

Attachment E – Notice of Intent

RECEIVED

APR 24 2014

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. New Applicator  | B. <input checked="" type="checkbox"/> Change of Information | WDID# 8-362723001 |
|                    | C. <input type="checkbox"/> Change of ownership or responsibility; WDID# |  |                   |

II. DISCHARGER INFORMATION

|  |  |   |                          |
|--|--|---|--------------------------|
| A. Name San Bernardino County Flood Control District |  |   |                          |
| B. Mailing Address 825 E. Third Street               |  |   |                          |
| C. City<br>San Bernardino                            | D. County<br>San Bernardino                                  | E. State<br>California  | F. Zip<br>92415-0835     |
| G. Contact Person<br>Annesley Ignatius               | H. E-mail address<br>annesley.ignatius@dpw.<br>sbcountry.gov | I. Title<br>Deputy Director -<br>Environmental and Construction | J. Phone<br>909-387-8110 |

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: San Bernardino County Flood Control District and County of San Bernardino

2.  Canals, ditches, or other constructed conveyance facilities owned and controlled by an entity other than the Discharger.  
Owner's name: \_\_\_\_\_  
Name of the conveyance system: \_\_\_\_\_

3. Directly to river, lake, creek, stream, bay, ocean, etc.  
Name of water body: See Attachment 1 - APAP

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

**V. ALGAECIDE AND AQUATIC HERBICIDE APPLICATION INFORMATION**

A. Target Organisms: \_\_\_\_\_ Algae and aquatic vegetation (submerged and emergent)

B. Algaecide and Aquatic Herbicide Used: List Name and Active ingredients  
  
See Attachment 1 - APAP

C. Period of Application: Start Date ~January End Date ~December

D. Types of Adjuvants Used: See Attachment 1

**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: Annesley Ignatius

B. Signature: 

Date: 4/21/2014

C. Title: Deputy Director - Environmental and Construction

**XI. FOR STATE WATER BOARD STAFF USE ONLY**

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

# **Weed Control Aquatic Pesticide Application Plan**

County of San Bernardino Regional Parks and the  
San Bernardino County Flood Control District  
825 E. Third Street, Room 117  
San Bernardino, CA 92415-0835  
Contact: Marc Rodabaugh

**March 2014**

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# List Acronyms and Abbreviations

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|                       |   |
|-----------------------|---|
| Agriculture           | County Department of Agriculture  |
| CAC                   | County Agricultural Commissioner  |
| CDPH                  | California Department of Public Health  |
| COC                   | Chain-of-custody  |
| District              | San Bernardino County Flood Control District  |
| DPR                   | California Department of Pesticide Regulation   |
| ELAP                  | Environmental Laboratory Accreditation Program  |
| ESB                   | E.S. Babcock & Sons   |
| FIFRA                 | Federal Insecticide, Fungicide, and Rodenticide Act   |
| Glen Helen            | Glen Helen Regional Park  |
| MRP                   | Monitoring and Reporting Program  |
| MS/MSD                | Matrix spike and matrix spike duplicate   |
| MSDS                  | Material Safety Data Sheets   |
| Policy                | State Water Board Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California |
| PURs                  | pesticide use reports   |
| QAC                   | Qualified Applicator Certificate  |
| QAQC                  | quality assurance/quality control   |
| Regional Parks        | San Bernardino County Regional Parks  |
| Regional Water Boards | Regional Water Quality Control Boards   |
| TDS                   | Total Dissolved Solids  |

APAP Review Check List for  
Order 2013-0002-DWQ  
Aquatic Weed Control Permit

| No. <sup>1</sup> | Permit requirements   | √ <sup>3</sup> | APAP Page Location    |
|------------------|---|----------------|-----------------------|
| C.1.             | Describe the water system where the pesticide <sup>2</sup> will be applied.               |                | Pgs.: 2-1 thru 2-4    |
| C.2.             | Describe the treatment area.  |                | Pgs.: 7-1             |
| C.3.             | Types of weeds to be controlled and why   |                | Pgs.: 3-1             |
| C.4.             | - Pesticide products to be used.  |                | Pgs.: 3-1             |
|                  | - Degradation byproducts of pesticide used if known.                                      |                | Pgs.: 6-2             |
|                  | - Method of application.  |                | Pgs.: 6-3, 7-1,7-2    |
|                  | - Surfactant and adjuvants to be used   |                | Pgs.: 6-1             |
| C.5.             | Discuss factors influencing the decision of using pesticide for weed control.             |                | Pgs.: 5-1             |
| C.6              | - List of gates or control structures to be used in receiving water.                      |                | Pg.: 11-1             |
|                  | - Inspection schedule of the gates and control structures.                                |                | Pg.: 11-1             |
| C.7              | For those with SIP exception:   |                | NA                    |
|                  | - exception period (beginning date to ending dates)                                       |                | NA                    |
|                  | - justification for exception period  |                | NA                    |
|                  | - describe plans to ensure compliance if applying pesticide outside the exception period. |                | NA                    |
| C.8              | Describe monitoring program   |                | Pgs.: 10-1 thru 10-12 |
| C.9              | How to prevent sample contamination.  |                | Pgs.: 10-7, 10-8      |

| No. <sup>1</sup> | Permit requirements | √ <sup>3</sup> | APAP Page Location |
|------------------|---------------------|----------------|--------------------|
|------------------|---------------------|----------------|--------------------|

| No. <sup>1</sup> | Permit requirements   | √ <sup>3</sup>          | Staff comments   |
|------------------|---|-------------------------|------------------|
| C.10             | Minimum content of BMPs:  |                         |                  |
|                  | a. How to prevent pesticide spill and spill contamination;                                  |                         | Pgs.: 12-1, 12-2 |
|                  | b. Ensure only minimum and consistent amount of pesticide used for targeted weeds;          |                         | Pgs.: 12-1, 12-2 |
|                  | c. Plan for educating applicators on avoiding adverse effect from pesticide application;    |                         | Pgs.: 12-1, 12-2 |
|                  | d. Plan on informing the farmers and agencies who have water rights on the receiving water; |                         | NA               |
|                  | e. Plan on preventing fish kill from pesticide application;                                 |                         | Pgs.: 12-1, 12-2 |
| C.11             | a.Evaluation of alternatives:   | i. no action.           | Pg.: 8-1         |
|                  |   | ii. Prevention.         | Pg.: 8-1         |
|                  |   | iii. Mechanical method. | Pg.: 8-1         |
|                  |   | iv. Cultural method.    | Pg.: 8-1         |
|                  |   | v. Biological control.  | Pg.: 8-1         |
|                  |   | vi. Pesticide control.  | Pg.: 8-1         |
|                  | b. Use least intrusive method of weed control;  |                         | Pg.: 8-1         |
|                  | c. Apply decision matrix concept for choosing the most appropriate formulation.             |                         | Pg.: 9-1         |

Notes:

1. Item in the permit.
2. Pesticides refer to algaecides and aquatic herbicides.
3. Check √ if APAP contains the required information.

# Chapter 1

## Background

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On 12 March 2001, the Ninth Circuit Court of Appeals ruled that discharges of pollutants from the use of aquatic pesticides to waters of the United States require coverage under an NPDES permit. Consequently, the State Water Resources Control Board developed an Emergency Aquatic Pesticide Permit (General Permit No. CAG990003) to cover short-term seasonal discharges by public entities of pollutants associated with the application of aquatic pesticide for resource or pest management to waters of the United States. An updated version of the Statewide General NPDES Permit for Residual Aquatic Pesticide Discharges to Waters Of The United States From Algae and Aquatic Weed Control Applications, General Permit No. CAG990005, Order No. 2013-0002-DWQ (Permit) was completed in 2013, and became effective on December 1, 2013. Some of the applicable standard provisions in the updated Permit include the following:

1. The applicator must follow all Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) pesticide label instructions and any Restricted Material Use Permits issued by a County Agricultural Commissioner (CAC);
2. All adjuvants used with the algaecides and aquatic herbicides must be labeled for aquatic use.
3. The Discharger must comply with effluent and receiving water limitations and must develop and implement an APAP
4. To reduce the potential impacts to water quality, Dischargers shall implement the feasible alternatives to algaecide and aquatic herbicide use that are identified in the APAP.
5. All Dischargers authorized to discharge under this General Permit shall comply with discharge prohibitions and other requirements contained in Basin Plans, as implemented by the State and the nine Regional Water Boards.

An APAP is a comprehensive plan developed by the discharger that describes the pesticide application program, the need for the project, methods to reduce water quality impacts, and how potential impacts will be monitored. Specifically, the APAP must contain the following elements:

1. Description of the water system to which algaecides and aquatic herbicides are being applied;
2. Description of the treatment area in the water system
3. Description of types of weed(s) and algae that are being controlled and why
4. Algaecide and aquatic herbicide products or types of algaecides and aquatic herbicides expected to be used and if known their degradation byproducts, the method in which they are applied, and if applicable, the adjuvants and surfactants used
5. Discussion of the factors influencing the decision to select algaecide and aquatic herbicide applications for algae and weed control
6. If applicable, list the gates or control structures to be used to control the extent of receiving waters potentially affected by algaecide and aquatic herbicide application and provide an inspection schedule of those gates or control structures to ensure they are not leaking

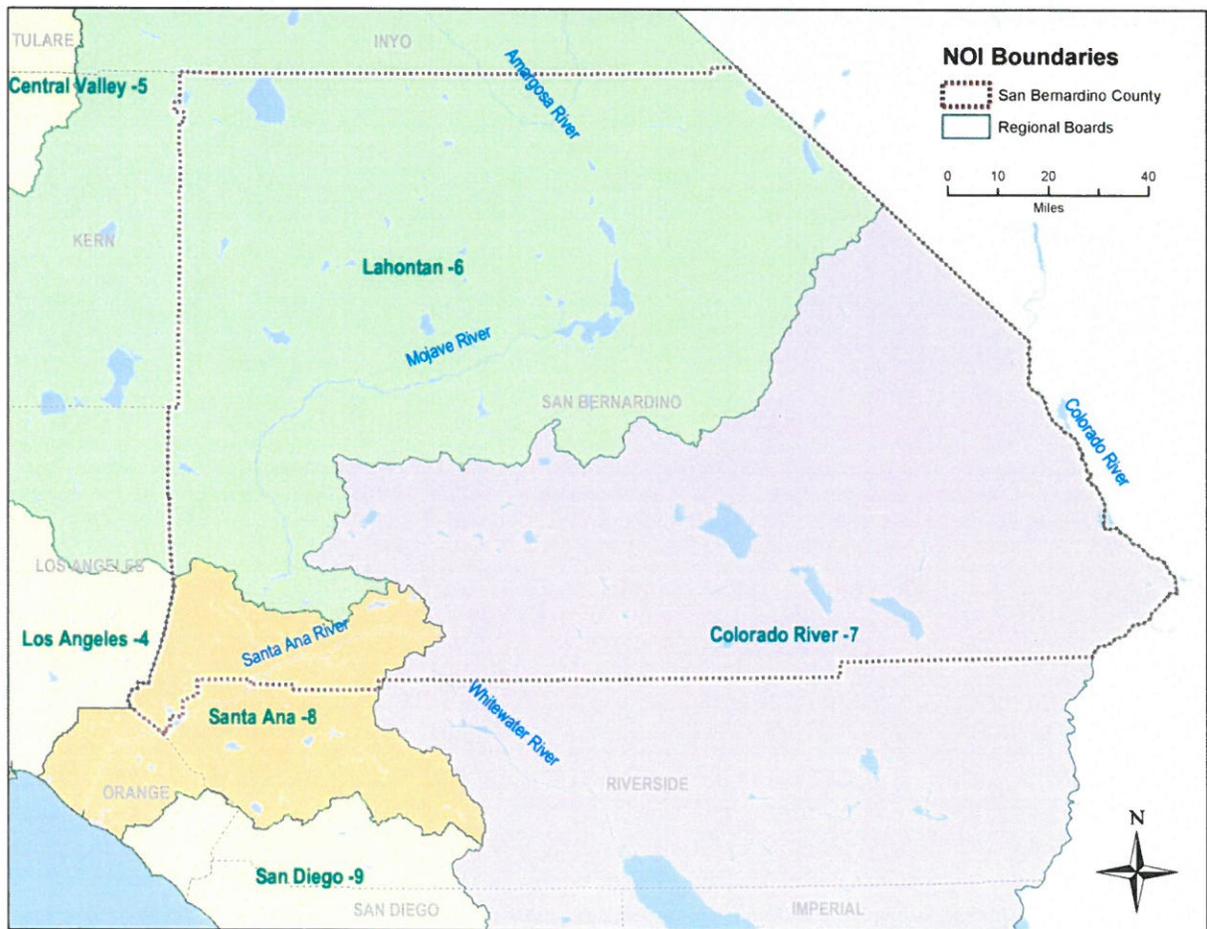
7. If the Discharger has been granted a short-term or seasonal exception under State Water Board Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (Policy) section 5.3 from meeting acrolein and copper receiving water limitations, provide the beginning and ending dates of the exception period, and justification for the needed time for the exception. If algaecide and aquatic herbicide applications occur outside of the exception period, describe plans to ensure that receiving water criteria are not exceeded because the Dischargers must comply with the acrolein and copper receiving water limitations for all applications that occur outside of the exception period;
8. Description of monitoring program;
9. Description of procedures used to prevent sample contamination from persons, equipment, and vehicles associated with algaecide and aquatic herbicide application;
10. Description of the BMPs to be implemented; and
11. Examination of Possible Alternatives. Dischargers should examine the alternatives to algaecide and aquatic herbicide use to reduce the need for applying algaecides and herbicides;
12. The Dischargers must be licensed by California Department of Pesticide Regulation if such licensing is required for the algaecide and aquatic herbicide application project.

The APAP described in the following pages addresses all of the above-mentioned requirements. An APAP was originally prepared by the San Bernardino County Flood Control District (District) in October 2005. This revised APAP is submitted to the State Water Board as one component of an NOI application for coverage under the new Permit, and addresses Permit-required changes to the application and monitoring program determined through the annual reporting process. This revised APAP will be implemented upon receipt of a Notice of Applicability from the State Water Board.

# Water System to Which Aquatic Pesticides Are Applied

The District applies aquatic pesticides for the purpose of weed control at locations within the jurisdiction of three different Regional Water Quality Control Boards (Regional Water Boards): Lahontan (Region 6); Colorado (Region 7); and Santa Ana (Region 8). The District and Regional Water Board boundaries are shown in Figure 1. Although portions of all three regions are contained within San Bernardino County, the majority of aquatic pesticide applications for the purpose of weed control occur in the Santa Ana region.

Approximately 90% of San Bernardino County is desert (San Bernardino County, 2005). The remaining land, however, is greatly varied, ranging from snow-capped peaks in the San Bernardino Mountains to low hills and green river valleys in the San Bernardino Valley. In the western portion of the county there are many areas characterized by a dry coastal climate with seasonal precipitation and a large number of historically ephemeral streams. Descriptions of the areas of San Bernardino County within each Regional Water Board area mentioned above follow.



**Figure 1. San Bernardino County and Regional Board Boundaries**

## 2.1 Lahontan Region (Region 6)

The Lahontan Region encompasses 33,131 square miles of California east of the crest of the Sierra Nevada Mountains, from the San Gabriel and San Bernardino Mountains in the south to the Oregon border in the north. San Bernardino County contains 10,404 square miles of the southern portion of the Lahontan Region; much of this area is characterized by the Mojave watershed. The Mojave watershed is an area of approximately 4,500 square miles containing the northwestern portion of the San Bernardino Mountains and the western portion of the Mojave Desert. The primary feature of the watershed is the 120 mile long Mojave River. The headwaters of the river are located in the mountains of the San Bernardino National Forest, which receive approximately 40 inches of rain each year (Lahontan Regional Water Quality Control Board, 2005). The remainder of the watershed is typically arid and can receive as little as two inches of rain each year. Thus, the water resources are limited in this area, and ground water is the primary source in the majority of the watershed.

Population in this area of San Bernardino County is concentrated primarily in one urban location in Victor Valley, which includes the cities of Victorville, Adelanto, Apple Valley, and Hesperia. Total population in the watershed is increasing, and is projected to reach half a million by 2015 (Lahontan Regional Water Quality Control Board, 2005). The remaining less developed areas in the region are affected by recreation, industry, military, and agriculture; both historically and in the present. Agricultural water use is lower in this region than in other portions of Southern California due to the use of irrigation for grazing lands rather than for crops.

## 2.2 Colorado River Region (Region 7)

The Colorado River Region covers 20,000 square miles in the southeast corner of California; 8,649 square miles are located in San Bernardino County. The Region is bordered by the Colorado River to the east, Mexico to the south, the San Bernardino Mountains to the west, and the New York, Providence, Granite, Old Dad, Bristol, Rodman, and Ord Mountain Ranges to the north. San Bernardino County encompasses the northern half of this region, which includes the northern portions of the Lower Colorado River watershed and the Desert Aquifers watershed. These are separated by a series of small mountain ranges. Desert valleys and low mountains under 5,000 feet in elevation characterize the Lower Colorado River watershed, and the Desert Aquifers watershed contains the southern portion of the Mojave Desert.

The cities with the largest populations in this area are Twentynine Palms and Yucca Valley; their combined population is just under 40,000 (San Bernardino County, 2005). Twentynine Palms Marine Corps Base, the largest Marine Corps Base in the world, occupies 932 square miles in this region (globalsecurity.org, 2005).

## 2.3 Santa Ana Region (Region 8)

The Santa Ana Region covers an area of approximately 2,800 square miles, making it the smallest of the water quality control regions. 1,010 square miles of this region are located in San Bernardino County. This portion is bordered to the north by the San Gabriel Mountains and to the north and east by the San Bernardino Mountains, which include Mt. San Gorgonio, the highest peak in Southern

California (11,499 feet in elevation). The western border is the Los Angeles county line. This area is entirely located in the Santa Ana River Watershed. The Santa Ana River begins in the mountains of the San Bernardino National Forest, and results mainly from snowmelt and storm runoff. As the river nears the San Bernardino County line to the south, only portions of the river flow perennially and this is due to inclusion of treated effluent discharges from wastewater treatment plants. The northern Santa Ana Region is semiarid in the inland valleys, and receives up to 40 inches of rain or more in the mountains (Santa Ana Watershed Project Authority, 2005).

Much of the developed portions of San Bernardino County are located in the Santa Ana Region, and it contains one of the fastest growing populations in California. The cities with the largest populations in this area include San Bernardino, Fontana, Ontario, Rancho Cucamonga, Chino and Upland. This area also contains commercial/industrial areas, and concentrations of agriculture that include dairy and citrus.

## 2.4 Aquatic Pesticide Application Sites

Aquatic pesticides, for the purpose of weed control, are applied to various District maintained facilities and to San Bernardino County Regional Parks (Regional Parks) facilities and recreation areas. The applications are used to manage submerged and emergent aquatic vegetation, including algae, which may interfere with the proper flood fighting operation of a facility or the recreational uses within the Regional Parks. There are five Regional Parks in which aquatic pesticides may be used for weed control in San Bernardino County: Glen Helen, Cucamonga Guasti, Lake Gregory, Mojave Narrows, Prado and Yucaipa.

Land uses tributary to application areas include urban, agricultural, and residential, as well as undeveloped State and National Forests and Regional Parks. Potential receiving waters that may be impacted through the application of aquatic pesticides include:

1. The Santa Ana and Mojave Rivers.
2. Various ponds and small lakes including Lake Arrowhead, Lake Gregory and Big Bear Lake.
3. Water features in County owned and operated parks: Prado Regional Park, Cucamonga Guasti Regional Park, Glen Helen Regional Park, Yucaipa Regional Park, Lake Gregory Regional Park and Mojave Narrows Regional Park.
4. Flood control channels, basins, storm drains and other stormwater conveyances owned and operated by the San Bernardino County Flood Control District and/or San Bernardino County draining into any of the above bodies of water.

Table 1 shows all of these sites grouped according to major drainage and identifies selected representative monitoring sites.

**Table 1. Aquatic Pesticide Application and Monitoring Sites.**

| Flood Control Facility Application Sites,<br>According to Major Drainage                     | Representative Monitoring Sites <sup>1</sup> |
|--|--|
| San Antonio-Chino Creek  | Carbon Canyon Creek Channel                  |
| Cucamonga Creek  |  |
| Day Creek  | Carbon Canyon Creek Channel                  |
| Etiwanda/San Sevaine Creek   | Carbon Canyon Creek Channel                  |
| Rialto Creek   | Carbon Canyon Creek Channel                  |
| Lytle-Cajon Creeks (Includes Devil Bypass and Lower Warm Creek)                              | Carbon Canyon Creek Channel                  |
| Twin-Warm Creek (Includes Devil Creek, Twin Creek, and Upper Warm Creek)                     | Carbon Canyon Creek Channel                  |
| Plunge Creek   | Carbon Canyon Creek Channel                  |
| City Creek   | Carbon Canyon Creek Channel                  |
| Mission-Zanja Creek  | Mission Channel                              |
| Wilson-Wildwood Creek  | Mission Channel                              |
| San Timoteo Creek  | Mission Channel                              |
| Reche Canyon Creek   | Mission Channel                              |
| Santa Ana River (Includes Mill Creek and other portions of the Basin not included elsewhere) | Mission Channel                              |
| Prado Basin (Includes Santa Ana River and Cypress Creek)                                     | Mission Channel                              |
| Deep Creek (Mojave River)  | Carbon Canyon Creek Channel                  |
|  |  |

| Regional Parks Application Sites | Representative Monitoring Sites <sup>1</sup> |
|----------------------------------|--|
| Glen Helen Ponds                 | N/A  |
| Yucaipa Park Lakes               | N/A  |
| Prado Park Lakes                 | N/A  |
| Cucamonga Guasti Park            | Yucaipa Park Lakes                           |
| Lake Gregory                     | N/A  |
| Horseshoe Lake                   | N/A  |
|                                  |  |
| <sup>1</sup> See Section 10.1    |  |

## Chapter 3

# Need for Control Measures and Description of Targeted Weeds

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Department of Public Works facility operation and maintenance requires control of aquatic weeds. Aquatic weeds can interfere with the efficient operation of flood control facilities, and also need to be controlled for recreation and the operation of Regional Parks' facilities.

The District relies on a network of facilities, such as channels, basins and roadside ditches, to direct stormwater for flood control purposes. In order for storm water to drain properly, channels must be kept clear of any vegetation that could obstruct the flow of water. Blocked drainages have the potential to cause flooding, property damage, and threat to life. During the cool wet season, vegetation growth is generally controlled by storm flows and environmental factors. However, vegetation growth is greater during dry periods, when temperatures are warmer, and the facilities may collect low levels of runoff water from wastewater treatment facilities and various urban and agricultural sources. Deposition and accumulation of silt in channels leads to growth of aquatic vegetation like broad leaf weeds and grasses. In addition, excess nutrients that enter water bodies can lead to the growth of algae. The District currently directs the application of the aquatic herbicides glyphosate, copper, triclopyr and diquat to remove aquatic weeds and algae for the purposes of flood control and recreation. Operation and maintenance of District facilities requires control of aquatic weeds because vegetation can interfere with flows, reduce hydraulic capacity of facilities, and provide vector breeding areas by creating stagnant water. Facilities must be kept clear of vegetation that could impede the flow of water or cause improper drainage. Excessive vegetation has the potential to damage flood control facilities, which may lead to flooding, property damage, and threat to life.

Regional Parks facilities and recreation areas also require control of aquatic weeds for optimum operation. Vegetation must be controlled to maintain recreational access and conditions suitable for activities, as well as for maintenance of Regional Parks facilities.

## Chapter 4

# Discussion of Control Tolerances

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Aquatic pesticide applications occur throughout the year, but primarily between spring and fall. Some sites will receive multiple applications per year, some sites will receive only one application, and some sites will receive none. Applications are made at a frequency to control vegetation at a level that maintains the hydraulic capacity or recreational use of the application site. The application frequency at a given site may vary based on seasonal weather patterns, species present, regulatory restrictions, and availability of application crews.

The District determines when aquatic weeds must be controlled in its facilities and contracts with the County Department of Agriculture (Agriculture) for application of aquatic weed control pesticides. Regional Parks determines when aquatic weeds must be controlled in its facilities, and conducts its own aquatic weed control applications.

## Factors Influencing Decision to use Pesticide

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Application of aquatic pesticides for weed control in San Bernardino County has proven to be the most effective method to control aquatic weeds with the lowest impact to habitat and water quality. Mechanical removal of vegetation is another potential option, and hand removal of vegetation is used in some cases, specifically, Mojave Narrows Park. However, mechanical and hand removal have the potential to increase erosion problems, which can slowly enlarge the size of channels and drains beyond acceptable limits, yet still not provide adequate weed control. In addition, these methods require more frequent action due to incomplete removal of roots and the spreading of viable vegetative stems and seeds. In general, mechanical and hand weed removal is prohibitively costly, labor intensive often with accessibility issues, and potentially destructive to the environment, resulting in habitat and water quality degradation, such as increased turbidity.

## Chapter 6

# Pesticides, Adjuvants, and Application Methods Pesticides

Aquatic pesticides which may be applied for the purpose of weed control are listed below in Table 2.

**Table 2. Aquatic Pesticides Applied in San Bernardino County**

| Active Compound             | Product Trade Name                    | EPA Registration # | Target  |
|-----------------------------|---------------------------------------|--------------------|---|
| Copper                      | Cutrine® Plus                         | 8959-10            | Algae and aquatic vegetation                  |
|                             | Cutrine® Plus Granular                | 8959-12-AA         |   |
|                             | Komeen®                               | 1812-312           |   |
|                             | K-Tea™                                | 1812-307           |   |
| Copper Sulfate Pentahydrate | Triangle Brand Copper Sulfate Crystal | 1278-8             | Algae and aquatic vegetation                  |
| Diquat                      | Reward®                               | 100-1091           | Partially submerged aquatic vegetation        |
| Glyphosate                  | Aquamaster™                           | 524-343            | Emergent foliage of aquatic vegetation        |
|                             | Aquatneat™                            | 228-365            |   |
|                             | Rodeo®                                | 92719-324          |   |
| Triclopyr                   | Renovate® OTF                         | 67690-42           | Emerged, submerged and floating aquatic weeds |
| Imazapyr                    | Habitat                               | 241-426            | Floating and emergent vegetation              |

Copper-based aquatic pesticides are used to control algal and aquatic plant growth. There are many different formulations; the primary formulations used in San Bernardino County are granular copper sulfate and Cutrine variants applied via liquid tank mixing.

Glyphosate-based aquatic pesticides are used to control emergent foliage of aquatic weeds. In San Bernardino County, glyphosate is applied to channel banks and emergent channel vegetation and also at lakes for the control of emergent cattails and bulrushes. Although generally very effective because it controls root systems, glyphosate does not work well on submerged or mostly submerged foliage.

Diquat-based aquatic pesticides are used to control aquatic weeds. Diquat is a quick-acting contact pesticide, causing injury only to the parts of the plant to which it is applied. In San Bernardino County, diquat is used to control partially submerged weeds where the use of glyphosate is ineffective. Diquat and glyphosate may be used together. Diquat is not used in areas with high Total Dissolved Solids (TDS).

Triclopyr (Renovate OTF) is specifically designed for the control of emerged, submerged and floating aquatic weeds in quiescent pond and lakes. Triclopyr is a selective systematic herbicide that, in its triethylamine salt (TEA) formulation, is used to control aquatic plant species, such as *Myriophyllum spicatum*, *Myriophyllum aquaticum*, *Lythrum salicaria*, *Eichhornia crassipes* and *Alternanthera philoxeroides*. The product, which is applied as flakes, is hoped to be less subject to wind drift, thus

allowing a more precise application. Renovate was first used by Regional Parks in Lake Gregory during the 2011 season.

Imazapyr (Habitat) is used to control floating and emergent undesirable vegetation. Habitat does not control plants which are completely submerged, or have a majority of their foliage under water. It acts only on non-submerged vegetation, as it is absorbed through emergent leaves and stems, then transported through the plant, including the roots, to prevent regrowth. Habitat is also effective to control undesirable woody vegetation by direct application to the cambium on fresh cuts on the stems or stump. The District uses Habitat primarily to control Salt Cedar.

One additional compound, Fluridone (Table 3), is being considered for use by the Regional Parks. This compound is not currently in use, but may potentially be applied in the future. If the decision is made to use Fluridone in the future, this APAP will be amended.

**Table 3. Additional Aquatic Pesticides Considered**

| Active Compound | Product Trade Name | EPA Registration # | Target  |
|-----------------|--------------------|--------------------|---|
| Fluridone       | Sonar™ A.S. and    | 67690-4            | Emersed, submerged and floating aquatic weeds |
|                 | Sonar™ SRP         | 67690-3            |   |

Fluridone is a systemic herbicide that kills the entire plant and is generally non-selective, which means most submersed plants and some floating leaved plants will be killed by fluridone during the treatment.

## 6.1 Adjuvants

Adjuvants/surfactants may be used in conjunction with active compounds for application purposes. Surfactants are used by the District to enhance efficacy of aquatic pesticides applications. Additionally, dye indicators may also be used in conjunction with the application of active compounds to increase the precision of application, including the indicator Bullseye®™. The indicator/surfactant compounds which may be used are listed below in Table 4. The District has ceased applying Excel-90, however, it is listed here for completeness, as it has been used in the past.

**Table 4. Surfactants and Indications**

| Compound                     | Trade Name                                 | CA Reg. No.      |
|------------------------------|--|------------------|
| Surfactant                   | No Foam A <sup>1</sup>                     | 1050775-50015    |
|                              | R-11 <sup>1</sup>                          | 2395-50142       |
|                              | Target Pro-Spreader Activator <sup>1</sup> | 1050775-50022-AA |
|                              | Activator 90 <sup>1</sup>                  | 36208-50014      |
|                              | First Choice® Excel 90-NF™ <sup>1</sup>    | 11656-50108-AA   |
|                              | Monterey Crop Oil                          | 17545-50031      |
| Polymeric Colorant Indicator | Bullseye®™                                 | None             |

<sup>1</sup> Nonylphenol is a breakdown product of the active ingredient of this product (Alkyl phenol ethoxylate). Presence determined by testing for total Phenols.

The District applies aquatic pesticide using various procedures. Blanket applications are performed either by using a flat-bed truck mounted boom or by hand using a hose sprayer from a truck or a boat. Spot applications are made using backpack sprayers.

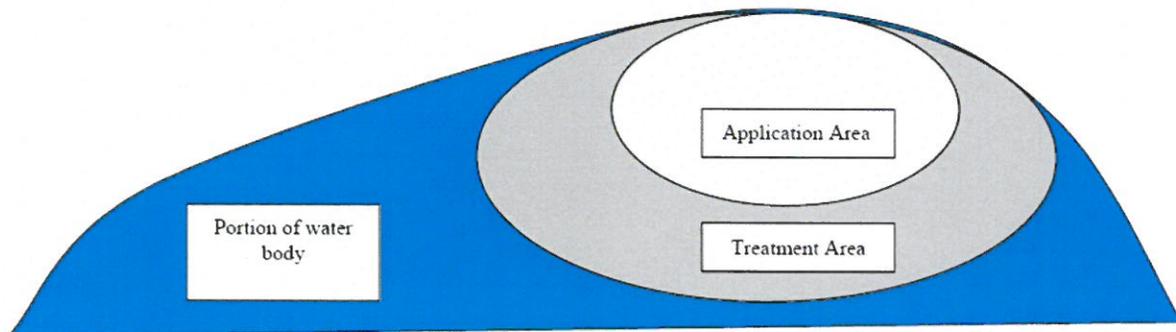
## Chapter 7

# Application/Treatment Areas

Application areas are typically selected based on their capacity to improve or preserve storm water flow, and for improving habitat, fishing, and access to recreational areas. Pesticide application areas are surrounded by a variety of land use types, including: urban, industrial, commercial, agriculture, and parks.

In channels and flood control facilities, the District targets aquatic pesticide applications primarily to live vegetation. Only incidental contact of aquatic pesticide with the water body being treated occurs during applications. In other words, the District does not attempt to treat emergent nuisance vegetation by applying aquatic pesticide directly to water bodies. Therefore, for sites with emergent vegetation, the treatment area is the same as the application area.

Aquatic pesticides are applied to lakes or ponds by Regional Parks for the purpose of managing aquatic vegetation that interferes with recreational use. The application area and treatment area for aquatic pesticides in sites with non-flowing water are illustrated in Figure 2 below, taken from the General Permit (No. CAG990005).



**Figure 2. The Application Area and Treatment Area for Non-Flowing Water**

The sites treated with aquatic pesticides in the District belong to one of two categories detailed below:

**Flowing Water (Streambed or channel with flowing water, some of them intermittent):** This scenario is typified by the stream-like flows in Mission Channel in the cities of San Bernardino and Redlands. This location is typical of the urban watershed stormwater facility, with low levels of residual watershed runoff flowing during the spring, accompanied by urban nuisance flows. Resultant vegetation overgrowth requires herbicidal treatment to be cleared for proper functioning of the storm conveyance system.

**Non-Flowing Water (Active, static or ponded lake):** This scenario is typical of Prado Lake in Prado Regional Park in Chino, and Lake Gregory in Crestline. Algal blooms and water plant overgrowth must be treated to maintain the recreational uses of the lakes. Other facilities which have similar scenarios include the lakes at Glen Helen Regional Park, Yucaipa Regional Park, and at Mojave Narrows Regional Park.

In channels and flood control facilities, the District targets aquatic pesticide applications to bankside and emergent (non-submerged) live vegetation. Contact of aquatic pesticide with the surface of the water body being treated is limited to incidental contact at the time of application only. The District does not treat nuisance vegetation through sub-surface, pre-emergent application of aquatic pesticide directly to water bodies. Therefore, for sites with emergent vegetation, the treatment area is the same as the application area.

Weed control application sites are typically selected due to a facility's inability to adequately drain stormwater or nuisance flows, or for the purpose of improving habitat, fishing, and recreational area access. Aquatic pesticide application areas are surrounded by a variety of land use types, including urban, industrial, commercial, agriculture, and open space (including parks).

This scenario also represents smaller stagnant ponded areas, such as roadside low spots, which need to be treated for vegetation overgrowth.

## Chapter 8

# Other Control Methods Used

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Methods for weed control exist that are non-toxic or less toxic than currently used aquatic pesticide. Mechanical or hand removal of weeds from within channels, or raking and hand removal of algal mats from lakes, are options that do not involve use of pesticides. Hand crews are periodically used to remove trash and weeds from channels, drains, and lake banks. Yucaipa and Mojave Narrows Regional Parks employ mechanical removal of weeds, and other parks employ a combination of mechanical removal and herbicide use. Mechanical removal of weeds, however, has the potential to slowly enlarge the size of channels and drains beyond what is acceptable and still not give adequate weed control. In general, physical weed removal is very costly, labor intensive, and potentially destructive to the environment, resulting in habitat and water quality degradation and increased turbidity.

Alternative pesticides to those currently being used by the District have been, and continue to be, evaluated for use. However, no suitable alternatives have been discovered that have been proven to provide the same level of effectiveness as those which are currently used (at a comparable cost and with minimal environmental impacts). Alternative pesticides have some or all of the following limitations:

- Higher handling hazard;
- Less effective at controlling target weeds;
- Use restrictions;
- Not legal for use by the District;
- Lack of translocation results in lowered long term effectiveness;
- Potential negative impacts upon surrounding crops or the environment; or are
- Cost-prohibitive.

## Application Rate Determination

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Aquatic pesticide application rates are determined by the licensed Agriculture applicators, and are made in a manner consistent with all product label instructions and Material Safety Data Sheets (MSDS). The aquatic pesticide concentration used is generally the lowest percentage of the range specified by the product label for each type of application. Applications are made only where and when suitable, based on presence and location of undesired weeds, and in consideration of meteorological conditions favorable to efficacious product use (not windy, raining, temperate). Applications are reported monthly to the San Bernardino County Agriculture Commissioner per State Department of Agriculture pesticide regulations, in addition to the aquatic pesticide Permit reporting regulations.

## Chapter 10

# Monitoring Program

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In this section, all aspects of the monitoring program are discussed in detail, including: overall approach, site selection, procedures, quality assurance/quality control (QAQC), reporting, and monitoring site descriptions. The District must comply with the Monitoring and Reporting Program (MRP), which is detailed in Attachment C of General Permit No. CAG990005. The goals of the MRP are to:

1. Determine compliance with the receiving water limitations and other requirements specified in this General Permit;
2. Measure and improve the effectiveness of the APAP;
3. Support the development, implementation, and effectiveness of BMPs;
4. Assess the chemical, physical, and biological impacts on receiving waters resulting from aquatic pesticide applications;
5. Assess the overall health and evaluate long-term trends in receiving water quality;
6. Demonstrate that water quality of the receiving waters following completion of resource or weed management projects are equivalent to pre-application conditions;
7. Identify and characterize aquatic pesticide application projects conducted by the discharger;
8. Ensure that projects that are monitored are representative of all pesticides and application methods used by the discharger.

## 10.1 Representative Monitoring Sites

The General Permit requires water quality sampling from a minimum of six application events for each active ingredient in each environmental setting (flowing water and non-flowing water) per year, except for glyphosate, which requires sampling from one application event for each environmental setting. If the results from six consecutive application events show concentrations that are less than the receiving water limitation/trigger for an active ingredient in an environmental setting, sampling shall be reduced to one application event per year for that active ingredient in that environmental setting.

The General Permit allows the use of representative monitoring locations to characterize water quality for all waters of the United States within the Discharger's boundaries for each environmental setting (flowing water and non-flowing water). To be considered "representative," at a minimum, a location must be similar in hydrology, algaeicides and aquatic herbicides use, and other factors that affect the discharge of algaeicides and aquatic herbicides and their residues to surface waters as a result of applications to the areas being represented in that environmental setting. The number and location of samples shall be selected to answer the two key questions.

1. Does the residual algaeicides and aquatic herbicides discharge cause an exceedance of receiving water limitations?

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?

Aquatic pesticide monitoring sites were selected based on the following criteria: presence of water during application months, type of water at site (flowing or non-flowing), site accessibility, field safety, area to be sprayed, and active compound applied. For each active compound being monitored, at least one sampling site will be analyzed. As more than one active compound may be applied at a monitoring site, a single monitoring location may be used to assess more than one active compound, rather than adding additional monitoring locations to assess the active compound.

Specifically, both diquat and glyphosate will be monitored at Mission Channel or Carbon Canyon Creek Channel to assess flowing water.

All pesticide applications at Regional Park facilities will be monitored to assess impacts non-flowing water. These sites, in conjunction with their specific pesticide applied, will be considered representative of applications to District facilities containing non-flowing (or stagnant) waters. Additionally, monitoring sites were selected to be representative of where the majority of applications occur, which is primarily in the Santa Ana Region, and secondarily in the Lahontan Region. Selected monitoring sites are presented in Table 1 and **Figure 3**.

From the list of nineteen application sites summarized in Table 1, the District has selected the following representative aquatic pesticide application sites for monitoring (Table 5).

**Table 5. Location Coordinates of Representative Monitoring Sites**

| Representative Monitoring Site | Typical Current Monitoring Constituents | Environmental Setting | Location Coordinates   |
|--------------------------------|---|-----------------------|------------------------|
| Mission Creek Channel          | Glyphosate, Diquat                      | Flowing               | N34.05581; W-117.21294 |
| Carbon Canyon Creek            | Glyphosate, Diquat                      | Flowing               | N33.98620; W-117.71546 |
| Horseshoe Lake                 | Glycophosphate                          | Intermittent Flowing  | N34.5112; W-117.2753   |
| Glen Helen Ponds:              |   |                       |                        |
| Large pond                     | Glyphosate, Diquat (potential)          | Non-Flowing           | N34.20791; W-117.40429 |
| Small pond                     |   |                       | N34.20595; W-117.40411 |
| Yucaipa Park Lakes             | Copper, Diquat                          | Non-Flowing           | N34.0469; W-117.0499   |
| Prado Park Lakes               | Glycophosphate                          | Non-Flowing           | N33.9434; W-117.6482   |
| Lake Gregory                   | Copper, Triclopyr, Diquat (potential)   | Non-Flowing           | N34.2488; W-117.27367  |



**Figure 3. Aquatic Pesticide Application Monitoring Sites**

### 10.1.1 Mission Channel

Mission Channel is located in the cities of Redlands and San Bernardino (Thomas Guide Pages 607-608), and drains to the Santa Ana River. Applications of aquatic pesticide for weed control typically take place between Tippecanoe Ave. and New York St. Aquatic pesticides are applied to weeds along the channel banks and bottom. Typical pesticides applied include: Glyphosate and Diquat.

### 10.1.2 Carbon Canyon Channel

The Carbon Canyon Channel location is located within the City of Chino Hills where Rolling Ridge Drive meets Chino Creek (Thomas Guide Page 681). The facility has constantly flowing water (generally 3-12 inches deep), primarily sourced by upstream springs in English and Carbon Canyon

Creeks, but also catching significant nuisance flows from the landscaping runoff in the area. At this location, aquatic pesticides applications are made for the control of weeds. The concrete lined portions of Carbon Canyon Creek Channel do not support aquatic weed growth. The earth bottom central portion of the Channel is frequently overgrown with aquatic pest weeds, and requires treatment 3 to 4 times per warm season to remove the vegetation, thus maintaining the flood control functionality. It has been selected as a representative facility for aquatic weed testing, due to the reliability of the need for treatment annually. Typical pesticides applied include: Glyphosate and Diquat.

### **10.1.3 Horseshoe Lake (Mojave Narrows Park)**

Horseshoe Lake, in the 840 acres Mojave Narrows Regional Park, is located east of the City of Victorville, west of the Town of Apple Valley and southeast of the 15 freeway crossing over the Mojave River. (Thomas Guide Pages 4296 & 4386). Horseshoe Lake is stocked with trout, catfish and bass and features year-round fishing, camping and picnicking for the public. Aquatic pesticide applications are made for the control of surface weeds, cattails, and grasses. Typical pesticides applied include: Glyphosate.

### **10.1.4 Glen Helen Ponds**

Glen Helen Regional Park (Glen Helen) is located just north of San Bernardino at the base of Cajon Pass, in the San Bernardino Mountains (Thomas Guide Pages 515 & 545). Glen Helen is a 1,340-acre park that features two lakes (referred to as large and small ponds) regularly stocked with trout and catfish for year-round fishing. Aquatic pesticide applications are made for the control of surface weeds, cattails, floating pennywort, nutsedge and grasses. Typical pesticides applied include: Glyphosate and Diquat.

### **10.1.5 Yucaipa Park Lakes**

Yucaipa Regional Park is located in the town of Yucaipa at the base of the Crafton Hills, in the San Bernardino Mountains (Thomas Guide Pages 609 & 649). Yucaipa Regional Park is an 885-acre park that features three lakes regularly stocked with trout for year-round fishing. Aquatic pesticide applications are made for the control of surface weeds, cattails, algae and grasses. Typical pesticides applied include: Copper and Diquat.

### **10.1.6 Lake Gregory**

Lake Gregory Regional Park is located in the city of Crestline, in the San Bernardino Mountains (Thomas Guide Pages 516-517). Lake Gregory is the main feature of the park. Aquatic pesticide applications are made at Lake Gregory for the control of algae and submerged weeds, especially in the swimming area, near the docks, the waterslide intake and outlet and the south wall. Typical pesticides applied include: Copper, Triclopyr, and Diquat.

## 10.2 Monitoring Approach

Since pesticides or other similar chemical components are commonly used in agricultural as well as residential areas, background concentrations may exist prior to, or after, an application event by the District. Each representative monitoring site shall be sampled in multiple locations. Collection of three samples at each representative monitoring site shall take place according to the following:

- Pre-event Background monitoring - Sample upstream or adjacent to the application area at the time of application, or collected at the treatment area just prior to application (up to 24 hours in advance of the application).
- Event monitoring - Sample immediately downstream or adjacent to the treatment area in flowing waters, collected immediately after the application event or shortly after application (after sufficient time has elapsed for treated water to enter the adjacent or downstream area).
- Post-event treatment area monitoring - Sample within the treatment area within one-week after the application event.

Monitoring shall be conducted at a minimum of once per application season at each of the selected monitoring site locations (see section 10.1).

## 10.3 Sample Collection and Analysis

### 10.3.1 Sampling Event Scheduling

Since monitoring will be dependent on times and areas of pesticide application, notification and scheduling are necessary in order to prepare for these monitoring events. The District and Regional Parks usually apply pesticide at least once per application season at the selected monitoring sites. Additional treatments are made on an as-needed basis. The District and Regional Parks shall notify the field sampling crew as early as possible of planned pesticide applications to the selected monitoring sites. When applying pesticide, the District and Regional Parks shall fill out a Pesticide Application Field Log sheet in addition to the Monthly Pesticide Use Report required by the Department of Pesticide Regulation. Monthly Use Reports shall be submitted to the San Bernardino County Agricultural Commissioner (CAC). Both forms are included in Appendix A of this document.

### 10.3.2 Sampling Preparation and Logistics

The following equipment preparation and maintenance activities shall be performed in preparation for each monitoring event. Contractors are hired to do the sampling and monitoring. The field crew shall inventory field equipment and replace items as necessary. All field meters and equipment shall be maintained, serviced, and calibrated at appropriate intervals specified by the manufacturer. A checklist of necessary field equipment is listed in Table 5. The District currently uses the E.S. Babcock & Sons (ESB) laboratory for sample analysis. ESB has been certified by the National Environmental Laboratory Accreditation Program (NELAP #02101CA) since January 2002 and is a member of the California Department of Public Health (CDPH) Environmental Laboratory Accreditation Program (ELAP) Certification (ELAP #2698).

**Table 5. Field Sampling Checklist**

| Available (✓) | Equipment                                 |
|---------------|---|
|               | Grab Sample Bottles                       |
|               | Expandable Grab Sampling Pole             |
|               | Wading Boots                              |
|               | Pencils (2) and Waterproof Markers (2)    |
|               | Powder-free Nitrile Gloves                |
|               | Digital Camera                            |
|               | GPS Unit                                  |
|               | Coolers and Ice                           |
|               | First Aid Kit                             |
|               | Water for Field Blanks                    |
|               | Cellular Phone                            |
|               | Clean Intermediate Containers             |
|               | Ziploc Bags                               |
|               | Field Meters (pH, Conductivity, Temp, DO) |
|               | Garbage Bag                               |
|               | Sample Containers                         |
| Available (✓) | Documents                                 |
|               | APAP                                      |
|               | Area Map (i.e. Thomas Guide)              |
|               | Field Log Book/Sampling Forms             |
|               | Chain of Custody Forms                    |

Bottle orders shall be placed with each analytical lab to conduct analysis prior to the application event. Orders shall include grab sample bottles, ice chests, blank water for field blank generation, and chain of custody forms. Sample bottle labels shall be prepared and applied to sample bottles prior to each monitoring event.

Field personnel shall have a cellular phone or other means of remote communication. This is important for safety as well as for general communication. The field crew shall always have the project contact list in their possession while in the field. The primary users of this Plan include the staff performing field application, sampling, and reporting for this program. The contact information for these staff is listed below in Table 6.

**Table 6. Contact List**

| Name                          | Organization   | Phone        | Email Address                       |
|-------------------------------|--|--------------|-------------------------------------|
| Marc Rodabaugh                | San Bernardino County<br>Flood Control District/<br>Stormwater Program                   | 909-387-8112 | Marc.rodabaugh<br>@dpw.sbcounty.gov |
| Mindy Davis                   | San Bernardino County<br>Flood Control District/<br>Environmental<br>Management Division | 909-387-8116 | Mindy.Davis@dpw.sbcounty.gov        |
| A J Gerber                    | Regional Parks   | 909-387-2410 | agerber@parks.sbcounty.gov          |
| Scott Ryan<br>(Zones 1 & 2)   | Flood Control<br>Operations  | 909-387-8016 | sryan@dpw.sbcounty.gov              |
| Isaias Gomez<br>(Zones 3 & 5) | Flood Control<br>Operations  | 909-387-8070 | igomez@dpw.sbcounty.gov             |
| Ed Hartwell<br>(Zones 4 & 6)  | Flood Control<br>Operations  | 760-949-0478 | ehartwell@dpw.sbcounty.gov          |
| Allen Lampman                 | Pesticide Regulation   | 909-386-8336 | alampman@awm.sbcounty.gov           |
| Emilio Lopez                  | Pesticide<br>Regulation/Pest<br>Management   | 909-387-2131 | elopez@awm.sbcounty.gov             |
| Roberta Willhite              | Pesticide<br>Regulation/Pest<br>Management   | 909-387-2117 | rwillhite@awm.sbcounty.gov          |

### 10.3.3 Field Safety

Safety is a primary concern. If for any reason sample collection appears unsafe, the sampling event shall be delayed or cancelled. Sampling crews shall always consist of a minimum of two people. In general, sampling personnel shall be aware of their surroundings, stay together, and remain watchful of one another. Personnel must pay careful attention to footing during all sample collection activities. Additionally, personnel shall familiarize themselves with the location of local hospitals, in case a medical problem occurs while working in the field. All sampling crews shall have immediate access to a first aid kit while working in the field.

### 10.3.4 Sample Collection Protocol

All water quality sampling activities shall be performed by consultants working for the District. Since sample collection is required just prior to and following pesticide application, Agriculture personnel shall notify the consultant sampling personnel of the time and date for planned application events at the selected monitoring sites, with sufficient advance notice (at least two days prior to planned application). If consultants cannot meet the application schedule, the sampling may be delayed until another application later in the season. Agriculture will continue to notify the consultant sampling personnel of additional applications, until a sampling event has been successfully accomplished.

During each monitoring site visit, the sampling crew shall record visual observations of channel configuration or water body, vegetation, weather, flow conditions, and any other relevant information. The sampling crew shall also note whether there are any irregular discharges, odors

(oil, methane, pesticides, etc), or excessive floating materials that could affect the concentration of targeted constituents. Visual observations shall be recorded in the Monitoring Field Log (Appendix A). Constituents being directly monitored are listed below in Table 8. Sampling quantities and containers required for each target compound are also indicated in Table 8. Digital pictures and GPS coordinates shall also be recorded.

The preferred method for grab sample collection is direct submersion of sample bottles at mid-stream and mid-depth. However, due to monitoring site configurations and safety concerns, direct filling of sample bottles may not always be possible. Monitoring site configuration will dictate grab sample collection technique.

#### **10.3.4.1 Clean Sample Collection Procedures**

“Clean sampling” techniques are required to collect and handle water samples so that contamination, loss, nor change in the chemical form of the constituents of interest occurs. Samples shall be collected using rigorous protocols summarized below:

Samples are collected only into rigorously pre-cleaned or new certified clean sample bottles.

- At least two persons, wearing clean, powder-free nitrile gloves at all times, are required on a sampling crew.
- Clean, powder-free nitrile gloves are changed whenever something not known to be clean has been touched.
- Clean techniques must be employed whenever handling containers or equipment used for collection of samples.
- Water samples are most cleanly obtained by sub-surface grab, using clean powder-free nitrile gloved hands, and facing into a flowing body of water.

To reduce potential sample contamination, sample collection personnel must adhere to the following rules at all times while collecting or handling samples:

- No smoking.
- Wear clean, powder-free, nitrile or similar surgical-quality gloves when handling sample containers.
- Never sample near a running vehicle. Do not park vehicles in immediate sample collection area (even non-running vehicles).
- Minimize the amount of time any sample container is left open.
- Do not set lids down where they may accumulate contaminants.
- Prevent foreign material (blowing dust, leaves, etc.) from entering any open sample container.
- Never touch the inside surfaces of sample bottles or lids, even with gloved hands.
- Sampling personnel shall not be the same as application personnel. Furthermore, sampling personnel shall not be present in the immediate application area during application.
- Any unavoidable potential source of contamination will be noted on the field sampling form.

### 10.3.5 Quality Assurance / Quality Control (QA/QC) Samples

Quality control samples shall be collected during each monitoring event according to the schedule presented in Table 7. Quality control sample results will be used for data evaluation and interpretation. The following quality control samples shall be analyzed during this project:

- Matrix Spike/Matrix Spike Duplicate – Lab may use a field sample
- Field Blank
- Duplicates (field and laboratory)

**Table 7. QA/QC Schedule**

| Sample Collection Location                      | QA/QC                          |
|---|--------------------------------|
| Glen Helen pre-event background                 |                                |
| Glen Helen event                                | Field Blank, Lab Dup, MS/MSD   |
| Glen Helen post-event treatment area            |                                |
| Mission Channel pre-event background            |                                |
| Mission Channel event                           | Field Blank, Field Dup, MS/MSD |
| Mission Channel post-event treatment area       |                                |
| Lake Gregory pre-event background               |                                |
| Lake Gregory event                              | Field Blank, Field Dup, MS/MSD |
| Lake Gregory post-event treatment area          |                                |
| Carbon Canyon Channel pre-event background      |                                |
| Carbon Canyon Channel event                     | Field Blank, Field Dup, MS/MSD |
| Carbon Canyon Channel post-event treatment area |                                |

#### 10.3.5.1 QA/QC Sample Collection Methods

Field blanks shall be collected to check sampling containers and procedures for potential sample contamination. Field blank samples shall be collected immediately prior to the collection of normal grab samples. The field crew shall use blank water provided by the analytical laboratory to fill a sample container according to standard procedures.

Matrix spike and matrix spike duplicate (MS/MSD) analyses shall be requested on the specified sample for each monitoring event (Table 7). MS/MSD analyses QA/QC checks for both precision and accuracy. No special sample collection considerations are required. However, triple the normal sample volume shall be collected.

Field duplicate samples shall be collected at the frequency specified in Table 7 for the purpose of checking variability in sample collection and field sample handling. Field duplicates shall be collected immediately following the collection of normal grab samples.

Laboratory duplicate analysis shall be collected at the frequency specified in Table 7 for the purpose of checking variability in laboratory procedures. No special sample collection considerations are required. However, double the normal sample volume shall be collected.

### 10.3.6 Shipment of Samples

Samples must be capped and refrigerated prior to transport. Coolers with ice will be available in the field to temporarily store samples during transport to the lab. All samples shall be delivered to the analytical laboratory for analysis as quickly as possible in order to assure that holding times are not exceeded. Samples may be held refrigerated or on ice at 40° F for up to 24 hours prior to lab delivery. Chain-of-custody (COC) forms shall be filled out for all samples submitted to the laboratory. Sample date, sample location, and analysis requested shall be noted on each COC. Additionally, QA/QC analysis specified in Table 7 shall be noted on the COC. A blank COC form is included in Appendix A.

### 10.3.7 Analyses of Samples

Water quality analyses required for this program are shown in Table 8. All samples will be analyzed at a laboratory with appropriate analytical capabilities for the substance being sampled. Other approved analytical methods may be substituted for listed methods at the discretion of the analytical lab, provided that it is of sufficient sensitivity.

**Table 8. Constituents and Sampling Parameters**

| Constituent      | Analytical Method | Sample Container | Preservative                         | Maximum Hold Time | Reporting Limit |
|------------------|-------------------|------------------|--------------------------------------|-------------------|-----------------|
| Glyphosate       | EPA 547           | 1 L Amber*       | 4° C                                 | 14 days           | 10 µg/L         |
| Turbidity        | SM2130B           |                  |                                      | 48 hours          | 1 NTU           |
| Total Phenols    | EPA 420.4         | 500 ml Amber*    | 4° C, H <sub>2</sub> SO <sub>4</sub> | 28 days           | 0.02 mg/L       |
| Total Copper     | EPA 200.8         | 1 L Plastic**    | 4° C, HNO <sub>3</sub>               | 6 months          | 10 µg/L         |
| Hardness         | SM3120.B          |                  |                                      | 6 months          | 1 mg/L          |
| Diquat           | EPA 549.1         | 1 L Amber        | 4° C                                 | 7 days            | 10 µg/L         |
| Triclopyr***     | EPA 515.3         | 1 L Amber        | 4° C                                 | 14 days           | 1.0 µg/L        |
| Temperature      | Field Meter       | N/A              | None                                 | Field             | N/A             |
| pH               | Field Meter       | N/A              | None                                 | Field             | N/A             |
| Dissolved Oxygen | Field Meter       | N/A              | None                                 | Field             | N/A             |
| Conductivity     | Field Meter       | N/A              | None                                 | Field             | N/A             |

\* Glyphosate, and turbidity analysis requires only a single 1 liter amber sample bottle; Phenols aliquot can come from the same single liter, with the preservative applied at the lab.

\*\* Total copper and hardness analysis requires only a single 1 liter plastic sample bottle

\*\*\* Triclopyr is analyzed using a modified method for Chlorinated Acid Herbicides

## 10.4 Reporting

Reports shall be submitted annually to each of the three Regional Water Board Executive Officers. Submitted reports shall comply with the provisions of Attachment-D in the General Permit, "Standard Provisions and Reporting for Waste Discharge Requirements". Signatory requirements of the General Permit are detailed in Section B1, "Monitoring and Reporting Requirements / Signatory Requirements".

Monthly Pesticide Use Reports shall be submitted to the San Bernardino County Agricultural Commissioner (CAC).

### 10.4.1 Annual Report

The District shall submit a calendar year annual monitoring data summary report no later than March 1 of the following year. The Annual Report shall contain the following:

1. Executive summary
2. Summary of monitoring data
3. Identification of BMPs
4. Application area map
5. Amounts of aquatic pesticides used at each application event
6. Information used to calculate dosage
7. Sampling results
8. Recommendations
9. Proposed changes

The report shall be submitted to each of the following local Regional Water Board addresses:

#### **Lahontan Regional Water Quality Control Board**

14440 Civic Drive, Suite 200  
Victorville, CA 92392

#### **Colorado Regional Water Quality Control Board**

73-720 Fred Waring Drive, Suite 100  
Palm Desert, CA 92260

#### **Santa Ana Regional Water Quality Control Board**

3737 Main Street, Suite 500  
Riverside, CA 92501

Any person signing a document submitted to the Regional Water Board shall complete 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."

## **10.4.2 Twenty-Four Hour Reporting**

The District shall report to the Regional Water Board any noncompliance that may endanger health or the environment. Any information will be provided orally within 24 hours from the time that the District becomes aware of the circumstances. A written submission will be provided within five days of the time that the District becomes aware of the circumstances. The written submission will contain a description of the noncompliance, 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/or prevent recurrence of the noncompliance.

## Chapter 11

# Gates and/or Control Structures

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Gates and control structures are present in water bodies in San Bernardino County for the purpose of flood control, and have no effect on the treatment areas for the application of aquatic pesticides.

## Chapter 12

# Current and Planned BMPs

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**Spill Prevention and Containment:** Spill prevention and containment is done by stopping the spill at its source, spreading absorbent material immediately if a spill occurs, disposing of the spilled material appropriately, protecting drains and storm sewers from runoff, and contacting the stormwater coordinator regardless of size. If necessary, the fire department and Regional Water Board will also be contacted.

**Product Label Requirements:** Pesticides and herbicides are applied in accordance with California Department of Pesticide requirements. Pesticide use is consistent with the pesticide label instructions and any applicable Use Permits.

**Staff Training:** All certified applicators are required to stay current on pesticide issues through continuing training. Training covers such topics as safe application techniques, environmental protection, proper use of application equipment, applicable laws and regulations, and specifics about the use of aquatic herbicides that are applied.

**Outreach:** The District will coordinate with stakeholders and agencies within the watershed and ensure that beneficial uses of the water (irrigation, drinking water supply, domestic stock water, etc.) are not impacted during the treatment period

**Fish Kill Prevention:** The District will apply pesticides in a manner so as to prevent fish kill, and monitor waters as described in Section 10.2, during treatment periods.

**Certification, Pesticide Labels, and Permits:** Applicators are familiar with Material Safety Data Sheets for all products they will use, and pesticide spill clean-up procedures. A Qualified Applicator Certificate (QAC) Holder must be physically present and available on-site (within the location) to directly manage and control the application of any pesticide by supervising others. The QAC manages and controls the application of pesticides, herbicides, and fertilizers through various verbal channels including direct interaction, telephones, cellular phones, 800 MHz phones, and radios.

**Notification Requirements:** Monthly pesticide use reports (PURs) are maintained which document the amounts and locations of pesticide applications. An open line of communication exists with the San Bernardino County Agricultural Commissioner (CAC) regarding what, why, and how different products are used. Monthly reports of pesticide use are submitted to the San Bernardino CAC.

**Preliminary Site Evaluations:** These are used to determine areas in need of a treatment, location of a treatment site (site suitability), and to identify some of the precautions to be used for a particular type of treatment. The District, in consultation with Agriculture or Regional Parks, considers the different treatment options on an ongoing basis. Weed type and growth stage are also considered in order to help determine the treatment type. This greatly increases the likelihood of achieving a high level of control.

**Secondary Site Evaluations and Pre-Treatment Monitoring:** Some of the factors considered are weed species present, growth stage, weed location, and weed density. These are used to help

determine such things as the appropriate mechanical control measure, herbicide use and application rate, and number of treatment sites needed.

**BMPs Implemented Prior to a Treatment:** Prior to application, the applicator shall check daily weather forecasts to schedule and/or modify the application. If it is raining, or rain is expected within 48 hours after a proposed aquatic pesticide application, the application is canceled. If the wind is high enough to cause significant drift at the start of or during aquatic pesticide application, the application is either delayed or cancelled. If conditions become dusty during an aquatic pesticide treatment, the treatment will be delayed (since dust hinders control). Low-pressures and special nozzles will be used, as needed, to help control drift.

**Post Treatment Assessment:** The evaluation of efficacy is routine, normally starting about one week after application season begins and continuing through the end of the application season. If a treatment is deemed hazardous or ineffective, the District will make corrective changes, eliminate that treatment type from a given area, or totally eliminate a certain type of treatment from the weed control program.

## Chapter 13

# Evaluation of Other Potential BMPs

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Several alternative measures have been investigated, as described in a Section 5 of this document. To date, no acceptable alternatives have been identified. In keeping with adaptive management strategy, the District and Regional Parks shall continue to track and consider potential alternative control measures. When applying algaecides and aquatic herbicides, the minimum amount will be used that is necessary to have an effective control program and is consistent with the algaecide and aquatic herbicide product label requirements. In order to maintain current applicator licenses, Agriculture applicators regularly attend seminars and trade shows. This continued education allows applicators to stay informed regarding the latest technologies and practices, such as the least intrusive methods and chemicals, as well as potential future BMPs.

## Chapter 14

# References

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- Globalsecurity.org, <http://www.globalsecurity.org/military/facility/29palms.htm>, viewed October, 2005
- Lahontan Regional Water Quality Control Board, Watershed Management Initiative Chapter, Revised 2005.
- San Bernardino County, <http://www.co.san-bernardino.ca.us/>, viewed October, 2005.
- Santa Ana Watershed Project Authority, <http://www.sawpa.org/about/watershed.htm#Location>, viewed October, 2005.
- State Water Resources Control Board (State Water Board), 2004, Water Quality Order No. 2004-0009-Dwq, *Statewide General National Pollutant Discharge Elimination System Permit For The Discharge Of Aquatic Pesticides For Aquatic Weed Control In Waters Of The United States* (General Permit No. CAG 990005)

Appendix A  
**Field Forms**

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STATE OF CALIFORNIA  
**MONTHLY SUMMARY PESTICIDE USE REPORT**  
 PR-ENF-060 (REV. 4/92)  
 INSTRUCTIONS FOR COMPLETING THIS FORM ARE INDICATED BELOW

DEPARTMENT OF PESTICIDE REGULATION  
 PESTICIDE ENFORCEMENT BRANCH

|                           |                |                      |               |                   |                              |          |  |              |  |
|---------------------------|----------------|----------------------|---------------|-------------------|------------------------------|----------|--|--------------|--|
| OPERATOR (FIRM NAME)      |                | ADDRESS              |               | CITY              |                              | ZIP CODE |  | PHONE NUMBER |  |
| OPERATOR ID/PERMIT NUMBER | LICENSE NUMBER | COUNTY WHERE APPLIED | COUNTY NUMBER | MONTH/YEAR OF USE | TOTAL NUMBER OF APPLICATIONS |          |  |              |  |

- Complete Columns A, B, C, and D for All Users
- Complete Column E by Using one of the Following Codes
  - Code 10 - Structural Pest Control.....includes any pest control work performed within or on buildings and other structures.
  - Code 30 - Landscape Maintenance Pest Control.....includes any pest control work performed on landscape plantings around residences, or other buildings, golf courses, parks, cemeteries, etc.
  - Code 40 - Right-of-Way Pest Control.....includes any pest control work performed along roadsides, power lines, median strips, ditch banks and similar sites.
  - Code 50 - Public Health Pest Control.....includes any pest control work performed by or under contract with State or local public health or vector control agencies.
  - Code 80 - Vertebrate Pest Control.....includes any pest vertebrate pest control work performed by public agencies or work under the supervision of the State or county agricultural commissioner.
  - Code 91 - Commodity Fumigation (Nonfood/Nonfeed).....includes fumigation of nonfood/nonfeed commodities such as pallets, dunnage, furniture, burlap bags, etc.
  - Code 100 - Regulatory Pest Control.....includes any pest control work performed by public employees or contractors in the control of regulated pests.
- Complete Columns F and G, if Use Does not Fit one of the Above Codes

| A  | B  | C   | D                      | E    | F                         | G                   |
|--|--|---|------------------------|------|---------------------------|---------------------|
| MANUFACTURER AND NAME OF PRODUCT APPLIED | EPA/CALIFORNIA REGISTRATION NUMBER FROM LABEL (INCLUDE ALPHA CODE) | TOTAL PRODUCT USED (Check One Unit of Measure)  | NUMBER OF APPLICATIONS | CODE | COMMODITY OR SITE TREATED | ACRES/UNITS TREATED |
|  | -  | <input type="checkbox"/> LB<br><input type="checkbox"/> OZ<br><input type="checkbox"/> PT<br><input type="checkbox"/> QT<br><input type="checkbox"/> GA |                        |      |                           |                     |
|  | -  | <input type="checkbox"/> LB<br><input type="checkbox"/> OZ<br><input type="checkbox"/> PT<br><input type="checkbox"/> QT<br><input type="checkbox"/> GA |                        |      |                           |                     |
|  | -  | <input type="checkbox"/> LB<br><input type="checkbox"/> OZ<br><input type="checkbox"/> PT<br><input type="checkbox"/> QT<br><input type="checkbox"/> GA |                        |      |                           |                     |
|  | -  | <input type="checkbox"/> LB<br><input type="checkbox"/> OZ<br><input type="checkbox"/> PT<br><input type="checkbox"/> QT<br><input type="checkbox"/> GA |                        |      |                           |                     |
|  | -  | <input type="checkbox"/> LB<br><input type="checkbox"/> OZ<br><input type="checkbox"/> PT<br><input type="checkbox"/> QT<br><input type="checkbox"/> GA |                        |      |                           |                     |
|  | -  | <input type="checkbox"/> LB<br><input type="checkbox"/> OZ<br><input type="checkbox"/> PT<br><input type="checkbox"/> QT<br><input type="checkbox"/> GA |                        |      |                           |                     |
|  | -  | <input type="checkbox"/> LB<br><input type="checkbox"/> OZ<br><input type="checkbox"/> PT<br><input type="checkbox"/> QT<br><input type="checkbox"/> GA |                        |      |                           |                     |
|  | -  | <input type="checkbox"/> LB<br><input type="checkbox"/> OZ<br><input type="checkbox"/> PT<br><input type="checkbox"/> QT<br><input type="checkbox"/> GA |                        |      |                           |                     |

REPORT PREPARED BY \_\_\_\_\_ DATE \_\_\_\_\_

Reports must be submitted to the county agricultural commissioner by the 10th of the month following the month in which the work was performed.

Aquatic Herbicide Application Log  
For San Bernardino County  
Department of Public Works

Date of Application \_\_\_\_\_ Start Time \_\_\_\_\_ End Time \_\_\_\_\_

Facility Number/Name \_\_\_\_\_  
*One Facility per sheet*

Site/Location/Reach Description \_\_\_\_\_  
\_\_\_\_\_

Water Body Type:  Pond  Lake  Basin  Channel  Ditch  Stream

Target:  Algae  Aquatic Weeds (surface)  Aquatic Weeds (submerged)

Other: \_\_\_\_\_

Water Temp (°F or °C) \_\_\_\_\_ Estimated Water Depth (feet or inches) \_\_\_\_\_

**Application Details**

| Product/Reg No.<br>(list each separately) | Quantity<br>(qt, oz, etc.) | Acres Treated | Application Rate<br>(qt/acre, oz/acre, etc.) | Application Method<br>(boom, backpack, etc.) |
|---|----------------------------|---------------|--|--|
|   |                            |               |  |  |
|   |                            |               |  |  |
|   |                            |               |  |  |
|   |                            |               |  |  |
|   |                            |               |  |  |

\*Specify Units

**Visual Observations of Treatment Area**

Aquatic Vegetation (% coverage) \_\_\_\_\_

Appearance of Water:  Clear  Cloudy  Oily  Brown  Green Other: \_\_\_\_\_

Weather Conditions:  Clear  Overcast  Warm  Cool Other: \_\_\_\_\_

**Comments:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

*I certify that this application was made according to the guidelines in the Aquatic Pesticide Application Plan.*

Name of Applicator \_\_\_\_\_ Title \_\_\_\_\_

\_\_\_\_\_  
Signature

Aquatic Herbicide Application Log  
For San Bernardino County  
Regional Parks Department

Date of Application \_\_\_\_\_ Start Time \_\_\_\_\_ End Time \_\_\_\_\_

Park \_\_\_\_\_

Site/Location Description \_\_\_\_\_

Water Body Type:  Pond  Lake  Basin  Channel  Ditch  Stream

Target:  Algae  Aquatic Weeds (surface)  Aquatic Weeds (submerged)

Other: \_\_\_\_\_

Water Temp (°F or °C) \_\_\_\_\_ Estimated Water Depth (feet or inches) \_\_\_\_\_

**Application Details**

| Product/Reg No.<br>(list each separately) | Quantity<br>(qt, oz, etc.) | Acres Treated | Application Rate<br>(qt/acre, oz/acre, etc.) | Application Method<br>(boom, backpack, etc.) |
|---|----------------------------|---------------|--|--|
|   |                            |               |  |  |
|   |                            |               |  |  |
|   |                            |               |  |  |
|   |                            |               |  |  |
|   |                            |               |  |  |

\*Specify Units

**Visual Observations of Treatment Area**

Aquatic Vegetation (% coverage) \_\_\_\_\_

Appearance of Water:  Clear  Cloudy  Oily  Brown  Green Other: \_\_\_\_\_

Weather Conditions:  Clear  Overcast  Warm  Cool Other: \_\_\_\_\_

**Comments:** \_\_\_\_\_

*I certify that this application was made according to the guidelines in the Aquatic Pesticide Application Plan.*

Name of Applicator \_\_\_\_\_ Title \_\_\_\_\_

\_\_\_\_\_  
Signature

# WEED AQUATIC PESTICIDE MONITORING FIELD LOG

Monitoring Site: \_\_\_\_\_ Date: \_\_\_\_\_ Field Personnel: \_\_\_\_\_

GPS Coordinates: \_\_\_\_\_ Photographs Taken : \_\_\_\_\_

Event Type:

Pre-Background  Event  Post-Background  Post-Treatment Area  Post-Downstream

## WATER QUALITY SAMPLES

Sample Collection Time: \_\_\_\_\_ Sample ID(s): \_\_\_\_\_

**Water Quality Samples Collected:**

Glyphosate  Diquat  Copper  Nonylphenol  Turbidity  Hardness

**QA/QC Samples Collected:**

Field Blank  MS/MSD  Field Duplicate  Lab Duplicate

## FIELD MEASUREMENTS

Measurement Time: \_\_\_\_\_ pH: \_\_\_\_\_ Turbidity (NTU): \_\_\_\_\_  Field  Lab

Dissolved Oxygen (mg/L): \_\_\_\_\_ Spec. Cond. ( $\mu\text{S}/\text{cm}$ ): \_\_\_\_\_ Temperature ( $^{\circ}\text{C}$ ): \_\_\_\_\_

## VISUAL OBSERVATIONS

Site Description (pond, lake, channel): \_\_\_\_\_

Observations of Waterway (color, clarity, oil/grease, odors, etc.): \_\_\_\_\_

Weather Conditions (fog, rain, wind, etc.): \_\_\_\_\_

Flow Conditions: (approx. width) \_\_\_\_\_ (approx. depth) \_\_\_\_\_

(approx. velocity): \_\_\_\_\_

Additional Notes/Observations: \_\_\_\_\_

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