquaMaster	Glyphosate	Aminomethylphosphonic acid, and carbon dioxide	Nonylphenol	Hand spot
Clearigate	Chelated Copper	None	D- Limonene	Drip, boom, and hand spot
Citrine Plus	Chelated Copper	None	None	Drip, boom, and hand spot
Citrine Ultra	Chelated Copper	None	D- Limonene	Drip, boom, and hand spot
Green Clean	Sodium Carbonate Peroxyhydrate	Water and dissolved oxygen	None	Drip, boom, and hand spot
Harpoon	Copper Ethylenediamine	None	None	Spreader
Komene	Copper sulphate pentahydrate	None	None	Boom, and hand spot
Nautique	Copper	None	None	Boom, and hand spot
PAK27	Sodium Carbonate Peroxyhydrate	Water and dissolved oxygen	None	Spreader
Phycomycin	Sodium Carbonate Peroxyhydrate	Water and dissolved oxygen	None	Spreader
Sonar	Fluridone	None	None	Boom, and hand spot

LIST OF GATES AND CONTROL STRUCTURES AND INSPECTION SCHEDULE

There are numerous gates and control structures throughout the Canal and reservoirs system. Some of devices have the potential to discharge to waters of the United States. Others are used to regulate the flow within the system.

CCWD considers the Canal and reservoirs system as a “closed loop” system. Raw water is conveyed through the Canal to terminal reservoirs and/or directly to other end users (e.g., City of Antioch, City of Pittsburg, City of Martinez, etc.). Only under emergency conditions, scheduled maintenance, or through other NPDES permitted activities are gates and/or control structures opened to allow discharge to waters of the United States. With the possible exception of an emergency condition, pesticide use would not occur in or around opened gates or structures that discharge to waters of the United States within a treatment area. The gates and control structures are routinely inspected for operational integrity. Inspections of the gates and/or structures are always conducted prior to pesticides treatment in locations that have gates and/or structures that could possibly discharge to waters of the United States.

Below is a table that describes the gate or structure and routine inspection schedule.

Wasteway Gates & Control Structures, and Routine Inspection Frequency			
Structure Type	Name	Location	Inspection Frequency
Slide gate	Rock Slough Headworks	Rock Slough Fish Screen	Biweekly
Wasteway	Los Medanos Wasteway	Check 3, Milepost 13.85	Biweekly
Wasteway	Nichols Wasteway	Check 7, Milepost 23.22	Biweekly
Wasteway	Seal Creek Wasteway	Check 10, Milepost 29.11	Biweekly
Wasteway	Galindo Creek Wasteway	Check 12, Milepost 32.84	Biweekly
Wasteway	Walnut Creek Wasteway	Check 16, Milepost 37.85	Biweekly
Wasteway	Grayson Creek Wasteway	Check 20, Milepost 41.55	Biweekly
Wasteway	Pacheco Creek Wasteway	Check 23, Milepost 43.97	Biweekly
Wasteway	Santa Fe Wasteway	Milepost 46.21	Biweekly
Wasteway	Pine Creek Wasteway	Ygnacio Canal Milepost 2.17	Biweekly

CEQA EXCEPTION PERIOD

Of the aquatic pesticides used by CCWD, only those containing copper must be evaluated under the California Environmental Quality Act (CEQA). Copper is a Priority Pollutant under the California Toxics Rule (CTR). CCWD copper containing aquatic pesticide use may on occasion exceed the Priority Pollutant CTR threshold. To allow copper containing aquatic pesticide use to continue under the permit, a discharger must obtain a Categorical

Exception per Section 5.3 of the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California*.

Section 5.3 lists several requirements including the preparation and completion of CEQA documents, and submittal of a time schedule. The time schedule is the CEQA exception period. CCWD's CEQA Mitigated Negative Declaration (January 2004) was adopted by the Board of Directors, and submitted to the State Water Resources Control Board in February 2004. The time schedule, as found in the "Project Schedule" section of the CEQA document, is presented below:

"All future application of copper based aquatic pesticides will only take place when needed and after CCWD has determined that this is the best alternative to deal with aquatic pest control. Such applications may be needed anywhere within the CCWD raw water conveyance and storage system.

In 2003, four applications of copper based aquatic pesticides took place at Mallard Reservoir, eight applications at Martinez Reservoir and zero applications were made at Contra Loma and Los Vaqueros Reservoir. Additionally, no application of aquatic pesticides was made at Mallard Slough in 2003. Copper based aquatic pesticides were applied on fourteen different days in the various sections of the unlined Canal between the Rock Slough Intake and Pumping Plant 1; no applications were made between Pumping Plant 1 to Pumping Plant 4. One application was made between pumping plant 1 and milepost 26 in the lined Canal. Along the loop portion of the Canal, applications were made seven times in the loop Canal and the Ygnacio Canal. The loop and Ygnacio Canal are typically shut down and drained in the winter for maintenance and cleaning to reduce the growth of aquatic pests."

Source: Contra Costa Water District, Mitigated Negative Declaration, January 2004, *The Application of Copper-Based Aquatic Pesticides to Contra Costa Canal, Mallard Slough, and Contra Loma, Mallard, Martinez, and Los Vaqueros Reservoirs for Algal and Aquatic Weed Control*.

MONITORING AND REPORTING PROGRAM

CCWD is required by the permit to implement a Monitoring and Reporting Program (MRP) that conforms to the requirements described in Attachment C of the permit. The MRP is designed to answer two questions:

Question No. 1: Does the residual algaecides and aquatic herbicides discharge cause an exceedance of receiving water limitations?

Question No. 2: Does the discharge of residual algaecides and aquatic herbicides, including active ingredients, inert ingredients, and degradation byproducts, in any combination cause or contribute to an exceedance of the “no toxics in toxic amount” narrative toxicity objective?

To satisfactorily answer these questions, sampling locations must be representative of the discharge characteristics for all treatment areas, and the schedule of sampling should cover the periods of interest that are relevant for each active ingredient in the environment in which it is applied.

The MRP considered the application of the pesticides in the context of a logical framework that included the following components:

Geographic and Hydrographic features. As described earlier, the system subject to the permit is the 48 mile long Canal, and Contra Loma, Martinez and Los Vaqueros Reservoirs. The permit broadly defines two types of environmental settings – non-flowing water and flowing water, which apply to the Reservoirs and Canal respectively. For the purposes of monitoring, the Canal can be further divided into the Unlined Canal (first three and a half miles from Rock Slough to Marsh Creek) and the Lined Canal (concrete lined portion that begins after Marsh Creek) settings to form three separate environmental settings. The Unlined Canal is under tidal influence, while the Lined Canal is not. This is an important difference that can influence the fate, transport and effects of pesticides. For that reason, the Unlined Canal and Lined Canal are each considered a separate environmental setting for permit monitoring purposes.

Application Practices. Application practices in the reservoirs involve dispersal of pesticide by boat across the treatment area. The chemicals can be broadcast near the surface or closer to the bottom (in the case of benthic treatments) with the use of weighted hoses. In both these cases, the area where actual application occurs (application area) represents a significant portion of the ultimate treatment area. By contrast Canal treatments involve point application of chemical at a fixed point. The treatment area is larger than the application area because flow will transport the pesticide downstream.

Transport, Fate and Effects. Transport of residues is governed by hydraulics and dispersion and the nature of transport will be different between flowing and non-flowing settings. In the reservoirs, transport occurs primarily through mixing and dispersion. In the Canal, residues would be transported by flow in the downstream direction. The fate of the active ingredient for each pesticide varies, but is expected to have non-significant impacts. Copper treatments result in short term increase in dissolved copper, but ultimately the copper becomes bound to sediments and is no longer bioavailable. Sodium Carbonate Peroxyhydrate rapidly breaks down into hydrogen pyroxide and sodium carbonate. The hydrogen peroxide oxidizes the

target pest and then breaks down into water and oxygen. The half life in water of Glyphosate is 35-63 days, however Glyphosate quickly adsorbs to soil particles and is eventually broken down through microbial degradation. Fluridone photo degrades and has a half life of 20 days in water. It also rapidly adsorbs to soil particles. The relatively short-lived presence of these compounds minimizes the potential effects.

Beneficial Uses. Both the Canal and Reservoirs are terminal water delivery systems and support municipal, agricultural and industrial supply. As discussed previously, the CCWD canal and reservoirs system is a closed loop and would not discharge to waters of the United States under normal conditions, so beneficial uses associated with those waters would not be impacted.

Cumulative and Indirect Effects. No cumulative or indirect effects are anticipated due to the relatively short time periods that the active ingredients are bioavailable.

Mechanism for Designated Beneficial Use Impacts. Over prescription of a pesticide can impact designated beneficial uses of the treatment area waters by applying pesticide concentrations above those that are necessary to treat the target organism. Improper pesticide application, such as applying a rate above the prescribed dosage during the treatment activities, can also lead to excess concentrations. The failure to implement administrative controls can also have adverse consequences on the respective designated uses. For example, the failure to inform users in advance of treatment activities could impact the use of the waters for municipal and/or agricultural water supply. The potential for impacts to actual receiving waters of the US is small as this could only occur via wasteways, which are not open under normal conditions, and are always checked prior to times of treatment to ensure that they are closed and no leakage is present.

Potential Impacts. The active ingredients of concern are dissolved copper, fluridone, sodium hydroxypyruvate, and glyphosate. Dissolved copper has potential impacts to dissolved oxygen for aquatic life, and is subject to instantaneous maximum concentrations for chronic effects. Copper based algaecides also have potential to affect municipal water supply use as copper can negatively affect coagulation and oxidation unit processes in water treatment plants and create potential taste and odor problems.

Fluridone and Glyphosate also have instantaneous maximum concentrations associated with USEPA Integrated Risk Information System and Maximum Contaminant Level criteria respectively. Additionally, Fluridone can potentially impact agricultural water supply beneficial use if present in water used for irrigation (e.g. grape crops).

The main potential impact for dissolved copper is reduction in localized oxygen levels in the treatment area. Other potential impacts are impacts to receiving waters at concentrations that exceed the limits shown below:

Active Ingredient	Instantaneous Maximum
Copper	$= 0.960 \exp\{0.8545[\ln(\text{hardness}^3) - 1.702]\}$
Fluridone	560 µg/L
Glyphosate	700 µg/L

Potential impacts for glyphosate are toxicity to aquatic life, however this risk is minimal if labeling instructions are followed. The half lives of dissolved copper and glyphosate are short and should not persist in the water column.

Copper is rapidly bound to sediment and is not readily bioavailable. Thus, it is not expected to have impacts. Glyphosphate also achieves a stable state in sediment and then biodegrades. Fluridone persists for a longer period of time, but the treatment area is isolated so that Fluridone will not be transported outside the treatment area.

Sampling Locations. The District has identified Reservoir sampling points and Canal sampling points. These will provide sufficient coverage of the potential treatment areas. Not all sampling points may be used in a year. For Reservoirs, which are considered non-flowing waters, there will be two sampling points per application: One within the treatment area and the other adjacent to the treatment area.

For the Canal, which is considered a flowing water, sampling points will be within the treatment area and immediately downstream of the treatment area. Sampling downstream will ensure that the max concentrations are observed.

Sampling Methods and Schedule. The MRP will be implemented through the following tasks:

- a. **Determination of monitoring locations:** Optimal sampling locations will determined for each application based on hydrology, access, and geography/bathymetry, operations, and potential for downstream impacts.
- b. **Sample collection equipment and container preparation:** Prior to each sampling event, the necessary equipment and collection containers will be prepared. Equipment will be calibrated as necessary.
- c. **Training.** Proper training will be provided to field personnel annually in proper sample collection techniques and chain of custody practices.

- d. **Sample collection and transport:** Samples will be collected in the field, preserved and then transported to the District laboratory. If necessary, samples requiring analysis by a contract laboratory will be shipped.
- e. **Sample analysis and reporting.** Samples will be analyzed by the District lab, or an external lab. Results will be reported to the Laboratory Supervisor, the Water Quality Superintendent and the Environmental Compliance Officer.
- f. **Evaluation.** Once results are available, any results that exceed receiving water limitations will be immediately noted and reports made to the SWRCB as required,
- g. **Modification of Treatment Application practices.** Application practices and methods will be adjusted as necessary guided by results of sampling.

The monitoring locations in the Program are the treatment locations on the Canal and within Los Vaqueros, Contra Loma and Martinez Reservoirs. Three types of samples will be collected for each treatment as described in the table below:

Sample Type	When Collected	Sample Location	
		Unlined Canal and Lined Canal	Reservoirs
Background	Prior to the treatment up to 24 hours in advance	In the Canal within the area to be treated	In the reservoir within the area to be treated
Event	Immediately following the event, but after sufficient time has elapsed to allow treated water to exit treatment area	In the Canal downstream of the treatment area	In the reservoir immediately outside the treatment area
Post-Event	Within one week following the treatment	In the Canal within the treatment area	In the reservoir within the treatment area

The District will monitor for three categories of parameters – visual, physical and chemical. Visual parameters will be recorded for all treatment events for all locations. For physical and chemical parameters, the monitoring frequency will be as described as follows: With the exception of glyphosate, samples will be collected for a minimum of 6 events for each environmental setting (described earlier) per year for each active ingredient used by the District (dissolved copper, fluridone and sodium hydroxyperuvate). If there are less than 6 events in a year for a given environmental setting, then samples will be collected for each environmental setting. If the results for six consecutive applications show active ingredient concentrations below the receiving water limit, then the frequency will be reduced to one event per year per environmental setting for that active ingredient. Glyphosate applications will be collected for one event per environmental setting per year.

The designated monitoring locations are representative of the range of treatment areas that the District is expected to encounter and will provide sufficient coverage to allow the two target MRP questions to be answered. They are best located to measure the projected transport fate and effects. Within the Reservoirs, in-reservoir sampling will be the most appropriate as the fate and effects will be confined within the reservoir itself. In the Unlined Canal and Lined Canal, measurement at downstream location will be most appropriate to account for the hydrodynamic transport of water and residues.

Monitoring Records. Monitoring records for each application will include:

- Date and time and location of samples collected
- Name(s) of individuals who conducted the treatment
- Dates of laboratory analysis
- Individuals who performed the analyses
- Analytical techniques or methods used; and
- Results

In addition, a log of water conditions in the treatment area (Attachment A) will be maintained that records observations from the visual assessment that include:

- Floating or suspended matter
- Discoloration
- Bottom deposits
- Aquatic life
- Visible films, sheens, or coatings
- Fungi, slimes, or objectionable growths
- Potential nuisance conditions

Laboratory Certification and Procedures. Laboratory Analyses will be conducted at the CCWD laboratory, which maintains Environmental Laboratory Accreditation Program (ELAP) certification from the California Department of Public Health, or will be conducted by a contract laboratory that also maintains ELAP certification. A Quality Assurance – Quality Control Program will be developed for on-site field measurements and will be kept in the laboratory and available at all times for inspection by State Water Board and Regional Water Boards staff. Analyses will be conducted consistent with the most current edition of “Guidelines Establishing Test Procedures for Analysis of Pollutants”, which is found in 40 C.F.R. Part 136. Equivalent methods approved by the State Water Board and Regional Water Boards may also be used, if necessary. All results will be stored in the CCWD Laboratory Information Management System (LIMS).

Annual Reporting. The District will submit an Annual Report that covers the period January 1 through December 1 for each year to the State Water Board and the Regional Water Boards. The report will be submitted by March 1 of the following year. The Annual Report will adhere to the requirements described in Attachment C of the Permit.

24 Hour Report and Five Day Reporting. The District will orally report any non-compliance - including any unexpected or unintended effect of an algaecide or aquatic herbicide use, that may endanger health or the environment – within 24 hours to the State Board and the appropriate Regional Water Board from the time that it becomes aware of the circumstances. The report will follow the format shown in Attachment B. The 24 hour report will be followed up by a written report within 5 days of the time that the District becomes aware of the non-compliance. This Five-Day Written Report will follow the format in Attachment C.

PROCEDURES TO PREVENT CONTAMINATION

Personnel responsible for sample collection shall be trained annually in proper collection methods and procedures to avoid contamination and ensure representative samples are taken. Sample equipment and containers will be provided and kept separate from pesticide containers and application equipment. Samples will be tracked using standard chain of custody protocols to ensure integrity of the sample collection and transfer process.

BEST MANAGEMENT PRACTICES

CCWD uses several Best Management Practices (BMPs) associated with the handling and use of aquatic pesticides. These aquatic pesticide BMPs are in place to prevent and mitigate releases, ensure the proper use, and prevent unintended consequences to both our customers and the environment. A select few of these BMPs are discussed below.

Measures to Prevent and Mitigate Aquatic Pesticide Spills. All aquatic pesticides and pesticide applications are conducted by licensed pest control applicators. These persons are trained annually in the proper handling and safe use of pesticides. This ensures that the mixing and application activities are conducted in ways that minimize accidental spills and overexposure to both the employee and the environment. Additionally, CCWD has specific procedures for the loading and handling of pesticides in the field to prevent accidental spillage during transfer, staging, and setup activities. In the event of an accidental release all CCWD pest control vehicles and pesticide storage areas are equipped with appropriate spill supplies.

Measures to Ensure an Appropriate Pesticide Application Rate. All CCWD pesticide use must be reviewed, recommended, and prescribed for applications by the Licensed Pesticide Control Advisor (PCA). The PCA and/or Water Quality provide direction as to the extent of treatment area, which ensures that the appropriate amount of pesticide is used during treatment activities. Additionally the pesticide usage amount at the time of treatment is specified by the pesticides' FIFRA required product label. At the time of treatment the CCWD pesticide applicator reviews the label against the pesticide prescription. This review serves to check the PCA's prescription in the field. All CCWD pesticide applicators at minimum possess a Qualified Applicator Certificate.

Staff Education on Avoidance of Potential Adverse Effects. Each year at the start of the treatment season and/or before the use of a pesticide the PCA will review the FIFRA label of the aquatic pesticide with the qualified applicator(s). The FIFRA label describes the potential environmental hazards associated with the use of the pesticide, and the measures that should be taken to avoid the adverse effects.

Coordination with Agricultural and Municipal Water Supply Customers. Prior to the application of an aquatic pesticide CCWD notifies all potentially affected customers of the pending treatment activity. Certain aquatic pesticides are known to impact certain agricultural customers. For example, fluridone can potentially impact grape crops. If a fluridone treatment is needed, CCWD will advise grape growers in the potentially affected treatment area of our intent to perform treatment activities such that crop irrigation activities can be adjusted. As another example, copper can impact water treatment plants using ozone treatment. CCWD will advise municipal water treatment plant customers of the pending treatment activities so that they can plan treatment plant operations in advance.

Measures to Prevent Fish Kill. Fish populate all CCWD raw water reservoirs. Some of these reservoirs are routinely stocked with live fish and used for recreational fishing. Fish can be harmed during the application of copper containing aquatic pesticides, which can reduce the amount of dissolved oxygen in the water. To prevent a fish kill in the reservoirs CCWD's practice is to treat no more than half a reservoir body at any one time. This practice allows fish to migrate away from the treatment area and towards the untreated reservoir body containing a higher dissolved oxygen concentration

EXAMINATION OF POSSIBLE ALTERNATIVES

It is the longstanding practice of CCWD to use the least toxic method for all pest control including the treatment activities for aquatic pests. This practice is discussed in detail in the CCWD Integrated Pest Management Plan (IPMP). Integrated pest management is an active decision making process that minimizes the use of pesticides. The process will determine if

and when treatment is needed, if and when pesticide alternatives are available and can be used, and if and when actual pesticide use is the only recourse. As stated in the Introduction of the CCWD IPMP:

“Integrated pest management (IPM) is an ongoing process that minimizes human health and environmental impacts while effectively suppressing pest populations. To be truly effective, the process requires established procedures that not only must be practiced, but undergo a periodic review. These procedures must properly identify pests, monitor pest populations, evaluate a wide variety of pest control strategies, implement the appropriate strategies, continually evaluate the effectiveness and impacts of implementation, and modify the control strategies as necessary.”

Source: CCWD IPMP Version 5, *Introduction*, August 31, 2012

CCWD employees refer to CCWD IPMP when considering pest management options, impacts to the environment and non-target organisms, alternatives, and least toxic method. The CCWD IPMP provides specific Best Management Practices as follows:

“Section A, Identify All Potential Pests

District personnel with responsibility for pest management will be trained to accurately identify pest species of animals and plants, the damage they can cause, and the control alternatives available. Field manuals, a list of Noxious Weeds as identified by the Contra Costa County Agricultural Commissioner and other resources will be made available to staff to assist in pest identification as necessary. A listing of Pests and Noxious Weeds is found in Appendix A. Descriptions and photographs of the pests and noxious weeds in Appendix A are accessible through the appendix via the internet if this IPM Program document is in electronic format (e.g., pdf).

Section B. Determination of Pest Management Action Level

District personnel with responsibility for pest management shall determine the annual and seasonal infestation levels that are unacceptable. These unacceptable levels are pest management action levels that indicate appropriate action must be taken to prevent damaging infestation. The determination of these levels will be completed using, in most cases, the following criteria:

- it is determined that the pest population will reach a critical level if left untreated;

- biological or environmental factors cannot be expected to reduce the pest problem within a reasonable time; and
- pest management costs (including any environmental or health impacts) are less than the potential pest damage.

If the determination concludes that pest management control action is necessary, District personnel responsible for pest management shall identify and/or implement the appropriate management practice per Section C, *Determine Acceptable Pest Management Practices*.

Section C. Determine Acceptable Pest Management Practices

- 1) District personnel responsible for pest management shall determine acceptable pest management practices using the criteria below. These criteria may not be met in every case. Judgment should be used in these cases to determine acceptable pest management practices that are:
 - least damaging to the general environment;
 - least hazardous to human health;
 - less of an impact on non-target organisms;
 - appropriate considering the absence of listed, candidate or locally rare species;
 - most likely to produce a permanent reduction of the pest; and
 - most cost-effective in the short and long-term.
- 2) As pest management practices are developed, they may include a combination of various control alternatives. The preferred methods in an IPM program are those which permanently prevent pest problems in an environmentally sensitive manner, therefore, eliminating the potential for pest damage. Chemical controls are a last resort. A pest management practice may include one or more of the following elements:
 - no controls are necessary;
 - physical/mechanical controls (hand abatement, soil tilling, discing, mowing, etc.);
 - biological controls (grazing by goats or cows, use of predators or parasites);
 - chemical controls (ranging from low toxicity materials such as soaps and oils, to least-toxic pesticides); and
 - other (mulching, planting alternative vegetation, and/or prescribed burns).

A listing of pests, management objectives, action levels, and acceptable management practices as discussed in Sections A through C above is found in Appendix B, *CCWD Pest Management Program Matrix*. Appendix B also presents the pest management practices' effects to the environment and listed species.”

Source: CCWD IPMP Version 5, *Procedures, General IPM Best Management Practices*, August 31, 2012

As noted in the closing paragraph of Section C, the CCWD IPMP contains a program matrix that is used to make decisions on the most appropriate pest control method. This matrix was developed to comply with the Biological Opinion issued by the United States Fish and Wildlife Service for Routine Maintenance Activities on Central Valley Project (CVP). Routine maintenance activities include the application and use of pesticides. The CVP facilities include the Canal and Contra Loma. Refer to the CCWD IPMP for a copy of this matrix.

CCWD uses several alternatives to aquatic pesticides. Following is a discussion of the alternatives and their respective limitations:

- **Lowering of Water Levels:** Reservoir and Canal water levels can be lowered to expose aquatic pests. This alternative allows for either physical aquatic pest removal or pesticide application above the waterline. While this alternative is highly effective in reducing pesticide use, it is limited to periods of low demand. This is typically during the winter season when aquatic pest (vegetation) growth is low.
- **Mechanical Harvesting:** Mechanical harvesting is conducted at Mallard Reservoir, which is not subject to the permit, and has also been used at the unlined portion of the Canal. This alternative physically removes macrophytes at a depth of about 3 feet below the waterline. It is limited by the fact that removal is only temporary, whereas the use of aquatic pesticides would be more effective in long-term mitigation. Mechanical harvesting is also time intensive. As such, it may not be effective in addressing an immediate water quality issue such as taste and odor.
- **Vacuum Removal of Attached Algae:** Attached algae at reservoir inlet/outlet structures, which cause taste and odor issues, can be removed by divers and vacuum. This alternative is limited to reservoir inlet/outlet structures when taste and odor issues are present. It is labor intensive, timely to procure and put into place, and may require aquatic pesticide treatment to be fully effective.

- **Canal Isolation:** The unlined portion of the Canal can be isolated to prevent Canal water from being released back to the Delta. Doing so provides static water conditions to treat Eurasian milfoil with fluridone. To be effective fluridone treatment requires relatively long term exposure (45 to 100 days). Isolating the Canal provides static long-term exposure conditions while reducing potential pesticide residual drift back into the Delta. While effective, this method is costly and requires extensive coordination with other activities to ensure water delivery is maintained when the Canal is isolated.

**ATTACHMENT A
PESTICIDE TREATMENT AND FIELD MONITORING LOGS**

**CONTRA COSTA WATER DISTRICT
Aquatic Pesticide NPDES Permit
Pesticide Treatment Log**

Applicator Name: _____

Proposed date(s) of treatment: _____

Actual date(s) of treatment: _____

Treatment Event Number _____

Treatment location:

- | | |
|--|--|
| <input type="checkbox"/> Los Vaqueros Res. (1,846 surface acres) | <input type="checkbox"/> Unlined Contra Costa Canal (Fish screens to Pumping Plant #1) |
| <input type="checkbox"/> Martinez Res. (13.7 surface acres) | <input type="checkbox"/> Lined Contra Costa Canal |
| <input type="checkbox"/> Contra Loma Res. (120 surface acres) | <input type="checkbox"/> Comments: _____ |

SITE EVALUATION

Describe reason for use (target organism): _____

Are other options available? No Yes If yes, circle below option employed

Mechanical harvesting; Drain/lower water to allow physical removal; application above water level

Other option
(describe): _____

If applicable, are wasteways leak free? Yes No

If wasteways not leak free, describe location: _____

Reservoir Water Level: _____ Canal Flow (cfs): _____

PESTICIDE USE INFORMATION

Pesticide name: _____

Active Ingredient: Copper Glyphosate Other _____
 Fluridone Other Surfactant: Other _____

Applied concentration: _____ ppm Usage amount (units): _____

Application Start Time: _____ Application Completion Time: _____

"I, the undersigned responsible person, certify that these treatment activities were conducted in accordance with the APAP:"

Responsible Person _____
signature/date

PCA Evaluation _____
signature/date

SUPERVISOR REVIEW _____
signature/date

CONTRA COSTA WATER DISTRICT
Aquatic Pesticide NPDES Permit
Field Monitoring Log

BACKGROUND MONITORING (BM) *upstream or w/i the treatment area before treatment*

Date: _____ Time: _____ Location: _____

Visual GPS Reading _____

Site Description: Reservoir Canal Vegetation coverage _____ %

Water Appearance
(sheen, color, clarity, etc.) _____

Weather Conditions
(fog, rain, wind, etc) _____

Field Measurements (3' below surface; or if < 6' deep, 1/2 the depth) Sampled Depth _____ ft.

Temperature (C) _____ Turbidity _____ SpC _____ pH _____ DO(mg/L) _____

Samples Collected (3' below surface; or if < 6' deep, 1/2 the depth)

Copper and Hardness/Turbidity Glyphosate Fluridone

EVENT MONITORING (EM) *downstream or adjacent to the treatment area after treatment*

Date: _____ Time: _____ Location: _____

Visual GPS Reading _____

Site Description: Reservoir Canal Vegetation coverage _____ %

Water Appearance
(sheen, color, clarity, etc.) _____

Weather Conditions
(fog, rain, wind, etc) _____

Field Measurements (3' below surface; or if < 6' deep, 1/2 the depth) Sampled Depth _____ ft.

Temperature (C) _____ Turbidity _____ SpC _____ pH _____ DO(mg/L) _____

Samples Collected (3' below surface; or if < 6' deep, 1/2 the depth)

Copper and Hardness/Turbidity Glyphosate Fluridone

POST-EVENT MONITORING (PEM) *within the treatment area*

Date: _____ Time: _____ Location: _____

Visual GPS Reading _____

Site Description: Reservoir Canal Vegetation coverage _____ %

Water Appearance
(sheen, color, clarity, etc.) _____

Weather Conditions
(fog, rain, wind, etc) _____

Field Measurements (3' below surface; or if < 6' deep, 1/2 the depth) Sampled Depth _____ ft.

Temperature (C) _____ Turbidity _____ SpC _____ pH _____ DO(mg/L) _____

Samples Collected (3' below surface; or if < 6' deep, 1/2 the depth)

Copper and Hardness/Turbidity Glyphosate Fluridone

ATTACHMENT B

TWENTY-FOUR HOUR REPORT LOG FORM

Purpose: This report must be provided to the appropriate Regional Water Quality Control Board and the State Water Board in the event that there is any noncompliance with the General NPDES Permit for Residual Aquatic Pesticide Discharges from Algae and Aquatic Weed Control Applications (Permit), including any unexpected or unintended effect of an algaecide or aquatic herbicide use that may endanger health or the environment. Requirements for this report are found in Attachment C (page C-10) of the Permit.

The report must be provided within 24 hours from the time the Coalition or Discharger becomes aware of the circumstances.

State Board Contact Phone Number:

Name of State Board Employee Contacted: _____

CVRWQCB/SFRWQCB (circle) Contact Phone Number:

Name of Regional Board Employee Contacted: _____

The following information shall be provided:

- a. Caller's name and telephone number

Name _____

Telephone Number _____

- b. Applicator name and mailing address

Contra Costa Water District
P.O. Box H2O
Concord, CA 94524

- c. Waste Discharge Identification (WDID) number

- d. Name and Telephone Number of Contact Person

Dave Omoto
Environmental Compliance Officer
(925) 688-8023
(925) 525-2564
daomoto@ccwater.com

e. How and When the Coalition of Discharger became aware of the noncompliance

How: _____

When: _____

f. Description of the location of the noncompliance

g. Description of the noncompliance identified and the U.S. EPA pesticide registration number for each product the Discharger applied in the area of noncompliance.

Description of Noncompliance:

Products Applied Including USEPA pesticide registration numbers

h. Description of any steps that the Coalition or Discharger has taken or will take to correct, repair, remedy, cleanup, or otherwise address any adverse effect.

Other comments provided to or received from State Board or CVRWQCB during phone call:

ATTACHMENT C

FIVE-DAY WRITTEN REPORT OUTLINE

Following submission of a twenty-four report, a written report must be provided to the Central Valley Regional Water Quality Control (CVRWQCB) Board and the State Water Board in the event that there is any noncompliance with the General NPDES Permit for Residual Aquatic Pesticide Discharges from Algae and Aquatic Weed Control Applications (Permit), including any unexpected or unintended effect of an algaecide or aquatic herbicide use that may endanger health or the environment. Requirements for this report are found in Attachment C (page C-11) of the Permit.

The written report must be provided within 5 days from the time the Coalition or Discharger becomes aware of the circumstances. The State Water Board staff or Regional Water Board staff may waive the written report required under this provision on a case-by-case basis if an oral report has been received within 24 hours.

The report should contain the following information:

- a. Date and time the Coalition or Discharger contacted the State Water Board and the appropriate Regional Water Board notifying of the noncompliance and any instructions received from the State and/or Regional Water Board; information required to be provided in Section D.1 (24-Hour Reporting);
- b. A description of the noncompliance and its cause, including exact date and time and species affected, estimated number of individual and approximate size of dead or distressed organisms (other than the pests to be eliminated);
- c. Location of incident, including the names of any waters affected and appearance of those waters (sheen, color, clarity, etc);
- d. Magnitude and scope of the affected area (e.g. aquatic square area or total stream distance affected);
- e. Algaecide and aquatic herbicide application rate, intended use site (e.g., banks, above, or direct to water), method of application, and name of algaecide and herbicide product, description of algaecide and herbicide ingredients, and U.S. EPA registration number;
- f. Description of the habitat and the circumstances under which the noncompliance activity occurred (including any available ambient water data for aquatic algaecides and aquatic herbicides applied);
- g. Laboratory tests performed, if any, and timing of tests. Provide a summary of the test results within five days after they become available;

- h. If applicable, explain why the Coalition or Discharger believes the noncompliance could not have been caused by exposure to the algaecides or aquatic herbicides from the Coalition's or Discharger's application; and
- i. Actions to be taken to prevent recurrence of adverse incidents.