

**City of Poway Submission for SIP Section 5.3 Exception for
Use of Copper to Control Aquatic Weeds in Lake Poway**

Water Quality Order No. 2013-002-DWQ

**City of Poway Public Works Department
13325 Civic Center Drive
Poway, CA 92064**

October 28, 2015

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Attachment 1 – Mitigated Negative Declaration and Initial Study/Environmental Checklist (with Appendix A3 only)

Attachment 2 – Lead Agency Notice of Determination and City of Poway Notice of Determination

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Attachment 4 – Lake Poway Aquatic Pesticide Application Plan

1. Description of Proposed Action

The proposed project consists of the occasional application of copper-based algaecides at Lake Poway by the City of Poway (Poway) Public Works Department reservoir operators to control and prevent degradation of water quality in the reservoir resulting from algae blooms, as allowed under Water Quality Order No. 2013-0002-DWQ (as amended by Order No. 2014-0078-DWQ), *Statewide General Permit for Residual Aquatic Pesticide Discharges to Waters of the U.S. from Algae and Aquatic Weed Control* (General Permit), issued by the State Water Resources Control Board (State Board).

Lake Poway is a manmade reservoir used to store some of the untreated water Poway purchases from the San Diego County Water Authority (Water Authority). Most of the untreated water that Poway purchases is diverted from the Water Authority's aqueduct directly into Poway's water treatment plant, where it is treated, stored, and distributed to Poway's municipal customers. Some of this purchased water is diverted to Lake Poway for storage. Poway draws from the reservoir during Water Authority service interruptions or other needs for additional water.

Copper sulfate is applied as needed to Lake Poway in the form of large crystals, which are typically applied by boat as a surface application, at various locations as necessary to prevent blooms from spreading. Citric acid is used in the application as a chelating agent. The need for treatment is based on physical inspections, water quality monitoring, and potential and existing impacts on drinking water quality. Poway uses algaecide consistent with the product label requirements and applies the minimum amount of product that is necessary to be effective. During a single application process, roughly 5 pounds of pesticide per acre-foot of water is used, which averages about 300 pounds of solid crystalline product for each application.

The application of algaecide at Lake Poway may require temporary exceedance of the permitted levels of dissolved copper stated in the General Permit; Poway, as a public water agency that must meet statutory requirements under the federal Safe Drinking Water Act or the California Health and Safety Code, is requesting an exception from the limitations pursuant to Section 5.3 of the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries in California* (the State Implementation Plan, or SIP).

2. Schedule

Poway has used copper sulfate for algae control at Lake Poway since the 1970s, with the frequency depending on when algae blooms occur, typically once per year, between April 1 and October 30. The need for treatment is based on physical inspections, water quality monitoring, and potential and existing impacts on drinking water quality. Poway does not know specifically when it may need to exceed the limitations granted by the exception and the exception is proposed to cover intermittent, periodic discharges that

may occur throughout the year, only when needed. Poway's discharges generally would be a single treatment per event and will dissipate within approximately 1 week.

3. Water Quality Monitoring Plan

Poway will conduct water quality monitoring in accordance with our approved Aquatic Pesticide Application Plan and the requirements of the 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. CAG990005 (Water Quality Order No. 2013-0002-DWQ [as amended by Order No. 2014-0078-DWQ]).

4. California Environmental Quality Act Documentation

A Mitigated Negative Declaration (MND) was prepared to jointly address copper-based algaecide application at reservoirs operated by five water agencies in San Diego County: Olivenhain Reservoir (Water Authority), Lake Jennings (Helix Water District), Lake Poway (City of Poway), San Dieguito Reservoir (Santa Fe Irrigation District), and Sweetwater Reservoir (Sweetwater Authority). The Water Authority served as lead agency pursuant to the California Environmental Quality Act (CEQA). The MND and associated Mitigation Monitoring and Reporting Program (MMRP) were posted on the Water Authority website and the Water Authority published a newspaper advertisement noticing the public review period for the document. The MND was adopted by the Water Authority Board of Directors on May 28, 2015, and a Notice of Determination (NOD) for the joint MND was filed with the County Clerk on June 1, 2015.

Subsequent to the Water Authority's action as lead agency, each of the other four participating agencies, as responsible agencies pursuant to CEQA, took the MND to their decision-making bodies for adoption. The Poway City Council adopted the MND and the MMRP specific to activities at Lake Poway on August 18, 2015, and an NOD specific to Poway was filed with the County Clerk on August 21, 2015. The MND, the Water Authority NOD, and the Poway NOD are included in the attachments.

5. Contingency Plan

If an exception to the General Permit limitations is not granted by the State Board, there is no considerable contingency plan to maintain the quality of its untreated water storage in the event of a serious, uncontrolled algae bloom in Lake Poway. Poway does not have a substantial secondary untreated water storage facility to draw from in the event of a major algae bloom at Lake Poway. Accordingly, Poway's only course of action would be to limit the amount of copper sulfate that they apply to Lake Poway so as to meet the limitations stated in the General Permit.

6. Identification of Alternative Water Supply

There is no alternative storage facility for untreated water purchased by Poway that could be used in the event of an uncontrolled algae bloom in Lake Poway. Lake Poway is

itself an alternative water supply, as discussed above under #1. When the Water Authority aqueduct system is available for deliveries, Poway does not need to draw water from Lake Poway, and algae blooms in Lake Poway would not affect Poway's water deliveries. During Water Authority service interruptions, however, algae blooms at Lake Poway have the potential to adversely affect water quality in Poway's deliveries to its customers, and there is no additional alternative water supply as used for this purpose.

7. Residual Waste Disposal Plans

Algaecide application at Lake Poway is not expected to result in an appreciable amount of residual waste. All chemicals used in the application would be stored, transported, and handled pursuant to all label directions and in accordance with applicable U.S. Environmental Protection Agency requirements. Any unforeseen spills resulting from normal application would only be composed of a small amount of algaecide that would not be significant enough to impact the beneficial use of the reservoir and its surrounding watershed. In the event of a large spill, Poway would contain, clean up, and dispose of spilled algaecide following its procedures provided in Poway's Hazardous Materials Business Plan and the product Material Safety Data Sheet.

Attachment 1

Mitigated Negative Declaration and Initial Study/Environmental Checklist

(with Appendix A3 only, Poway APAP)

**FINAL MITIGATED NEGATIVE DECLARATION AND
INITIAL STUDY/ENVIRONMENTAL CHECKLIST**

**APPLICATION OF COPPER-BASED ALGAECIDES
AT FIVE RESERVOIRS
SAN DIEGO COUNTY CALIFORNIA**

SCH No. 2015031045

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May 2015

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SECTION 1.0 INTRODUCTION

1.1 PROJECT BACKGROUND

The San Diego County Water Authority (Water Authority) and four of its member agencies—Helix Water District (HWD), City of Poway (Poway), Santa Fe Irrigation District (SFID), and Sweetwater Authority (Sweetwater)—have identified the need to occasionally apply copper-based algaecides to their respective surface water reservoirs to control algae blooms. Algae blooms can lead to degradation of drinking water quality through presence of taste and odor compounds and production of algal toxins, and can clog filters in water treatment plants. The subject reservoirs are:

- Olivenhain Reservoir (Water Authority)
- Lake Jennings (HWD)
- Lake Poway (Poway)
- San Dieguito Reservoir (SFID)
- Sweetwater Reservoir (Sweetwater)

These five agencies plan to individually obtain permission from the State Water Resources Control Board (State Board) to apply copper-based algaecide at their reservoirs by qualifying for Water Quality Order No. 2013-0002-DWQ (as amended by Order No. 2014-0078-DWQ), *Statewide General Permit for Residual Aquatic Pesticide Discharges to Waters of the U.S. from Algae and Aquatic Weed Control* (General Permit).¹ All five of the referenced agencies have prepared an Aquatic Pesticide Application Plan (APAP) and submitted a Notice of Intent to the State Board to initiate the permit process. To date, the Water Authority, HWD, Poway, and Sweetwater have received a Notice of Applicability from the State Board approving their APAP; SFID has responded to comments from the State Board and resubmitted their APAP for review.

The General Permit identifies a maximum allowable concentration of certain aquatic pesticide constituents, including copper. Public water agencies may apply to the State Board to obtain a short-term or seasonal exception to the limitations on copper concentration established in the General Permit, pursuant to Section 5.3 of the *Policy for Implementation of Toxic Standards for Inland Surface Waters, Enclosed Bays, and Estuaries in California* (the State Implementation Plan, or SIP). Exceptions to the limitations are allowed if deemed necessary for drinking water sources to meet statutory requirements under the federal Safe Drinking Water Act or the California Health and Safety Code. Section 5.3 of the SIP states that to be considered for an exception, a water agency must provide the following information to the State Board:

1. A detailed description of the proposed action, including the proposed method of completing the action;
2. A time schedule;

¹ A draft order further amending the General Permit was prepared in December 2014, and a public hearing for the order was held on March 3, 2015. The revision proposes to add calcium hypochlorite and sodium hypochlorite as active ingredients; add State Water Board delegation that allows the Executive Director to add (1) active ingredients to the General Permit and (2) agencies to the SIP exception list; add three agencies to the SIP exception list; and modify the SIP exception for the Department of Water Resources.

3. A discharge and receiving water quality monitoring plan (before project initiation, during the project, and after project completion, with the appropriate quality assurance and quality control procedures);
4. California Environmental Quality Act (CEQA) documentation;
5. Contingency plans;
6. Identification of alternate water supply (if needed); and
7. Residual waste disposal plans.

Upon completion of an application, the agency is required provide certification by a qualified biologist that the receiving water beneficial uses have been restored.

Under the current version of the General Permit, 28 agencies statewide are approved for the exception to the receiving water limitations established in the General Permit, as listed in Appendix G of the permit; the amendment proposed in December 2014 would increase that number to 31 agencies. As additional agencies are approved for the exception, the General Permit would be subsequently amended to add them to the list in Appendix G of the permit.

The five water agencies listed above have indicated the current limitation on dissolved copper levels in the General Permit and the resultant allowable amount of the copper-based algaecide they are able to apply has the potential to constrain the effectiveness of algae control at their facilities and lead to diminished drinking water quality that is delivered to consumers. Therefore, the agencies will be submitting the required documentation to the State Board to be considered for approval of the General Permit exemption. This Mitigated Negative Declaration (MND) has been prepared for purposes of the agencies obtaining CEQA documentation compliance, as listed above.

The CEQA “project” addressed in this MND is the application of copper-based algaecides at each of the five listed reservoirs, as implemented by the respective agencies, which may include periodic exceedances of the limitations stated in the General Permit. The Water Authority is the lead agency for CEQA administrative purposes, but does not have discretionary authority over project activities at the other reservoirs; the other four agencies’ decision-making bodies, as Responsible Agencies under CEQA, will separately consider adopting the MND and implementing the project and the mitigation program identified specific to their activities. Aside from this combined MND, each participating agency will be individually responsible for complying with the terms and conditions specified in Section 5.3 of the SIP and in the General Permit as they seek coverage under the General Permit and State Board approval of the SIP limitation exceptions for copper.

The State Board will be a responsible agency under CEQA for this MND, and will be using the document in its review process for considering the agencies’ respective exceptions to the receiving-water limitations stated in the General Permit.

1.2 PROJECT LOCATION AND ENVIRONMENTAL SETTING

The five subject reservoirs are located in the western portion of San Diego County, as shown in Figure 1. Specific discussions of the location of and environmental setting at each reservoir are provided below.

1.2.1 Olivenhain Reservoir

Olivenhain Reservoir is a surface water storage reservoir owned by the Water Authority and located in northern unincorporated San Diego County, near the southwestern boundary of the City of Escondido,

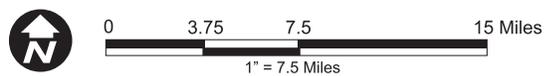
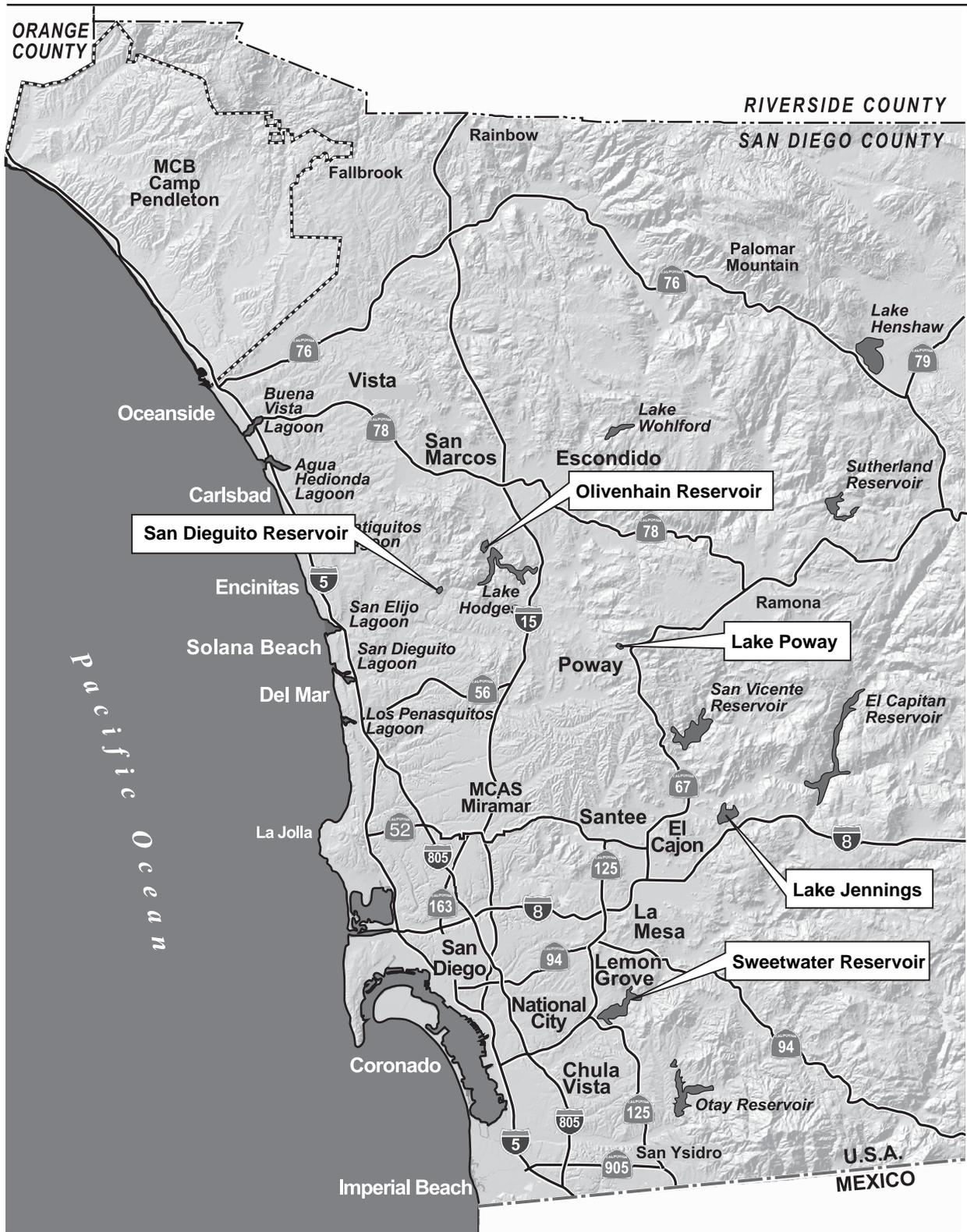


Figure 1
Regional Map

and the far northern reaches of the City of San Diego's incorporated boundaries. The City of Encinitas is approximately 2 miles to the west. Elfin Forest Road provides access to the reservoir and its operations facilities, which are located on the reservoir's southwestern end. Olivenhain Reservoir is approximately 1 mile west of the City of San Diego's Hodges Reservoir, also known as Lake Hodges, which is connected to Olivenhain Reservoir and provides some of the water stored in Olivenhain Reservoir. With storage of approximately 24,400 acre-feet, water in Olivenhain Reservoir is reserved for emergency use throughout the Water Authority's service area (San Diego County Water Authority 2014a). Water stored in Olivenhain Reservoir must be treated before distribution to consumers. Olivenhain Reservoir and the surrounding area are depicted in Figure 2.

Olivenhain Reservoir is surrounded by undeveloped open space of the Elfin Forest Recreational Reserve (Reserve), a 784-acre open space park and recreational area developed by the Water Authority and Olivenhain Municipal Water District (OMWD) in partnership with the U.S. Department of the Interior, Bureau of Land Management, as an element of the Olivenhain Water Storage Project and the Water Authority's Emergency Storage Project biological resources mitigation. The Reserve is owned by the Water Authority and managed by OMWD. A few rural residences are scattered southeast of the reservoir on Mount Israel, and additional residences are located farther east, on the western side of Lake Hodges. Denser residential development in the City of Escondido and unincorporated county begins at a radius of between 2 and 3 miles from the reservoir.

Olivenhain Reservoir is not open for recreational use (San Diego County Water Authority 2014b). However, the Reserve features public picnic areas and approximately 11 miles of trails for hiking, mountain biking, and equestrian use.

1.2.2 Lake Jennings

Lake Jennings is a surface water storage reservoir owned by HWD and located in the unincorporated community of Lakeside, in the central portion of San Diego County, east of the City of Santee. Regional access to the reservoir is provided by Lake Jennings Park Road from Interstate 8. Lake Jennings serves as a short-term storage reservoir for HWD's R. M. Levy Water Treatment Plant, which is on the reservoir's southwest corner. Lake Jennings holds roughly 9,790 acre-feet of water, of which approximately 95% is untreated imported water purchased from the Water Authority. The remaining water comes from ephemeral, unnamed drainages (Helix Water District 2014a). The San Diego River is located approximately 2,000 feet north of Lake Jennings. The reservoir and surrounding area are shown in Figure 3.

Lake Jennings is surrounded by a combination of open space and residential neighborhoods of varying densities, including the Lake Jennings Park Estates mobile home park located on the southern edge of the lake and other single-family residential developments in Lakeside on the west, north, south, and east of the reservoir. Open space is located directly adjacent to the reservoir on the north and east.

Lake Jennings is open to the public year-round for fishing and boating. Swimming and other body contact uses are not allowed. HWD stocks the reservoir with catfish between May and September, and with trout during varying periods depending on water temperature. Stocking schedules are typically every 2 or 3 weeks (Helix Water District 2014b).

1.2.3 Lake Poway

Lake Poway is a surface water storage reservoir owned by Poway and located in the northern portion of the incorporated area. Regional access to the reservoir is provided by Lake Poway Road. The facility is



Source: SANDAG 2012

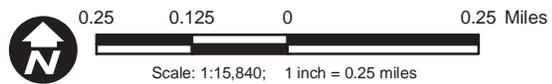
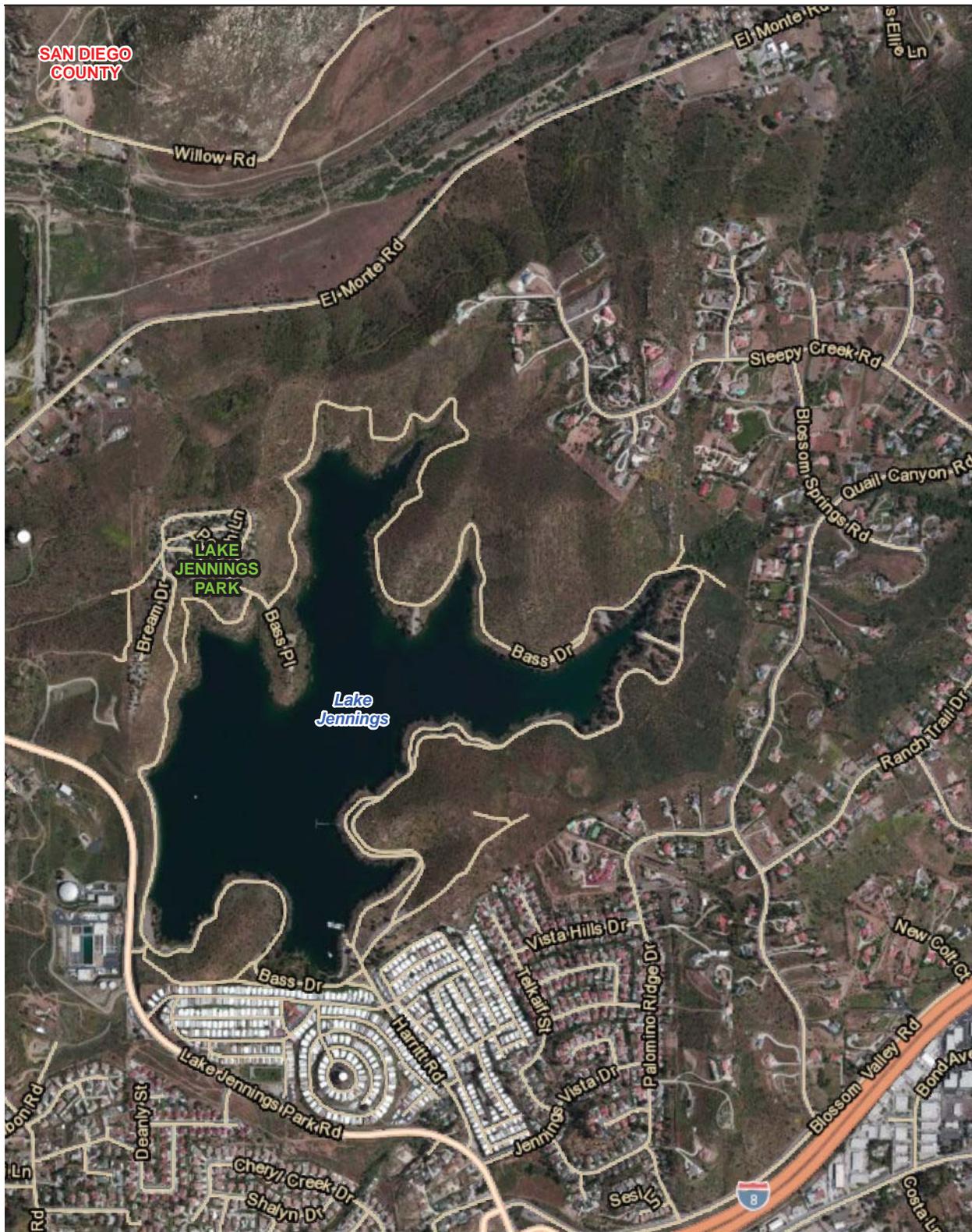


Figure 2
Olivenhain Reservoir

San Diego Reservoirs Copper-Based Algaecide MND

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 Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community; SANDAG 2012

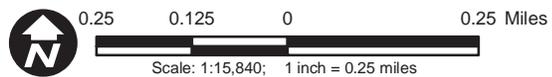


Figure 3
Lake Jennings

San Diego Reservoirs Copper-Based Algaecide MND

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maintained to hold approximately 3,150 acre-feet of water, with an approximately 60-acre surface area. The majority of the water stored in the reservoir is untreated imported water purchased from the Water Authority, although seasonal runoff can also enter the lake through the Boulder Bay stream within Warren Canyon, located east of the reservoir. Water from the reservoir is treated at the Lester J. Berglund Water Treatment Plant, which is located west of the reservoir (City of Poway 2014a). Lake Poway and the surrounding area are depicted in Figure 4.

The Blue Sky Ecological Reserve, a 700-acre open space preserve owned by Poway, is located north and east of Lake Poway. The reservoir directly adjoins to Lake Poway Recreational Area to the east. High-density residential is located to the east of Lake Poway, with lower density housing to the south. Poway High School is located approximately 1 mile southwest of Lake Poway.

Lake Poway is open year-round for fishing Wednesdays through Sundays, sunrise to sunset. Night fishing is available on select nights during the summer. The reservoir is stocked with rainbow trout weekly during the winter, and with channel catfish weekly during the summer. Public rental of rowboats, motorboats, sailboats, and paddle boats is available from a concessionaire, but private boats are not permitted. Swimming and other body contact is not allowed (City of Poway 2014b).

1.2.4 San Dieguito Reservoir

San Dieguito Reservoir is a surface water storage reservoir owned by SFID and located in the northern part of the unincorporated community of Rancho Santa Fe, in the northern part of San Diego County. Access is provided by El Camino del Norte, which runs along the northern side of the reservoir, and El Montevideo and Lago Lindo which runs along the south side of the reservoir. The City of Encinitas is located approximately 1 mile northwest of the reservoir. The facility is an 800-acre-foot terminal reservoir that receives its water from Lake Hodges via the Cielo Pump Station, which is located on Del Dios Highway approximately 2 miles east of the reservoir. San Dieguito Reservoir water is pumped to the R.E. Badger Filtration Plant, which is jointly owned by SFID and the San Dieguito Water District and provides drinking water to both districts (Santa Fe Irrigation District 2014a).

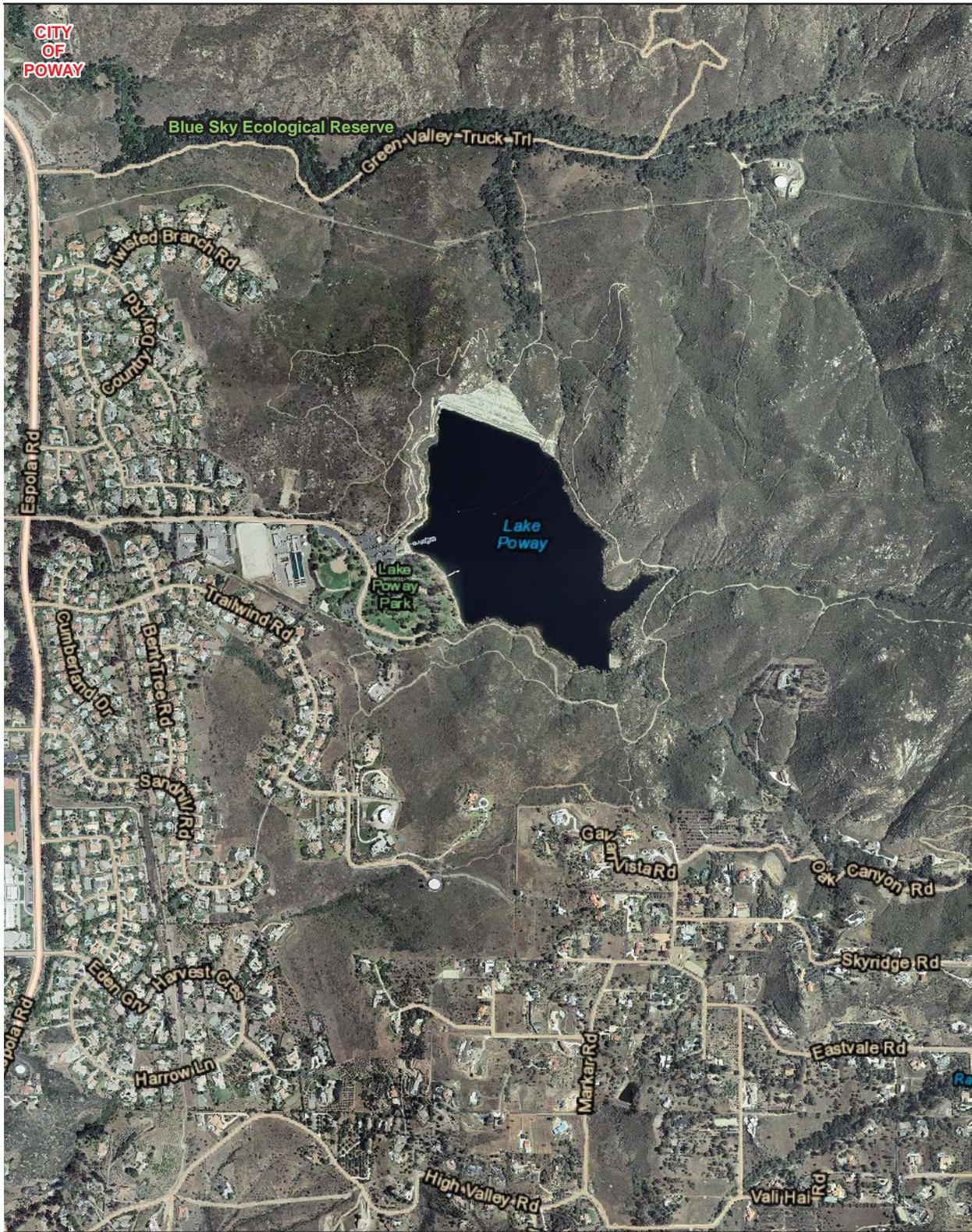
The surrounding areas are composed of rural residential development in the communities of Rancho Santa Fe and Fairbanks Ranch, many with associated agricultural uses. Figure 5 shows the reservoir and its surrounding area.

The reservoir is not open to the public (Santa Fe Irrigation District 2014b).

1.2.5 Sweetwater Reservoir

Sweetwater Reservoir is a surface water storage reservoir owned by Sweetwater and located along the Sweetwater River in southwestern San Diego County, near the unincorporated communities of La Presa to the north and Bonita to the west. The incorporated boundary of the City of Chula Vista is located to the south. The reservoir is directly east of the State Route 54 and State Route 125 interchange. Sweetwater Reservoir has a capacity of approximately 28,100 acre-feet and a maximum surface area of 1,027 acres (Sweetwater Authority 2013).

Sweetwater Summit Regional Park abuts the reservoir's southern bank, and the U.S. Fish and Wildlife Service's (USFWS) 11,152-acre San Diego National Wildlife Refuge is located immediately east of the reservoir. The Sweetwater Summit Regional Park offers trails, picnic areas, and a campground. Additional surrounding uses include single-family residential development to the north and west. The Bonita Golf Club's golf course and the County's Sweetwater Sports Complex are located southwest of the



Source: SANDAG 2012

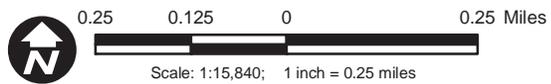
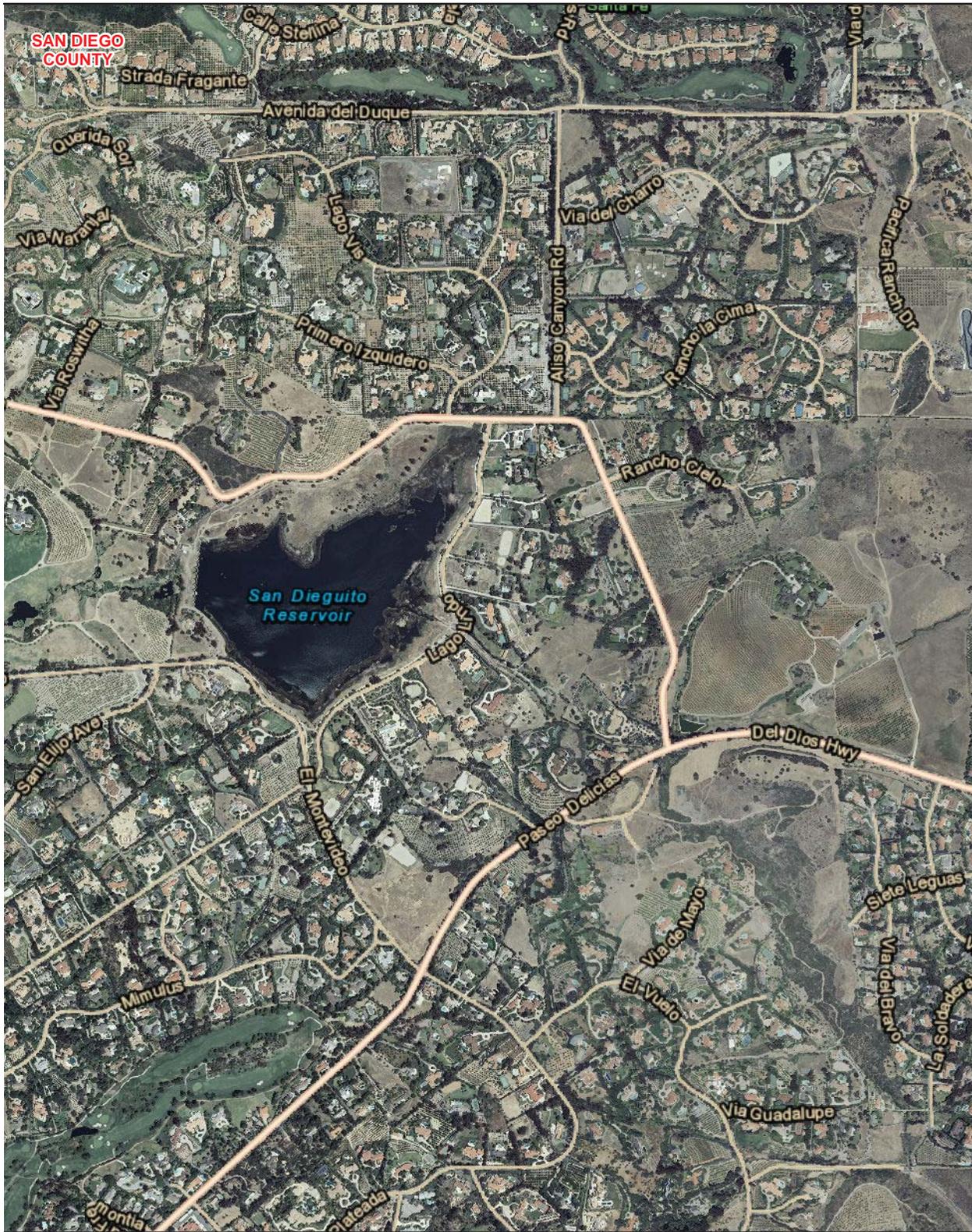


Figure 4
Lake Poway

San Diego Reservoirs Copper-Based Algaecide MND

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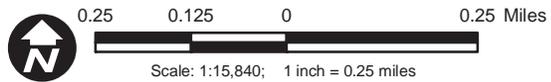


Figure 5
San Dieguito Reservoir

San Diego Reservoirs Copper-Based Algaecide MND

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reservoir, across State Route 125. The Sweetwater Dam, the Robert A. Perdue Water Treatment Plant (PWTP), and Sweetwater's operations building are on the western side of the reservoir. The reservoir and surrounding area are shown in Figure 6.

Sweetwater Reservoir is open to the public 3 days a week year-round for shoreline fishing from a limited area on the reservoir's southern end; no boats or body contact recreational activities are allowed. Sweetwater does not stock the reservoir with fish. A 5-mile riding and hiking trail is also located on the southern border of the lake for pedestrians, bikes, and horses (Sweetwater Authority 2014).

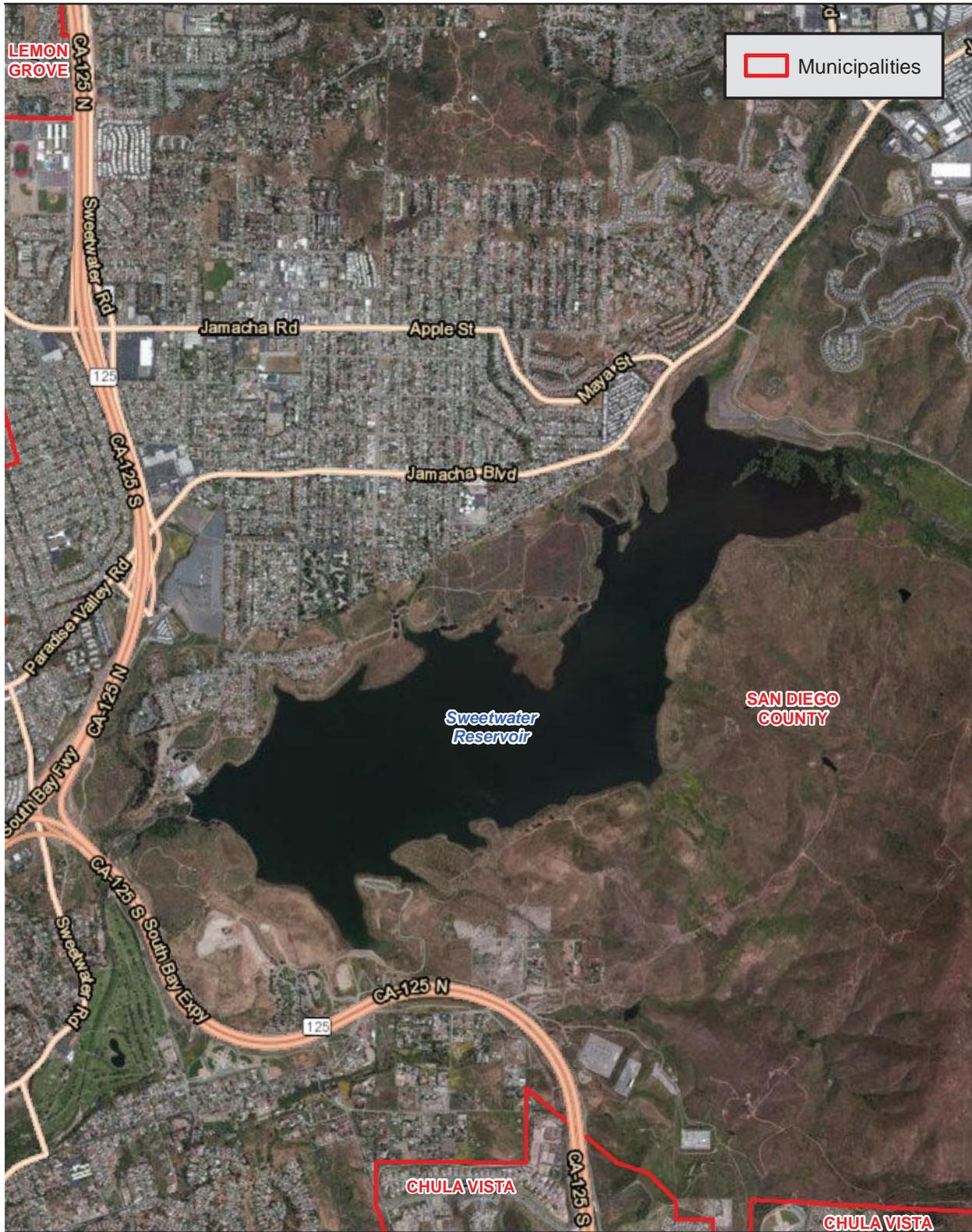
1.3 PROJECT DESCRIPTION

The project entails occasional application of copper-based algaecides at five surface water reservoirs in San Diego County to control and prevent degradation of water quality at those facilities resulting from algae blooms. The five reservoirs are Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, and Sweetwater Reservoir. Algae cause a multitude of water-quality concerns, including the potential to produce taste- and odor-causing compounds and toxins that are potent enough to poison animals and humans. Taste-and-odor compounds cause malodorous or unpalatable drinking water, resulting in increased treatment costs and consumer complaints. In addition, if great masses of algae enter the water treatment plant, the algae can cause operational problems by increasing the amount of suspended material that must be settled out of the water, and excessive algae can lead to water filter clogging. Filter clogging leads to shortened filter run times; this in turn leads to increased electricity and chemical use in the water treatment plant.

The algaecides would be applied at the subject reservoirs pursuant to methods stated in the respective agencies' APAPs, which have been submitted to the State Board for approval of coverage under the General Permit. To date, the Water Authority, HWD, Poway, and Sweetwater have received a Notice of Applicability from the State Board approving their APAP; SFID has responded to comments from the State Board and resubmitted their APAP for review. Each of the five subject agencies has indicated that their periodic treatment of algae may require temporary exceedance of the permitted levels of dissolved copper stated in the General Permit, and the agencies are applying to the State Board for an exception from those copper levels.

The project-related APAPs are included in this MND as Appendix A1 through A5. The requirement to prepare APAPs is described in Section VIII.C of the General Permit, which identifies the following mandatory information:

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 to be used, the method in which they are applied, and 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. Description of the control structure to be used to control the extent of receiving waters potentially affected by algaecide and aquatic herbicide application and the inspection schedule of the control structure to ensure that it is not leaking (if applicable);



Source: SANDAG 2012

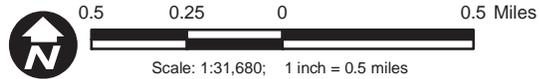


Figure 6
Sweetwater Reservoir

San Diego Reservoirs Copper-Based Algaecide MND

Path: \\ussdg1fp001.na.aecomnet.com\data\projects\2015\60334496_SDCWA_T020\900-CAD-GIS\920 GIS\922_Maps\Sweetwater.mxd, 1/14/2015, jansenn

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 a monitoring program demonstrating compliance with the receiving water limitations, discharge specifications, and other requirements in the General Permit;
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 best management practices (BMPs) to be implemented.
11. Examination of possible alternatives to algaecide and aquatic herbicide use to reduce the need for applying algaecides and herbicides.

The individual project descriptions for each subject reservoir provided below summarize the respective APAPs, augmented with additional information obtained from personal communications with representatives of the participating agencies, if needed.

1.3.1 Olivenhain Reservoir

The Water Authority's APAP, provided as Appendix A1 in this MND, proposes application of copper sulfate if necessary to control nuisance algae blooms. Since the reservoir became operational in 2003, it has not experienced significant algal growth and the Water Authority has not needed to apply chemicals to the reservoir to control algae. However, reservoir staff has started to recognize increased algal growth in recent years, which originates from Lake Hodges water transfers, and the Water Authority is seeking General Permit coverage for algaecide application in case the need arises. If nuisance algae blooms occur at Olivenhain Reservoir, in-situ treatment would be required to ensure the Water Authority's deliveries from the reservoir to its member agencies meet appropriate water quality specifications, primarily to prevent taste- and odor-causing compounds and algal toxins from reaching consumers. The Water Authority's primary response to algae blooms at Olivenhain Reservoir is to select a lower withdrawal elevation on the reservoir's outlet tower to avoid algae blooms that form on the surface. If that option is not available, then the secondary response would be isolating Olivenhain Reservoir from the Water Authority's system and transferring water to its member agencies from another storage point. If regional demands or operational constraints do not allow for the termination of flow from Olivenhain Reservoir, then the Water Authority would consider applying copper-based algaecide.

Pursuant to their APAP, the Water Authority would apply a mixture of copper sulfate pentahydrate crystals and granular citric acid (for chelation purposes) at Olivenhain Reservoir from side hoppers attached to a powerboat. Applications are proposed to occur in the surface water on the reservoir's southwestern side. Application would be performed in a manner consistent with product labeling and would be the minimum amount necessary to be effective; the APAP proposes a rate of approximately 2 pounds of copper sulfate and 1 pound of citric acid per surface acre of treated area. The Water Authority estimates up to 80 pounds of the solid crystalline product would be delivered for a single application.

Three monitoring locations are proposed in the Water Authority's APAP. Prior to an application event (24 hours in advance), background monitoring would be conducted near the application area. Event monitoring samples would be collected immediately after the application from two locations outside of

the treatment area—one near the reservoir’s outlet tower and another near the Lake Hodges inlet/outlet structure. Post-event monitoring samples would be collected inside the treatment area within a week after application. This post-treatment monitoring would also include visual inspection of the treatment area for evidence of fish kills. The Water Authority will post a notification on its website and/or notify impacted member agencies by email, as appropriate, at least 7 days prior to the first algaecide application every calendar year. The notification will conform to the procedures described in Section VIII.B of the General Permit.

1.3.2 Lake Jennings

HWD’s APAP, provided as Appendix A2 in this MND, covers treatment of Lake Jennings for algae with the copper-based algaecide Cutrine Plus, a liquid chelated copper product applied using a boat-mounted spray rig.² Algaecide would be applied to the water in an area adjacent to Chet Harritt Dam and the intake tower to the water treatment plant.

HWD normally prevents and controls algae blooms in Lake Jennings by conventional methods, using a mechanical system that aerates and circulates water. The aeration system consists of an air compressor located on the dam, an air diffuser grid that is located on the lake bottom adjacent to the dam, and an air line that connects the air compressor & diffuser grid. HWD places the aeration system in operation at the beginning of the season when algae blooms commonly occur (typically the summer) and operates the system throughout the season. Algaecide was used infrequently at Lake Jennings in the years before HWD installed and activated the aeration system but has not been used in the past 20 years due to the effectiveness of treatment through aeration. Because Lake Jennings is a water source for HWD’s water treatment plant that produces potable water for its customers, HWD is seeking approval to use algaecide in case a severe algae bloom occurs that is beyond the capability of the aeration system to control. HWD would use algaecide consistent with the product label requirements and apply the minimum amount of product that is necessary to be effective- an estimated range of 2.75 to 11 gallons of the liquid product.

The HWD APAP establishes two monitoring locations—one at an anchored buoy located within the algaecide application area near the dam, and another at an anchored buoy located outside of the treatment area where prevailing winds tend to push surface water at the reservoir. HWD’s monitoring program includes background monitoring within 24 hours before an application event, event monitoring of samples just outside the treatment area immediately after the application event, and post-event monitoring of samples taken within the treatment area up to a week after the application. No public agencies need to be notified of algaecide application at Lake Jennings because HWD is both the discharger and the affected public agency.

1.3.3 Lake Poway

Poway’s APAP, provided as Appendix A3 in this MND, covers treatment of Lake Poway for algae blooms to prevent development of nuisance conditions. Poway has used copper sulfate for algae control since the 1970s, with the frequency depending on when algae blooms occur, typically once per year, between April 1 and October 30. The copper sulfate product is ordered by the pallet and then used as needed. Copper sulfate is applied as needed to Lake Poway in the form of large crystals, which are typically applied by boat as a surface application, at various locations as necessary to prevent blooms from spreading. Citric acid is used in the application as a chelating agent. The need for treatment is based

² The HWD APAP also covers treatment of aquatic weeds such as tamarix, cattails, and tules by spraying herbicides along the edges of Lake Jennings. However, this MND covers only the application of algaecide, as that is the subject of the exception from the permit limitations that HWD is seeking along with the other participating agencies.

on physical inspections, water quality monitoring, and potential and existing impacts on drinking water quality. Poway uses algaecide consistent with the product label requirements and applies the minimum amount of product that is necessary to be effective. During a single application process roughly five pounds of pesticide per acre foot of water is used, which averages about 300 pounds of solid crystalline product for each application.

Poway does not implement any conventional, non-chemical algae treatment at Lake Poway; however, a Poway representative reported that nuisance algae blooms did not occur when they employed methods for controlling invasive quagga mussels and milfoil plants, which were treated by reducing the reservoir's water level and drying out the shoreline for 30 to 40 days (City of Poway 2014b).

Because copper application within Lake Poway is not performed at any specific location within the reservoir, the copper-application monitoring locations will also vary depending on actual application sites. For each application, a treatment map will be developed showing the application area, treatment area, and adjacent untreated area (if applicable), which will be used throughout the monitoring period for each application. Post-application monitoring includes visual monitoring for fish kills. No agencies will be notified of Poway's algaecide application because no other public agencies are expected to be affected.

1.3.4 San Dieguito Reservoir

SFID's APAP, provided as Appendix A4 in this MND, covers treatment of San Dieguito Reservoir for algae blooms that originate at Lake Hodges and that are transferred into the reservoir along with water deliveries via the Cielo Pump Station. SFID implements a Lake Management Program to control algae at San Dieguito Reservoir, with preferred methods being nonchemical solutions such as aeration, water level manipulation, nutrient control, and selective withdrawals from Lake Hodges's three outlets, pulling water from variable depths to minimize algae intake. These strategies are effective at minimizing algae blooms in the reservoir, but SFID often needs to apply algaecide to control major blooms and prevent adverse effects on water quality.

The Cielo Pump Station is equipped with a closed-feed injection system that can release algaecides directly into the water while being pumped from Lake Hodges to San Dieguito Reservoir as necessary. SFID applies a liquid non-chelated copper sulfate product through this method. The injection system allows for safe and effective application of precise amounts and minimizes the potential for worker exposure and spills. The rate of feed for any treatment event is limited to the recommendations on the product label to ensure effectiveness and minimize any unintended effects on non-targeted organisms. Chelated copper application is not necessary at San Dieguito Reservoir because SFID does not apply directly to the reservoir, so the product does not need to remain suspended in reservoir water in order to effectively treat the targeted algae. The volume of liquid algaecide used for an application would depend on the severity of the algal bloom. SFID estimates between 100 to 500 gallons are used per application. The product is ordered in quantities large enough for roughly one year of application events, and is stored on site until it is used. At the end of a treatment event, the system is flushed with water to eliminate any algaecides remaining in the system. This protects the feed system from corrosion and leaks. The liquid copper sulfate containers are stored within a spill catchment that can capture 100% of the chemical available for feed.

The SFID APAP establishes two representative monitoring locations within San Dieguito Reservoir. One location, at the receiving water pipeline on the reservoir's eastern shore, is used for baseline monitoring, conducted within 24 hours before the treatment, and event monitoring, starting immediately after treatment begins. The second location is the San Dieguito Reservoir pump station inlet on the opposite side of the reservoir, which is used for post-event monitoring conducted within a week after treatment

begins. SFID does not notify other agencies of algaecide application at San Dieguito Reservoir because no other public agencies are expected to be affected by this activity.

1.3.5 Sweetwater Reservoir

Sweetwater's APAP, provided as Appendix A5 in this MND, proposes application of copper sulfate when necessary to control nuisance algae blooms for control of taste and odor in their drinking water, and to prevent filter impairment at the PWTP. Sweetwater has been applying copper sulfate for algae control at least since 1986, averaging approximately one treatment per year during the summer, though the frequency and timing of application varies depending on the number of algae blooms per year, the length of the bloom, and the severity of the taste and odor problem that arises. The need for copper application at Sweetwater Reservoir has not arisen since 2009.

Sweetwater prefers to initially handle algae blooms without the use of an algaecide. Alternative methods employed at Sweetwater Reservoir include obtaining water from different levels of the reservoir that are not inhibited by an algae bloom, adding powdered activated carbon to the water treatment process at PWTP, increasing the duration of free chlorine contact with treated water at PWTP, blending treated water with imported water, and waiting for a bloom to die off naturally. The decision to apply copper to the reservoir is made when nuisance algae indicators increase significantly over a short period of time and when other preferred mitigation strategies have not been successful.

The Sweetwater APAP proposes application of a mixture of copper sulfate crystals and granular citric acid (for chelation purposes) at the reservoir from side hoppers attached to a powerboat. Applications are proposed to occur in an even manner throughout the surface of the western side of the reservoir, depending on the location of the bloom, though no more than one-half of the surface of the reservoir would be treated per application. If an additional treatment is necessary, a minimum of 2 weeks would elapse between applications. Application would be performed in a manner consistent with product labeling and would be the minimum amount necessary to be effective; the APAP proposes a rate of approximately 2 pounds of copper sulfate and 1 pound of citric acid per surface acre of treated area. In the past, the average amount of solid crystalline product used has been approximately 1,250 pounds per application.

Monitoring before, during, and after a copper application is proposed to occur at three numbered buoys in the reservoir, to ensure consistency. Buoy #1 is located at the west end of the reservoir, near the Sweetwater Dam and PWTP; Buoy #2 is located in the center of the reservoir's minimum pool area, in the center of the potential application area; Buoy #7 is located near the opening to Gum Tree Cove on the reservoir's northern shore. Prior to an application event (up to 24 hours in advance), background monitoring would be conducted at Buoy #1 and Buoy #2. Event monitoring samples would be collected at Buoy #7 immediately after the application. Post-event monitoring samples would be collected at Buoy #1 and Buoy #2 within a week after application. Post-treatment monitoring would also include visual inspection of the treatment area by a qualified biologist to ensure beneficial uses have not been impacted. Every calendar year, at least 15 days prior to the first algaecide application (if any), Sweetwater will post a notification on its website and/or provide on-site signage (as appropriate) at the fishing program area. The notification will conform to the procedures described in Section VIII.B of the General Permit. No other agencies have rights to the water in the reservoir, and therefore no public agencies need to be notified.

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SECTION 2.0
INITIAL STUDY/ENVIRONMENTAL CHECKLIST FORM

1. Project Title: Application of Copper-Based Algaecides at Five Reservoirs, San Diego County
2. Lead Agency Name and Address: San Diego County Water Authority
4677 Overland Avenue
San Diego, CA 92123
3. Contact Person and Phone Number: Larry Purcell
Water Resources Manager
(858) 522-6752
4. Project Location: Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir
5. Project Sponsor's Name and Address: San Diego County Water Authority
4677 Overland Avenue
San Diego, CA 92123
- Sweetwater Authority
505 Garrett Avenue
Chula Vista, California 91910
- Helix Water District
7811 University Avenue
La Mesa, California 91942
- City of Poway, Public Works Department
13325 Civic Center Drive
Poway, California 92064
- Santa Fe Irrigation District
5920 Linea del Cielo
Rancho Santa Fe, California 92067
6. General Plan Designation: NA
7. Zoning: NA
8. Description of Project:

Please refer to Section 1.3 for a detailed description of the proposed project at each of the subject reservoirs.

9. Surrounding Land Uses and Setting:

Please refer to Section 1.2 for a detailed discussion of the project setting and surrounding land uses.

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below will be potentially affected by this project, involving at least one impact that is "Less Than Significant with Mitigation Incorporated" or a "Potentially Significant Impact" as indicated by the checklist on the following pages.

- Aesthetics
- Agriculture and Forestry Resources
- Air Quality
- Biological Resources
- Cultural Resources
- Geology and Soils
- Greenhouse Gas Emissions
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Mineral Resources
- Noise
- Population and Housing
- Public Services
- Recreation
- Transportation/Traffic
- Utilities and Service Systems
- Mandatory Findings of Significance

DETERMINATION:

On the basis of this initial evaluation:

- I find that the proposed project COULD NOT have a significant effect on the environment, and a Categorical Exemption (Class 2, Section 15302) is the appropriate CEQA documentation.
- I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
- I find that although the proposed project could have a significant effect on the environment, there WILL NOT be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
- I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
- I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated impact" on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
- I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.



Ken Weinberg
Director of Water Resources
San Diego County Water Authority

March 10, 2015
Date

Environmental Impact Evaluation	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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EVALUATION OF ENVIRONMENTAL IMPACTS:

I. Aesthetics

I. AESTHETICS. Would the project:

a) Have a substantial adverse effect on a scenic vista?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

Visible components of the project include occasional operation of boats on existing reservoirs for infrequent algaecide application and monitoring. This activity would not have an aesthetic effect, and would not cause an impact at any scenic vistas that may exist at the subject reservoirs; therefore, no impact would occur.

b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

See the response to I.a) None of the reservoirs are visible from a scenic highway. No impact would result from this project.

c) Substantially degrade the existing visual character or quality of the site and its surroundings?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

See the response to I.a) The use of boats for infrequent application and/or monitoring would not lead to a significant divergence from normal views at the reservoirs, especially for those that allow recreational boating, and the visible components of this project would have no impact. The application of the algaecides would result in the reduction or removal of algae blooms, which typically occur below the water surface, so their removal generally would not be visible to reservoir users. Therefore, the project would have no impact.

d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

The proposed project would not introduce any new source of light to the project area. Additionally, project activities would occur only during daylight hours and would not require any nighttime lighting in order to be carried out. Therefore, no impact would occur.

Environmental Impact Evaluation

Potentially Significant Impact
 Less Than Significant with Mitigation Incorporated
 Less Than Significant Impact
 No Impact

II. AGRICULTURE AND FORESTRY RESOURCES.

II. Agriculture and Forestry Resources

Would the project:

a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

The proposed project activities would not convert or alter Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. All activities would occur within the reservoir and have no impact on agricultural resources.

b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

No Williamson Act contract lands occur within the project area and no agricultural uses would be displaced as a result of the project. Therefore, no related impact would occur.

c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section (4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

No forest land, timberland, or Timberland Production lands occur within the project area. Therefore, no related impact would occur.

d) Result in the loss of forest land or conversion of forest land to non-forest use?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

See II.c) above. Because no forest land exists in the project area, no related impact would occur.

Environmental Impact Evaluation	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

Application of algaecides to the reservoirs would not lead to changes in the environment that would convert Farmland to non-agricultural use or forest-land to non-forest use. The algaecides would be applied directly to the water and would affect only the algae in the water. Therefore there is no impact.

III. AIR QUALITY.

III. Air Quality

Would the project:

a) Conflict with or obstruct implementation of the applicable air quality plan?			X	
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

The proposed project would involve the infrequent use of delivery trucks for transportation of algaecides to the subject reservoirs and the use of boats for application and monitoring. Applications would entail a single delivery truck trip to the respective reservoir’s operations facility, and operation of a single boat to apply the product, except at San Dieguito Reservoir, where copper is applied through an in-line injection system, and operation of a single boat for pre- and post-application monitoring. The use of this equipment would be sporadic and last for a short duration of time. Any emissions release from the project equipment would be negligible. Therefore, project implementation would not conflict with or obstruct implementation of the applicable air quality plan. This impact is less than significant.

b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?			X	
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

See III.a) above. Project activities would result in minimal vehicle emissions from trucks and boats for the transportation and application of the algaecide and monitoring in the reservoirs. Application events would not occur often, and would not result in long-term emissions. Therefore, this impact would be less than significant.

Environmental Impact Evaluation

Potentially Significant Impact
 Less Than Significant with Mitigation Incorporated
 Less Than Significant Impact
 No Impact

c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?			X	
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

See III.a) and III.b) above. Project-related emissions would be negligible and would not contribute considerably to a net increase for any criteria pollutants in the San Diego region. This impact is less than significant.

d) Expose sensitive receptors to substantial pollutant concentrations?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

Sensitive receptors include residences, schools, playgrounds, child care centers, athletic facilities, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes. The nearest sensitive receptors to the proposed project are residential properties scattered around the reservoirs and park uses adjacent to certain reservoirs. The algaecides would be applied directly to the reservoirs in either a solid or liquid form, and would not contribute to air contaminants. Spray application at Lake Jennings are not conducted when winds exceed 10 miles per hour in order to ensure maximum control of the Cutrine Plus application and prevent any spray clouds from escaping the treatment zone. Minimal amounts of exhaust would be created by trucks and boats during the application and monitoring process at the reservoirs, but this would not create a substantial amount of pollutants in the area that would be received by these receptors. Therefore, no impact would occur.

e) Create objectionable odors affecting a substantial number of people?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

Exhaust odors would be emitted by trucks and boats during algaecide application. However, the exhaust is highly diffusive and would be created only in minimal amounts in isolated incidents, so nearby receptors would not be significantly affected. Copper sulfate and citric acid are odorless substances. Furthermore, the algaecides are being applied to reduce or remove algae in the reservoirs, which would also reduce the objectionable odors created by nuisance algae. Therefore, no impact would occur.

Environmental Impact Evaluation

Potentially Significant Impact
 Less Than Significant with Mitigation Incorporated
 Less Than Significant Impact
 No Impact

IV. BIOLOGICAL RESOURCES. Would the project:

a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?			X	
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To assess the potential for the project to result in a significant impact on sensitive plant or wildlife species, AECOM first conducted a search of the California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDDB), generating a separate list for each subject reservoir and a surrounding 1-mile radius around the edge of respective reservoir. Sensitive species identified in the database include species listed as endangered or threatened pursuant to the federal Endangered Species Act or California Endangered Species Act, rare plant species identified by the California Native Plant Society, and species listed as State Species of Special Concern by CDFW. AECOM reviewed the search results and then considered the potential for each of the identified species to be present within or adjacent to the reservoir such that they would be likely to come into contact with reservoir water, based on a review of SANDAG regional vegetation mapping to characterize the actual habitats present on-site. For those species that were considered to have potential to occur at the reservoirs based on habitat presence, AECOM considered the potential for these species to be significantly affected by copper application activities, including the temporary increase in copper concentrations in reservoir water. The analysis focused on species that would have the potential to reside or forage in the reservoirs or in wetland habitat on the edges of the reservoirs, because those would be the species that would have the most potential to come into contact with elevated copper levels during and after application. Upland species that are not known to be active in these wetland habitats or to forage in open water were removed from consideration because they would be unlikely to come into contact with elevated copper levels. The analysis concluded that while several special-status species may occur at or adjacent to the reservoirs, the project’s impact would be less than significant because these species would not have the potential come into contact with harmful concentrations of copper. The results are summarized below for each subject reservoir.

Copper treatments at the subject reservoirs would result in short-term increases in dissolved copper in the reservoir water. Copper would not be applied directly to land or at the edges of reservoirs. As stated in the General Permit, the registration process for pesticides in California includes evaluation of a product’s chemical data by EPA and the California Department of Pesticide Regulation “to ensure that a product used according to label instructions will cause no harm or adverse impact on non-target organisms that cannot be reduced or mitigated with protective measures or use restrictions.” The copper-based products discussed in this MND are algaecides with approved registration labels that explicitly allow direct application to water bodies.

According to the U.S. Environmental Protection Agency’s (EPA) “Copper Facts” sheet (EPA 2008), copper can be toxic in high concentrations, but it is also an important essential trace element for terrestrial animals, and many terrestrial animals have the ability to cope with some amount of excess copper exposure by storing it in the liver and bone marrow. The factsheet states that copper is highly toxic to most aquatic species, with the main cause of copper toxicity to fish and aquatic invertebrates being

through rapid binding of copper to the gill membranes, which causes damage and interferes with osmoregulatory processes. However, the long-term biological impacts when copper is applied to reservoirs in the amounts needed to control algae are lessened, because the applied copper settles out of the water as it is taken up by the targeted algae and becomes bound to the bottom sediments, where it is biologically unavailable to organisms that are active within the reservoir water. Settlement rates for copper are dependent on several different factors, including water temperature, turbidity, pH, dissolved solids in the water, and oxidation reduction potential. The EPA states that copper strongly absorbs to organic matter, carbonates, and clay, thereby reducing the bioavailability of copper (EPA 2015). While copper has the ability to bioconcentrate in certain fish organs, the EPA considers this to have a low potential to occur in the quantities applied for algaecide purposes. Bioavailability of copper in bottom sediments is highly variable, and appears to be correlated with sediment characteristics, including pH, sediment particle size, cation exchange capacity, and other factors (Willis 2012). The three participating agencies that allow fishing at their reservoirs for recreational purposes—HWD, Poway, and Sweetwater—have not observed fish kill incidents after copper application and have no records that such fish kills have occurred in the past (Helix Water District 2015; City of Poway 2015; Sweetwater Authority 2015).

Olivenhain Reservoir

The CNDDDB search conducted for Olivenhain Reservoir identified eight special-status plant species and 12 special-status wildlife species based on the species’ regional distribution, as shown in Table 1.

Table 1: CNDDDB Search Results at Olivenhain Reservoir

Common Name	Scientific Name	Status	Habitat	Habitat is not Present in Project Area; Species Eliminated from Further Consideration	Habitat is Present in Project Area
PLANTS					
Encinitas baccharis	<i>Baccharis vanessae</i>	CNPS-1, SE, FT	Low-growing chaparral dominated by chamise; in Encinitas region, grows nearby Del Mar manzanita, Mojave yucca, and mission manzanita	X	
felt-leaved monardella	<i>Monardella hypoleuca ssp. lanata</i>	CNPS-1	Chaparral understory, beneath mature strands of Chamise in xeric conditions	X	
Orcutt's brodiaea	<i>Brodiaea orcuttii</i>	CNPS-1	Vernally moist grasslands, mima mound topography, and periphery of vernal pools	X	

Common Name	Scientific Name	Status	Habitat	Habitat is not Present in Project Area; Species Eliminated from Further Consideration	Habitat is Present in Project Area
Robinson's pepper-grass	<i>Lepidium virginicum</i> var. <i>robinsonii</i>	CNPS-1	Openings in chaparral and sage scrub, away from coast in foothill elevations; typical sites are relatively dry and exposed	X	
San Diego sagewort	<i>Artemisia palmeri</i>	CNPS-4	Coastal sage scrub, riparian scrub or woodland communities, and chaparral below 1970 feet, also along drainages	X	
sea dahlia	<i>Leptosyne maritima</i>	CNPS-2	coastal sage scrub, within coastal bluffs	X	
summer holly	<i>Comarostaphylis diversifolia</i> ssp. <i>diversifolia</i>	CNPS-1	Southern mixed chaparral, on mesic north-facing slopes	X	
wart-stemmed ceanothus	<i>Ceanothus verrucosus</i>	CNPS-2	Coastal chaparral with chamise and Mission Manzanita	X	
REPTILES					
coast horned lizard	<i>Phrynosoma blainvillii</i>	CSSC	Lowlands along sandy washes with scattered low bushes	X	
coast patch-nosed snake	<i>Salvadora hexalepis virgultea</i>	CSSC	Coastal slope with coastal sage scrub, chaparral, riparian, grasslands, and agricultural fields, but with open habitat with friable or sandy soils, but with some cover	X	
coastal whiptail	<i>Aspidoscelis tigris stejnegeri</i>		Deserts and semiarid habitats from sea-level to 7000 feet, often associated with dense vegetation like chaparral and sage scrub around sandy washes and streambeds	X	
orange-throated whiptail	<i>Aspidoscelis hyperythra</i>	CSSC	Coastal chaparral and thornscrub, within washes, streams, terraces, and other sandy areas associated with some perennial plants	X	
red-diamond rattlesnake	<i>Crotalus ruber</i>	CSSC	Chaparral, coastal sage scrub, along creek banks, and in granite rock outcrops or piles of debris	X	

Common Name	Scientific Name	Status	Habitat	Habitat is not Present in Project Area; Species Eliminated from Further Consideration	Habitat is Present in Project Area
western pond turtle	<i>Emys marmorata</i>	CSSC	Slow moving rivers, streams, and ponds with emergent marsh vegetation without dense canopy, with protruding rocks, vegetation mats, or submerged logs for sunning	X	
BIRDS					
coastal California gnatcatcher	<i>Poliophtila californica californica</i>	FT, CSSC	Diegan coastal sage scrub, dominated by California sagebrush and flat-top buckwheat	X	
southern California rufous-crowned sparrow	<i>Aimophila ruficeps canescens</i>	CSSC	Grassy or rocky slopes with open scrub at elevations from sea level to 2000 feet; most populations occur in coastal sage scrub	X	
MAMMALS					
Dulzura pocket mouse	<i>Chaetodipus californicus femoralis</i>	CSSC	Coastal sage scrub, chaparral, woodlands, and grasslands, often at the scrub-grassland interface	X	
northwestern San Diego pocket mouse	<i>Chaetodipus fallax fallax</i>	CSSC	Open habitats of coastal sage scrub, sage scrub/grassland ecotones,	X	
San Diego desert woodrat	<i>Neotoma lepida intermedia</i>	CSSC	Habitats with patches of prickly pear or cholla, or with rock outcrops or low shrubs	X	
western mastiff bat	<i>Eumops perotis californicus</i>	CSSC	Areas with caves, rock crevices, or abandoned buildings		X

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ST = State Listed as Threatened

SCSC = State Listed Species of Concern

CNPS-1 = California Native Plant Society Listed Rare, Threatened, or Endangered in CA only

CNPS-2 = California Native Plant Society Listed Rare, Threatened, or Endangered

CNPS-4 = California Native Plant Society Listed as Limited Distribution

Of these species identified in the CNDDDB search, AECOM concluded that none of the plant species has the potential to exist in or adjacent to the reservoir because these species are found in sage scrub and chaparral habitat, which would not be affected by copper application at Olivenhain Reservoir. Therefore,

the project would not have a significant impact on any of the special-status plant species identified for Olivenhain Reservoir.

One of the 12 CNDDDB wildlife species for Olivenhain Reservoir—the western mastiff bat (*Eumops perotis californicus*)—was identified as having potential to use the reservoir as a drinking water source. Western mastiff bat is a CDFW State Species of Special Concern, though it is not a covered species under the Water Authority’s Natural Communities Conservation Plan/Habitat Conservation Plan (NCCP/HCP). This bat species typically inhabits areas featuring caves, rock crevices, or even abandoned buildings, but is also known to forage over 15 miles from its roost sites and drink from large water impoundments. Western mastiff bat’s preferred prey consists of terrestrial invertebrates, so this species is not likely to forage for food on Olivenhain Reservoir, but western mastiff bat has the potential to drink from Olivenhain Reservoir. However, this species is not likely to be affected by increased copper concentrations at Olivenhain Reservoir. If western mastiff bat drinks from the reservoir, it would do so from the reservoir’s immediate surface, which would only experience high concentrations of copper immediately following an application, before the chemical would start sinking and mixing with subsurface water. Since algaecide applications at Olivenhain Reservoir would be performed during the day, when western mastiff bat is inactive, the species would not be present to experience an extended exposure to high concentrations of the chemical. Therefore, the western mastiff bat is not likely to ingest large concentrations of copper, and the project would not have a significant impact on this species.

No other special-status species would have the potential to be affected by algaecide application at Olivenhain Reservoir. Therefore, the project would have a less than significant impact at Olivenhain Reservoir.

Lake Jennings

The CNDDDB search conducted for Lake Jennings identified four special-status plant species and 16 special-status wildlife species based on the species’ regional distribution, as shown in Table 2.

Table 2: CNDDDB Search Results at Lake Jennings

Common Name	Scientific Name	Status	Habitat	Habitat is not Present in Project Area; Species Eliminated from Further Consideration	Habitat is Present in Project Area
PLANTS					
Abrams' spurge	<i>Chamaesyce abramsiana</i>	CNPS-2	Creosote Bush Scrub, sandy flats and open areas	X	
decumbent goldenbush	<i>Isocoma menziesii</i> var. <i>decumbens</i>	CNPS-1	Coastal Sage Scrub, intermixed with grassland, wetland-riparian, more partial to clay soils	X	

Common Name	Scientific Name	Status	Habitat	Habitat is not Present in Project Area; Species Eliminated from Further Consideration	Habitat is Present in Project Area
delicate clarkia	<i>Clarkia delicata</i>	CNPS-1	Periphery of oak woodlands and cismontane Chaparral haunts, partially shaded by tree canopy or large shrubs, and typically mesic situations	X	
Ramona horkelia	<i>Horkelia truncata</i>	CNPS-1	Chamise Chaparral, Foothill Woodland	X	
REPTILES					
coast horned lizard	<i>Phrynosoma blainvillii</i>	CSSC	Lowlands along sandy washes with scattered low bushes	X	
Coronado Island skink	<i>Plestiodon skiltonianus interparietalis</i>	CSSC	Wide variety ranging from coastal sage, chaparral, oak woodlands, pinon-juniper, riparian woodlands, and pine forests, restricted to more mesic micro-habitats	X	
orange-throated whiptail	<i>Aspidoscelis hyperythra beldingi</i>	CSSC	Coastal chaparral and thornscrub, within washes, streams, terraces, and other sandy areas associated with some perennial plants	X	
rosy boa	<i>Charina trivirgata</i>		Dry rocky brushlands and arid habitats, usually near intermittent streams, also needs vegetation or rock outcrops for shelter	X	
silvery legless lizard	<i>Anniella pulchra pulchra</i>	CSSC	Veg communities include coastal dunes, chaparral, pine-oak woodland, and streamside growth of sycamores, cottonwoods, or oaks, with loose, moist, warm soil for burrowing, underneath leaf litter for cover	X	
BIRDS					
coastal cactus wren	<i>Campylorhynchus brunneicapillus sandiegensis</i>	CSSC	Coastal sage scrub with extensive stands of prickly pear or cholla cacti	X	
coastal California gnatcatcher	<i>Polioptila californica californica</i>	FT, CSSC	Diegan coastal sage scrub, dominated by California sagebrush and flat-top buckwheat	X	

Common Name	Scientific Name	Status	Habitat	Habitat is not Present in Project Area; Species Eliminated from Further Consideration	Habitat is Present in Project Area
southern California rufous-crowned sparrow	<i>Aimophila ruficeps canescens</i>	CSSC	Grassy or rocky slopes with open scrub at elevations from sea level to 2000 feet; most populations occur in coastal sage scrub	X	
yellow-breasted chat	<i>Icteria virens</i>	CSSC	Riparian woodland with dense undergrowth	X	
MAMMALS					
American badger	<i>Taxidea taxus</i>	CSSC	Level and open areas in grasslands, agricultural areas, and open shrub habitats	X	
big free-tailed bat	<i>Nyctinomops macrotis</i>	CSSC	Pinyon-juniper and Douglas fir forests, chaparral and oak forests in the mountains and foothills where rocky cliffs and crevices are present	X	
pallid bat	<i>Antrozous pallidus</i>	CSSC	Caves, mines, crevices, and abandoned buildings as roost sites	X	
San Diego black-tailed jackrabbit	<i>Lepus californicus bennettii</i>	CSSC	Typical habitats include early stages of chaparral, open coastal sage scrub, and grasslands near the edges of brush; needs some open land with some shrubs for cover	X	

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CNPS-4 = California Native Plant Society Listed as Limited Distribution

Of the four plant species identified in the CNDDDB search, AECOM concluded that none of the species have the potential to exist in or adjacent to the reservoir because these species are found in creosote scrub, sage scrub, woodlands, and chaparral habitat, which would not be affected by copper application at Lake Jennings. Therefore, the project would not have a significant impact on any of the special-status plant species identified for Lake Jennings.

Of the 16 wildlife species identified in the CNDDDB search for Lake Jennings, AECOM concluded that none of the species have potential to be present in or adjacent to the reservoir such that they could be exposed to elevated copper levels during or after algaecide application. Two State Species of Special Concern bat species—big free-tailed bat (*Nyctinomops macrotis*) and pallid bat (*Antrozous pallidus*)—

were identified in the CNDDDB search, but unlike the western mastiff bat mentioned above in the Olivenhain Reservoir discussion, these species do not have high potential to use Lake Jennings as a water source, and they are not likely to forage on the reservoir. Therefore, the project would not result in a significant impact on sensitive species.

No other special-status species would have the potential to be affected by algaecide application at Lake Jennings. Therefore, the project would have a less than significant impact at Lake Jennings.

Lake Poway

The CNDDDB search conducted for Lake Poway identified three special-status plant species and three special-status wildlife species based on the species' regional distribution, as shown in Table 3.

Table 3: CNDDDB Search Results at Lake Poway

Common Name	Scientific Name	Status	Habitat	Habitat is not Present in Project Area; Species Eliminated from Further Consideration	Habitat is Present in Project Area
PLANTS					
delicate clarkia	<i>Clarkia delicata</i>	CNPS-1	Periphery of oak woodlands and cismontane Chaparral haunts, partially shaded by tree canopy or large shrubs, and typically mesic situations	X	
Robinson's pepper-grass	<i>Lepidium virginicum</i> var. <i>robinsonii</i>	CNPS-1	Openings in chaparral and sage scrub, away from coast in foothill elevations; typical sites are relatively dry and exposed	X	
San Diego sagewort	<i>Artemisia palmeri</i>	CNPS-4	Coastal sage scrub, riparian scrub or woodland communities, and chaparral below 2000 feet, also along drainages	X	
BIRDS					
coastal California gnatcatcher	<i>Poliophtila californica californica</i>	FT, CSSC	Diegan coastal sage scrub, dominated by California sagebrush and flat-top buckwheat	X	
southern California rufous-crowned sparrow	<i>Aimophila ruficeps canescens</i>	CSSC	Grassy or rocky slopes with open scrub at elevations from sea level to 2000 feet; most populations occur in coastal sage scrub	X	
MAMMALS					
San Diego desert woodrat	<i>Neotoma lepida intermedia</i>	CSSC	Habitats with patches of prickly pear or cholla, or with rock outcrops or low shrubs	X	

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SE = State Listed as Endangered
 ST = State Listed as Threatened
 SCSC = State Listed Species of Concern
 CNPS-1 = California Native Plant Society Listed Rare, Threatened, or Endangered in CA only
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 CNPS-4 = California Native Plant Society Listed as Limited Distribution

Of these species identified in the CNDDDB search, AECOM concluded that none of the plant species has the potential to exist in or adjacent to the reservoir because these species are found in sage scrub and chaparral habitat and at the edges of oak woodland habitat, none of which would be affected by copper application at Lake Poway. Therefore, the project would not have a significant impact on any of the special-status plant species identified for Lake Poway.

Similarly, none of the three wildlife species identified in the Lake Poway CNDDDB search were considered to have potential to be present in or adjacent to the reservoir such that they could be exposed to elevated copper levels during or after algaecide application. Therefore, the project would not result in a significant impact on sensitive species.

No other special-status species would have the potential to be affected by algaecide application at Lake Poway. Therefore, the project would have a less than significant impact at Lake Poway.

San Dieguito Reservoir

The CNDDDB search conducted for San Dieguito Reservoir identified 11 special-status plant species and three special-status wildlife species based on the species' regional distribution, as shown in Table 4.

Table 4: CNDDDB Search Results at San Dieguito Reservoir

Common Name	Scientific Name	Status	Habitat	Habitat is not Present in Project Area; Species Eliminated from Further Consideration	Habitat is Present in Project Area
PLANTS					
California adolphia	<i>Adolphia californica</i>	CNPS-2	Within Diegan Sage scrub, also peripheral of chaparral habitats on hillsides near creeks	X	
Nuttall's scrub oak	<i>Quercus dumosa</i>	CNPS-1	Lowlands from sea level to 1000 feet in open chaparral and coastal sage scrub,	X	
Orcutt's brodiaea	<i>Brodiaea orcuttii</i>	CNPS-1	Vernally moist grasslands, mima mound topography, and periphery of vernal pools	X	

Common Name	Scientific Name	Status	Habitat	Habitat is not Present in Project Area; Species Eliminated from Further Consideration	Habitat is Present in Project Area
Orcutt's spineflower	<i>Chorizanthe orcuttiana</i>	CNPS-1, SE, FE	Coastal sage scrub and coastal chaparral openings and mesas in chamise, with loose sandy substrate	X	
Palmer's grapplinghook	<i>Harpagonella palmeri</i>	CNPS-4	clay soils and bums below 3260 feet as well as open grassy slopes or open Diegan Sage Scrub	X	
San Diego goldenstar	<i>Bloomeria clevelandii</i>	CNPS-1	Valley grasslands coastal sage scrub, and chaparral, near Mima mound topography or vicinity of vernal pools	X	
San Diego marsh-elder	<i>Iva hayesiana</i>	CNPS-2	Creeks or intermittent streambeds, open riparian canopy to allow sunlight, sandy alluvial embankments with cobbles		X
San Diego sagewort	<i>Artemisia palmeri</i>	CNPS-4	Coastal sage scrub, riparian scrub or woodland communities, and chaparral below 2000 feet, also along drainages		X
sticky dudleya	<i>Dudleya viscida</i>	CNPS-1	Shallow soils and cracks on vertical rock faces, steep canyon slopes	X	
summer holly	<i>Comarostaphylis diversifolia</i> ssp. <i>Diversifolia</i>	CNPS-1	Southern mixed chaparral, on mesic north-facing slopes	X	
wart-stemmed ceanothus	<i>Ceanothus verrucosus</i>	CNPS-2	Coastal chaparral with chamise and Mission Manzanita	X	
BIRDS					
coastal cactus wren	<i>Campylorhynchus brunneicapillus sandiegensis</i>	CSSC	Coastal sage scrub with extensive stands of prickly pear or cholla cacti	X	
coastal California gnatcatcher	<i>Poliptila californica californica</i>	FT, CSSC	Diegan coastal sage scrub, dominated by California sagebrush and flat-top buckwheat	X	
MAMMALS					
Dulzura pocket mouse	<i>Chaetodipus californicus femoralis</i>	CSSC	Coastal sage scrub, chaparral, woodlands, and grasslands, often at the scrub-grassland interface	X	

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Of the 11 special-status plant species identified in the CNDDDB search, AECOM concluded that two of the plant species—San Diego marsh-elder (*Iva hayesiana*) and San Diego sagewort (*Artemisia palmeri*)—have the potential to exist adjacent to the reservoir based on the presence of suitable wetland habitat, as mapped in the SANDAG regional vegetation data. San Diego marsh-elder is an evergreen herbaceous perennial shrub that occupies the margins of permanent alkaline streams and playas near the coast. San Diego sagewort is a perennial deciduous shrub that occupies drainages and riparian scrub from the foothills to the coast. Both of these plants are considered sensitive by the California Native Plant Society due to their limited distribution and threats from water channelization and coastal development. These plants are terrestrial species that may be found in or near drainages that lead into San Dieguito Reservoir. They are not found in open water, so they are unlikely to become inundated by copper-treated water that enters the reservoir after injection at the Cielo Pump Station. Furthermore, the EPA has determined that copper sulfate does not pose a risk to freshwater vascular plants or estuarine/marine plants (EPA 2008), so the potential exposure of these plants to copper as a result of the project would not create a significant impact.

None of the three wildlife species identified in the San Dieguito Reservoir CNDDDB search were considered to have potential to be present in or adjacent to the reservoir such that they could be exposed to elevated copper levels during or after algaecide application. Therefore, the project would not result in a significant impact on sensitive species.

No other special-status species would have the potential to be affected by algaecide application at San Dieguito Reservoir. Therefore, the project would have a less than significant impact at San Dieguito Reservoir.

Sweetwater Reservoir

The CNDDDB search conducted for Sweetwater Reservoir identified 23 special-status plant species and 28 special-status wildlife species based on the species' regional distribution, as shown in Table 5. In addition to the 28 wildlife species identified in the CNDDDB search, AECOM considered two more species based on input from Sweetwater biologists regarding special-status species known to occur near the Sweetwater Reservoir.

Table 5: CNDDDB Search Results at Sweetwater Reservoir

Common Name	Scientific Name	Status	Habitat	Habitat is not Present in Project Area; Species Eliminated from Further Consideration	Habitat is Present in Project Area
PLANTS					
California adolphia	<i>Adolphia californica</i>	CNPS-2	Within Diegan Sage scrub, also peripheral of chaparral habitats on hillsides near creeks	X	
chaparral ragwort	<i>Senecio aphanactis</i>	CNPS-2	Coastal sage scrub, cismontane woodland and alkaline flats	X	
Dean's milk-vetch	<i>Astragalus deanei</i>	CNPS-1	Open coastal sage scrub, chaparral, or southern oak woodland on dry hillsides between 805 and 1126 feet	X	
decumbent goldenbush	<i>Isocoma menziesii</i> var. <i>decumbens</i>	CNPS-1	Coastal Sage Scrub, intermixed with grassland, wetland-riparian, more partial to clay soils		X
desert bedstraw	<i>Galium proliferum</i>	CNPS-2	Creosote Bush Scrub, Joshua Tree Woodland	X	
felt-leaved monardella	<i>Monardella hypoleuca</i> ssp. <i>lanata</i>	CNPS-1	Chaparral understory, beneath mature strands of Chamise in xeric conditions	X	
Laguna Mountains jewelflower	<i>Streptanthus bernardinus</i>	CNPS-4	Chaparral, Yellow Pine Forest	X	
mud nama	<i>Nama stenocarpum</i>	CNPS-2	Muddy embankments of ponds, lakes, and rivers		X
Munz's sage	<i>Salvia munzii</i>	CNPS-2	Coastal sage scrub below 1640 feet in elevation	X	
Otay manzanita	<i>Arctostaphylos otayensis</i>	CNPS-1	Dry slopes in chaparral on metavolcanic peaks, shallow soils with exposed rock flake, endemic to Otay mountain sites	X	
Otay Mountain ceanothus	<i>Ceanothus otayensis</i>	CNPS-1	Xeric chamise chaparral, restricted to metavolcanic and gabbroic peaks	X	
Otay tarplant	<i>Deinandra conjugens</i>	CNPS-1, SE, FT	Fractured clay soils in grasslands or lightly vegetated Diegan sage scrub	X	
Palmer's grapplinghook	<i>Harpagonella palmeri</i>	CNPS-4	clay soils and bums below 3280 feet as well as open grassy slopes or open Diegan Sage Scrub	X	
Parry's tetracoccus	<i>Tetracoccus dioicus</i>	CNPS-1	Low-growing chamise chaparral, with moderately dense canopy cover	X	

Common Name	Scientific Name	Status	Habitat	Habitat is not Present in Project Area; Species Eliminated from Further Consideration	Habitat is Present in Project Area
purple stemodia	<i>Stemodia durantifolia</i>	CNPS-2	Riparian habitats, on wet sand or rocks, drying streambeds lower than 1300 feet	X	
Robinson's pepper-grass	<i>Lepidium virginicum</i> var. <i>robinsonii</i>	CNPS-1	Openings in chaparral and sage scrub, away from coast in foothill elevations; typical sites are relatively dry and exposed	X	
San Diego ambrosia	<i>Ambrosia pumila</i>	CNPS-1, FE	Valleys or disturbed areas below 470 feet, usually creek beds, seasonally dry drainages, and floodplains		X
San Diego barrel cactus	<i>Ferocactus viridescens</i>	CNPS-2	Diegan sage scrub hillsides; crest of slopes and growing in cobbles, periphery of vernal pools, slopes below 4922 feet	X	
San Diego goldenstar	<i>Bloomeria clevelandii</i>	CNPS-1	Valley grasslands coastal sage scrub, and chaparral, near Mima mound topography or vicinity of vernal pools	X	
San Diego marsh-elder	<i>Iva hayesiana</i>	CNPS-2	Creeks or intermittent streambeds, open riparian canopy to allow sunlight, sandy alluvial embankments with cobbles		X
San Diego thorn-mint	<i>Acanthomintha ilicifolia</i>	CNPS-1, SE, FT	Grassy openings in chaparral or sage scrub with friable or broken clay soils, in clay depressions on mesas	X	
spreading navarretia	<i>Navarretia fossalis</i>	CNPS-1, FT	Vernal pools and vernal swales, ditches and other artificial depressions below 1475 feet	X	
variegated dudleya	<i>Dudleya variegata</i>	CNPS-1	Openings in sage scrub and chaparral, isolated rocky substrates in open grasslands, proximity to vernal pools	X	
INVERTEBRATE					
Hermes copper butterfly	<i>Lycaena hermes</i>		Chaparral or coastal sage scrub with redberry	X	
San Diego fairy shrimp	<i>Branchinecta sandiegonensis</i>	FE	Vernal pools on mesas and in roadsides ditches and tire ruts that are shallow	X	
Thorne's hairstreak	<i>Callophrys thornei</i>		Requires Tecate cypress (<i>Cupressus forbesii</i>) as a host plant for reproduction. Known remaining populations are within the BLM Otay Mountain Wilderness.	X	

Common Name	Scientific Name	Status	Habitat	Habitat is not Present in Project Area; Species Eliminated from Further Consideration	Habitat is Present in Project Area
Western beach tiger beetle	<i>Cicindela latesignata latesignata</i>		Coastal habitats consisting of salt flats associated with estuaries.	X	
Western tidal-flat tiger beetle	<i>Cicindela gabbii</i>		Salty coastal habitats including salt marsh, tidal flats, and beaches.	X	
AMPHIBIANS					
arroyo toad	<i>Anaxyrus californicus</i>	FE, CSSC	Gravelly or sandy washes, stream and river banks, and arroyos; adults burrow in upland habitat near washes and streams		X
Western spadefoot toad	<i>Spea hammondi</i>	CSSC	Prefers sandy or gravelly soil in grasslands, open chaparral, and pine-oak woodlands. Breeds in vernal pools and ephemeral ponds.		X
REPTILES					
coast horned lizard	<i>Phrynosoma blainvillii</i>	CSSC	Lowlands along sandy washes with scattered low bushes		X
orange-throated whiptail	<i>Aspidoscelis hyperythra</i>	CSSC	Coastal chaparral and thornscrub, within washes, streams, terraces, and other sandy areas associated with some perennial plants		X
Coastal whiptail	<i>Aspidoscelis tigris stejnegeri</i>	CSSA	Occurs in a variety of habitats, including chaparral, mixed chaparral, desert scrub, alkali scrub, and annual grassland.	X	
red-diamond rattlesnake	<i>Crotalus ruber</i>	CSSC	Chaparral, coastal sage scrub, along creek banks, and in granite rock outcrops or piles of debris		X
Rosy boa	<i>Charina trivirgata</i>	CSSA	Sparsely distributed in desert and chaparral habitats.		X
San Diego ringnecked snake	<i>Diadophis punctatus similis</i>	CSSA	Most common in rocky areas within valley-foothill, mixed chaparral, and annual grassland habitats.	X	
Western pond turtle	<i>Emys marmorata</i>	CSSC	Slow moving rivers, streams, and ponds with emergent marsh vegetation without dense canopy, with protruding rocks, vegetation mats, or submerged logs for sunning		X

Common Name	Scientific Name	Status	Habitat	Habitat is not Present in Project Area; Species Eliminated from Further Consideration	Habitat is Present in Project Area
BIRDS					
coastal cactus wren	<i>Campylorhynchus brunneicapillus sandiegensis</i>	CSSC	Coastal sage scrub with extensive stands of prickly pear or cholla cacti	X	
coastal California gnatcatcher	<i>Poliophtila californica californica</i>	FT, CSSC	Diegan coastal sage scrub, dominated by California sagebrush and flat-top buckwheat	X	
Bell's sage sparrow	<i>Artemisiospiza belli belli</i>	CSWL	Coastal sage scrub and open chaparral habitats.	X	
California horned lark	<i>Eremophila alpestris actia</i>	CSWL	Inhabits sandy ocean or bay shores, grasslands, and open scrublands and woodlands with low, sparse vegetation.	X	
Cooper's hawk	<i>Accipiter cooperii</i>	CSWL (nesting)	Uncommon migrant and winter visitor to woodlands, parks, and residential areas.		X
Double-crested cormorant	<i>Phalacrocorax auritus</i>	CSWL	Found near fresh and saltwater near coastline, inshore waters, beaches, inland rivers, and lakes.		X
Least Bell's vireo	<i>Vireo bellii pusillus</i>	FE, SE, CSSC	Summer resident of low riparian growth in the vicinity of water or in dry river bottoms. Nests are placed along the margins of bushes, usually <i>Salix</i> , <i>Baccharis</i> , or <i>Prosopis</i> .		X
Southern California rufous-crowned sparrow	<i>Aimophila ruficeps canescens</i>	CSWL	Uncommon to fairly common localized resident of sage scrub on steep rocky slopes.	X	
Southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	FE, SE	Typically nests in riparian woodlands that are marshy or at water's edge.		X
Swainson's hawk	<i>Buteo swainsoni</i>	ST	In southern California, now mostly limited to spring and fall transient. Breeds and roosts in open stands of trees in juniper-sage flats, riparian areas, and in oak savannah. Forages in adjacent grasslands or suitable agricultural fields, or livestock pastures.	X	
Tricolored blackbird	<i>Agelaius tricolor</i>	SE, CSSC (nesting colony)	Localized resident; nests in large, dense colonies in freshwater marsh; forages in agricultural areas, lakeshores and damp lawns.		X

Common Name	Scientific Name	Status	Habitat	Habitat is not Present in Project Area; Species Eliminated from Further Consideration	Habitat is Present in Project Area
Yellow warbler	<i>Setophaga petechia</i>	CSSC (nesting)	Occupies marshes, swamps, streamside groves, willow and alder thickets, open woodlands with thickets, orchards, gardens, and open mangroves.		X
Yellow-breasted chat	<i>Icteria virens</i>	CSSC (nesting)	The breeding population is confined to riparian woodlands in the coastal lowlands.		X
MAMMALS					
American badger	<i>Taxidea taxus</i>	CSSC	Primarily uses drier, relatively open stages of scrub, forest, and herbaceous habitats that have friable soils.	X	
Pocketed free-tailed bat	<i>Nyctinomops femorosaccus</i>	CSSC	Rare in California, but where it is present, the species' habitat preference includes pinyon-juniper woodlands, desert scrub, desert succulent shrub, desert riparian, desert wash, alkali desert scrub, Joshua tree, and palm oasis.		X
San Diego black-tailed jackrabbit	<i>Lepus californicus bennettii</i>	CSSC	Habitats include coastal sage scrub, chaparral, and grasslands.	X	

FE = Federally Listed as Endangered
 FT = Federally Listed as Threatened
 SE = State Listed as Endangered
 ST = State Listed as Threatened
 CSSC = State Listed Species of Concern
 CSWL = State Watch List
 CSSA = State Special Animal

CNPS-1 = California Native Plant Society Listed Rare, Threatened, or Endangered in CA only
 CNPS-2 = California Native Plant Society Listed Rare, Threatened, or Endangered
 CNPS-4 = California Native Plant Society Listed as Limited Distribution

Of the 23 special-status plant species identified in the CNDDDB search, AECOM concluded that three species are known to exist at the Sweetwater reservoir. These include San Diego marsh-elder (*Iva hayesiana*), decumbent goldenbush (*Isocoma menziesii* var. *decumbens*), and mud nama (*Nama stenocarpum*). One other species that appeared in the CNDDDB search, San Diego ambrosia (*Ambrosia pumila*), has the potential to occur at the reservoir based on the presence of suitable wetland habitat, as mapped in the SANDAG regional vegetation data. San Diego marsh-elder is an evergreen herbaceous perennial shrub that occupies the margins of permanent alkaline streams and playas near the coast. Decumbent goldenbush is a low-growing perennial evergreen shrub that occupies chaparral and coastal

scrub. Mud nama is a low-growing annual plant found in marshes, swamps, and lake margins. San Diego ambrosia is a low-growing evergreen rhizomatous perennial shrub that occurs most frequently on alluvial soils in valleys and floodplains that are seasonally dry. These plants are all terrestrial species that may be found in or near drainages that lead into Sweetwater Reservoir or, in the case of mud nama, on the reservoir's muddy embankments. They do not grow in open water, so they are unlikely to become inundated by copper-treated water in the reservoir. Furthermore, the EPA has determined that copper sulfate does not pose a risk to freshwater vascular plants or estuarine/marine plants (EPA 2008), so the potential exposure of these plants to copper as a result of the project would not create a significant impact.

Fifteen of the 30 wildlife species identified in the Sweetwater Reservoir CNDDDB search and identified by Sweetwater biologists were considered to have potential to be present in habitat immediately adjacent to the reservoir. Seven of these species are reptiles, including the following: coast horned lizard (*Phrynosoma blainvillii*), orange-throated whiptail (*Aspidoscelis hyperythra*), red-diamond rattlesnake (*Crotalus ruber*), and western pond turtle (*Emys marmorata*) (all CDFW State Species of Special Concern), as well as coastal whiptail (*Aspidoscelis tigris stejnegeri*), rosy boa (*Charina trivirgata*), and San Diego ringnecked snake (*Diadophis punctatus similis*) (CDFW State Special Animals). With the exception of the western pond turtle and red-diamond rattlesnake, they are primarily terrestrial species that would typically not enter the reservoir water, and their target prey base consists of terrestrial invertebrates and rodents, so they are not likely to have any exposure to copper-treated water as a result of the project. While the western pond turtle would be expected to occasionally enter the reservoir, it spends the majority of the time in streams, secluded ponded areas, or in basking habitat along the edge of streams and is unlikely to occur in the open water areas that are treated with copper. The red-diamond rattlesnake has been documented swimming in open water, but this behavior is not a regular or common occurrence. The potential for this species to be swimming in the application area on the reservoir's western side is very limited, and it is unlikely this species would come into contact with copper-treated water. Additionally, the rosy boa and the coast horned lizard have also been documented in the upper riparian zone at Sweetwater Reservoir, but this habitat is distant from the areas of copper-based algacide application and the potential for these species to come into contact with copper-treated water is very limited. Therefore, the project's impact on these special-status reptile species is less than significant.

Two amphibian species with potential to occur in aquatic habitats adjacent to the reservoir are arroyo toad (*Bufo californicus*) and the western spadefoot toad (*Spea hammondi*). The arroyo toad is a species listed by USFWS as endangered pursuant to the federal Endangered Species Act, and is listed as a CDFW State Species of Special Concern. Outside of the arroyo toad's springtime breeding season, which is from March 1 through June 30, this species inhabits uplands areas with moist soils, typically in the interface between upland and riparian areas near streams. During the breeding season, arroyo toads enter slow-moving streams with adjacent sandbars, where quiet backwaters are available for egg laying. The species does not enter open water. Formerly occupied arroyo toad habitat is located upstream of the Sweetwater Reservoir along the Sweetwater River. The habitat is largely over-grown and arroyo toad has not been detected for many years. The western spadefoot toad is a CDFW State Species of Special Concern. This species occupies moist upland burrows for the majority of the year, only entering shallow rain-filled pools and ponds during the breeding season. Western spadefoot toad would not be expected to occur within the open water of the reservoir. Copper application at Sweetwater Reservoir would occur in open water, and high concentrations of copper would not migrate to formerly occupied arroyo toad or western spadefoot

toad habitat upstream of the reservoir. Therefore, the project would not result in a significant impact on arroyo toad or western spadefoot toad.

Thirteen special-status bird species are known to occur in the vicinity of the Sweetwater Reservoir, all of which have affinities for the various upland and/or wetland vegetation communities within the study area (Table 5, "BIRDS"). Six of those 13 bird species are terrestrial species that would not enter the reservoir water, and their target prey base consists of terrestrial invertebrates and rodents, so they are not likely to have any exposure to copper-treated water as a result of the project. These six birds are coastal cactus wren (*Campylorhynchus brunneicapillus sandiegensis*) (State Species of Concern), coastal California gnatcatcher (*Polioptila californica californica*) (Federally-listed threatened, and a State Species of Concern), Bell's sage sparrow (*Artemisiospiza belli belli*) (State Watch List), California horned lark (*Eremophila alpestris actia*) (State Watch List), southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*) (State Watch List), and Swainson's hawk (*Buteo swainsoni*) (State-listed threatened). Therefore, the project's impact on these special-status reptile species is less than significant.

The other seven bird species are also terrestrial but are strongly associated with riparian and wetland vegetation communities associated with the Sweetwater reservoir. These are double-crested cormorant (*Phalacrocorax auritus*) (State Watch List), least Bell's vireo (*Vireo bellii pusillus*) (Federally and State-listed endangered, and a State Species of Concern), southwestern willow flycatcher (*Empidonax traillii extimus*) (Federally and State-listed endangered), tricolored blackbird (*Agelaius tricolor*) (State-listed endangered, and State Species of Concern), Cooper's hawk (*Accipiter cooperii*) (State Watch List), yellow warbler (*Setophaga petechia*) (State Species of Concern), and yellow-breasted chat (*Icteria virens*) (State Species of Concern). With the exception of the double-crested cormorant, these bird species would not be expected to swim, wade, or forage in the reservoir. In the case of the double-crested cormorant, the proposed application locations would be located away from potential rookery sites. Rookeries are colonial nests, and the double-crested cormorant builds their nests from twigs and branches, on cliff ledges, in trees, or occasionally on the ground; as such, rookeries would typically be near but not on water. Additionally, the activities associated with the application of algaecide would be expected to flush the cormorant away from the treated area. Once applied, copper sulfate quickly hydrolyzes and moves down the water column, and the likelihood of direct contact with avian species would be minimized. Terrestrial wildlife species have mechanisms for sequestering and/or eliminating some excess copper levels (EPA 2008). In order to minimize ecological risk and to avoid exposing terrestrial wildlife to high concentrations of copper that could have adverse effects, the EPA requires strict labeling and application guidelines associated with copper pesticides and algaecides, including weather restrictions and steps to minimize spray drift (EPA 2008), which will be strictly adhered to by Sweetwater pursuant to their APAP. Therefore, the project would have a less than significant impact on avian species at Sweetwater Reservoir.

Of the three special-status mammal species documented in the CNDDDB query, only the pocketed free-tailed bat (*Nyctinomops femorosaccus*) would be expected to utilize the aquatic habitat of the Sweetwater Reservoir. The species is a State Species of Concern, and would be expected to fly over the reservoir during nighttime foraging, to skim the surface while drinking water. Since the application of algaecide would occur during daytime hours, the pocketed free-tailed bat would not be present when copper sulfate is being dispersed, or when the compound is at the surface of the reservoir. The other two mammal species identified in the CNDDDB query are the American badger (*Taxidea taxus*) and San Diego black-

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	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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tailed jackrabbit (*Lepus californicus bennettii*), which are both terrestrial species that would not be expected to enter the reservoir. Therefore, the application of copper sulfate is not expected to result in significant impacts to mammal species at the Sweetwater Reservoir site.

b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?			X	
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

The project does not entail vegetation clearing or other activities that could have an adverse effect on riparian habitats or other sensitive natural communities. Project-related application of algaecide would occur in open water at surface water reservoirs or, in the case of San Dieguito Reservoir, through direct injection at the Cielo Pump Station, which then pumps water into a surface water reservoir. Applied copper settles out of water as it is taken up by the targeted algae and becomes bound to bottom sediments. Therefore, significant amounts of copper would not migrate into wetland habitat that exists at the fringes of the subject reservoirs. Furthermore, the EPA has determined that copper sulfate does not pose a risk to freshwater vascular plants or estuarine/marine plants (EPA 2008), so the potential copper exposure to plants that form these wetland communities would not create a significant impact.

Provision IX.4.b of the General Permit requires public entities who obtain an exception to the receiving water limitations on copper concentration to provide certification by a qualified biologist that beneficial uses of receiving waters have been restored upon completion of an algaecide application. This observation and certification process would be incorporated into the monitoring and reporting protocol for all five agencies addressed in this MND. If unforeseen situations arise in which the beneficial uses of receiving waters are adversely affected following an application, then provision IX.5.b of the General Permit requires the agency to implement corrective action by revising its application process and control measures to ensure that the situation is eliminated and will not be repeated in the future.

c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

The project does not propose direct removal, filling, hydrological interruption, or other disturbance of wetlands or jurisdictional waters. Therefore, no impact would occur.

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 Less Than Significant Impact
 No Impact

d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

The project does not entail new construction or modification of existing features that could affect wildlife movement. Therefore, no impact would occur.

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

There are no local policies or ordinances pertaining to biological resources that would apply to algae treatment activity at the subject reservoirs. Therefore, no impact would occur.

f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?				X
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Olivenhain Reservoir

The Water Authority conducts capital improvement projects and operations and maintenance (O&M) work within its system pursuant to the Water Authority NCCP/HCP, which was adopted in December 2010 (San Diego County Water Authority 2010). The Water Authority NCCP/HCP is a comprehensive program designed in conjunction with CDFW and USFWS to (1) facilitate conservation and management of plan-specified covered species and habitats associated with Water Authority activities, and (2) contribute to ongoing regional conservation efforts. Section 5.2.14 of the Water Authority NCCP/HCP identifies pest control, including pesticide application, as a covered activity, but does not specify aquatic pest control at Olivenhain Reservoir as part of this activity (nor does it preclude such activity). The project is limited to occasional O&M work at the reservoir that would not have any direct impact on habitat, nor would it result in take of any covered species. Therefore, the project would not rely on the permits for habitat impacts or species impacts obtained by the Water Authority as part of the NCCP/HCP process, and NCCP/HCP reporting is not required for project-related activities at Olivenhain Reservoir. The project would not conflict with provisions of the Water Authority NCCP/HCP, and there would be no impact.

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Potentially Significant Impact
 Less Than Significant with Mitigation Incorporated
 Less Than Significant Impact
 No Impact

Lake Jennings and Sweetwater Reservoir

HWD and Sweetwater, along with Padre Dam Municipal Water District, formed the Joint Water Agencies (JWA) to prepare a combined NCCP and HCP for land management and conservation of natural habitats and species specific to the projects and O&M work related to these agencies’ systems. However, preparation of the JWA NCCP was terminated in 2012. Therefore, no current habitat conservation plans pertain to activity at Lake Jennings and Sweetwater Reservoir, and there would be no impact.

Lake Poway

Poway adopted its HCP/NCCP in April 1996 (City of Poway 1996). The Poway HCP/NCCP identifies Lake Poway and immediately surrounding lands with the land use designation Open Space-Recreation as active recreation areas, with the lake allowing boating and fishing and the developed park space supporting picnic areas, ball fields, and land areas featuring active recreation that is generally not compatible with open space preservation. The Poway HCP/NCCP does not explicitly allow or prohibit pesticide application at Lake Poway. The project is limited to occasional O&M work at the reservoir that would not have any direct impact on habitat, nor would it result in take of any species covered by Poway’s plan. Therefore, the project would not rely on the permits for habitat impacts or species impacts obtained by the Water Authority as part of the NCCP/HCP process, and NCCP/HCP reporting is not required for project-related activities at Lake Poway. The project would not conflict with provisions of the Water Authority NCCP/HCP, and there would be no impact.

San Dieguito Reservoir

SFID is preparing a subarea plan to the MSCP that will include San Dieguito Reservoir and its surrounding lands, but the plan is in draft form and has not yet been finalized, nor have permits been issued pursuant to the plan (Santa Fe Irrigation District 2012). Therefore, no current habitat conservation plans pertain to activity at San Dieguito Reservoir, and there would be no impact.

V. CULTURAL RESOURCES. Would the project:

V. Cultural Resources

a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

The project does not entail ground disturbance or any other activities that might adversely alter or disturb a historical resource. There would be no impact.

b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?				X
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	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

See V.a) above. No project activities would disturb or adversely affect the significance of an archaeological resource. There would be no impact.

c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

See V.a) above. No project activities would affect a unique paleontological resource or geologic feature. Project activities would be contained to the open water and therefore would have no impact.

d) Disturb any human remains, including those interred outside of formal cemeteries?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

See V.a) above. There would be no impact.

VI. GEOLOGY AND SOILS. Would the project:

VI. Geology and Soils

a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:

i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of known fault? Refer to Division of Mines and Geology Special Publication 42.				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

Project activities are limited to algaecide transportation, application, and water quality monitoring at the subject reservoirs. The project would not develop new structures or expose people to any risk of geologic hazards. There would be no impact.

ii) Strong seismic ground shaking?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

See VI.a.- i) above. The project would not expose people or structures to seismic shaking and would not produce an increased risk of loss or injury due to ground shaking. There would be no impact.

Environmental Impact Evaluation	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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iii) Seismic-related ground failure, including liquefaction?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

See VI.a.- i) above. Project activities would occur only on the waters of the reservoirs and would not expose people or structures to ground failure. There would be no impact.

iv) Landslides?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

See VI.a.- i) above. The project would not involve any ground-disturbing activities and would not expose people or structures to related hazards. There would be no impact.

b) Result in substantial soil erosion or loss of topsoil?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

The project does not entail ground disturbance and would not create conditions that could contribute to soil erosion and loss of topsoil. There would be no impact.

c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

No project elements would be located on unstable geologic or soil units, and would not lead to a related hazard. Therefore, no impact would occur.

d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

See VI.c) above. No new structures would be built as a result of this project. No project activities would occur on expansive soil, so no impact would occur.

Environmental Impact Evaluation	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

The proposed project involves the direct application of algaecide into reservoirs and would not involve the use of septic tanks or alternative waste water disposal systems. Therefore, no related impacts would occur.

VII. GREENHOUSE GAS EMISSIONS. Would the project:

VII. Greenhouse Gas Emissions

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?			X	
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

See Section III.a) above. A minimal amount of greenhouse gas (GHG) emissions would be generated by trucks during the transportation of the algaecides to the reservoirs, and by the boats used to apply the algaecides and to conduct water quality monitoring. These activities would occur minimally on an as-needed basis and would last for a short duration. These emissions would not elevate GHG emissions significantly above existing conditions. This impact is less than significant.

b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emission of greenhouse gases?			X	
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

See VII.a) above. The GHG emissions created by project activities would be negligible. Therefore, the project would not conflict with an applicable plan, policy, or regulation in the San Diego region. This impact is less than significant.

VIII. HAZARDS AND HAZARDOUS MATERIALS. Would the project:

VIII. Hazards and Hazardous Materials

a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?		X		
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Algaecide application at the subject reservoirs would entail transporting, handling, and using copper, which is a regulated hazardous material, but one that is commonly used in applications such as is proposed as part of the project. The EPA “Copper Facts” factsheet discusses the human health risks and

environmental hazards related to copper-based pesticides and algaecides. According to the EPA's fact sheet, "There are no human health risks of concern for dietary (food and drinking water) exposures to the pesticidal uses of copper. However, some of the various copper compounds and formulations may cause some dermal or eye irritation." Exposure or ingestion at very high levels can be harmful to human health, and the EPA regulates labeling of copper-based pesticide and algaecide products to prevent injury resulting from improper handling and application. The factsheet also indicates that copper is highly toxic to most aquatic species but is less of a concern for terrestrial species. In response to potential hazards of these materials, EPA publishes standards for application of copper-based algaecides that are incorporated into product labels.

The potential for project-related impacts related to transport and handling of copper would be the result of spills or improper application, which could lead to worker or environmental exposure at toxic levels. Section VIII.C of the General Permit requires a discharger to incorporate into their APAP the BMPs that will be employed in association with algaecide application so as to reduce the risk of worker or environmental exposure at hazardous levels, including measures to prevent spills and to ensure application at rates consistent with the product label, a plan for staff education on proper use of the products, and measures to prevent fish kills. Section V.B.1 of the General Permit states that dischargers pursuant to the permit must be licensed by the Department of Pesticide Regulation for applicable products; however, copper-based algaecide applications do not require such a license because copper is not a federal restricted use pesticide (RUP) or a California restricted material.

The impact discussion below assesses the potential hazards of copper application at each of the subject reservoirs and identifies the best management practices stated in the agencies' APAPs, which will be incorporated as mitigation measures to ensure the project's impact related to hazardous materials would be reduced to less-than-significant levels.

Olivenhain Reservoir

Algaecide application at Olivenhain Reservoir entails transporting and handling copper sulfate pentahydrate, which is a regulated hazardous material. The Water Authority estimates up to 80 pounds of the solid crystalline product would be delivered for a single application. The product would be purchased at the time of each application, and would not be stored at the Water Authority's facility. The Water Authority's APAP encloses a Material Safety Data Sheet (MSDS) describing copper sulfate's potential hazards and handling precautions. The MSDS describes copper sulfate pentahydrate as a blue crystalline or powdered, odorless solid that is harmful or potentially fatal if swallowed. The material may cause irritation to the eyes, respiratory system, and skin, and exposing the material to flames may produce irritating, corrosive, and/or toxic fumes. The Water Authority's algaecide application at Olivenhain Reservoir also entails transporting and handling citric acid in solid form, which is less of a concern than copper sulfate, but is identified in the MSDS provided in the Water Authority's APAP as a potential irritant to eyes and skin (San Diego County Water Authority 2014a). All empty containers will be disposed of in accordance with all manufacturer and regulatory requirements.

Transport, handling, and use of copper sulfate and citric acid at Olivenhain Reservoir would create the potential for spills that could affect worker safety and the environment. The Water Authority operates with an Emergency Response Guide and Hazardous Materials Business Plan that would be followed in

the event of a spill. The Water Authority's APAP incorporates measures to prevent hazards related to a potential spill from occurring. With the implementation of these mitigation measures, the project's hazardous materials impact at Olivenhain Reservoir would be reduced to a less-than-significant level.

OLIVENHAIN-HAZ-1: The Water Authority will require training in copper sulfate and citric acid safety for all Water Authority employees participating in the application and handling of these chemicals. Response and containment procedures provided in the Water Authority's Emergency Response Guide, Hazardous Materials Business Plan and the product MSDS will be followed in the event of a spill. These procedures include isolation and containment of the spill while wearing the appropriate personal protective equipment.

OLIVENHAIN-HAZ-2: The Water Authority will avoid over-application by ensuring that employees involved with chemical application follow the specific product labels for the algaecides used in the program. Algaecide quantities required for each treatment will be precalculated and only sufficient material to carry out the treatment is transported for an application event. All label directions and California Department of Pesticide Regulation guidelines will be followed as to acceptable application methods as well as weather limitations for application.

OLIVENHAIN-HAZ-3: Water Authority staff members that may come into contact with the algaecide will be trained on its use and hazards by the safety department. Review of all applicable MSDSs will be included in the training to ensure that employees are up to date on the hazards associated with the chemical(s) used. Personal protective equipment is supplied to any employee that will be working with the chemical(s). Goggles, face shield, chemically impervious gloves, and protective clothing to prevent skin contact are provided and used any time work is to be done with the algaecide.

OLIVENHAIN-HAZ-4: The Water Authority will ensure that application of algaecides is targeted at nuisance algae growths and that algaecides are applied in accordance with label instructions to minimize the application quantity and maximize efficacy. This includes avoiding uneven distribution and applying during favorable weather conditions, when feasible. Because nuisance algal growth affects the beneficial uses within the project area, application of algaecides will be proactive, which will minimize the quantity of decaying algae that results and may threaten oxygen levels.

Lake Jennings

Algaecide application at Lake Jennings entails transporting and handling Cutrine Plus, a liquid copper-based product that is a regulated hazardous material. HWD estimates using 2.75 to 11 gallons of liquid Cutrine Plus per application, and would order the specific amount at the time application is needed. HWD's APAP encloses an MSDS describing Cutrine Plus's potential hazards and handling precautions. The MSDS describes Cutrine Plus as a liquid product that can cause irritation to the eyes, respiratory system, and skin, and that is slightly toxic if swallowed (Helix Water District 2014a). Exposing the material to flames may produce irritating, corrosive, and/or toxic fumes. All empty containers would be disposed of pursuant to the instructions on the product label and applicable regulations.

Transport, handling, and use of Cutrine Plus at Lake Jennings would create the potential for spills that could affect worker safety and the environment. HWD's APAP incorporates measures to prevent these hazards from occurring. With the implementation of these mitigation measures, the project's hazardous materials impact at Lake Jennings would be reduced to a less-than-significant level.

JENNINGS-HAZ-1: HWD will ensure that algaecide use rates will be per the U.S. Environmental Protection Agency (EPA) label and will be limited to ensure compliance with receiving water limitations. Treatments will be performed when no water is being discharged from the lake system.

JENNINGS-HAZ-2: HWD will ensure that application personnel follow the storage, transport, and spill control procedures per EPA and California Department of Pesticide Regulation rules, regulations, and label instructions.

JENNINGS-HAZ-3: HWD will ensure that algaecide quantities required for each treatment will be precalculated and only sufficient material to carry out the treatment will be transported for an application event. Application equipment will be routinely cleaned and maintained, and all label directions and Department of Pesticide Regulations guidelines will be followed as to acceptable application methods, including limitations due to weather conditions. Surface applications will not be made in winds above 10 miles per hour.

Lake Poway

Algaecide application at Lake Poway entails transporting and handling copper sulfate, which is a regulated hazardous material. Poway applies the solid copper sulfate at a rate of 5 pounds per acre foot of water, and estimates an average use of roughly 300 pounds per application. Copper sulfate is an odorless solid that is harmful or potentially fatal if swallowed. The material may cause irritation to the eyes, respiratory system, and skin, and exposing the material to flames may produce irritating, corrosive, and/or toxic fumes (San Diego County Water Authority 2014a). Copper sulfate is ordered by Poway by the pallet, and is used as needed. Post-application, the empty copper sulfate bags are disposed of by Poway. Transport, handling, and use of copper sulfate at Lake Poway would create the potential for spills that could affect worker safety and the environment. Poway's APAP incorporates measures to prevent these hazards from occurring. With the implementation of these mitigation measures, the project's hazardous materials impact at Lake Poway would be reduced to a less-than-significant level.

POWAY-HAZ-1: Poway will ensure that algaecide use rates will be per the EPA label and will be limited to ensure compliance with receiving water limitations. Treatments will be performed when no water is being discharged from the lake system.

POWAY-HAZ-2: Poway will ensure that application personnel follow the storage, transport, and spill control procedures per EPA and California Department of Pesticide Regulation rules, regulations, and label instructions.

POWAY-HAZ-3: Poway will ensure that algaecide quantities required for each treatment will be precalculated and only sufficient material to carry out the treatment will be transported for an

application event. Application equipment will be routinely cleaned and maintained, and all label directions and Department of Pesticide Regulation guidelines will be followed as to acceptable application methods, including limitations due to weather conditions. Surface applications will not be made in winds above 10 miles per hour.

San Dieguito Reservoir

Algaecide application at San Dieguito Reservoir entails transporting and handling a liquid form of copper sulfate pentahydrate, which is a regulated hazardous material. SFID's APAP encloses an MSDS describing copper sulfate's potential hazards and handling precautions. The MSDS describes copper sulfate pentahydrate as a clear blue, corrosive liquid with minimal odor. The substance is harmful if swallowed and may cause irritation to the eyes, respiratory system, and skin (Santa Fe Irrigation District 2014a). Exposing the material to flames may produce irritating, corrosive, and/or toxic fumes.

Application of algaecides at San Dieguito Reservoir is conducted via a feed system in the Cielo Pump Station, as opposed to application on the reservoir from a boat, which allows for safe and effective application and minimizes exposure to workers and unintended targets. SFID estimates using 100 to 500 gallons of the liquid copper sulfate pentahydrate per application. Because applications at San Dieguito Reservoir are from a fixed feed system, the rate of application can be tightly controlled from the chemical metering portion of the system. Each feed system is contained within a spill catchment that is sized to capture 100% of the chemical available for feed.

Transport, handling, and use of copper sulfate at San Dieguito Reservoir would create the potential for spills that could affect worker safety and the environment. SFID generally orders a year's supply of the product, and stores it on site to use as needed. After application the containers are triple rinsed and disposed of by SFID. SFID's APAP incorporates measures to prevent hazardous spills and exposure from occurring during and after application of copper sulfate. With the implementation of these mitigation measures, the project's hazardous materials impact at San Dieguito Reservoir would be reduced to a less-than-significant level.

SAN DIEGUITO-HAZ-1: SFID will ensure the algaecide treatment system within the Cielo Pump Station is flushed with water at the end of each treatment event to eliminate having any copper sulfate remaining in the system, which will protect the feed system from corrosion and leaks and minimize the potential for worker exposure.

SAN DIEGUITO-HAZ-2: SFID will ensure that a break in the algaecide application feed line, tanks, or pumps will be captured and treated as hazardous waste. SFID's safety department will employ a hazardous waste disposal company that will properly dispose of any material that has been contaminated by a spill.

SAN DIEGUITO-HAZ-3: SFID staff will calculate maximum dosage rates and program them into the feed system to ensure correct concentration of the feed. The rate of feed for any treatment event will be limited to the recommendations on the product label and the MSDS to ensure effectiveness and minimize any unintended effects on nontargeted organisms.

SAN DIEGUITO-HAZ-4: SFID will ensure that any staff members that may come into contact with copper sulfate are trained on its use and hazards by the SFID safety department. SFID will periodically review the product's MSDS to ensure employees are up to date on the hazards associated with the chemical. SFID will ensure personal protective equipment is supplied to any employee that will be working with copper sulfate. Goggles, face shield, chemically impervious gloves, and protective clothing to prevent skin contact will be provided by SFID and used any time work is to be done with the algaecide.

Sweetwater Reservoir

Algaecide application at Sweetwater Reservoir entails transporting and handling copper sulfate pentahydrate, which is a regulated hazardous material. Sweetwater generally stores enough copper sulfate product on site for two treatment applications. On average, an application at the Sweetwater Reservoir has required 1,250 pounds of solid copper sulfate crystals. This number varies based on water level and how much of the lake's surface area is being treated. The application rate of copper sulfate is approximately 2 pounds per surface acre. Sweetwater's APAP encloses an MSDS describing copper sulfate's potential hazards and handling precautions. The MSDS describes copper sulfate pentahydrate as a blue crystalline or powdered, odorless solid that is harmful or potentially fatal if swallowed. The material may cause irritation to the eyes, respiratory system, and skin, and exposing the material to flames may produce irritating, corrosive, and/or toxic fumes. Sweetwater's algaecide application at Sweetwater Reservoir also entails transporting and handling citric acid in solid form, which is less of a concern than copper sulfate but is identified in the MSDS provided in Sweetwater's APAP as a potential irritant to eyes and skin (Sweetwater Authority 2013). After application, the empty 50 pound bags of copper sulfate are disposed of by Sweetwater in a sanitary landfill, as per the product label instructions.

Transport, handling, and use of copper sulfate and citric acid at Sweetwater Reservoir would create the potential for spills that could affect worker safety and the environment. Sweetwater operates with a Chemical Hygiene Plan and Hazardous Response Plan that would be followed in the event of a spill. Sweetwater's APAP incorporates measures to prevent spill-related hazards from occurring. With the implementation of these mitigation measures, the project's hazardous materials impact at Sweetwater Reservoir would be reduced to a less-than-significant level.

SWEETWATER-HAZ-1: Sweetwater will apply copper sulfate and citric acid in accordance with the product label and shall comply with the recommendations provided on the MSDS applicable to the specific copper sulfate product to be used. Copper sulfate will be applied in an even, consistent manner over the surface area to be treated, thus minimizing the potential for higher than intended localized concentrations.

SWEETWATER-HAZ-2: Sweetwater will require training in copper sulfate and citric acid safety for all Sweetwater employees participating in the application and handling of copper sulfate. Sweetwater shall conduct additional refresher training, as deemed necessary, prior to each treatment event.

Environmental Impact Evaluation

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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SWEETWATER-HAZ-3: Sweetwater will follow all response and containment procedures provided in their Chemical Hygiene Plan, Hazardous Response Plan, and the product MSDS in the event of a spill. These procedures include isolation and containment of the spill while wearing the appropriate personal protective equipment.

SWEETWATER-HAZ-4: Sweetwater will require its employees participating in the application or handling of copper sulfate and citric acid to wear appropriate personal protective equipment recommended on the MSDS, including protective safety glasses with side shields (or goggles) per Occupational Safety and Health Administration (OSHA) 29 CFR 1910.133. Chemically impervious gloves made of any waterproof material, boots, and protective clothing will be worn to avoid skin contact (refer to OSHA 29 CFR 1910.138), as well as a respirator that meets OSHA 29 CFR 1910.134 requirements.

b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?		X		
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

See VIII.a) above. Implementation of the mitigation measures identified above will reduce this impact to a less-than-significant level at all of the subject reservoirs.

c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

There are no schools within ¼ mile of any of the subject reservoirs. Therefore, no impact would occur.

d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

The project does not entail any new development, earth disturbance, or other activities that could be affected by prior hazardous materials listing at any of the subject reservoirs. Therefore, no impact would occur.

Environmental Impact Evaluation

Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

The project does not entail any new development or activities that could be affected by air traffic. Therefore, no impact would occur.

f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

The project does not entail any new development or activities that could be affected by air traffic. Therefore, no impact would occur.

g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

The project does not entail any new development or construction activities that could interfere with emergency response. Therefore, no impact would occur.

h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

The project does not entail any new development or construction activities that could cause or be affected by wildland fire. Therefore, no impact would occur.

Environmental Impact Evaluation

Potentially Significant Impact
 Less Than Significant with Mitigation Incorporated
 Less Than Significant Impact
 No Impact

IX. HYDROLOGY AND WATER QUALITY. Would the project:

IX. Hydrology and Water Quality

a) Violate any water quality standards or waste discharge requirements?		X		
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As discussed in Section 1.1, the application of copper-based products for treatment of algae is permitted under the State Board’s Water Quality Order No. 2013-0002-DWQ, *Statewide General Permit for Residual Aquatic Pesticide Discharges to Waters of the U.S. from Algae and Aquatic Weed Control* (General Permit), which regulates use of aquatic pesticides for the purpose of maintaining water quality statewide. The General Permit identifies a limitation on copper concentration in waters that receive permitted pesticide application, which is specified in Table 3 of the permit. The copper limitation is based on the California Toxics Rule (CTR) and varies depending on water hardness. Copper is more toxic to aquatic species when water is softer, as a lower concentration of minerals means a lower concentration of materials with which copper can bond, leading to a greater accumulation of copper in the water.

However, the State Board’s permitting process acknowledges that public water agencies and mutual water companies may need to periodically exceed this copper limitation when required to otherwise control water quality in their facilities that serve the public. Section 5.3 of the State Implementation Plan provides a Categorical Exemption to the toxics standards where the discharge is necessary to meet statutory requirements under the federal Safe Drinking Water Act or the California Health and Safety Code. The potential application of this Categorical Exception to the receiving-water copper limitation is identified in Table 3 of the General Permit, which points to Attachment G of the permit, a list of water agencies and mutual water companies that have been granted exemptions. The Categorical Exception is intended as a short-term or seasonal exception, not a permanent pass on meeting the limitations. As stated in the General Permit’s Fact Sheet, Attachment D to the permit, “there is no discrete definition for short-term; but the intent is to allow the exception to apply during the treatment period. It is up to the Discharger to make this demonstration.” The timeframe of when an agency expects they may exceed the receiving water limitations is identified in the agency’s Notice of Intent. If the agency is granted the exception, the agency’s APAP is revised to identify the approved seasonal exception. For these agencies that are granted the exception, the General Permit or SIP does not state additional limits on copper concentrations for those agencies who have been granted an exception. Instead, water quality monitoring is conducted before, during, and after an application event, and this information is reported to the State Board so they can observe application-related conditions and ensure there are no causes for water quality concern at the respective receiving water.

As described above in Section 1.3, the purpose of algaecide application at the five subject reservoirs is to control serious algae blooms that could affect water quality at the subject reservoirs. This periodic treatment is necessary so the agencies can meet taste and odor standards in the drinking water they deliver to their respective consumers. Therefore, such discharges would qualify for the Categorical Exception to the CTR standards that are incorporated into the General Permit’s receiving water limitations. The five subject water agencies plan to apply for coverage under the General Permit for use of copper sulfate and, as part of that application, seek the Categorical Exception to the receiving water limitations in case they identify the need to apply increased concentrations of copper during serious algae blooms.

The agencies' use of copper sulfate to control algae blooms would temporarily elevate copper concentrations in the subject reservoirs. If high concentrations of copper are needed or soft water conditions in the treated reservoirs elevate the copper toxicity, then these applications could result in excess of the thresholds set forth in the CTR and translated to the General Permit. Exceeding the thresholds in this instance would itself be necessary to prevent water quality impacts at the five reservoirs, but exceeding the thresholds would still be considered a significant impact. By seeking an exemption from the thresholds pursuant to the State Board's permit process, this potentially significant impact would be reduced to a less-than-significant level. Mitigation measures are stated below for each subject agency.

Olivenhain Reservoir

OLIVENHAIN-WQ-1: The Water Authority will apply for coverage under the State Board's NPDES Permit for Discharges of Aquatic Pesticides and, as part of that application, seek a Categorical Exception pursuant to Section 5.3 of the State Board's Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California.

OLIVENHAIN-WQ-2: The Water Authority will continue to monitor and report copper levels in Olivenhain Reservoir in accordance with State Board requirements.

Lake Jennings

JENNINGS-WQ-1: HWD will apply for coverage under the State Board's NPDES Permit for Discharges of Aquatic Pesticides and, as part of that application, seek a Categorical Exception pursuant to Section 5.3 of the State Board's Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California.

JENNINGS-WQ-2: HWD will continue to monitor and report copper levels in Lake Jennings in accordance with State Board requirements.

Lake Poway

POWAY-WQ-1: Poway will apply for coverage under the State Board's NPDES Permit for Discharges of Aquatic Pesticides and, as part of that application, seek a Categorical Exception pursuant to Section 5.3 of the State Board's Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California.

POWAY-WQ-2: Poway will continue to monitor and report copper levels in Lake Poway in accordance with State Board requirements.

San Dieguito Reservoir

SAN DIEGUITO-WQ-1: SFID will apply for coverage under the State Board's NPDES Permit for Discharges of Aquatic Pesticides and, as part of that application, seek a Categorical Exception pursuant to Section 5.3 of the State Board's Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California.

Environmental Impact Evaluation

Potentially Significant Impact
 Less Than Significant with Mitigation Incorporated
 Less Than Significant Impact
 No Impact

SAN DIEGUITO-WQ-2: SFID will continue to monitor and report copper levels in San Dieguito Reservoir in accordance with State Board requirements.

Sweetwater Reservoir

SWEETWATER-WQ-1: Sweetwater will apply for coverage under the State Board’s NPDES Permit for Discharges of Aquatic Pesticides and, as part of that application, seek a Categorical Exception pursuant to Section 5.3 of the State Board’s Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California.

SWEETWATER-WQ-2: Sweetwater will continue to monitor and report copper levels in Sweetwater Reservoir in accordance with State Board requirements.

b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

The proposed project would not entail the use of groundwater and, thus, would not deplete groundwater supplies or interfere with groundwater recharge. Therefore, no related impacts would occur.

c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

The proposed project would not affect drainage patterns. Therefore, no impact would occur.

d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or off site?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

See IX.c) above. No impact would occur.

Environmental Impact Evaluation	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

See IX.c) above. The project would not create or contribute runoff water. No impact would occur.

f) Otherwise substantially degrade water quality?		X		
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

See IX.a) above. All of the respective reservoirs are surface water impoundments within potable water systems, and none of them release considerable amounts of water to downstream water bodies. Therefore, temporarily increased copper levels at the reservoirs after application would have no impact outside the subject reservoirs. There are no other project components that would affect water quality that are not already discussed in IX.a). With the implementation of the mitigation measures stated above in IX.a), this impact would be reduced to a less than-significant level.

g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

The proposed project would not place housing in floodplains. No related impacts would occur.

h) Place structures within a 100-year flood hazard area which would impede or redirect flood flows?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

The project would not place structures in flood hazard areas. No related impacts would occur.

i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

The project would not expose people or structures to potential flooding. Therefore, no related impacts would occur.

Environmental Impact Evaluation	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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j) Inundation by seiche, tsunami, or mudflow?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

The project does not propose development or other uses that could be affected by seiche, tsunami, or mudflow. Therefore, no impact would occur.

X. LAND USE AND PLANNING. Would the project:

X. Land Use and Planning

a) Physically divide an established community?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

The proposed project would be implemented within existing reservoirs and does not entail building any new structures. Thus, the project would not physically divide an established community and no related impacts would occur.

b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

The project would not result in a change in land use, or create any new land uses, so it would not conflict with any applicable land use plan, policy, or regulation. Therefore, no related impacts would occur.

c) Conflict with any applicable habitat conservation plan or natural community conservation plan?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

See IV.f) above. The project would not conflict with any applicable habitat conservation or natural community conservation plans. Therefore, no impact would occur.

XI. MINERAL RESOURCES. Would the project:

XI. Mineral Resources

a) Result in the loss of availability of a known mineral resource that would be of future value to the region and the residents of the state?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

Environmental Impact Evaluation	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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Activities of the proposed project are limited to the application of algaecides into existing reservoirs in the San Diego region. No development or ground-disturbing activities would occur, and there would be no loss of availability of mineral resources. Therefore, no impacts to mineral resources would occur.

b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

See XI.a) above. The project activities would not result in the loss of availability of a mineral resource recovery site. There would be no impact.

XII. NOISE.

XII. Noise

Would the project result in:

a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

Algaecide application involves limited use of delivery trucks and boats on the subject reservoirs. Trucks would be licensed for use on existing roadways, and any noise produced would not exceed thresholds. On the reservoirs that allow boating, noise from the boat motor would not create significant adverse conditions. On the reservoirs that restrict boating access, other uses are restricted as well, so no people in the surrounding area would be significantly affected by the noise of the motor. Additionally, noise from one power boat engine would not be enough to exceed the thresholds of a general plan or other applicable standards. Noise generation would be short in duration and occur sporadically, on an as-needed basis. There would be no impact.

b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

See XII.a) above. Any groundborne vibration from delivery trucks would be inconsequential due to the short duration and minimal use of the equipment. There would be no impact.

Environmental Impact Evaluation

Potentially Significant Impact
 Less Than Significant with Mitigation Incorporated
 Less Than Significant Impact
 No Impact

c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

The project does not entail installation or operation of new permanent sources of stationary noise. Therefore, no impact would occur.

d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?			X	
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

See XII.a) above. Trucks and boats would generate noise at the project area, but this would not be a substantial increase in noise, especially for the reservoirs that allow use of the lake for recreational activities. For the reservoirs that do not allow public access, the project activity would not last long enough or create enough of a noise disturbance to be considered substantial. This is a less than significant impact.

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

None of the subject reservoirs are located within an airport use plan or within 2 miles of a public airport. Therefore, no related impacts would occur.

f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

None of the subject reservoirs are in the vicinity of a private airstrip. Therefore, no impact would occur.

Environmental Impact Evaluation	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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XIII. POPULATION AND HOUSING. Would the project:

XIII. Population and Housing

a) Induce substantial population growth in an area either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

The proposed project does not entail construction of homes, businesses, or new infrastructure. Therefore, no impact would occur.

b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

The proposed project occurs within the boundaries of existing reservoirs, and would not impact or displace existing housing or necessitate construction of replacement housing in the area. Therefore, no related impacts would occur.

c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

See XIII.b) above. There would be no impact.

XIV. PUBLIC SERVICES.

XIV. Public Services

Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:

a) Fire protection?			X	
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

The proposed project involves the application of algaecides into the waters of existing reservoirs. There would be no development or construction of new structures, and no alteration of existing government facilities or new government facilities would be necessary. According to the MSDS included in the project-related APAPs, the algaecide products that would be used pursuant to this project are not flammable; therefore, on-site storage and use in compliance with applicable requirements would not

Environmental Impact Evaluation

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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create a fire hazard. However, the products may decompose if exposed to the heat of a fire and produce corrosive and/or toxic fumes. The storage and use of hazardous materials for algaecide application could require the hazmat response services of local fire agencies in the event of an unforeseen accident. The potential for this to occur is limited and would be alleviated by proper storage and use of the products. Therefore, the project would not result in a significant impact on response times or service standards and the project’s impact on fire protection services is less than significant.

b) Police protection?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

See XIV.a) above. There would be no impact to police protection.

c) Schools?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

See XIV.a) above. There would be no impact to school facilities.

d) Parks?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

See XIV.a) above. There would be no impact to parks.

e) Other public services?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

See XIV.a) above. There would be no impact to other public services.

XV. RECREATION.

XV. Recreation

a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

Application of algaecides at the subject reservoirs would not increase the use of existing recreational facilities. No impact would occur.

In addition, the potential for impacts on existing water-based recreational uses at the subject reservoirs has been considered. There are no in-water recreational uses allowed at Olivenhain Reservoir, San

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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Environmental Impact Evaluation

Dieguito Reservoir, or Sweetwater Reservoir. HWD, Poway, and Sweetwater do not restrict recreational use of the reservoir following a copper application (Helix Water District 2015; City of Poway 2015; Sweetwater 2015).

b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

See XV.a) above. The proposed project would not include recreational facilities or require the construction or expansion of recreational facilities. Therefore, no impact would occur.

XVI. TRANSPORTATION/CIRCULATION.

XVI. Transportation/Circulation

Would the project:

a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

The proposed project involves the use of light- to medium-duty trucks periodically for the delivery of the algaecide to the reservoir, and would not cause a substantial increase in traffic above existing conditions. Deliveries of the algaecide would occur infrequently and would not require an extensive number of trips to and from the project site. The use of boats for algaecide application would not have an impact on transportation at the project site or surrounding areas. There would be no impact.

b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

See XVI.a) above. There would be no impact.

Environmental Impact Evaluation	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

The proposed project would have no effect on air traffic. Therefore, no related impacts would occur.

d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

The proposed project activities would be limited to the waters of existing reservoirs and existing roadways. No changes to roadways or increases in hazards due to equipment would occur. Therefore, no impact would occur.

e) Result in inadequate emergency access?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

The proposed project would not restrict emergency access to the reservoirs. There would be no impact.

f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

See XVI.d and e) above. The proposed project would not result in effects on existing bus stops, bike lanes, or pedestrian facilities in the vicinity. Thus, the project would not result in conflicts with adopted policies, plans, or programs supporting alternative transportation. There would be no impact.

XVII. UTILITIES AND SERVICE SYSTEMS. Would the project:

XVII. Utilities and Service Systems

a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

The proposed project would be limited to the application of algaecides in existing bodies of water and would not generate any wastewater. No wastewater treatment requirements would be exceeded; therefore, no related impacts would occur.

Environmental Impact Evaluation

Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

The proposed project would not generate any wastewater. No new or expanded water or wastewater treatment facilities would result or be required. Therefore, no related impacts would occur.

c) Require or result in construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

The proposed project would not require or include construction of new or expanded storm water facilities. Additionally, no new areas of impervious surface would be created that could increase the volume of storm water runoff associated with the project alignment. Therefore, no related impacts would occur.

d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

The proposed project would not require additional water supplies. No new or expanded facilities would be needed. Therefore, no related impacts would occur.

e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

The proposed project would not result in an increased demand on wastewater services. Therefore, no related impacts would occur.

Environmental Impact Evaluation	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

No solid waste would be generated by the application of algaecides into the reservoirs aside from the bags and containers used to store the algaecides. This solid waste generation would be minimal, and no landfill would be needed for this project, and therefore no impact would occur.

g) Comply with federal, state, and local statutes and regulations related to solid waste?				X
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Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

See XVII.f) above. There would be no impact.

XVIII. MANDATORY FINDINGS OF SIGNIFICANCE.

XVIII. Mandatory Findings of Significance

a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?			X	
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These topics have been addressed above, including issues of biological resources in Section IV and cultural resources in Section V. Section IV concluded that there would be no significant impact on biological resources. Section V concluded there would be no impacts on cultural resources, so the project would not eliminate examples of the major periods of California history or prehistory.

b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)				X
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Environmental Impact Evaluation

Potentially Significant Impact
 Less Than Significant with Mitigation Incorporated
 Less Than Significant Impact
 No Impact

Olivenhain Reservoir, Lake Jennings, Lake Poway, San Dieguito Reservoir, Sweetwater Reservoir

The project entails a very minimal amount of worker activity on an ongoing basis at each of the subject reservoirs, with work being confined to the reservoirs and their adjacent operations facilities. The subject reservoirs are contained by dams that do not release substantial amounts of water downstream, and there is no direct hydrologic connection between any of the reservoirs involved in the project. Therefore, algaecide-treated water in one reservoir would never drain into another reservoir. Application of aquatic pesticides at one reservoir could not lead to increased impacts at any of the others, as the pesticides could not travel between reservoirs and lead to a compounded level of copper. Accordingly, there would be no potential for a cumulative increase in copper levels at any of the reservoirs due to application at any of the other reservoirs. This means that no potential for cumulative water quality impacts would occur at any of the subject reservoirs as a result of this project. This also means there is no potential for a combined accumulation of copper levels at any of the reservoirs that would affect biological resources. This limited amount of activity and lack of connectivity between the reservoirs would not have the potential to substantially contribute to any cumulative impacts that may occur in the project areas. Therefore, no impact would occur.

c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?		X		
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The project’s potential to result in impacts on human health have been addressed above, including air quality (Section III), hazards and hazardous materials (Section VIII), and noise (Section XII). As discussed in Sections III and XII, the project would not have air quality or noise effects that would cause substantial direct or indirect adverse effects on human beings. Section VIII identified potential health risks of exposure to copper-based products used in the proposed activity, and identified mitigation measures each of the subject agencies would employ to limit these risks and ensure impacts would be reduced to less-than-significant levels.

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SECTION 3.0 DETERMINATION

In conformance with the State CEQA Guidelines, the Water Authority, as lead agency, prepared an Initial Study (IS) and completed an Environmental Checklist Form (see Section 2.0) for the proposed project. During the analysis of the project's environmental impacts, the Water Authority determined that, unless certain mitigation was implemented, the proposed project could have a significant impact on the following environmental factors: hazards and hazardous materials, and hydrology and water quality. The significant impacts warranting mitigation were presented in the IS Checklist and are detailed below in Section 3.1 through 3.5. The project has been revised to include the specific measures listed below in Section 3.2, which would mitigate these impacts to below a level of significance. Analysis of all environmental issues is presented in the evaluation portion of the IS Checklist, provided in Section 2.0.

3.1 OLIVENHAIN RESERVOIR ENVIRONMENTAL IMPACTS AND MITIGATION

3.1.1 Hazards and Hazardous Materials

Algaecide application at Olivenhain Reservoir entails transporting, handling, and using copper-based products that are regulated hazardous materials and, if handled or applied improperly, could be hazardous to human health and the environment. The following mitigation measures will be incorporated into the project to reduce this impact to a less-than-significant level:

OLIVENHAIN-HAZ-1: The Water Authority will require training in copper sulfate and citric acid safety for all Water Authority employees participating in the application and handling of these chemicals. Response and containment procedures provided in the Water Authority's Emergency Response Guide, Hazardous Materials Business Plan and the product MSDS will be followed in the event of a spill. These procedures include isolation and containment of the spill while wearing the appropriate personal protective equipment.

OLIVENHAIN-HAZ-2: The Water Authority will avoid over-application by ensuring that employees involved with chemical application follow the specific product labels for the algaecides used in the program. Algaecides quantities required for each treatment will be precalculated and only sufficient material to carry out the treatment is transported for an application event. All label directions and California Department of Pesticide Regulation guidelines will be followed as to acceptable application methods as well as weather limitations for application.

OLIVENHAIN-HAZ-3: Water Authority staff members that may come into contact with the algaecide will be trained on its use and hazards by the safety department. Review of all applicable MSDSs will be included in the training to ensure that employees are up to date on the hazards associated with the chemical(s) used. Personal protective equipment is supplied to any employee that will be working with the chemical(s). Goggles, face shield, chemically impervious gloves, and protective clothing to prevent skin contact are provided and used any time work is to be done with the algaecide.

OLIVENHAIN-HAZ-4: The Water Authority will ensure that application of algaecides is targeted at nuisance algae growths and that algaecides are applied in accordance with label instructions to minimize the application quantity and maximize efficacy. This includes avoiding uneven distribution and applying during favorable weather conditions, when feasible. Because

nuisance algal growth affects the beneficial uses within the project area, application of algaecides will be proactive, which will minimize the quantity of decaying algae that results and may threaten oxygen levels.

3.1.2 Hydrology and Water Quality

The Water Authority's use of copper to control algae blooms at Olivenhain Reservoir may result in excess of receiving-water limitations established in the General Permit. Exceeding the thresholds would itself be necessary to prevent algae-related water quality impacts at Olivenhain Reservoir, but this would be considered a significant impact unless the Water Authority obtains an exception from the limitations by the State Water Resources Control Board. The following mitigation measures will be incorporated into the project to reduce this impact to a less-than-significant level:

OLIVENHAIN-WQ-1: The Water Authority will apply for coverage under the State Board's NPDES Permit for Discharges of Aquatic Pesticides and, as part of that application, seek a Categorical Exception pursuant to Section 5.3 of the State Board's Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California.

OLIVENHAIN-WQ-2: The Water Authority will continue to monitor and report copper levels in Olivenhain Reservoir in accordance with State Board requirements.

3.2 LAKE JENNINGS ENVIRONMENTAL IMPACTS AND MITIGATION

3.2.1 Hazards and Hazardous Materials

Algaecide application at Lake Jennings entails transporting, handling, and using copper-based products that are regulated hazardous materials and, if handled or applied improperly, could be hazardous to human health and the environment. The following mitigation measures will be incorporated into the project to reduce this impact to a less-than-significant level:

JENNINGS-HAZ-1: HWD will ensure that algaecide use rates will be per the U.S. Environmental Protection Agency (EPA) label and will be limited to ensure compliance with receiving water limitations. Treatments will be performed when no water is being discharged from the lake system.

JENNINGS-HAZ-2: HWD will ensure that application personnel follow the storage, transport, and spill control procedures per EPA and California Department of Pesticide Regulation rules, regulations, and label instructions.

JENNINGS-HAZ-3: HWD will ensure that algaecide quantities required for each treatment will be precalculated and only sufficient material to carry out the treatment will be transported for an application event. Application equipment will be routinely cleaned and maintained, and all label directions and Department of Pesticide Regulations guidelines will be followed as to acceptable application methods, including limitations due to weather conditions. Surface applications will not be made in winds above 10 miles per hour.

3.2.2 Hydrology and Water Quality

HWD's use of copper to control algae blooms at Lake Jennings may result in excess of receiving-water limitations established in the General Permit. Exceeding the thresholds would itself be necessary to prevent algae-related water quality impacts at Lake Jennings, but this would be considered a significant

impact unless HWD obtains an exception from the limitations by the State Water Resources Control Board. The following mitigation measures will be incorporated into the project to reduce this impact to a less-than-significant level:

JENNINGS-WQ-1: HWD will apply for coverage under the State Board's NPDES Permit for Discharges of Aquatic Pesticides and, as part of that application, seek a Categorical Exception pursuant to Section 5.3 of the State Board's Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California.

JENNINGS-WQ-2: HWD will continue to monitor and report copper levels in Lake Jennings in accordance with State Board requirements.

3.3 LAKE POWAY ENVIRONMENTAL IMPACTS AND MITIGATION

3.3.1 Hazards and Hazardous Materials

Algaecide application at Lake Poway entails transporting, handling, and using copper-based products that are regulated hazardous materials and, if handled or applied improperly, could be hazardous to human health and the environment. The following mitigation measures will be incorporated into the project to reduce this impact to a less-than-significant level:

POWAY-HAZ-1: Poway will ensure that aquatic algaecide use rates will be per the EPA label and will be limited to ensure compliance with receiving water limitations. Treatments will be performed when no water is being discharged from the lake system.

POWAY-HAZ-2: Poway will ensure that application personnel follow the storage, transport, and spill control procedures per EPA and California Department of Pesticide Regulation rules, regulations, and label instructions.

POWAY-HAZ-3: Poway will ensure that algaecide quantities required for each treatment will be precalculated and only sufficient material to carry out the treatment will be transported for an application event. Application equipment will be routinely cleaned and maintained, and all label directions and Department of Pesticide Regulation guidelines will be followed as to acceptable application methods, including limitations due to weather conditions. Surface applications will not be made in winds above 10 miles per hour.

3.3.2 Hydrology and Water Quality

Poway's use of copper to control algae blooms at Lake Poway may result in excess of receiving-water limitations established in the General Permit. Exceeding the thresholds would itself be necessary to prevent algae-related water quality impacts at Lake Poway, but this would be considered a significant impact unless Poway obtains an exception from the limitations by the State Water Resources Control Board. The following mitigation measures will be incorporated into the project to reduce this impact to a less-than-significant level:

POWAY-WQ-1: Poway will apply for coverage under the State Board's NPDES Permit for Discharges of Aquatic Pesticides and, as part of that application, seek a Categorical Exception pursuant to Section 5.3 of the State Board's Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California.

POWAY-WQ-2: Poway will continue to monitor and report copper levels in Lake Poway in accordance with State Board requirements.

3.4 SAN DIEGUITO RESERVOIR ENVIRONMENTAL IMPACTS AND MITIGATION

3.4.1 Hazards and Hazardous Materials

Algaecide application at San Dieguito Reservoir entails transporting, handling, and using copper-based products that are regulated hazardous materials and, if handled or applied improperly, could be hazardous to human health and the environment. The following mitigation measures will be incorporated into the project to reduce this impact to a less-than-significant level:

SAN DIEGUITO-HAZ-1: SFID will ensure the algaecide treatment system within the Cielo Pump Station is flushed with water at the end of each treatment event to eliminate having any copper sulfate remaining in the system, which will protect the feed system from corrosion and leaks and minimize the potential for worker exposure.

SAN DIEGUITO-HAZ-2: SFID will ensure that a break in the algaecide application feed line, tanks, or pumps will be captured and treated as hazardous waste. SFID's safety department will employ a hazardous waste disposal company that will properly dispose of any material that has been contaminated by a spill.

SAN DIEGUITO-HAZ-3: SFID staff will calculate maximum dosage rates and program them into the feed system to ensure correct concentration of the feed. The rate of feed for any treatment event will be limited to the recommendations on the product label and the MSDS to ensure effectiveness and minimize any unintended effects on nontargeted organisms.

SAN DIEGUITO-HAZ-4: SFID will ensure that any staff members that may come into contact with copper sulfate are trained on its use and hazards by the SFID safety department. SFID will periodically review the product's MSDS to ensure employees are up to date on the hazards associated with the chemical. SFID will ensure personal protective equipment is supplied to any employee that will be working with copper sulfate. Goggles, face shield, chemically impervious gloves, and protective clothing to prevent skin contact will be provided by SFID and used any time work is to be done with the algaecide.

3.4.2 Hydrology and Water Quality

SFID's use of copper to control algae blooms at San Dieguito Reservoir may result in excess of receiving-water limitations established in the General Permit. Exceeding the thresholds would itself be necessary to prevent algae-related water quality impacts at San Dieguito Reservoir, but this would be considered a significant impact unless SFID obtains an exception from the limitations by the State Water Resources Control Board. The following mitigation measures will be incorporated into the project to reduce this impact to a less-than-significant level:

SAN DIEGUITO-WQ-1: SFID will apply for coverage under the State Board's NPDES Permit for Discharges of Aquatic Pesticides and, as part of that application, seek a Categorical Exception pursuant to Section 5.3 of the State Board's Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California.

SAN DIEGUITO-WQ-2: SFID will continue to monitor and report copper levels in San Dieguito Reservoir in accordance with State Board requirements.

3.5 SWEETWATER RESERVOIR ENVIRONMENTAL IMPACTS AND MITIGATION

3.5.1 Hazards and Hazardous Materials

Algaecide application at Sweetwater Reservoir entails transporting, handling, and using copper-based products that are regulated hazardous materials and, if handled or applied improperly, could be hazardous to human health and the environment. The following mitigation measures will be incorporated into the project to reduce this impact to a less-than-significant level:

SWEETWATER-HAZ-1: Sweetwater will apply copper sulfate and citric acid in accordance with the product label and shall comply with the recommendations provided on the MSDS applicable to the specific copper sulfate product to be used. Copper sulfate will be applied in an even, consistent manner over the surface area to be treated, thus minimizing the potential for higher than intended localized concentrations.

SWEETWATER-HAZ-2: Sweetwater will require training in copper sulfate and citric acid safety for all Sweetwater employees participating in the application and handling of copper sulfate. Sweetwater shall conduct additional refresher training, as deemed necessary, prior to each treatment event.

SWEETWATER-HAZ-3: Sweetwater will follow all response and containment procedures provided in their Chemical Hygiene Plan, Hazardous Response Plan, and the product MSDS in the event of a spill. These procedures include isolation and containment of the spill while wearing the appropriate personal protective equipment.

SWEETWATER-HAZ-4: Sweetwater will require its employees participating in the application or handling of copper sulfate and citric acid to wear appropriate personal protective equipment recommended on the MSDS, including protective safety glasses with side shields (or goggles) per Occupational Safety and Health Administration (OSHA) 29 CFR 1910.133. Chemically impervious gloves made of any waterproof material, boots, and protective clothing will be worn to avoid skin contact (refer to OSHA 29 CFR 1910.138), as well as a respirator that meets OSHA 29 CFR 1910.134 requirements.

3.5.2 Hydrology and Water Quality

Sweetwater's use of copper to control algae blooms at the Sweetwater Reservoir may result in excess of receiving-water limitations established in the General Permit. Exceeding the thresholds would itself be necessary to prevent algae-related water quality impacts at Sweetwater Reservoir, but this would be considered a significant impact unless Sweetwater obtains an exception from the limitations by the State Water Resources Control Board. The following mitigation measures will be incorporated into the project to reduce this impact to a less-than-significant level:

SWEETWATER-WQ-1: Sweetwater will apply for coverage under the State Board's NPDES Permit for Discharges of Aquatic Pesticides and, as part of that application, seek a Categorical Exception pursuant to Section 5.3 of the State Board's Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California.

SWEETWATER-WQ-2: Sweetwater will continue to monitor and report copper levels in Sweetwater Reservoir in accordance with State Board requirements.

3.6 AUTHORITY TO PREPARE A MITIGATED NEGATIVE DECLARATION

As provided in the State CEQA Guidelines Section 15070 (Title 14 - California Code of Regulations), an MND may be prepared for a project subject to CEQA when an IS has identified potentially significant effects on the environment, but revisions to the project have been made so that clearly no significant effect on the environment will result from project implementation. The Water Authority is the lead agency for preparation of this MND. Based on the findings of the IS/Environmental Checklist Form prepared for this project (Section 2.0 of this document), the Water Authority has determined that preparation of an MND is the appropriate method to present environmental review of the proposed project in compliance with CEQA. HWD, City of Poway, SFID, and Sweetwater have reviewed this IS and MND; their respective decision-making bodies will also consider adopting the MND before implementing any mitigation program identified specific to their activities.

3.7 PREPARERS OF THE MITIGATED NEGATIVE DECLARATION

This MND was prepared by AECOM, 401 West A Street, Suite 1200, San Diego, CA 92101. The following AECOM professionals contributed to its preparation.

Bill Graham – Principal in Charge
Alex Hardy – Senior Project Manager
Jessica Fernandes – Environmental Planner
Meghan Haggblade – Environmental Planner
Lyndon Quon – Senior Biologist
Keoni Calantas – Project Biologist
Nick Janssen – Geographic Information Systems Specialist
Therese Tempereau – Technical Editor
Marisa Fabrigas – Word Processor

3.8 RESULTS OF PUBLIC REVIEW (TO BE COMPLETED WITH FINAL MND)

- () No comments were received during the public input period.
- () Comments were received during the public input period, but they did not address the Draft Mitigated Negative Declaration findings or the accuracy or completeness of the Initial Study. No response is necessary. The letters are attached.
- (x) Comments addressing the findings of the Draft Mitigated Negative Declaration and/or accuracy or completeness of the Initial Study were received during the public input period.



Signature

Ken Weinberg
Director of Water Resources
San Diego County Water Authority

March 10, 2015
Date of Draft MND

May 13, 2015
Date of Final MND

SECTION 4.0 REFERENCES

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- City of Poway. 2014a. Aquatic Pesticide Application Plan. March.
- City of Poway. 2014b. Personal communication; project questionnaire and emailed information provided to Alex Hardy, AECOM, by Kevin O'Reilly, Water Treatment Plant Supervisor. November–December.
- City of Poway. 2015. Personal communication; emailed information provided to Alex Hardy, AECOM, by Kevin O'Reilly, Water Treatment Plant Supervisor. January.
- Helix Water District. 2014a. Aquatic Pesticide Plan.
- Helix Water District. 2014b. Personal communication; project questionnaire and emailed information provided to Alex Hardy, AECOM, by Brian Olney. November–December.
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- Santa Fe Irrigation District 2012. Final Project Development and Feasibility Report for the San Dieguito Reservoir. Prepared by Dudek. May.
- Santa Fe Irrigation District. 2014a. Aquatic Pesticide Application Plan. October 16.
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- Sweetwater Authority. 2015. Personal communication; emailed information provided to Alex Hardy, AECOM, by Mark Hatcher, Water Quality Laboratory Supervisor. January.

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- Willis, B.E. 2012. Detecting Copper Residues in Sediments From Aquatic Copper-Based Pesticide Applications. A Thesis Presented to the Graduate School of Clemson University. December.

SECTION 5.0 RESPONSE TO COMMENTS ON THE DRAFT MND

The Draft MND for the project was circulated for a 30-day public review beginning March 12, 2015. A Notice of Intent (NOI) to Adopt an MND was published in the *U-T San Diego* newspaper on March 12, 2015, and was mailed to a list of potentially interested agencies and organizations compiled by the Water Authority and the four other agencies participating in preparation of the MND. Copies of the Draft MND and the supporting technical appendices were made available for review at the Water Authority and at the following libraries near the reservoirs and/or the participating agencies' service area: Bonita-Sunnyside Branch Library, Escondido Main Library, Lakeside Branch Library, National City Public Library, Poway Branch Library, Rancho San Diego Branch Library, Rancho Santa Fe Branch Library, and Spring Valley Branch Library. An electronic version of the Draft MND and appendices were made available for review and download from the Water Authority's webpage, <http://www.sdcwa.org>. A public hearing to take testimony on the adequacy of the Draft MND was held at the Water Authority's Board of Directors meeting on March 26, 2015.

One comment letter was received in response to issuance of the Draft MND, from the California Department of Fish and Wildlife. No speakers offered testimony on the MND during the March 26, 2015, hearing.

This Final MND has been prepared in accordance with the requirements of the California Environmental Quality Act (California Public Resources Code Section 21000, et seq., [revised December 1998] herein, CEQA) and the State of California CEQA Guidelines, as amended February 1999 (California Administrative Code, Title 14, Section 15000, et seq.). The purpose of the Final MND is to provide the decision-making body, in this case the San Diego County Water Authority, responsible agencies, and the public with environmental impact information relative to the proposed project. The Water Authority must consider the information contained in this Final MND, including comments received during the public review period, prior to approving the proposed project.

The Final MND includes copies of the comment letter received regarding the Draft MND and the Water Authority's responses to the comments provided in the letter. The Final MND also includes the revised Draft MND and the appendices. Each issue raised in the comment letters has been assigned a number, as indicated with brackets in the margin of the comment letter page, and each response is numbered accordingly. The comment letter has been reproduced on the pages preceding the responses.

The Final MND includes revisions to clarify and correct the Draft MND, where necessary. Those revisions are shown in strike-out/underline format, with strikeout text (~~text~~) signifying deletions and underline text (text) signifying additions. No new significant information is presented in the Final MND that would require recirculation of the Draft MND pursuant to Section 15073.5(a) of the CEQA Guidelines.

DRAFT MND COMMENT LETTERS

State Agencies

California Department of Fish and Wildlife, dated April 13, 2015 (comment letter #1)

COMMENT LETTER #1

California Department of Fish and Wildlife, dated April 13, 2015

(a typographic error on the letter shows the date as April 13, 2014)



State of California – Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
South Coast Region
3883 Ruffin Road
San Diego, CA 92123
(858) 467-4201
www.wildlife.ca.gov

EDMUND G. BROWN JR., Governor
CHARLTON H. BONHAM, Director



April 13, 2014

Mr. Larry Purcell
San Diego County Water Authority
4677 Overland Avenue
San Diego, California 92123
LPurcell@sdcwa.org

Subject: Comments on the draft Mitigated Negative Declaration for the Application of Copper-based Algaecides at Five Reservoirs Project San Diego County (SCH# 2015031045)

Dear Mr. Purcell:

The California Department of Fish and Wildlife (Department) has reviewed the above-referenced draft Mitigated Negative Declaration (MND) for the Application of Copper-based Algaecides at Five Reservoirs, San Diego County. The following statements and comments have been prepared pursuant to the Department's authority as Trustee Agency with jurisdiction over natural resources affected by the project (California Environmental Quality Act, [CEQA] Guidelines § 15386) and pursuant to our authority as a Responsible Agency under CEQA Guidelines section 15381 over those aspects of the proposed project that come under the purview of the California Endangered Species Act (Fish and Game Code § 2050 *et seq.*) and Fish and Game Code section 1600 *et seq.* The Department also administers the Natural Community Conservation Planning (NCCP) program.

The project consists of the occasional application of copper sulfate pentahydrate or copper-based algaecides at five reservoirs in the western portion of San Diego County to control and prevent degradation of water quality resulting from algal and cyanobacterial blooms. The subject reservoirs and the member agencies that own and operate them are Olivenhain Reservoir (San Diego County Water Authority; SDCWA), Lake Jennings (Helix Water District), Lake Poway (City of Poway), San Dieguito Reservoir (Santa Fe Irrigation District), and Sweetwater Reservoir (Sweetwater Authority). Copper-based algaecide application is authorized by the State Water Resources Control Board (SWQCB) under a Statewide General Permit, Water Quality Order Number 2013-0002-DWQ (as amended by Order No. 2014-0078-DWQ). Each agency will apply to the SWQCB to obtain permission to use copper-based algaecide at their respective reservoirs. Additionally, the MND discusses periodic exceedances of the copper limit stated in the General Permit.

The Department offers the following comments and recommendations to assist the SDCWA in avoiding or minimizing potential project impacts on biological resources.

Algaecide Chelation and Toxicity

The Department is aware that the form of copper and water characteristics (e.g., pH and hardness) affects the toxicity response of algae and cyanobacteria to an algaecide exposure. Chelated copper formulations are used because they typically remain in the water column longer than non-chelated formulations and display a higher margin of safety for non-target

1

Conserving California's Wildlife Since 1870

Mr. Larry Purcell
San Diego County Water Authority
April 13, 2015
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species (e.g., fish). Increased residence time of copper in the water also increases the duration of algaecide exposure. However, the non-chelated algaecides, (e.g., copper sulfate pentahydrate) generally tend to have a shorter residence time and may be more toxic to non-target species than chelated formulations of algaecide (e.g., Cutrine®-Plus). Therefore the Department recommends the use of chelated algaecides whenever it is appropriate.

1 cont.

Algaecide Selection

The draft MND (Page 13) discusses the use of specific types of algaecides. However, there is no mention of how the algaecides were selected. The Department is not clear if studies were conducted to determine the appropriate form and concentration of copper that should be used to control the algae and cyanobacteria. Additionally, the Aquatic Pesticide Application Plans do not contain any information regarding how algaecides were selected. Therefore, the Department recommends that the final MND contain a section which explains the algaecide selection process.

2

Algaecide Applications

Page 2 of the MND states "the application of copper-based algaecides at each of the five listed reservoirs, as implemented by the respective agencies, which may include periodic exceedances of the limitations stated in the General Permit." Higher concentrations of algaecide may cause increased toxicity to aquatic organisms.

3

The Department recommends using multiple (2 or more) algaecide applications (if possible) to control algal growth and / or using field trials (or laboratory bioassay) to determine the most efficient and effective chelated algaecide formulation before the five water agencies resort to increasing copper concentrations to control problematic algae and cyanobacteria.

We appreciate the opportunity to comment on the referenced MND. Questions regarding this letter and further coordination on these issues should be directed to Bryand Duke at (858) 637-5511 or Bryand.Duke@wildlife.ca.gov.

Sincerely,



Gail K. Sevrens
Environmental Program Manager
South Coast Region

ec: Lauren Kershek (U.S. Fish and Wildlife Service; lauren_kershek@fws.gov)
Scott Morgan (State Clearinghouse)

Mr. Larry Purcell
San Diego County Water Authority
April 13, 2015
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RESPONSE TO COMMENT LETTER #1

California Department of Fish and Wildlife

1. Four of the five agencies whose algaecide application programs are discussed in the MND propose to use either pre-chelated copper algaecide products or citric acid as a chelating agent, when copper-based algaecide is applied to their respective reservoirs. The Water Authority, Sweetwater Authority, and Poway use and/or propose to use citric acid as a chelating agent for their copper applications. HWD currently uses and proposes to continue using Cutrine Plus, a pre-chelated copper product.

SFID uses and proposes to continue using a non-chelated copper algaecide product at San Dieguito Reservoir because it is more appropriate to SFID's method of application, which is a direct injection and mixing in the pipeline that delivers water to their reservoir. The algaecide application point for water transferred from Lake Hodges to San Dieguito Reservoir is in a pipeline approximately 1 mile from the reservoir, so the algaecide acts while water is in transit to the reservoir rather than while water is in the reservoir. Because SFID's water is treated in line, the product does not need to remain suspended in reservoir water in order to treat the targeted algae; therefore, the non-chelated product is the most effective and efficient means of algae control at San Dieguito Reservoir.

Sections 1.3.2, 1.3.3, and 1.3.4 have been revised in the Final MND to clarify the products that each of the agencies proposes to use in their algae control programs.

2. As a requirement of APAP preparation, each agency addressed in this MND performed an examination of alternative, non-chemical treatment methods of algae control, and has described the alternate methods they considered and those they already employ in their respective APAPs. Based on this review of alternative treatment options, application of the respective copper products proposed at each subject reservoir has been determined to be the most practical and effective method to control nuisance algae blooms, while minimizing potential environmental impacts. Copper-based algaecides have a long history of effective treatment of algae blooms at reservoirs in the United States and around the world. This historic use has provided extensive field data that inform manufacturers' chemical formulation and recommended concentration specifications as listed on the products' EPA-regulated labels. With the exception of the Water Authority, which has not had to use algaecide at Olivenhain Reservoir in the past, the water agencies addressed in this MND have their own histories with copper-based algaecide application at their respective reservoirs, and as a result have extensive field data on application at their own reservoirs. This past experience and the monitoring required pursuant to the General Permit has enabled each agency to develop and optimize an efficient algae-control program that minimizes potential toxicity to non-target species. The Water Authority has relied on an ample amount of information available on various copper-based algaecides to select their product, and will follow all label requirements and industry-standard practices whenever they need to commence algaecide application at Olivenhain. All of the agency practices addressed in this MND will continue to conform to requirements stated in the General Permit, including pre- and post-application monitoring and reporting to the State Board to demonstrate permit compliance.
3. Application of algaecides at each of the reservoirs addressed in this MND will continue to be conducted in conformance with algaecide label instructions, including specifications governing product formulation, concentration, and application frequency. Large blooms of algae are most effectively controlled by repeated low dosage algaecide applications in conformance with label directions (and as recommended in this comment), rather than by merely increasing the amount of copper used in a single application. However, the infrequent exceedance of copper limitations allowed by the General Permit exception provisions may occur even though the agencies conform to label requirements and treat algal blooms with multiple low concentrations rather than a single higher concentration of algaecide product.

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APPENDIX A3
Lake Poway APAP

**AQUATIC PESTICIDE
APPLICATION PLAN (APAP)**

For

LAKE POWAY



Prepared By

CLEAN LAKES INC.

2150 Franklin Canyon Road

Martinez, California 94553

PO Box 3186

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Prepared For

City of Poway

14521 Lake Poway Road

Poway, CA 92064

March 2014

Purpose: To meet the requirements and ensure compliance with Water Quality Order No. 2013-0002-DWQ, Statewide General National Pollutant Discharge Elimination System Permit for Residual Aquatic Pesticide Discharges to Waters of the United States from Algae and Aquatic Weed Control Applications, General Permit No. CAG990005, adopted by the State Water Resource Control Board on March 5, 2013

AQUATIC PESTICIDE APPLICATION PLAN (APAP)

Lake Poway

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CERTIFICATION

In accordance with Attachment B, Section V.B.1. Standard Provisions – Reporting, Signatory and Certification Requirements, Water Quality Order No. 2013-0002-DWQ Statewide General National Pollutant Discharge Elimination System Permit for Residual Aquatic Pesticide Discharges to Waters of the United States from Algae and Aquatic Weed Control Applications, General Permit No. CAG 990005:

“I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.” (40 C.F.R. § 122.22(d).)

Kevin O'Reilly
Water Treatment Plant Supervisor
City of Poway Public Works

Date

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BACKGROUND INFORMATION

This Aquatic Pesticide Application Plan (APAP) is a comprehensive plan developed by the discharger, the City of Poway, to comply with the provisions of Water Quality Order No. 2013-0002-DWQ, Statewide General National Pollutant Discharge Elimination System Permit for Residual Aquatic Pesticide Discharges to Waters of the United States from Algae and Aquatic Weed Control Applications, General Permit No. CAG990005, adopted by the State Water Resource Control Board on March 5, 2013.

This Aquatic Pesticide Application Plan (APAP) describes the project site, algae nuisances, aquatic pesticide products expected to be used, the monitoring program, and Best Management Practices to be followed, as well as the other conditions addressed in the General Permit, Section VIII C, Aquatic Pesticide Use Requirements, Aquatic Pesticide Application Plan.

The use of aquatic pesticides within Lake Poway's Algae Control Program is necessary to manage the lake resources and maintain beneficial uses that include drinking water quality, recreation, aesthetics, boating, and fishing. The Algae Control Program is an undertaking necessary to control specific types of algae from becoming nuisances to the management of the water body which can otherwise cause impacts to health and beneficial uses. The need for aquatic pesticide application events as part of this program vary from week to week, season to season, and year to year due to such things as water temperature, sunlight, nutrient levels, plant and algae growth, and other factors. This APAP, per the General Permit requirements described below, provides the outline to ensure that the Algae Control Program is successful.

PERMIT COVERAGE: The General Permit (No. CAG990005) addresses the discharge of aquatic pesticide residues related to the application of 2,4-D, acrolein, copper, diquat, endothall, fluridone, imazapyr, glyphosate, sodium carbonate peroxyhydrate, triclopyr-based algacides and aquatic pesticides, and adjuvants containing ingredients represented by the surrogate nonylphenol. Aquatic pesticides that are applied to application areas within waters of the United States in accordance with FIFRA label requirements and Use

Permit restrictions are not considered pollutants. However, residues associated with aquatic pesticide application require coverage under the General Permit. These include over-applied or misdirected pesticide products and pesticide residues. Residues are any pesticide byproduct, or breakdown product, or pesticide product that is present after the use of the pesticide to kill or control the target weed.

The General Permit does not cover agricultural storm water discharges or return flows from irrigated agriculture because these discharges are not defined as “point sources” and do not require coverage under an NPDES permit. The General Permit also does not cover other indirect or non point source discharges from applications of pesticides, including discharges of pesticides to land that may be conveyed in storm water or irrigation runoff. The General Permit does not cover the discharge of pollutants related to applications of pesticides other than 2,4-D, acrolein, copper, diquat, endothall, fluridone, imazapyr, glyphosate, sodium carbonate peroxyhydrate, triclopyr - based algaecides and aquatic pesticides, and adjuvants containing ingredients represented by the surrogate nonylphenol based pesticides; however, the General Permit includes a re-opener statement specifying that the permit may be reopened for the specific purpose of modifying the list of pesticides whose associated discharge is authorized by this General Permit.

WATERS OF THE UNITED STATES: The General Permit regulates the discharge of residues associated with the application of aquatic pesticides to waters of the United States. “Waters of the United States” are defined by the General Permit as follows:

1. All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
2. All interstate waters, including interstate “wetlands”;
3. All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sand flats, “wetlands,” sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such waters:
 - a. Which are or could be used by interstate or foreign travelers for recreational or other purposes;

- b. From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
 - c. Which are used or could be used for industrial purposes by industries in interstate commerce.
4. All impoundments of waters otherwise defined as waters of the United States under this definition;
 5. Tributaries of waters identified in items 1 through 4 of this definition;
 6. The territorial sea; and
 7. "Wetlands" adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (1) through (6) of this definition. Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA (other than cooling ponds as defined in 40 C.F.R. section 423.11(m) which also meet the criteria of this definition) are not waters of the United States. This exclusion applies only to manmade bodies of water which neither were originally created in waters of the United States (such as disposal area in wetlands) nor resulted from the impoundment of waters of the United States [See Note 1 of this Section.] Waters of the United States do not include prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with U.S. EPA.

WATER QUALITY STANDARDS: The Clean Water Act (CWA) defines Water Quality Standards as "Provisions of state or federal law which consist of designated uses for the waters of the United States, water quality criteria for waters based upon such uses, and antidegradation policies. Water quality standards are to protect the public health or welfare, enhance the quality of water and serve the purposes of the Act." [40 Code of Federal Regulations (CFR) section 131.3(i)].

In California, *Water Quality Control Plans* designate the beneficial uses of waters of the State and water quality objectives (WQOs) to protect those uses. The *Water Quality Control Plans* are adopted by the State and Regional Boards through a formal administrative rulemaking process, and, upon approval by USEPA, the WQOs for waters of the United States (generally surface waters) become State water quality standards.

USEPA has established water quality criteria in California for priority pollutants in the National Toxics Rule and the California Toxics Rule (CTR). The CTR criteria are also water quality standards.

EFFLUENT LIMITATIONS: NPDES permits for discharges to surface waters must meet all applicable provisions of sections 301 and 402 of the CWA. These provisions require controls that utilize best available technology economically achievable (BAT), best conventional pollutant control technology (BCT), and any more stringent controls necessary to reduce pollutant discharge and meet water quality standards.

Title 40, CFR section 122.44 states that if a discharge causes, has the reasonable potential to cause, or contributes to an excursion (Reasonable Potential) of a numeric or narrative water quality criterion, the permitting authority must develop effluent limits as necessary to meet water quality standards. Title 40, CFR section 122.44(k)(3) allows these effluent limits to be requirements to implement BMPs if numeric effluent limits are infeasible. It is infeasible for the State Board to establish numeric effluent limitations in this General Permit, because the application of aquatic pesticides is not necessarily considered a discharge of pollutants according to the Talent decision. The regulated discharge is the discharge of residues associated with the application of aquatic pesticides. These include over-applied and misdirected pesticide product and pesticide residue. At what point the pesticide becomes a residue is not precisely known and varies depending on such things as target weed or algae, water chemistry, and flow. Therefore, the effluent limitations contained in the General Permit are narrative and include requirements to develop and implement this APAP that describes appropriate BMPs, including compliance with all pesticide label instructions, and to comply with receiving water limitations.

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

Once an aquatic pesticide has been applied to an application area, the pesticide product can actively treat the target species within the treatment area. During the treatment event, the aquatic pesticide is at a sufficient concentration to actively kill or control the target

weeds plants or algae. When active ingredient concentrations are below this effective concentration, the aquatic pesticide becomes a residue. The minimum effective concentration, and the time required to reach it, vary due to site specific conditions, such as flow, target species, and water chemistry. The Receiving Water Limitations require that an application event does not result in an exceedence of water quality standards in the receiving water. The receiving water includes:

- Anywhere outside of the treatment area at any time, and
- Anywhere inside the treatment area after completion of the treatment event.

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

Receiving water limitations are provided in the General Permit and are provided as follows: The instantaneous maximum receiving water limitations are based on promulgated water quality criteria such as those provided in the CTR, water quality objectives adopted by the State and Regional Water Boards in their Basin Plans, water quality criteria adopted by the California Department of Fish and Wildlife, water quality standards such as drinking water standards adopted by U.S. EPA or the California Department of Public Health (CDPH), or the U.S. EPA's National Recommended Ambient Water Quality Criteria.

This General Permit provides receiving water limitations based on the lowest water quality criteria/objectives to protect all designated beneficial uses of the receiving water. The receiving water limitations in this General Permit are similar as those in Order No. 2004-0009-DWQ, with the exception of copper, which has an updated formula (copper chronic = $0.96 * \text{EXP}(0.8545 * (\text{LN}(\text{harness as CaCO}_3)) - 1.702)$) to calculate copper exceedence limits based on the CTR.

The rationale for each limitation is summarized in the table below:

Constituent/ Parameter	BENEFICIAL USE ¹			All Designations	Basis
	MUN, µg/L	WARM or COLD, µg/L	Other than MUN, WARM, or COLD, µg/L		
2,4,-D	70				U.S. EPA MCL
Acrolein ²	320	21	780		U.S. EPA Water Quality Criteria, 1986.
Copper ²				Dissolved Freshwater ³ Copper Chronic = $0.960 \exp\{0.8545 [\ln(\text{hardness}^4)] - 1.702\}$ ^{5,6} Dissolved saltwater ³ Copper Chronic = $0.83 \exp\{0.8545 [\ln(\text{hardness}^4)] - 1.702\}$ ^{5,6}	California Toxics Rule
Diquat	20				U.S. EPA MCL
Endothall	100				U.S. EPA MCL
Fluridone	560				U.S. EPA Integrated Risk Information System
Glyphosate	700				U.S. EPA MCL
Nonylphenol				Freshwater Chronic Criterion = 6.6 µg/L Saltwater Chronic Criterion = 1.7 µg/L	U.S. EPA National Recommended Ambient Water Quality Criteria
Toxicity	Algaecide and aquatic herbicide applications shall not cause or contribute to toxicity in receiving water(s).				Regional Water Boards' Basin Plans

Notes

1. See Regional Water Boards' Water Quality Control Plans (Basin Plans) for beneficial use definitions.
2. Public entities and mutual water companies listed in Attachment G are not required to meet this receiving water limitation during the exception period described in Section VIII.C.10, Limitations
3. For waters in which the salinity is equal to or less than 1 part per thousand 95% or more of the time, the freshwater criteria apply. For waters in which the salinity is equal to or greater than 10 parts per thousand 95% or more of the time, saltwater criteria apply. For waters in which the salinity is between 1 and 10 parts per thousand, the applicable criteria are the more stringent of the freshwater or saltwater criteria.
4. For freshwater aquatic life criteria, waters with a hardness 400 mg/L or less as calcium carbonate, the actual ambient hardness of surface water shall be used. For waters with a hardness of over 400 mg/L as calcium carbonate, a hardness of 400 mg/L as calcium carbonate shall be used with a default Water-Effect Ratio of 1.
5. Values should be rounded to two significant figures.
6. This limitation does not apply to the Sacramento River and its tributaries above the State Highway 32 Bridge at Hamilton City. See Table III – 1 of the Basin Plan for the Sacramento and San Joaquin River Basins for copper limitation.

MONITORING REQUIREMENTS: The General Permit requires dischargers to comply with the Monitoring and Reporting Program (MRP). The goals of the MRP are to:

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

This APAP was prepared to address the above requirements and those detailed in the General Permit.

DESCRIPTION OF THE WATER SYSTEM

Lake Poway, owned and operated by the City of Poway, was created in 1972 to provide a dependable supply of water and is located in Poway, CA within San Diego County. Due to the relatively small watershed that Lake Poway falls within (1,900 acres), and the relatively low rainfall received in the area (approximately 12 inches per year), the majority of water is imported from the San Diego County Water Authority's first aqueduct. Seasonal runoff can enter the lake through Boulder Bay stream within Warren Canyon. Lake Poway rarely discharges into the watershed below and would only do so during very heavy rain events. The Blue Sky Ecological Reserve is found immediately below Lake Poway. Lake Hodges, operated and maintained by the City of San Diego's Public Utilities Department, is found approximately 5 miles downstream of Lake Poway. The lake is approximately 60 surface acres in size, is maintained to hold approximately 3,150 acre feet of water, has an average depth of 52.5 feet and is 110 feet at its deepest.

The lake serves primarily as a raw water supply for drinking water, and is used for non water body contact that includes fishing from electric boats managed by a concessionaire.



DESCRIPTION OF THE TREATMENT AREA

Based on planktonic algae growth conditions, and specifically cyanobacteria blooms, the lake system can from time to time require algacide treatments to prevent nuisance algae levels from developing with treatment occurring between April 1 to October 30 each year.

Lake Poway is a manmade lake impounded by a dam and is constructed with a spillway. The dam contains a discharge valve that is opened infrequently for maintenance purposes only. This discharge valve will be inspected prior to all treatments to ensure that it is not open prior to any aquatic pesticide application.

APPLICATION SCHEDULE

The City of Poway will provide a phone number or other specific contact information to all persons who request the application schedule and will inform the requester if the schedule is subject to change.

PUBLIC NOTICE REQUIREMENTS

No public agencies are expected to be potentially impacted as the lake, nor the lake shoreline, is shared or managed with any other public agency and the lake does not discharge water downstream of the dam during the months that algaecide treatments may occur. Therefore no agencies will be notified about algaecide treatment.

DESCRIPTION OF THE TYPES OF AQUATIC WEEDS AND ALGAE TO BE CONTROLLED:

There are three basic types of aquatic plants known to occupy southern California lakes; Free Floating , Submerged (those found growing below the water line), and Emergent (those found growing above the water line). There are also three basic types of algae, know as attached, filamentous, or planktonic algae. Only planktonic algae (cyanobacteria) can cause nuisances that may require treatment with an algaecide at Lake Poway.

AQUATIC PESTICIDES AND ADJUVANTS EXPECTED TO BE USED AND APPLICATION METHODS

Provided in the table below are those algaecides that may be used in the algae control program for Lake Poway. The need for treatments is based on physical inspections, water quality monitoring, and potential and existing impacts to drinking water quality.

<i>Herbicide* Algaecide*</i>	<i>Water Use Restrictions</i>			<i>Degradation Byproducts</i>
	<i>Days for Swimming</i>	<i>Days for Fish Consumption</i>	<i>Days for Irrigation of Turf/Food Crops</i>	
Copper Sulfate <i>(Copper as metallic, 25.1%)</i>	0	0	0	None

**Refer to Product Labels and MSDS's for Further Information*

Algaecide applications are to be performed utilizing Best Management Practices (BMP's) by licensed personnel in accordance with a Pest Control Recommendations (PCR) issued by a State of California, Department of Pesticide Regulation (DPR) contract Pest Control Advisor (PCA). City of Poway staff will perform algae control applications and water quality monitoring. City of Poway application staff hold State of California, Department of Pesticide Regulation (DPR) Qualified Applicator Licenses (QAL) or Certificates (QAC). Applications would be performed from a boat as a surface application over the entire reservoir surface.

FACTORS INFLUENCING ALGAE CONTROL

The decision to implement algae control treatment is based on algae species, density and counts carried out by the water treatment plant. Planktonic algae treatments are based on preventing nuisance levels from developing during the spring and summer months. When algae is treated in an early growth stage there is less biomass that is controlled which helps reduce and protect against impacts to dissolved oxygen depletion from decomposing biomass. Based on nuisance levels algae species or densities and the potential to impact beneficial uses of the lake system, City water treatment personnel and a Pest Control Advisor (PCA) will review control options. Based on findings, a Pest Control Recommendation (PCR) will be developed for algaecide applications.

Aquatic algaecide treatments are determined based on the following characteristics:

Site Characteristics:

- The surface area of Lake Poway is estimated to be 60 surface acres.
 - The area that may be targeted for algae control with copper sulfate covers the entire lake surface of 60 acres.
- The water volume of Lake Poway is approximately 3,150 acre feet (~60 surface acres x 52.5 foot average depth)
- The water volume of the area that may be targeted for submerged aquatic plant control is approximately 60 acre feet (60 surface acres x 1 foot average depth).

- No water discharges occur from Lake Poway into the watershed below.

MONITORING AND REPORTING PROGRAM

Monitoring Requirements: The General Permit requires that dischargers comply with the Monitoring and Reporting Program (MRP) outlined in the General Permit. The goals of the MRP are to:

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

General Monitoring

1. Lake Poway algae treatments will occur, when needed, as whole lake treatments. Sample locations will be established in the lake proper according to pre and post event monitoring schedules outlined in the General Permit. The Event Monitoring sample will be taken within the treatment area as will the pre and post event monitoring events. GPS coordinates for these locations will be noted.
2. Algaecide application practices will be established based on the Pest Control Recommendations (PCR) from a contracted CA DPR licensed Pest Control Advisor (PCA). Algae growth will be evaluated to determine the potential for creating impacts or nuisances to lake use and management prior to any treatments. Algaecide label directions are factored into treatments to determine timing and application rates. Application practices utilize the most appropriate application technique to comply with BMP's via surface treatment methods.

3. Algaecides are registered by the US Environmental Protection Agency (USEPA) nationally and the CA Department of Pesticide Regulation (CADPR) within California. Manufacturers of products must provide information to the USEPA for registration or re-registration purposes that includes information with regard to transport, environmental fate and effects of algaecides. Algaecides that may be used in Lake Poway are registered for use by both the USEPA and the CADPR. Detailed information about transport, fate and effects of algaecides and aquatic herbicides are addressed in USEPA's Re-registration Eligibility Decisions (RED) documents for each of the active ingredients, as follows:
 - Copper sulfate (copper):
http://www.epa.gov/oppsrrd1/REDs/copper_red.pdf
4. Cumulative and indirect effects of copper based algaecides are discussed in USEPA Re-registration Eligibility Documents (RED) presented in item 3 above.
5. The potential for algaecide applications leading to designated use impacts is unlikely since DPR licensed Qualified Applicators will implement the treatments based on a Pest Control Recommendation (PCR) following herbicide label directions. Misuse, over use, or use of incorrect products are not expected to occur due to the preparations and planning that take place prior to implementing a treatment.
6. No known or potential impacts from algaecide applications on water quality are anticipated based on following algaecide label requirements, the infrequent applications that are anticipated to take place, and the short duration that algaecides are present in the water column. A Risk Assessment is provided for copper in the USEPA RED discussed in Item 3.
7. Pre and post water quality sampling stations are sufficient to assess algaecide applications due to the small nature of the lake, the size of the treatments, and the relative ease that sample locations can be visited.
8. The monitoring plan prepared for this APAP is described below.

Receiving Water Monitoring

Treatment Maps: For each application, a treatment map will be developed with a convenient scale showing the application area, treatment area, immediately adjacent untreated areas (if entire water body is not treated), and water bodies receiving treated water. Information about surface area and/or volume of the application area, treatment area, and any other information used to calculate dosage and quantity of each pesticide used at each application site will be included with the algacide application monitoring log forms (see below). Sampling locations will be noted on the treatment map and global positioning systems (GPS) coordinates for each sampling site will be noted on application monitoring log forms.

Control Structure Inspections: Prior to every application, an inspection of the integrity of the discharge valve will be performed to ensure that treated water does not unintentionally get discharged from the lake system.

Aquatic Pesticide Monitoring Frequency: Samples will be collected from a minimum of six application events for copper applications. If there are less than six application events in a year, samples will be collected during each application event for each active ingredient. If the results from six consecutive sampling events show concentrations that are less than the receiving water limitation/trigger for an active ingredient, sampling shall be reduced to one application event per year for that active ingredient. If the yearly sampling event shows exceedence of the receiving water limitation/trigger for an active ingredient, then sampling shall return to six application events for that active ingredient. If less than six treatments are carried out per year, then monitoring will continue to occur in following years until six treatments, and thus six monitoring events, have been carried out and reported in the annual report.

Aquatic Pesticide Monitoring: The following monitoring activities will be performed for a minimum of six application events or for as many applications as occur in a year if there are less than six application events, over multiple years if necessary, at representative locations:

1. Background Monitoring. Background monitoring samples will be collected in the application area just prior to (up to 24 hours in advance of) the application event.
2. Event Monitoring. Event monitoring samples will be collected inside of the treatment area after the application event since the algaecide treatment will be carried out as a whole lake treatment.
3. Post-Event Monitoring. Post-event monitoring samples will be collected within the treatment area within one week after application.

Sample Analysis: All samples requiring laboratory analyses will be collected and analyzed by a laboratory certified for such analyses by the California Department of Health Services. All analyses will be conducted in accordance with the latest edition of "Guidelines Establishing Test Procedures for Analysis of Pollutants" (Guidelines), promulgated by the U.S. Environmental Protection Agency (USEPA) (Title 40 Code of Federal Regulations part 136). Field analysis for the parameters of temperature, dissolved oxygen (DO), electrical conductivity, and pH will be performed using a Portable Multi-Parameter Meter (YSI or equivalent) with a sufficiently long probe cable, and will be maintained and calibrated at regular intervals according to the manufacturer specifications. Secchi Disk measurements will be performed using a standard Secchi disk. Water samples collected for laboratory analysis will be accompanied with a completed chain of custody form identifying the chemical constituents requiring analysis, and delivered to a State of California Certified Laboratory.

Monitoring Parameters: The following parameters will be collected or analyzed:

Sample Type	Constituent/Parameter	Units	Sample Method	Minimum Sampling Frequency	Sample Type Requirement	Required Analytical Test Method
Visual	1. Monitoring area description (pond, lake, open waterway, channel, etc.) 2. Appearance of waterway (sheen, color, clarity, etc.) 3. Weather conditions (fog, rain, wind,	Not applicable	Visual Observation	1	Background, Event and Post- event Monitoring	Not applicable
Physical	1. Temperature ²	°F	Grab ⁴	5	Background, Event and Post- event Monitoring	6
	2. pH ³	Number				
	3. Turbidity ³	NTU				
	4. Electric Conductivity ³ @ 25°C	µmhos/cm				
Chemical	1. Active Ingredient ⁷	µg/L	Grab ⁴	5	Background, Event and Post- event Monitoring	6
	2. Nonylphenol ⁸	µg/L				
	3. Hardness (if copper is monitored)	mg/L				
	4. Dissolved Oxygen ²	mg/L				

1: All applications at all sites.

2: Field testing.

3: Field or laboratory testing.

4: Samples shall be collected at three feet below the surface of the water body or at mid water column depth if the depth is less than three feet.

5: Collect samples 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. If there are less than six application events in a year, collect samples during each application event for each active ingredient in each environmental setting (flowing water and non-flowing water). If the results from six consecutive sampling 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. If the yearly sampling event shows exceedence of the receiving water limitation/trigger for an active ingredient in an environmental setting, then sampling shall return to six application events for that active ingredient in each environmental setting. For glyphosate, collect samples from one application event from each environmental setting (flowing water and non-flowing water) per year.

6: Pollutants shall be analyzed using the analytical methods described in 40 C.F.R. part 136.

7: 2,4-D, acrolein, dissolved copper, diquat, endothall, fluridone, glyphosate, imazamox, imazapyr, penoxsulam, and triclopyr.

8: It is required only when a surfactant is used.

Sampling Procedures: Samples will be collected using sampling procedures which minimize loss of monitored constituents during sample collection and analysis to maintain sample integrity.

Sampling protocols: Samples will be retrieved, stored, recorded, and shipped or delivered to a laboratory using the following methods and precautions. Any deviation from these methods and precautions will be recorded and explained.

Materials for in field sampling:

- 1) New sampling bottles, one per sample with sample ID label.
- 2) Cooler(s) sufficient to hold ample bottles, with ice- or gel-packs
- 3) Plastic gloves
- 4) Subsurface grab sampler
- 5) Depth finder, marked pole, Secchi Disk (cord marked with half foot increments), or water quality monitoring probe with depth sensor.
- 6) Instrument(s) for measurement of temperature, pH, dissolved oxygen, hardness, electrical conductivity, depth.
- 7) GPS for sample location coordinates.
- 8) Field data sheets and clipboard
- 9) A clean boat and a transport vehicle

Method to collect a single sample: Samples will be simple grab samples.

- 1) When approaching a sampling location, care will be taken to not stir up sediments and to approach from downstream or down wind direction. If anchoring is required, lower anchor gently.
- 2) Immediately prior to collecting the sample, the sample bottle label details will be completed (i.e. date, time, sample collector...)
- 3) When taking the sample, the cap will be left on the bottle until it is at three feet of depth or at midpoint in the water column, per the monitoring forms outlined below.
- 4) Once the bottle is at the appropriate depth, the cap will be removed below the surface. Stirring of the sediments will be avoided.
- 5) The bottle will be rinsed with sample water and emptied twice, then filled completely
- 6) Once the bottle is full, it will be capped.
- 7) The bottle will be placed in the appropriate cooler. The bottles will be kept in contact with ice packs
- 8) Other water quality measurements will be taken and recorded
- 9) The Water Sampling Data Sheet will be filled out with information for the sample

- 10) In the office, the bottle will be placed into a refrigerator, unless samples are taken immediately to a laboratory.

Submitting sample to lab:

- 1) Samples will be submitted within 48 hours of sample collection or sooner to a laboratory as required by hold times for the constituents to be sampled.
- 2) Samples will be packed in a cooler with ice packs between each bottle
- 3) Chain of Custody (COC) form will be prepared to include details on the sample bottle labels.
- 4) If the samples are shipped to the lab, the pick-up person will sign the COC and a copy will be made before sending out the shipment. If the samples are delivered to the lab, the delivering person will have the receiving person sign the COC form and provide a copy before turning over the shipment.

Retention of Records: Records of all monitoring information including all calibration and maintenance records, copies of all reports required by the General Permit, and records of all data used to complete the application per the General Permit will be retained. Records will be maintained for a minimum of three years from the date of the sampling event. This period may be extended during the course of any unresolved litigation regarding a discharge, or when requested by the appropriate Regional Board Executive Officer.

Monitoring Records: Records of monitoring events will include the following information:

- a. The date, exact place, and time of sampling or measurements;
- b. The individuals who performed the sampling or measurements;
- c. The dates analyses were performed;
- d. The individuals who performed the analyses;
- e. The analytical techniques or method used; and
- f. The results of such analyses.

The following forms will be used to collect and track information required for each treatment event as required by the General Permit:

**CLEAN LAKES, INC. AQUATIC WEED CONTROL
NPDES AQUATIC PESTICIDE APPLICATION LOG**

Date of Application:		Location:		App. Start Time:	
				App. Stop Time:	
Applicator Name:			APAP Certification:		
Attach map showing application area, treatment area, immediately adjacent untreated area, and water bodies receiving treated water.					
Discharge Gates or Control Structures					
Name	Date Closed	Time Closed	Date Opened	Time Opened	
1.					
Calculations to Determine Opening and Closures:					
2. Provide information on surface area and/or volume of application area and treatment area and other information used to calculate dosage and quantity of each pesticide used at each application site:					
2.a Application Area – Surface Area:			2.b Application Area – Volume:		
2.c Treatment Area – Surface Area:			2.d Treatment Area – Volume:		
2.e Dosage and Quantity Information for each pesticide used:					
Application Details					
Plot Number	Area (ac. or sq. ft.)	Average Depth	Product	Product Quantity	Concentration or Rate

For additional treatment areas use additional forms.

AQUATIC WEED CONTROL NPDES RECEIVING WATER MONITORING

Visual Observation Form (Background Monitoring)

Monitoring Date:		Location:		Sampled by:	
Monitoring Area Description (pond, lake, waterway, channel,...):					
Site Conditions/Appearance of Waterway					
Floating or suspended matter: Present <input type="checkbox"/> Absent <input type="checkbox"/>		Discoloration: Present <input type="checkbox"/> Absent <input type="checkbox"/>		Bottom deposits: Present <input type="checkbox"/> Absent <input type="checkbox"/>	
Visible films, sheens or coatings: Present <input type="checkbox"/> Absent <input type="checkbox"/>		Fungi, slimes, or objectionable growths: Present <input type="checkbox"/> Absent <input type="checkbox"/>		Aquatic life: Present <input type="checkbox"/> Absent <input type="checkbox"/>	
				Potential nuisance conditions: Present <input type="checkbox"/> Absent <input type="checkbox"/>	
Weather conditions and other observations (fog, rain, wind, wind direction...):					

Visual Observation Form (Event Monitoring)

Monitoring Date:		Location:		Sampled by:	
Monitoring Area Description (pond, lake, waterway, channel,...):					
Site Conditions/Appearance of Waterway					
Floating or suspended matter: Present <input type="checkbox"/> Absent <input type="checkbox"/>		Discoloration: Present <input type="checkbox"/> Absent <input type="checkbox"/>		Bottom deposits: Present <input type="checkbox"/> Absent <input type="checkbox"/>	
Visible films, sheens or coatings: Present <input type="checkbox"/> Absent <input type="checkbox"/>		Fungi, slimes, or objectionable growths: Present <input type="checkbox"/> Absent <input type="checkbox"/>		Aquatic life: Present <input type="checkbox"/> Absent <input type="checkbox"/>	
				Potential nuisance conditions: Present <input type="checkbox"/> Absent <input type="checkbox"/>	
Weather conditions and other observations (fog, rain, wind, wind direction...):					

Visual Observation Form (Post Event Monitoring)

Monitoring Date:		Location:		Sampled by:	
Monitoring Area Description (pond, lake, waterway, channel,...):					
Site Conditions/Appearance of Waterway					
Floating or suspended matter: Present <input type="checkbox"/> Absent <input type="checkbox"/>		Discoloration: Present <input type="checkbox"/> Absent <input type="checkbox"/>		Bottom deposits: Present <input type="checkbox"/> Absent <input type="checkbox"/>	
Visible films, sheens or coatings: Present <input type="checkbox"/> Absent <input type="checkbox"/>		Fungi, slimes, or objectionable growths: Present <input type="checkbox"/> Absent <input type="checkbox"/>		Aquatic life: Present <input type="checkbox"/> Absent <input type="checkbox"/>	
				Potential nuisance conditions: Present <input type="checkbox"/> Absent <input type="checkbox"/>	
Weather conditions and other observations (fog, rain, wind, wind direction...):					

**AQUATIC WEED CONTROL
NPDES RECEIVING WATER MONITORING**

Physical and Chemical Monitoring **Location:** _____ **Sampled by:** _____
 (Physical and chemical monitoring required for six (6) applications for each type of pesticide at each waterbody site. See General Permit)

1. Background Monitoring Parameters (u/s or at treatment area up to 24 hours before or at time of treatment)			Date:
Physical Sample Type (3 feet below water surface or mid depth)	Temperature (F) ¹	Turbidity (NTU) ²	Electrical Conductivity (µmhos/cm) ²
Chemical Sample Type (3 feet below water surface or mid depth)	Active Ingredient (µg/l)	Nonylphenol (µg/l) ³	pH ²
	Dissolved Oxygen (mg/L) ²	Hardness (CaCO₃) ⁴	GPS latitude and longitude coordinates
2. Event Monitoring Parameters (d/s or immediately adjacent to treatment area immediately after application)			Date:
Physical Sample Type (3 feet below water surface or mid depth)	Temperature (F) ¹	Turbidity (NTU) ²	Electrical Conductivity (µmhos/cm) ²
Chemical Sample Type (3 feet below water surface or mid depth)	Active Ingredient (µg/l)	Nonylphenol (µg/l) ³	pH ²
	Dissolved Oxygen (mg/L) ²	Hardness (CaCO₃) ⁴	GPS latitude and longitude coordinates
3. Post Event Monitoring Parameters (w/i treatment area + immediately d/s in flowing water or adjacent to treatment area w/i 1 week)			Date:
Physical Sample Type (3 feet below water surface or mid depth)	Temperature (F) ¹	Turbidity (NTU) ²	Electrical Conductivity (µmhos/cm) ²
Chemical Sample Type (3 feet below water surface or mid depth)	Active Ingredient (µg/l)	Nonylphenol (µg/l) ³	pH ²
	Dissolved Oxygen (mg/L) ²	Hardness (CaCO₃) ⁴	GPS latitude and longitude coordinates

¹ Field Test; ² Field or Laboratory Test; ³ Required when nonylphenol is used; ⁴ Required for copper applications.

Device Calibration and Maintenance: All monitoring instruments and devices that will be used by the discharger to fulfill the prescribed monitoring program will be properly maintained and calibrated as necessary to ensure their continued accuracy.

Reporting

All reports will be submitted to the appropriate State Water Resources Control Board, NPDES Wastewater Unit. All reports submitted in response to the Water Quality Order will comply with the provisions stated in the Standard Provisions (Attachment B) and Monitoring and Reporting Program (Attachment C), of the General Permit. The Annual reports will contain the following information:

- An executive summary discussing compliance or violation of the General Permit, and the effectiveness of the APAP to reduce or prevent the discharge of pollutants associated with algaecide and aquatic herbicide applications;
- A summary of monitoring data, including the identification of water quality improvements, or degradation as a result of the algaecide or aquatic pesticide application, if appropriate, and recommendations for improvements to the APAP (including proposed best management practices (BMPs) and monitoring program based on the monitoring results). All receiving water monitoring data will be compared to receiving water limitations and receiving water monitoring triggers;
- Identification of BMPs currently in use and a discussion of their effectiveness in meeting the requirements in this General Permit;
- A discussion of BMP modifications addressing violations of this General Permit;
- A map showing the location of each treatment area;
- Types and amounts of algaecides used at each application event;
- Information on surface area and/or volume of treatment areas and any other information used to calculate dosage, concentration, and quantity of each algaecide and aquatic herbicide used;

- Sampling results will indicate the name of the sampling agency or organization, detailed sampling location information (including latitude and longitude or township/range/section if available), detailed map or description of each sampling area (address, cross roads, etc.), collection date, name of constituent/parameter and the concentration detected, minimum levels, method detection limits for each constituent analysis, name or description of water body sampled, and a comparison with applicable water quality standards, and a description of the analytical QA/quality control plan. Sampling results will be tabulated so that they are readily discernible; and
- A summary of the algaecide application logs.

24 Hour Report and Five Day Reporting : The discharger and or applicator will orally report any non-compliance. This includes any unexpected or unintended effect of the use of an algaecide or aquatic herbicide that may danger health or the environment. This information will be provided orally within 24 hours from the time the discharger or applicator becomes aware o the circumstances. A written report of the non-compliance will be provided within five (5) days of the time the discharger and or applicator becomes aware of the noncompliance. The 24 hour report as well as the 5 day written report will follow the format in Attachment C.

Data Storage: All data will be recorded on supplied forms. At the end of each day, all data forms will be double copied. The original will stay in specified notebooks. The first copy will be stored in a file cabinet. The second copy will be stored and shipped with the samples.

Quality Assurance Audits and Personnel: The discharger will provide a Quality Assurance Officer and the Certified Laboratory will provide one Quality Assurance Officer. In addition, the Water Quality Control Board is welcome to provide third party validation of the sampling procedures.

Methods for Determination of Other Water Quality Parameters: Water quality parameters such as pH, dissolved oxygen, and temperature will be measured by appropriate instrumentation within the manufacturer's tolerances. These parameters will be measured at the same sites where water samples for aquatic pesticides are retrieved. These parameters will be measured at the same depths from which the water samples for aquatic pesticides are retrieved, within +/- 0.5 meters. Data and deviations will be recorded on specified forms and/or lab notebooks.

Methods for Data Summarization, Analysis, Review, and Reporting: All data will be included in the final report. The final report will also contain narrative and numerical summaries as appropriate. Final data reports will also be reviewed by a Quality Assurance Officer.

Training on Sampling Techniques: All personnel performing water sampling will have been trained before water sampling is scheduled to begin, a training session will be held reviewing sampling technique; equipment and instrument calibration, maintenance, and operation; sample storage and delivery; the proper use of COC and other forms; and other records and deviations.

DESCRIPTION OF PROCEDURES TO PREVENT SAMPLE CONTAMINATION

Measures will be taken to prevent sample collection contamination from persons, equipment and vehicles associated with algaecide application, as follows:

- Background monitoring sample collection will be carried out prior to application equipment or algaecides being loaded into a boat. Background monitoring sampling, as well as post event monitoring sampling (within one week), if appropriate, sampling may be carried out from shore at a dock within the sampling areas to eliminate the potential for contamination. Sampling equipment, with particular emphasis on cooler and sample bottles, will be transported separately from algaecides and application equipment on the day of the

application event. Background monitoring will take place immediately prior to the application event.

- For event monitoring, sampling will be carried out after application equipment and all application related equipment and devices including personal protection equipment (PPE) used during the application has been removed from the boat, if no other boats are available to support sampling efforts. If there are multiple personnel supporting applications, one will be designated the sample collector while the other will be responsible for boat operation. Hands will be washed with soap and clean potable water before handling sampling equipment, cooler and sample bottle. During sample bottle handling and sample collection, disposable rubber gloves will be used to collect a water sample. The pre labeled sample bottle will be completed with time and date of sample collection immediately after removing from the sample cooler and replaced in the cooler immediately after sample collection. Once sampling has been completed, water samples will be delivered immediately to the laboratory, if possible. If background and event samples cannot be delivered the same day, sample bottles will be stored in a clean refrigerator at the office until samples can be delivered the next business day.

DESCRIPTION OF BEST MANAGEMENT PRACTICES (BMPs) TO BE IMPLEMENTED:

A variety of approaches will be utilized to minimize the impacts of aquatic pesticides used while still achieving their goals.

- Techniques that help reduce pesticide impacts include:
 - Non-pesticide control methods as outlined below (Alternatives) have been attempted or considered.
 - Pre Treatment surveys and water quality analysis are carried out to identify treatment timing
 - Adjustments will be made to treatment protocols based upon survey results
 - Choice of pesticides based on toxicity

- Treatments will occur when no water is being discharged from the lake system
 - Algaecide use rates will be per the EPA label and will be limited to ensure compliance with Receiving Water Limitations
 - Partial waterbody treatments or split treatments may be utilized to minimize impacts that might otherwise occur
-
- In order to avoid inadvertent or accidental soil or water contamination with aquatic pesticides, application personnel follow the storage, transport, and spill control procedures per USEPA and DPR rules, regulations and label instructions.
 - Over application is avoided by following the specific product labels for the aquatic pesticides used in the program. Algaecide quantities required for each treatment are calculated at the office and only sufficient material to carry out the treatment is transported for the day's application. Application equipment is routinely cleaned and maintained, and all label directions and DPR guidelines are followed as to acceptable application methods as well as weather conditions. Surface applications are not made in winds above 10 miles per hour.
 - The various BMP's being implemented ensures that the Algae Control Program will meet the requirements of the general NPDES Permit for the use of aquatic pesticides.
 - Licensing: All crew leaders and biologists that apply or supervise the application of aquatic pesticides are certified and or licensed by DPR.
 - Notification: As detailed elsewhere in this document, whenever pesticides are used potentially affected users in the area are informed of the treatments so that means can be taken to avoid using the treated water.
 - Site Evaluations: As has been detailed in this section and elsewhere, both preliminary and secondary site evaluations are a major aspect of the program, as represented by the extensive surveying carried out by the field crews.
 - Alternative Treatments: Staff considers a number of potential alternative control strategies in every situation, and will make use of non-herbicide options when conditions are suitable or appropriate.

- **Treatment Conditions:** Every application will be made according to label directions and other requirements as directed by DPR or the agricultural commissioner, which not only specify the amounts and situations where pesticides may be applied, but the atmospheric and environmental conditions under which they may be applied. If there are conditions where it is determined that the treatment would be ineffective, application staff wait for other conditions or use a different treatment method.
- **Post-treatment:** Surveys or water quality analysis is also carried out for post-treatment assessment of treatment efficacy and non-target impacts. Survey crews are instructed to look for possible non-target impacts that can be seen with the naked eye, such as dead fish or damage to plants on the shoreline.
- The applicator follows all pesticide label instructions and any Use Permits issued by a CAC;
- The discharger's applicator will be licensed by DPR, or work with or under the supervision of someone who is licensed;
- The discharger's applicator will comply with effluent limitations
- The discharger's applicator will follow this Aquatic Pesticide Application Plan (APAP);
- The discharger's applicator will comply with applicable receiving water limitations; and
- The discharger's applicator will comply with the monitoring and reporting requirements outlined in this APAP.

Aquatic Pesticide Use Requirements:

- **License Requirements.** Discharger's applicators will be licensed by DPR if such licensing is required for the aquatic pesticide application project.
- **Application Requirements.** The pesticide will be consistent with FIFRA pesticide label instructions and any Use Permits issued by CACs.
- **Application Schedule.** When requested, the discharger will provide a phone number to persons who request the discharger's application schedule. The

discharger shall provide the requester with the most current application schedule and inform the requester if the schedule is subject to change. Information may be made available by electronic means.

- **Public Notice Requirements.** Every calendar year, at least 15 days prior to the first application of aquatic pesticides, the Discharger will notify potentially affected public agencies, if any exist. The Discharger will post the notification on its website if available. The notification will include the following information:

1. A statement of the discharger's intent to apply algaecide or aquatic herbicide(s);
2. Name of algaecide and or aquatic herbicide to be used;
3. Purpose of use;
4. General time period and locations of expected use;
5. Any water use restrictions or precautions during treatment; and
6. A phone number that interested persons may call to obtain additional information from the Discharger.

EXAMINATION OF ALGAE CONTROL ALTERNATIVES

All appropriate aquatic plant management technologies within the context of the identified beneficial uses and impacted areas of the lake have been evaluated, and include all available cultural, biological, mechanical, and aquatic herbicide/algaecide formulations.

Aquatic weed and algae control options can be divided into four basic categories that include:

- Watershed Management
- Biological Control
- Physical and Mechanical Control
- Aquatic Herbicides and Algaecides

A discussion on each of the alternatives as well as their limitations follows:

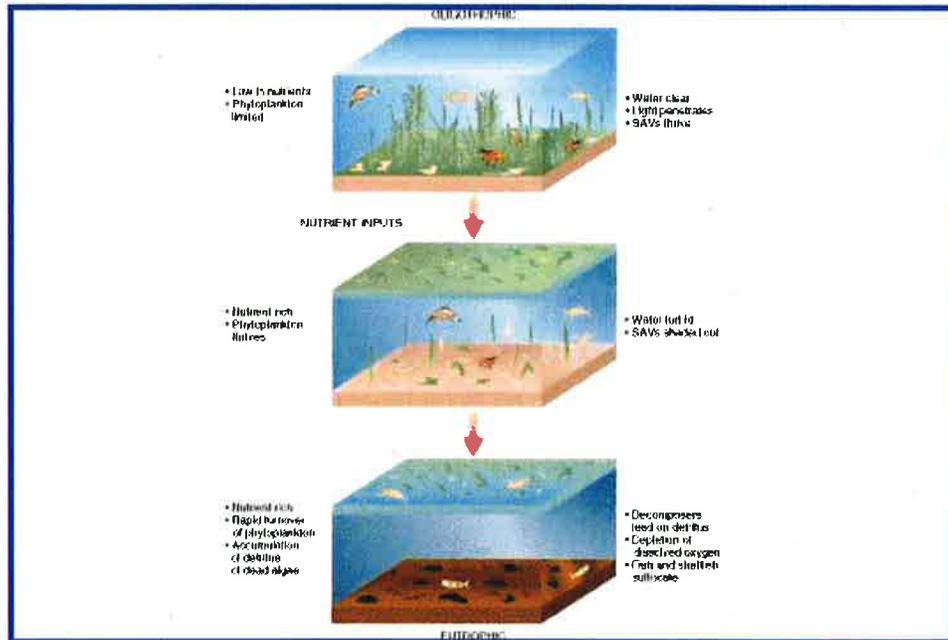
Watershed Management and the Runoff Impacts: Watershed management is one of the most important control parameters as it deals with limiting nutrients and runoff into the lake system from the watershed. It entails implementing practices in the watershed that will support the reduction of nutrient and other pollutant runoff into the lake system. Residential and commercial development, with its increasing areas of concrete, asphalt and buildings, leaves more of the urban environment impermeable to rainwater (see table). This leads to an increasing volume of runoff water and a reduced ability for water to naturally infiltrate back into the soil. In natural areas, 10 % is runoff and 50 to 60 % is direct infiltration. In urban areas, roughly 50 to 60 % (at times up to 90 %) of all water that falls as rain runs off in urban areas; only 10 to 15% will actually infiltrate into the ground (*Runoff Coefficients for the Rational Method of Estimating Rainfall (McCuen, 1989)*).

Description of Area	Runoff Coefficients
Business	
Downtown	0.70-0.95
Neighborhood	0.50-0.70
Residential	
Single-family	0.30-0.50
Multiunit, detached	0.40-0.60
Multiunit, attached	0.60-0.75
Residential (suburban)	0.25-0.40
Apartment	0.50-0.70
Industrial	
Light	0.50-0.80
Heavy	0.60-0.90
Parks, cemeteries	0.10-0.25
Playgrounds	0.20-0.35
Railroad yard	0.20-0.35
Unimproved	0.10-0.30
It often is desirable to develop a composite runoff coefficient based on the percentage of different types of surface in the drainage area.	

- Runoff Impacts
 - Non-point source pollution poses the most serious threat to the water quality of urban lakes.
 - Non-point pollution in runoff includes: sediments, oil, anti-freeze, road salt, pesticides, yard wastes and pet and waterfowl droppings.
 - Urban runoff often contains excessive quantities of nutrients that accelerate eutrophication.
- Nutrient Effects
 - Increase in algae blooms
 - Odor problems
 - Oxygen supply depletion
 - Fish kills
 - Decrease in water clarity
 - Increase in the amount of rooted aquatic plants growing in the shallow near shore waters of a lake

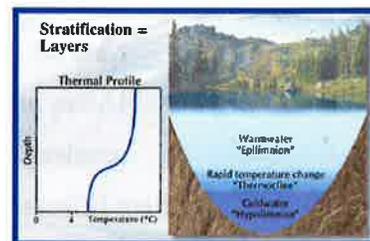
- Reduction in the recreational value of the lake
- Hinders swimming, boating, fishing
- Reduces overall aesthetics of the lake

Eutrophication Process and Impacts:



○ Impacts of Eutrophication

- Fish kills due to low oxygen or high metals
- Taste and odor problems, resulting in an increase in water treatment costs
- Floating algae mats, decaying vegetation
- Increased littoral vegetation in shallow areas
- Mobilization of sediment bound metals and ions during anoxic conditions (e.g., copper, ammonia, iron, sulfur, phosphorus)
- Increased temperature
- Reduced water clarity



- Nuisance algal blooms
 - Reduced dissolved oxygen in hypolimnion
 - Earlier onset and/or longer duration of periods of anoxia in hypolimnion
-
- Bacterial Contaminants: Wildlife can contribute significant amounts of fecal matter to a natural system. Estimates of microbial flora in animal feces have been summarized by Rheinheimer, (1991). Fecal Coliform (FC) and streptococci (FS) estimates for duck, mice, rabbits, and chipmunks were estimated as follows:
 - Ducks: FC = 33,000,000 FS = 54,000,000
 - Mice: FC = 330,000 FS = 7,700,000
 - Rabbits: FC = 20 FS = 47,000
 - Chipmunks: FC = 148,000 FS = 6,000,000
-
- Categories of management practices and remedial alternatives to protect urban lakes (http://mnlakes.org/main_dev/news/uniquechallenge.cfm)
 - Administrative alternatives: Local governmental units have jurisdiction over land use around urban lakes and can therefore play a major role in the prevention of lake degradation. Several tools are available to control the use and misuse of this land including:
 - Comprehensive Plans to guide long-term growth;
 - Zoning Ordinances to regulate land use of private lands;
 - Storm water and Surface Water Management Planning that considers data collection, land use, system site considerations, and design criteria for structures in setting goals for watershed runoff; and
 - Rules for Lake Uses such as where, when and how a lake can be used recreationally to control shoreline erosion, nutrient recirculation and overuse.

- Other administrative alternatives may include the development of fertilizer, yard waste, shoreline erosion and sedimentation control management programs. Education is still probably the best way to combat urban water quality issues.
 - Non-structural alternatives: Seasonal street cleaning, to capture sediments before they are conveyed through storm sewer systems to lakes, and urban best management practices, such as buffer strips around water bodies to filter out sediments and reduce nutrients, are examples of non-structural alternatives. Chemical inactivation/precipitation of in-lake phosphorus, chemical control of algae, dredging of accumulated sediments, and mechanical harvesting of aquatic vegetation are additional examples.
 - Structural alternatives: Storm water detention basins and wetland treatment systems are structural alternatives that detain runoff to control peak flow rates and control downstream flooding. They also allow pollutants to settle out of the water before reaching the lake. Diversions routing storm water away from the lake and in-lake aeration systems to oxygenate the water are other structural alternatives

Summary: Much of the problem with rural lakes in farming communities is with sediment, nutrient, and organic loading. Rural lakes can sometimes be described as having an excessive growth of weeds and algae, and watershed management techniques, or implementation of removal/inactivation methods are required to address the problem.



- Biological Control

- The Triploid Grass Carp is a biological control agent for aquatic plants, and is considered an attractive long-term method. However, the Grass Carp is not effective against cyanobacteria.



- Cultural/Physical

- Aeration & Water Quality Alteration: An aeration/circulation system has been installed in Lake Poway to circulate water, increase dissolved oxygen levels, and prevent anoxic conditions from forming. In stratified lake systems, or areas where organic matter accumulates, lake bottom waters become anoxic during the summer months. Properly designed aeration systems will promote nutrient reductions by supporting aerobic bacteria in bottom waters and oxidize nutrients to the hydrosol.

- Shading/Light Attenuation: A basic environmental manipulation method for aquatic plant control is light reduction or attenuation. Shading has been achieved in lakes by the application of natural and synthetic dyes. This action



effectively inhibits photosynthesis in young, bottom plant growth. Aquashade, or generics are primarily effective at depths of 2 feet or greater. Inhibition of planktonic algae blooms has also been proven. Aquashade is non-corrosive and will not stain bathing suits, fountain surfaces or other water features at use dilution rates. Aquashade and or a generic lake dye are not expected to be added to Lake Poway.

- Mechanical, Hand Harvesting nor Dredging of cyanobacteria are not practical control option.

A matrix that presents the control methods that have been reviewed for implementation at Lake Poway follows:

Matrix of Control Options

OPTION	METHOD	PRACTICAL	RANK
Watershed Management	Structural	Very	10
	Non Structural	Very	10
Biological Control	Grass Carp	No	1
Cultural Control	Aeration	Implemented	7
	Light Limitation	Not Practical	0
	Benthic Barriers	Not Practical	0
	Draw Down	Not Practical	0
	Hand Harvesting	Not Practical	0
	Sediment Removal	Not Practical	0
Mechanical Control	Diver Dredging	Not Practical	0
	Harvesting	Not Practical	0
Algaecides	Various	Very	8

APAP UPDATES: This APAP will be updated as the General Permit conditions change, any new algaecides or aquatic herbicides are needed for the aquatic vegetation management program, or as new control technologies are developed and become available.

END OF APAP

Attachments: Project Site Map

References

- Water Quality Order No. 2013-0002-DWQ, General Permit No. CAG990005, Statewide General National Pollutant Discharge Elimination System Permit for Residual Aquatic Pesticide Discharges to Waters of the United States from Algae and Aquatic Weed Control Applications.
- Watershed Sanitary Survey Update (2010), December 2010. Malcolm Pirnie.
- City of Poway Annual Water Quality Report - 2012

Attachment 2

Lead Agency Notice of Determination

City of Poway Notice of Determination, posted August 21, 2015

MAY 29 2015

BY V. Orendain
DEPUTY

Notice of Determination

Appendix D

To:

Office of Planning and Research
U.S. Mail: Street Address:
P.O. Box 3044 1400 Tenth St., Rm 113
Sacramento, CA 95812-3044 Sacramento, CA 95814

From:

Public Agency: San Diego County Water Authority
Address: 4677 Overland Avenue
San Diego, CA 92123
Contact: Larry Purcell
Phone: 858.522.6752

County Clerk
County of: San Diego
Address: 1600 Pacific Highway, Suite 260
San Diego, CA 92101

Lead Agency (if different from above):
Address: _____
Contact: _____
Phone: _____

150074

SUBJECT: Filing of Notice of Determination in compliance with Section 21108 or 21152 of the Public Resources Code.

State Clearinghouse Number (if submitted to State Clearinghouse): 2015031045

Project Title: Application of Copper-Based Algaecides at Five Reservoirs in San Diego County

Project Applicant: San Diego County Water Authority

Project Location (include county): Five Reservoirs in San Diego County

Project Description:

The project consists of the occasional application of copper-based algaecides at 5 reservoirs to control and prevent degradation of water quality resulting from algae blooms. The subject reservoirs and the public water agencies that own and operate them are Olivenhain Reservoir (San Diego County Water Authority), Lake Jennings (Helix Water District), Lake Poway (City of Poway Public Works Department), San Dieguito Reservoir (Santa Fe Irrigation District), and Sweetwater Reservoir (Sweetwater Authority). Copper-based algaecide application is authorized by the State Water Resources Control Board under a statewide General Permit, Water Quality Order No. 2013-0002-DWQ.

This is to advise that the San Diego County Water Authority has approved the above
 Lead Agency or Responsible Agency)

described project on May 28, 2015 and has made the following determinations regarding the above
(date)
described project.

- 1. The project [will will not] have a significant effect on the environment.
- 2. An Environmental Impact Report was prepared for this project pursuant to the provisions of CEQA.
 A Negative Declaration was prepared for this project pursuant to the provisions of CEQA.
- 3. Mitigation measures [were were not] made a condition of the approval of the project.
- 4. A mitigation reporting or monitoring plan [was was not] adopted for this project.
- 5. A statement of Overriding Considerations [was was not] adopted for this project.
- 6. Findings [were were not] made pursuant to the provisions of CEQA.

This is to certify that the final EIR with comments and responses and record of project approval, or the negative Declaration, is available to the General Public at:

www.sdcwa.org

Signature (Public Agency): *Larry Purcell* Title: Water Resources Department Manager

Date: May 28, 2015 Date Received for filing at OPR: _____

FILED IN THE OFFICE OF THE COUNTY CLERK

MAY 29 2015

San Diego County on

Posted MAY 29 2015

Removed

JUN 29 2015

Returned to agency on

JUN 29 2015

Deputy

V. Orendair

State of California—Natural Resources Agency
CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE
2015 ENVIRONMENTAL FILING FEE CASH RECEIPT

RECEIPT# SD2015 0483
STATE CLEARING HOUSE #(if applicable) 2015031045

SEE INSTRUCTIONS ON REVERSE. TYPE OR PRINT CLEARLY

LEAD AGENCY SAN DIEGO COUNTY WATER AUTHORITY			DATE 05/29/2015
COUNTY/STATE AGENCY OF FILING SAN DIEGO			DOCUMENT NUMBER *20150074*
PROJECT TITLE APPLICATION OF COPPER-BASED ALGAECIDES AT FIVE RESERVOIRS IN SAN DIEGO COUNTY			
PROJECT APPLICANT NAME SAN DIEGO COUNTY WATER AUTHORITY			PHONE NUMBER 858-522-6752
PROJECT APPLICANT ADDRESS 4677 OVERLAND AVENUE	CITY SAN DIEGO	STATE CA	ZIP CODE 92123
PROJECT APPLICANT (Check appropriate box): <input checked="" type="checkbox"/> Local Public Agency <input type="checkbox"/> School District <input type="checkbox"/> Other Special District <input type="checkbox"/> State Agency <input type="checkbox"/> Private Entity			

CHECK APPLICABLE FEES:

- | | | |
|---|------------|--------------------|
| <input type="checkbox"/> Environmental Impact Report (EIR) | \$3,069.75 | \$ _____ |
| <input checked="" type="checkbox"/> Negative Declaration (ND)(MND) | \$2,210.00 | \$ <u>2,210.00</u> |
| <input type="checkbox"/> Application Fee Water Diversion (State Water Resources Control Board Only) | \$850.00 | \$ _____ |
| <input type="checkbox"/> Projects Subject to Certified Regulatory Programs (CRP) | \$1,043.75 | \$ _____ |
| <input checked="" type="checkbox"/> County Administrative Fee | \$50.00 | \$ <u>50.00</u> |
| <input type="checkbox"/> Project that is exempt from fees | | |
| <input type="checkbox"/> Notice of Exemption | | |
| <input type="checkbox"/> CDFW No Effect Determination (Form Attached) | | |
| <input type="checkbox"/> Other _____ | | \$ _____ |

150074

PAYMENT METHOD:

- Cash Credit Check Other CHK #101298604

TOTAL RECEIVED \$ 2,260.00

SIGNATURE X V. Orendain	TITLE Deputy
--	-----------------



AUG 21 2015

Notice of Determination

BY E. Alvarado DEPUTY

To: [X] Office of Planning and Research 150128
U.S. Mail: Street Address:
P.O. Box 3044 1400 Tenth St., Rm 113
Sacramento, CA 95812-3044 Sacramento, CA 95814

From: Public Agency: City of Poway
Address: 13325 Civic Center Drive
Poway, CA 92064
Contact: Bob Manis
Phone: (858) 668-4601

[X] County Clerk
County of: San Diego
Address: 1600 Pacific Highway, Suite 260
San Diego, CA 92101

Lead Agency (if different from above):
San Diego County Water Authority
Address: 4677 Overland Avenue
Contact: Larry Purcell
Phone: (858) 522-6752

SUBJECT: Filing of Notice of Determination in compliance with Section 21108 or 21152 of the Public Resources Code.

State Clearinghouse Number (if submitted to State Clearinghouse): 2015031045

Project Title: Application of Copper-Based Algaecides at Five Reservoirs in San Diego County

Project Applicant: City of Poway Public Works Department, et al

Project Location (include county): Five Reservoirs in San Diego County, including Lake Poway

Project Description: The project consists of the occasional application of copper-based algaecides at 5 reservoirs to control and prevent degradation of water quality resulting from algae blooms. The subject reservoirs are Olivenhain Reservoir (San Diego County Water Authority), Lake Jennings (Helix Water District), Lake Poway (City of Poway), San Dieguito Reservoir (Santa Fe Irrigation District), and Sweetwater Reservoir (Sweetwater Authority). The City of Poway is the entity responsible for implementing the project at Lake Poway. The algaecide application is authorized by the State Water Resources Control Board under a statewide General Permit, Water Quality Order No. 2013-0002-DWQ.

This is to advise that the City of Poway has approved the above (Lead Agency or Responsible Agency)

described project on August 18, 2015 and has made the following determinations regarding the above described project.

- 1. The project [] will [X] will not have a significant effect on the environment.
2. [] An Environmental Impact Report was prepared for this project pursuant to the provisions of CEQA. [X] A Negative Declaration was prepared for this project pursuant to the provisions of CEQA.
3. Mitigation measures [X] were [] were not made a condition of the approval of the project.
4. A mitigation reporting or monitoring plan [X] was [] was not adopted for this project.
5. A statement of Overriding Considerations [] was [X] was not adopted for this project.
6. Findings [] were [X] were not made pursuant to the provisions of CEQA.

This is to certify that the final EIR with comments and responses and record of project approval, or the negative Declaration, is available to the General Public at: www.sdcwa.org

Signature (Public Agency): Robert Alvarado Title: Development Services Director

Date: August 18, 2015 Date Received for filing at OPR:

State of California—Natural Resources Agency
 CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE
2015 ENVIRONMENTAL FILING FEE CASH RECEIPT

RECEIPT#
 SD2015 0765
 STATE CLEARING HOUSE # (if applicable)
 2015031045

SEE INSTRUCTIONS ON REVERSE. TYPE OR PRINT CLEARLY

LEAD AGENCY CITY OF POWAY			DATE 08/21/2015
COUNTY/STATE AGENCY OF FILING SAN DIEGO			DOCUMENT NUMBER *20150128*
PROJECT TITLE APPLICATION OF COPPER BASED ALGAECIDES AT FIVE RESERVOIRS IN SAN DIEGO COUNTY			
PROJECT APPLICANT NAME CITY OF POWAY PUBLIC WORKS DEPARTMENT			PHONE NUMBER 858-668-4601
PROJECT APPLICANT ADDRESS 13325 CIVIC CENTER DRIVE	CITY POWAY	STATE CA	ZIP CODE 92064

PROJECT APPLICANT (Check appropriate box):

- Local Public Agency
 School District
 Other Special District
 State Agency
 Private Entity

CHECK APPLICABLE FEES:

- | | | | |
|---|--------|------------|------------------|
| <input type="checkbox"/> Environmental Impact Report (EIR) | 150128 | \$3,069.75 | \$ _____ |
| <input checked="" type="checkbox"/> Negative Declaration (ND)(MND) | | \$2,210.00 | \$ _____ \$0.00 |
| <input type="checkbox"/> Application Fee Water Diversion (State Water Resources Control Board Only) | | \$850.00 | \$ _____ |
| <input type="checkbox"/> Projects Subject to Certified Regulatory Programs (CRP) | | \$1,043.75 | \$ _____ |
| <input checked="" type="checkbox"/> County Administrative Fee | | \$50.00 | \$ _____ \$50.00 |
| <input type="checkbox"/> Project that is exempt from fees | | | |
| <input type="checkbox"/> Notice of Exemption | | | |
| <input type="checkbox"/> CDFW No Effect Determination (Form Attached) | | | |
| <input type="checkbox"/> Other _____ | | | \$ _____ |

*+\$2.50
CREDIT FEE*

PAYMENT METHOD:

- Cash
 Credit
 Check
 Other CHK:V101336946

TOTAL RECEIVED \$ _____ \$50.00

SIGNATURE X <u>E. Alvarado</u>	TITLE Deputy
--	-----------------

= \$52.50

REM: 05/29/2015
 RCT: SD2015 0074



Attachment 3

City of Poway Mitigation Monitoring and Reporting Program

MITIGATION MONITORING AND REPORTING PROGRAM

**APPLICATION OF COPPER-BASED ALGAECIDES
AT FIVE RESERVOIRS
SAN DIEGO COUNTY CALIFORNIA**

Prepared for:

City of Poway, Public Works Department
13325 Civic Center Drive
Poway, California 92064
Contact: Russ Campbell

Prepared by:

AECOM
401 West A Street, Suite 1200
San Diego, California 92101

May 2015

INTRODUCTION

The California Environmental Quality Act (CEQA) requires that public agencies adopting a Mitigated Negative Declaration (MND) take affirmative steps to determine that approved mitigation measures and project design features are implemented subsequent to project approval. The lead or responsible agency must adopt a monitoring and reporting program for the mitigation measures incorporated into a project or included as conditions of approval. The program must be designed to ensure compliance with the MND during project implementation (Public Resources Code, Section 20181.6; CEQA Guidelines, Section 15074(d)).

This Mitigation Monitoring and Reporting Program (MMRP) will be used by the City of Poway to ensure compliance with adopted mitigation measures associated with the application of copper-based algaecides to Lake Poway to control algal blooms. Table 1 lists the project mitigation measures to be carried out by Poway, organized by environmental impact category discussed in the MND. The table identifies the mitigation monitoring and reporting requirements, including the timing of implementation (prior to, during, or after application) and the party responsible for implementing the measure. Space is provided for sign-off following completion/implementation of the mitigation measure. Poway, as a Responsible Agency pursuant to CEQA, will ensure that all mitigation measures identified for the project at Lake Poway are carried out in accordance with this section of the adopted MMRP.

**Table 1. Mitigation Monitoring and Reporting Program: City of Poway
Application of Copper-Based Algaecides at Lake Poway**

Mitigation No.	Mitigation Measure	Timing of Verification (application phase)			Responsible Party	Completed		Comments	Resp. Team Member	Comments
		Pre App	During App	Post App		Initials	Date			
HAZARDS AND HAZARDOUS MATERIALS										
POWAY-HAZ-1	Poway will ensure that aquatic algaecide use rates will be per the U.S. Environmental Protection Agency (EPA) label and will be limited to ensure compliance with receiving water limitations. Treatments will be performed when no water is being discharged from the lake system.		X		Poway					
POWAY-HAZ-2	Poway will ensure that application personnel follow the storage, transport, and spill control procedures per EPA and California Department of Pesticide Regulation rules, regulations, and label instructions.	X	X		Poway					
POWAY-HAZ-3	Poway will ensure that algaecide quantities required for each treatment will be precalculated and only sufficient material to carry out the treatment will be transported for an application event. Application equipment will be routinely cleaned and maintained, and all label directions and Department of Pesticide Regulation guidelines will be followed as to acceptable application methods, including limitations due to weather conditions. Surface applications will not be made in winds above 10 miles per hour.	X	X		Poway					
HYDROLOGY AND WATER QUALITY										
POWAY-WQ-1	Poway will apply for coverage under the State Board's National Pollutant Discharge Elimination System Permit for Discharges of Aquatic Pesticides and, as part of that application, seek a Categorical Exception pursuant to Section 5.3 of the State Board's Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California.	X			Poway					
POWAY-WQ-2	Poway will continue to monitor and report copper levels in Lake Poway in accordance with State Board requirements.			X	Poway					

Attachment 4

Lake Poway Aquatic Pesticide Application Plan

**AQUATIC PESTICIDE
APPLICATION PLAN (APAP)**

For

LAKE POWAY



Prepared By

CLEAN LAKES INC.

2150 Franklin Canyon Road

Martinez, California 94553

PO Box 3186

Martinez, California 94553

www.cleanlake.com

Prepared For

City of Poway

14521 Lake Poway Road

Poway, CA 92064

March 2014

Purpose: To meet the requirements and ensure compliance with Water Quality Order No. 2013-0002-DWQ, Statewide General National Pollutant Discharge Elimination System Permit for Residual Aquatic Pesticide Discharges to Waters of the United States from Algae and Aquatic Weed Control Applications, General Permit No. CAG990005, adopted by the State Water Resource Control Board on March 5, 2013

AQUATIC PESTICIDE APPLICATION PLAN (APAP)

Lake Poway

Page 1 of 37

CERTIFICATION

In accordance with Attachment B, Section V.B.1. Standard Provisions – Reporting, Signatory and Certification Requirements, Water Quality Order No. 2013-0002-DWQ Statewide General National Pollutant Discharge Elimination System Permit for Residual Aquatic Pesticide Discharges to Waters of the United States from Algae and Aquatic Weed Control Applications, General Permit No. CAG 990005:

“I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.” (40 C.F.R. § 122.22(d).)

Kevin O’Reilly
Water Treatment Plant Supervisor
City of Poway Public Works

Date

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DESCRIPTION OF THE TYPES OF AQUATIC WEEDS AND ALGAE TO BE CONTROLLED:..... 12

AQUATIC PESTICIDES AND ADJUVANTS EXPECTED TO BE USED AND APPLICATION METHODS 12

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DESCRIPTION OF BEST MANAGEMENT PRACTICES (BMPs) TO BE IMPLEMENTED:..... 27

EXAMINATION OF ALGAE CONTROL ALTERNATIVES..... 30

BACKGROUND INFORMATION

This Aquatic Pesticide Application Plan (APAP) is a comprehensive plan developed by the discharger, the City of Poway, to comply with the provisions of Water Quality Order No. 2013-0002-DWQ, Statewide General National Pollutant Discharge Elimination System Permit for Residual Aquatic Pesticide Discharges to Waters of the United States from Algae and Aquatic Weed Control Applications, General Permit No. CAG990005, adopted by the State Water Resource Control Board on March 5, 2013.

This Aquatic Pesticide Application Plan (APAP) describes the project site, algae nuisances, aquatic pesticide products expected to be used, the monitoring program, and Best Management Practices to be followed, as well as the other conditions addressed in the General Permit, Section VIII C, Aquatic Pesticide Use Requirements, Aquatic Pesticide Application Plan.

The use of aquatic pesticides within Lake Poway's Algae Control Program is necessary to manage the lake resources and maintain beneficial uses that include drinking water quality, recreation, aesthetics, boating, and fishing. The Algae Control Program is an undertaking necessary to control specific types of algae from becoming nuisances to the management of the water body which can otherwise cause impacts to health and beneficial uses. The need for aquatic pesticide application events as part of this program vary from week to week, season to season, and year to year due to such things as water temperature, sunlight, nutrient levels, plant and algae growth, and other factors. This APAP, per the General Permit requirements described below, provides the outline to ensure that the Algae Control Program is successful.

PERMIT COVERAGE: The General Permit (No. CAG990005) addresses the discharge of aquatic pesticide residues related to the application of 2,4-D, acrolein, copper, diquat, endothall, fluridone, imazapyr, glyphosate, sodium carbonate peroxyhydrate, triclopyr-based algaecides and aquatic pesticides, and adjuvants containing ingredients represented by the surrogate nonylphenol. Aquatic pesticides that are applied to application areas within waters of the United States in accordance with FIFRA label requirements and Use

Permit restrictions are not considered pollutants. However, residues associated with aquatic pesticide application require coverage under the General Permit. These include over-applied or misdirected pesticide products and pesticide residues. Residues are any pesticide byproduct, or breakdown product, or pesticide product that is present after the use of the pesticide to kill or control the target weed.

The General Permit does not cover agricultural storm water discharges or return flows from irrigated agriculture because these discharges are not defined as “point sources” and do not require coverage under an NPDES permit. The General Permit also does not cover other indirect or non point source discharges from applications of pesticides, including discharges of pesticides to land that may be conveyed in storm water or irrigation runoff. The General Permit does not cover the discharge of pollutants related to applications of pesticides other than 2,4-D, acrolein, copper, diquat, endothall, fluridone, imazapyr, glyphosate, sodium carbonate peroxyhydrate, triclopyr - based algaecides and aquatic pesticides, and adjuvants containing ingredients represented by the surrogate nonylphenol based pesticides; however, the General Permit includes a re-opener statement specifying that the permit may be reopened for the specific purpose of modifying the list of pesticides whose associated discharge is authorized by this General Permit.

WATERS OF THE UNITED STATES: The General Permit regulates the discharge of residues associated with the application of aquatic pesticides to waters of the United States. “Waters of the United States” are defined by the General Permit as follows:

1. All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
2. All interstate waters, including interstate “wetlands”;
3. All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sand flats, “wetlands,” sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such waters:
 - a. Which are or could be used by interstate or foreign travelers for recreational or other purposes;

- b. From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
 - c. Which are used or could be used for industrial purposes by industries in interstate commerce.
4. All impoundments of waters otherwise defined as waters of the United States under this definition;
 5. Tributaries of waters identified in items 1 through 4 of this definition;
 6. The territorial sea; and
 7. "Wetlands" adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (1) through (6) of this definition. Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA (other than cooling ponds as defined in 40 C.F.R. section 423.11(m) which also meet the criteria of this definition) are not waters of the United States. This exclusion applies only to manmade bodies of water which neither were originally created in waters of the United States (such as disposal area in wetlands) nor resulted from the impoundment of waters of the United States [See Note 1 of this Section.] Waters of the United States do not include prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with U.S. EPA.

WATER QUALITY STANDARDS: The Clean Water Act (CWA) defines Water Quality Standards as "Provisions of state or federal law which consist of designated uses for the waters of the United States, water quality criteria for waters based upon such uses, and antidegradation policies. Water quality standards are to protect the public health or welfare, enhance the quality of water and serve the purposes of the Act." [40 Code of Federal Regulations (CFR) section 131.3(i)].

In California, *Water Quality Control Plans* designate the beneficial uses of waters of the State and water quality objectives (WQOs) to protect those uses. The *Water Quality Control Plans* are adopted by the State and Regional Boards through a formal administrative rulemaking process, and, upon approval by USEPA, the WQOs for waters of the United States (generally surface waters) become State water quality standards.

USEPA has established water quality criteria in California for priority pollutants in the National Toxics Rule and the California Toxics Rule (CTR). The CTR criteria are also water quality standards.

EFFLUENT LIMITATIONS: NPDES permits for discharges to surface waters must meet all applicable provisions of sections 301 and 402 of the CWA. These provisions require controls that utilize best available technology economically achievable (BAT), best conventional pollutant control technology (BCT), and any more stringent controls necessary to reduce pollutant discharge and meet water quality standards.

Title 40, CFR section 122.44 states that if a discharge causes, has the reasonable potential to cause, or contributes to an excursion (Reasonable Potential) of a numeric or narrative water quality criterion, the permitting authority must develop effluent limits as necessary to meet water quality standards. Title 40, CFR section 122.44(k)(3) allows these effluent limits to be requirements to implement BMPs if numeric effluent limits are infeasible. It is infeasible for the State Board to establish numeric effluent limitations in this General Permit, because the application of aquatic pesticides is not necessarily considered a discharge of pollutants according to the Talent decision. The regulated discharge is the discharge of residues associated with the application of aquatic pesticides. These include over-applied and misdirected pesticide product and pesticide residue. At what point the pesticide becomes a residue is not precisely known and varies depending on such things as target weed or algae, water chemistry, and flow. Therefore, the effluent limitations contained in the General Permit are narrative and include requirements to develop and implement this APAP that describes appropriate BMPs, including compliance with all pesticide label instructions, and to comply with receiving water limitations.

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

Once an aquatic pesticide has been applied to an application area, the pesticide product can actively treat the target species within the treatment area. During the treatment event, the aquatic pesticide is at a sufficient concentration to actively kill or control the target

weeds plants or algae. When active ingredient concentrations are below this effective concentration, the aquatic pesticide becomes a residue. The minimum effective concentration, and the time required to reach it, vary due to site specific conditions, such as flow, target species, and water chemistry. The Receiving Water Limitations require that an application event does not result in an exceedence of water quality standards in the receiving water. The receiving water includes:

- Anywhere outside of the treatment area at any time, and
- Anywhere inside the treatment area after completion of the treatment event.

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

Receiving water limitations are provided in the General Permit and are provided as follows: The instantaneous maximum receiving water limitations are based on promulgated water quality criteria such as those provided in the CTR, water quality objectives adopted by the State and Regional Water Boards in their Basin Plans, water quality criteria adopted by the California Department of Fish and Wildlife, water quality standards such as drinking water standards adopted by U.S. EPA or the California Department of Public Health (CDPH), or the U.S. EPA's National Recommended Ambient Water Quality Criteria.

This General Permit provides receiving water limitations based on the lowest water quality criteria/objectives to protect all designated beneficial uses of the receiving water. The receiving water limitations in this General Permit are similar as those in Order No. 2004-0009-DWQ, with the exception of copper, which has an updated formula (copper chronic = $0.96 * \text{EXP}(0.8545 * (\text{LN}(\text{harness as CaCO}_3)) - 1.702)$) to calculate copper exceedence limits based on the CTR.

The rationale for each limitation is summarized in the table below:

Constituent/ Parameter	BENEFICIAL USE ¹			All Designations	Basis
	MUN, µg/L	WARM or COLD, µg/L	Other than MUN, WARM, or COLD, µg/L		
2,4,-D	70				U.S. EPA MCL
Acrolein ²	320	21	780		U.S. EPA Water Quality Criteria, 1986.
Copper ²				Dissolved Freshwater ³ Copper Chronic = $0.960 \exp\{0.8545 [\ln(\text{hardness}^4)] - 1.702\}$ ^{5,6} Dissolved saltwater ³ Copper Chronic = $0.83 \exp\{0.8545 [\ln(\text{hardness}^4)] - 1.702\}$ ^{5,6}	California Toxics Rule
Diquat	20				U.S. EPA MCL
Endothall	100				U.S. EPA MCL
Fluridone	560				U.S. EPA Integrated Risk Information System
Glyphosate	700				U.S. EPA MCL
Nonylphenol				Freshwater Chronic Criterion = 6.6 µg/L Saltwater Chronic Criterion = 1.7 µg/L	U.S. EPA National Recommended Ambient Water Quality Criteria
Toxicity	Algaecide and aquatic herbicide applications shall not cause or contribute to toxicity in receiving water(s).				Regional Water Boards' Basin Plans

Notes

1. See Regional Water Boards' Water Quality Control Plans (Basin Plans) for beneficial use definitions.
2. Public entities and mutual water companies listed in Attachment G are not required to meet this receiving water limitation during the exception period described in Section VIII.C.10, Limitations
3. For waters in which the salinity is equal to or less than 1 part per thousand 95% or more of the time, the freshwater criteria apply. For waters in which the salinity is equal to or greater than 10 parts per thousand 95% or more of the time, saltwater criteria apply. For waters in which the salinity is between 1 and 10 parts per thousand, the applicable criteria are the more stringent of the freshwater or saltwater criteria.
4. For freshwater aquatic life criteria, waters with a hardness 400 mg/L or less as calcium carbonate, the actual ambient hardness of surface water shall be used. For waters with a hardness of over 400 mg/L as calcium carbonate, a hardness of 400 mg/L as calcium carbonate shall be used with a default Water-Effect Ratio of 1.
5. Values should be rounded to two significant figures.
6. This limitation does not apply to the Sacramento River and its tributaries above the State Highway 32 Bridge at Hamilton City. See Table III – 1 of the Basin Plan for the Sacramento and San Joaquin River Basins for copper limitation.

MONITORING REQUIREMENTS: The General Permit requires dischargers to comply with the Monitoring and Reporting Program (MRP). The goals of the MRP are to:

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

This APAP was prepared to address the above requirements and those detailed in the General Permit.

DESCRIPTION OF THE WATER SYSTEM

Lake Poway, owned and operated by the City of Poway, was created in 1972 to provide a dependable supply of water and is located in Poway, CA within San Diego County. Due to the relatively small watershed that Lake Poway falls within (1,900 acres), and the relatively low rainfall received in the area (approximately 12 inches per year), the majority of water is imported from the San Diego County Water Authority's first aqueduct. Seasonal runoff can enter the lake through Boulder Bay stream within Warren Canyon. Lake Poway rarely discharges into the watershed below and would only do so during very heavy rain events. The Blue Sky Ecological Reserve is found immediately below Lake Poway. Lake Hodges, operated and maintained by the City of San Diego's Public Utilities Department, is found approximately 5 miles downstream of Lake Poway. The lake is approximately 60 surface acres in size, is maintained to hold approximately 3,150 acre feet of water, has an average depth of 52.5 feet and is 110 feet at its deepest.

The lake serves primarily as a raw water supply for drinking water, and is used for non water body contact that includes fishing from electric boats managed by a concessionaire.



DESCRIPTION OF THE TREATMENT AREA

Based on planktonic algae growth conditions, and specifically cyanobacteria blooms, the lake system can from time to time require algaecide treatments to prevent nuisance algae levels from developing with treatment occurring between April 1 to October 30 each year.

Lake Poway is a manmade lake impounded by a dam and is constructed with a spillway. The dam contains a discharge valve that is opened infrequently for maintenance purposes only. This discharge valve will be inspected prior to all treatments to ensure that it is not open prior to any aquatic pesticide application.

APPLICATION SCHEDULE

The City of Poway will provide a phone number or other specific contact information to all persons who request the application schedule and will inform the requester if the schedule is subject to change.

PUBLIC NOTICE REQUIREMENTS

No public agencies are expected to be potentially impacted as the lake, nor the lake shoreline, is shared or managed with any other public agency and the lake does not discharge water downstream of the dam during the months that algaecide treatments may occur. Therefore no agencies will be notified about algaecide treatment.

DESCRIPTION OF THE TYPES OF AQUATIC WEEDS AND ALGAE TO BE CONTROLLED:

There are three basic types of aquatic plants known to occupy southern California lakes; Free Floating , Submerged (those found growing below the water line), and Emergent (those found growing above the water line). There are also three basic types of algae, know as attached, filamentous, or planktonic algae. Only planktonic algae (cyanobacteria) can cause nuisances that may require treatment with an algaecide at Lake Poway.

AQUATIC PESTICIDES AND ADJUVANTS EXPECTED TO BE USED AND APPLICATION METHODS

Provided in the table below are those algaecides that may be used in the algae control program for Lake Poway. The need for treatments is based on physical inspections, water quality monitoring, and potential and existing impacts to drinking water quality.

<i>Herbicide* Algaecide*</i>	<i>Water Use Restrictions</i>			<i>Degradation Byproducts</i>
	<i>Days for Swimming</i>	<i>Days for Fish Consumption</i>	<i>Days for Irrigation of Turf/Food Crops</i>	
Copper Sulfate <i>(Copper as metallic, 25.1%)</i>	0	0	0	None

**Refer to Product Labels and MSDS's for Further Information*

Algaecide applications are to be performed utilizing Best Management Practices (BMP's) by licensed personnel in accordance with a Pest Control Recommendations (PCR) issued by a State of California, Department of Pesticide Regulation (DPR) contract Pest Control Advisor (PCA). City off Poway staff will perform algae control applications and water quality monitoring. City of Poway application staff hold State of California, Department of Pesticide Regulation (DPR) Qualified Applicator Licenses (QAL) or Certificates (QAC). Applications would be performed from a boat as a surface application over the entire reservoir surface.

FACTORS INFLUENCING ALGAE CONTROL

The decision to implement algae control treatment is based on algae species, density and counts carried out by the water treatment plant. Planktonic algae treatments are based on preventing nuisance levels from developing during the spring and summer months. When algae is treated in an early growth stage there is less biomass that is controlled which helps reduce and protect against impacts to dissolved oxygen depletion from decomposing biomass. Based on nuisance levels algae species or densities and the potential to impact beneficial uses of the lake system, City water treatment personnel and a Pest Control Advisor (PCA) will review control options. Based on findings, a Pest Control Recommendation (PCR) will be developed for algaecide applications.

Aquatic algaecide treatments are determined based on the following characteristics:

Site Characteristics:

- The surface area of Lake Poway is estimated to be 60 surface acres.
 - The area that may be targeted for algae control with copper sulfate covers the entire lake surface of 60 acres.
- The water volume of Lake Poway is approximately 3,150 acre feet (~60 surface acres x 52.5 foot average depth)
- The water volume of the area that may be targeted for submerged aquatic plant control is approximately 60 acre feet (60 surface acres x 1 foot average depth).

- No water discharges occur from Lake Poway into the watershed below.

MONITORING AND REPORTING PROGRAM

Monitoring Requirements: The General Permit requires that dischargers comply with the Monitoring and Reporting Program (MRP) outlined in the General Permit. The goals of the MRP are to:

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

General Monitoring

1. Lake Poway algae treatments will occur, when needed, as whole lake treatments. Sample locations will be established in the lake proper according to pre and post event monitoring schedules outlined in the General Permit. The Event Monitoring sample will be taken within the treatment area as will the pre and post event monitoring events. GPS coordinates for these locations will be noted.
2. Algaecide application practices will be established based on the Pest Control Recommendations (PCR) from a contracted CA DPR licensed Pest Control Advisor (PCA). Algae growth will be evaluated to determine the potential for creating impacts or nuisances to lake use and management prior to any treatments. Algaecide label directions are factored into treatments to determine timing and application rates. Application practices utilize the most appropriate application technique to comply with BMP's via surface treatment methods.

3. Algaecides are registered by the US Environmental Protection Agency (USEPA) nationally and the CA Department of Pesticide Regulation (CADPR) within California. Manufacturers of products must provide information to the USEPA for registration or re-registration purposes that includes information with regard to transport, environmental fate and effects of algaecides. Algaecides that may be used in Lake Poway are registered for use by both the USEPA and the CADPR. Detailed information about transport, fate and effects of algaecides and aquatic herbicides are addressed in USEPA's Re-registration Eligibility Decisions (RED) documents for each of the active ingredients, as follows:
 - Copper sulfate (copper):
http://www.epa.gov/oppsrrd1/REDS/copper_red.pdf
4. Cumulative and indirect effects of copper based algaecides are discussed in USEPA Re-registration Eligibility Documents (RED) presented in item 3 above.
5. The potential for algaecide applications leading to designated use impacts is unlikely since DPR licensed Qualified Applicators will implement the treatments based on a Pest Control Recommendation (PCR) following herbicide label directions. Misuse, over use, or use of incorrect products are not expected to occur due to the preparations and planning that take place prior to implementing a treatment.
6. No known or potential impacts from algaecide applications on water quality are anticipated based on following algaecide label requirements, the infrequent applications that are anticipated to take place, and the short duration that algaecides are present in the water column. A Risk Assessment is provided for copper in the USEPA RED discussed in Item 3.
7. Pre and post water quality sampling stations are sufficient to assess algaecide applications due to the small nature of the lake, the size of the treatments, and the relative ease that sample locations can be visited.
8. The monitoring plan prepared for this APAP is described below.

Receiving Water Monitoring

Treatment Maps: For each application, a treatment map will be developed with a convenient scale showing the application area, treatment area, immediately adjacent untreated areas (if entire water body is not treated), and water bodies receiving treated water. Information about surface area and/or volume of the application area, treatment area, and any other information used to calculate dosage and quantity of each pesticide used at each application site will be included with the algacide application monitoring log forms (see below). Sampling locations will be noted on the treatment map and global positioning systems (GPS) coordinates for each sampling site will be noted on application monitoring log forms.

Control Structure Inspections: Prior to every application, an inspection of the integrity of the discharge valve will be performed to ensure that treated water does not unintentionally get discharged from the lake system.

Aquatic Pesticide Monitoring Frequency: Samples will be collected from a minimum of six application events for copper applications. If there are less than six application events in a year, samples will be collected during each application event for each active ingredient. If the results from six consecutive sampling events show concentrations that are less than the receiving water limitation/trigger for an active ingredient, sampling shall be reduced to one application event per year for that active ingredient. If the yearly sampling event shows exceedence of the receiving water limitation/trigger for an active ingredient, then sampling shall return to six application events for that active ingredient. If less than six treatments are carried out per year, then monitoring will continue to occur in following years until six treatments, and thus six monitoring events, have been carried out and reported in the annual report.

Aquatic Pesticide Monitoring: The following monitoring activities will be performed for a minimum of six application events or for as many applications as occur in a year if there are less than six application events, over multiple years if necessary, at representative locations:

1. Background Monitoring. Background monitoring samples will be collected in the application area just prior to (up to 24 hours in advance of) the application event.
2. Event Monitoring. Event monitoring samples will be collected inside of the treatment area after the application event since the algaecide treatment will be carried out as a whole lake treatment.
3. Post-Event Monitoring. Post-event monitoring samples will be collected within the treatment area within one week after application.

Sample Analysis: All samples requiring laboratory analyses will be collected and analyzed by a laboratory certified for such analyses by the California Department of Health Services. All analyses will be conducted in accordance with the latest edition of "Guidelines Establishing Test Procedures for Analysis of Pollutants" (Guidelines), promulgated by the U.S. Environmental Protection Agency (USEPA) (Title 40 Code of Federal Regulations part 136). Field analysis for the parameters of temperature, dissolved oxygen (DO), electrical conductivity, and pH will be performed using a Portable Multi-Parameter Meter (YSI or equivalent) with a sufficiently long probe cable, and will be maintained and calibrated at regular intervals according to the manufacturer specifications. Secchi Disk measurements will be performed using a standard Secchi disk. Water samples collected for laboratory analysis will be accompanied with a completed chain of custody form identifying the chemical constituents requiring analysis, and delivered to a State of California Certified Laboratory.

Monitoring Parameters: The following parameters will be collected or analyzed:

Sample Type	Constituent/Parameter	Units	Sample Method	Minimum Sampling Frequency	Sample Type Requirement	Required Analytical Test Method
Visual	1. Monitoring area description (pond, lake, open waterway, channel, etc.) 2. Appearance of waterway (sheen, color, clarity, etc.) 3. Weather conditions (fog, rain, wind,	Not applicable	Visual Observation	1	Background, Event and Post- event Monitoring	Not applicable
Physical	1. Temperature ²	°F	Grab ⁴	5	Background, Event and Post- event Monitoring	6
	2. pH ³	Number				
	3. Turbidity ³	NTU				
	4. Electric Conductivity ³ @ 25°C	µmhos/cm				
Chemical	1. Active Ingredient ⁷	µg/L	Grab ⁴	5	Background, Event and Post- event Monitoring	6
	2. Nonylphenol ⁸	µg/L				
	3. Hardness (if copper is monitored)	mg/L				
	4. Dissolved Oxygen ²	mg/L				

1: All applications at all sites.

2: Field testing.

3: Field or laboratory testing.

4: Samples shall be collected at three feet below the surface of the water body or at mid water column depth if the depth is less than three feet.

5: Collect samples 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. If there are less than six application events in a year, collect samples during each application event for each active ingredient in each environmental setting (flowing water and non-flowing water). If the results from six consecutive sampling 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. If the yearly sampling event shows exceedence of the receiving water limitation/trigger for an active ingredient in an environmental setting, then sampling shall return to six application events for that active ingredient in each environmental setting. For glyphosate, collect samples from one application event from each environmental setting (flowing water and non-flowing water) per year.

6: Pollutants shall be analyzed using the analytical methods described in 40 C.F.R. part 136.

7: 2,4-D, acrolein, dissolved copper, diquat, endothall, fluridone, glyphosate, imazamox, imazapyr, penoxsulam, and triclopyr.

8: It is required only when a surfactant is used.

Sampling Procedures: Samples will be collected using sampling procedures which minimize loss of monitored constituents during sample collection and analysis to maintain sample integrity.

Sampling protocols: Samples will be retrieved, stored, recorded, and shipped or delivered to a laboratory using the following methods and precautions. Any deviation from these methods and precautions will be recorded and explained.

Materials for in field sampling:

- 1) New sampling bottles, one per sample with sample ID label.
- 2) Cooler(s) sufficient to hold ample bottles, with ice- or gel-packs
- 3) Plastic gloves
- 4) Subsurface grab sampler
- 5) Depth finder, marked pole, Secchi Disk (cord marked with half foot increments), or water quality monitoring probe with depth sensor.
- 6) Instrument(s) for measurement of temperature, pH, dissolved oxygen, hardness, electrical conductivity, depth.
- 7) GPS for sample location coordinates.
- 8) Field data sheets and clipboard
- 9) A clean boat and a transport vehicle

Method to collect a single sample: Samples will be simple grab samples.

- 1) When approaching a sampling location, care will be taken to not stir up sediments and to approach from downstream or down wind direction. If anchoring is required, lower anchor gently.
- 2) Immediately prior to collecting the sample, the sample bottle label details will be completed (i.e. date, time, sample collector...)
- 3) When taking the sample, the cap will be left on the bottle until it is at three feet of depth or at midpoint in the water column, per the monitoring forms outlined below.
- 4) Once the bottle is at the appropriate depth, the cap will be removed below the surface. Stirring of the sediments will be avoided.
- 5) The bottle will be rinsed with sample water and emptied twice, then filled completely
- 6) Once the bottle is full, it will be capped.
- 7) The bottle will be placed in the appropriate cooler. The bottles will be kept in contact with ice packs
- 8) Other water quality measurements will be taken and recorded
- 9) The Water Sampling Data Sheet will be filled out with information for the sample

- 10) In the office, the bottle will be placed into a refrigerator, unless samples are taken immediately to a laboratory.

Submitting sample to lab:

- 1) Samples will be submitted within 48 hours of sample collection or sooner to a laboratory as required by hold times for the constituents to be sampled.
- 2) Samples will be packed in a cooler with ice packs between each bottle
- 3) Chain of Custody (COC) form will be prepared to include details on the sample bottle labels.
- 4) If the samples are shipped to the lab, the pick-up person will sign the COC and a copy will be made before sending out the shipment. If the samples are delivered to the lab, the delivering person will have the receiving person sign the COC form and provide a copy before turning over the shipment.

Retention of Records: Records of all monitoring information including all calibration and maintenance records, copies of all reports required by the General Permit, and records of all data used to complete the application per the General Permit will be retained. Records will be maintained for a minimum of three years from the date of the sampling event. This period may be extended during the course of any unresolved litigation regarding a discharge, or when requested by the appropriate Regional Board Executive Officer.

Monitoring Records: Records of monitoring events will include the following information:

- a. The date, exact place, and time of sampling or measurements;
- b. The individuals who performed the sampling or measurements;
- c. The dates analyses were performed;
- d. The individuals who performed the analyses;
- e. The analytical techniques or method used; and
- f. The results of such analyses.

The following forms will be used to collect and track information required for each treatment event as required by the General Permit:

**CLEAN LAKES, INC. AQUATIC WEED CONTROL
NPDES AQUATIC PESTICIDE APPLICATION LOG**

Date of Application:		Location:		App. Start Time:	
				App. Stop Time:	
Applicator Name:			APAP Certification:		
Attach map showing application area, treatment area, immediately adjacent untreated area, and water bodies receiving treated water.					
Discharge Gates or Control Structures					
Name	Date Closed	Time Closed	Date Opened	Time Opened	
1.					
Calculations to Determine Opening and Closures:					
2. Provide information on surface area and/or volume of application area and treatment area and other information used to calculate dosage and quantity of each pesticide used at each application site:					
2.a Application Area – Surface Area:			2.b Application Area – Volume:		
2.c Treatment Area – Surface Area:			2.d Treatment Area – Volume:		
2.e Dosage and Quantity Information for each pesticide used:					
Application Details					
Plot Number	Area (ac. or sq. ft.)	Average Depth	Product	Product Quantity	Concentration or Rate

For additional treatment areas use additional forms.

AQUATIC WEED CONTROL NPDES RECEIVING WATER MONITORING

Visual Observation Form (Background Monitoring)

Monitoring Date:		Location:		Sampled by:	
Monitoring Area Description (pond, lake, waterway, channel,...):					
Site Conditions/Appearance of Waterway					
Floating or suspended matter: Present <input type="checkbox"/> Absent <input type="checkbox"/>		Discoloration: Present <input type="checkbox"/> Absent <input type="checkbox"/>		Bottom deposits: Present <input type="checkbox"/> Absent <input type="checkbox"/>	
				Aquatic life: Present <input type="checkbox"/> Absent <input type="checkbox"/>	
Visible films, sheens or coatings: Present <input type="checkbox"/> Absent <input type="checkbox"/>		Fungi, slimes, or objectionable growths: Present <input type="checkbox"/> Absent <input type="checkbox"/>		Potential nuisance conditions: Present <input type="checkbox"/> Absent <input type="checkbox"/>	
Weather conditions and other observations (fog, rain, wind, wind direction...):					

Visual Observation Form (Event Monitoring)

Monitoring Date:		Location:		Sampled by:	
Monitoring Area Description (pond, lake, waterway, channel,...):					
Site Conditions/Appearance of Waterway					
Floating or suspended matter: Present <input type="checkbox"/> Absent <input type="checkbox"/>		Discoloration: Present <input type="checkbox"/> Absent <input type="checkbox"/>		Bottom deposits: Present <input type="checkbox"/> Absent <input type="checkbox"/>	
				Aquatic life: Present <input type="checkbox"/> Absent <input type="checkbox"/>	
Visible films, sheens or coatings: Present <input type="checkbox"/> Absent <input type="checkbox"/>		Fungi, slimes, or objectionable growths: Present <input type="checkbox"/> Absent <input type="checkbox"/>		Potential nuisance conditions: Present <input type="checkbox"/> Absent <input type="checkbox"/>	
Weather conditions and other observations (fog, rain, wind, wind direction...):					

Visual Observation Form (Post Event Monitoring)

Monitoring Date:		Location:		Sampled by:	
Monitoring Area Description (pond, lake, waterway, channel,...):					
Site Conditions/Appearance of Waterway					
Floating or suspended matter: Present <input type="checkbox"/> Absent <input type="checkbox"/>		Discoloration: Present <input type="checkbox"/> Absent <input type="checkbox"/>		Bottom deposits: Present <input type="checkbox"/> Absent <input type="checkbox"/>	
				Aquatic life: Present <input type="checkbox"/> Absent <input type="checkbox"/>	
Visible films, sheens or coatings: Present <input type="checkbox"/> Absent <input type="checkbox"/>		Fungi, slimes, or objectionable growths: Present <input type="checkbox"/> Absent <input type="checkbox"/>		Potential nuisance conditions: Present <input type="checkbox"/> Absent <input type="checkbox"/>	
Weather conditions and other observations (fog, rain, wind, wind direction...):					

**AQUATIC WEED CONTROL
NPDES RECEIVING WATER MONITORING**

Physical and Chemical Monitoring **Location:** _____ **Sampled by:** _____
 (Physical and chemical monitoring required for six (6) applications for each type of pesticide at each waterbody site. See General Permit)

1. Background Monitoring Parameters (u/s or at treatment area up to 24 hours before or at time of treatment)			Date:
Physical Sample Type (3 feet below water surface or mid depth)	Temperature (F) ¹	Turbidity (NTU) ²	Electrical Conductivity (µmhos/cm) ²
Chemical Sample Type (3 feet below water surface or mid depth)	Active Ingredient (µg/l)	Nonylphenol (µg/l) ³	pH ²
	Dissolved Oxygen (mg/L) ²	Hardness (CaCO₃) ⁴	GPS latitude and longitude coordinates
2. Event Monitoring Parameters (d/s or immediately adjacent to treatment area immediately after application)			Date:
Physical Sample Type (3 feet below water surface or mid depth)	Temperature (F) ¹	Turbidity (NTU) ²	Electrical Conductivity (µmhos/cm) ²
Chemical Sample Type (3 feet below water surface or mid depth)	Active Ingredient (µg/l)	Nonylphenol (µg/l) ³	pH ²
	Dissolved Oxygen (mg/L) ²	Hardness (CaCO₃) ⁴	GPS latitude and longitude coordinates
3. Post Event Monitoring Parameters (w/i treatment area + immediately d/s in flowing water or adjacent to treatment area w/i 1 week)			Date:
Physical Sample Type (3 feet below water surface or mid depth)	Temperature (F) ¹	Turbidity (NTU) ²	Electrical Conductivity (µmhos/cm) ²
Chemical Sample Type (3 feet below water surface or mid depth)	Active Ingredient (µg/l)	Nonylphenol (µg/l) ³	pH ²
	Dissolved Oxygen (mg/L) ²	Hardness (CaCO₃) ⁴	GPS latitude and longitude coordinates

¹ Field Test; ² Field or Laboratory Test; ³ Required when nonylphenol is used; ⁴ Required for copper applications.

Device Calibration and Maintenance: All monitoring instruments and devices that will be used by the discharger to fulfill the prescribed monitoring program will be properly maintained and calibrated as necessary to ensure their continued accuracy.

Reporting

All reports will be submitted to the appropriate State Water Resources Control Board, NPDES Wastewater Unit. All reports submitted in response to the Water Quality Order will comply with the provisions stated in the Standard Provisions (Attachment B) and Monitoring and Reporting Program (Attachment C), of the General Permit. The Annual reports will contain the following information:

- An executive summary discussing compliance or violation of the General Permit, and the effectiveness of the APAP to reduce or prevent the discharge of pollutants associated with algaecide and aquatic herbicide applications;
- A summary of monitoring data, including the identification of water quality improvements, or degradation as a result of the algaecide or aquatic pesticide application, if appropriate, and recommendations for improvements to the APAP (including proposed best management practices (BMPs) and monitoring program based on the monitoring results). All receiving water monitoring data will be compared to receiving water limitations and receiving water monitoring triggers;
- Identification of BMPs currently in use and a discussion of their effectiveness in meeting the requirements in this General Permit;
- A discussion of BMP modifications addressing violations of this General Permit;
- A map showing the location of each treatment area;
- Types and amounts of algaecides used at each application event;
- Information on surface area and/or volume of treatment areas and any other information used to calculate dosage, concentration, and quantity of each algaecide and aquatic herbicide used;

- Sampling results will indicate the name of the sampling agency or organization, detailed sampling location information (including latitude and longitude or township/range/section if available), detailed map or description of each sampling area (address, cross roads, etc.), collection date, name of constituent/parameter and the concentration detected, minimum levels, method detection limits for each constituent analysis, name or description of water body sampled, and a comparison with applicable water quality standards, and a description of the analytical QA/quality control plan. Sampling results will be tabulated so that they are readily discernible; and
- A summary of the algaecide application logs.

24 Hour Report and Five Day Reporting : The discharger and or applicator will orally report any non-compliance. This includes any unexpected or unintended effect of the use of an algaecide or aquatic herbicide that may danger health or the environment. This information will be provided orally within 24 hours from the time the discharger or applicator becomes aware o the circumstances. A written report of the non-compliance will be provided within five (5) days of the time the discharger and or applicator becomes aware of the noncompliance. The 24 hour report as well as the 5 day written report will follow the format in Attachment C.

Data Storage: All data will be recorded on supplied forms. At the end of each day, all data forms will be double copied. The original will stay in specified notebooks. The first copy will be stored in a file cabinet. The second copy will be stored and shipped with the samples.

Quality Assurance Audits and Personnel: The discharger will provide a Quality Assurance Officer and the Certified Laboratory will provide one Quality Assurance Officer. In addition, the Water Quality Control Board is welcome to provide third party validation of the sampling procedures.

Methods for Determination of Other Water Quality Parameters: Water quality parameters such as pH, dissolved oxygen, and temperature will be measured by appropriate instrumentation within the manufacturer's tolerances. These parameters will be measured at the same sites where water samples for aquatic pesticides are retrieved. These parameters will be measured at the same depths from which the water samples for aquatic pesticides are retrieved, within +/- 0.5 meters. Data and deviations will be recorded on specified forms and/or lab notebooks.

Methods for Data Summarization, Analysis, Review, and Reporting: All data will be included in the final report. The final report will also contain narrative and numerical summaries as appropriate. Final data reports will also be reviewed by a Quality Assurance Officer.

Training on Sampling Techniques: All personnel performing water sampling will have been trained before water sampling is scheduled to begin, a training session will be held reviewing sampling technique; equipment and instrument calibration, maintenance, and operation; sample storage and delivery; the proper use of COC and other forms; and other records and deviations.

DESCRIPTION OF PROCEDURES TO PREVENT SAMPLE CONTAMINATION

Measures will be taken to prevent sample collection contamination from persons, equipment and vehicles associated with algaecide application, as follows:

- Background monitoring sample collection will be carried out prior to application equipment or algaecides being loaded into a boat. Background monitoring sampling, as well as post event monitoring sampling (within one week), if appropriate, sampling may be carried out from shore at a dock within the sampling areas to eliminate the potential for contamination. Sampling equipment, with particular emphasis on cooler and sample bottles, will be transported separately from algaecides and application equipment on the day of the

application event. Background monitoring will take place immediately prior to the application event.

- For event monitoring, sampling will be carried out after application equipment and all application related equipment and devices including personal protection equipment (PPE) used during the application has been removed from the boat, if no other boats are available to support sampling efforts. If there are multiple personnel supporting applications, one will be designated the sample collector while the other will be responsible for boat operation. Hands will be washed with soap and clean potable water before handling sampling equipment, cooler and sample bottle. During sample bottle handling and sample collection, disposable rubber gloves will be used to collect a water sample. The pre labeled sample bottle will be completed with time and date of sample collection immediately after removing from the sample cooler and replaced in the cooler immediately after sample collection. Once sampling has been completed, water samples will be delivered immediately to the laboratory, if possible. If background and event samples cannot be delivered the same day, sample bottles will be stored in a clean refrigerator at the office until samples can be delivered the next business day.

DESCRIPTION OF BEST MANAGEMENT PRACTICES (BMPs) TO BE IMPLEMENTED:

A variety of approaches will be utilized to minimize the impacts of aquatic pesticides used while still achieving their goals.

- Techniques that help reduce pesticide impacts include:
 - Non-pesticide control methods as outlined below (Alternatives) have been attempted or considered.
 - Pre Treatment surveys and water quality analysis are carried out to identify treatment timing
 - Adjustments will be made to treatment protocols based upon survey results
 - Choice of pesticides based on toxicity

- Treatments will occur when no water is being discharged from the lake system
 - Algaecide use rates will be per the EPA label and will be limited to ensure compliance with Receiving Water Limitations
 - Partial waterbody treatments or split treatments may be utilized to minimize impacts that might otherwise occur
-
- In order to avoid inadvertent or accidental soil or water contamination with aquatic pesticides, application personnel follow the storage, transport, and spill control procedures per USEPA and DPR rules, regulations and label instructions.
 - Over application is avoided by following the specific product labels for the aquatic pesticides used in the program. Algaecide quantities required for each treatment are calculated at the office and only sufficient material to carry out the treatment is transported for the day's application. Application equipment is routinely cleaned and maintained, and all label directions and DPR guidelines are followed as to acceptable application methods as well as weather conditions. Surface applications are not made in winds above 10 miles per hour.
 - The various BMP's being implemented ensures that the Algae Control Program will meet the requirements of the general NPDES Permit for the use of aquatic pesticides.
 - Licensing: All crew leaders and biologists that apply or supervise the application of aquatic pesticides are certified and or licensed by DPR.
 - Notification: As detailed elsewhere in this document, whenever pesticides are used potentially affected users in the area are informed of the treatments so that means can be taken to avoid using the treated water.
 - Site Evaluations: As has been detailed in this section and elsewhere, both preliminary and secondary site evaluations are a major aspect of the program, as represented by the extensive surveying carried out by the field crews.
 - Alternative Treatments: Staff considers a number of potential alternative control strategies in every situation, and will make use of non-herbicide options when conditions are suitable or appropriate.

- **Treatment Conditions:** Every application will be made according to label directions and other requirements as directed by DPR or the agricultural commissioner, which not only specify the amounts and situations where pesticides may be applied, but the atmospheric and environmental conditions under which they may be applied. If there are conditions where it is determined that the treatment would be ineffective, application staff wait for other conditions or use a different treatment method.
- **Post-treatment:** Surveys or water quality analysis is also carried out for post-treatment assessment of treatment efficacy and non-target impacts. Survey crews are instructed to look for possible non-target impacts that can be seen with the naked eye, such as dead fish or damage to plants on the shoreline.
- The applicator follows all pesticide label instructions and any Use Permits issued by a CAC;
- The discharger's applicator will be licensed by DPR, or work with or under the supervision of someone who is licensed;
- The discharger's applicator will comply with effluent limitations
- The discharger's applicator will follow this Aquatic Pesticide Application Plan (APAP);
- The discharger's applicator will comply with applicable receiving water limitations; and
- The discharger's applicator will comply with the monitoring and reporting requirements outlined in this APAP.

Aquatic Pesticide Use Requirements:

- **License Requirements.** Discharger's applicators will be licensed by DPR if such licensing is required for the aquatic pesticide application project.
- **Application Requirements.** The pesticide will be consistent with FIFRA pesticide label instructions and any Use Permits issued by CACs.
- **Application Schedule.** When requested, the discharger will provide a phone number to persons who request the discharger's application schedule. The

discharger shall provide the requester with the most current application schedule and inform the requester if the schedule is subject to change. Information may be made available by electronic means.

- **Public Notice Requirements.** Every calendar year, at least 15 days prior to the first application of aquatic pesticides, the Discharger will notify potentially affected public agencies, if any exist. The Discharger will post the notification on its website if available. The notification will include the following information:

1. A statement of the discharger's intent to apply algaecide or aquatic herbicide(s);
2. Name of algaecide and or aquatic herbicide to be used;
3. Purpose of use;
4. General time period and locations of expected use;
5. Any water use restrictions or precautions during treatment; and
6. A phone number that interested persons may call to obtain additional information from the Discharger.

EXAMINATION OF ALGAE CONTROL ALTERNATIVES

All appropriate aquatic plant management technologies within the context of the identified beneficial uses and impacted areas of the lake have been evaluated, and include all available cultural, biological, mechanical, and aquatic herbicide/algaecide formulations.

Aquatic weed and algae control options can be divided into four basic categories that include:

- Watershed Management
- Biological Control
- Physical and Mechanical Control
- Aquatic Herbicides and Algaecides

A discussion on each of the alternatives as well as their limitations follows:

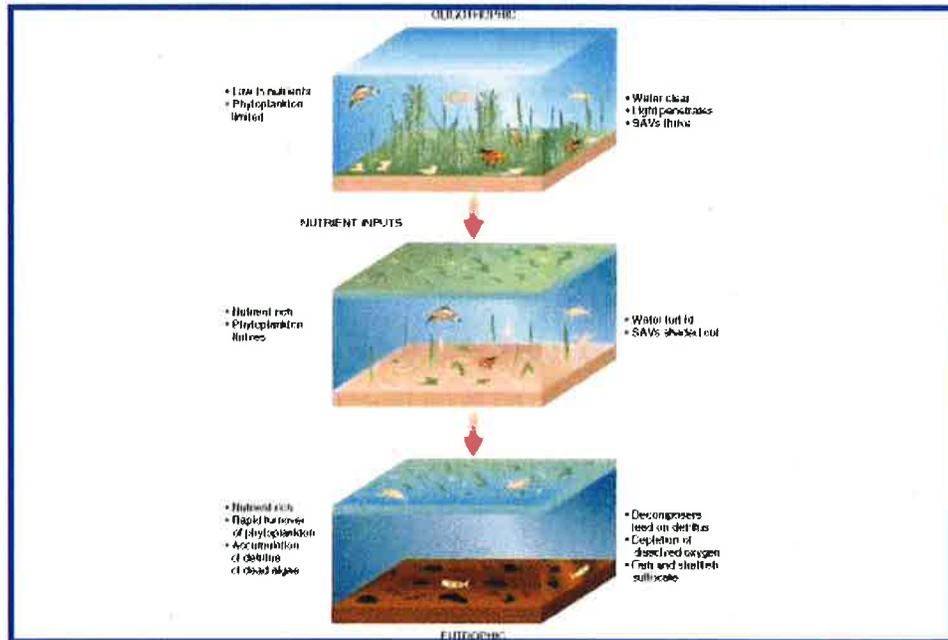
Watershed Management and the Runoff Impacts: Watershed management is one of the most important control parameters as it deals with limiting nutrients and runoff into the lake system from the watershed. It entails implementing practices in the watershed that will support the reduction of nutrient and other pollutant runoff into the lake system. Residential and commercial development, with its increasing areas of concrete, asphalt and buildings, leaves more of the urban environment impermeable to rainwater (see table). This leads to an increasing volume of runoff water and a reduced ability for water to naturally infiltrate back into the soil. In natural areas, 10 % is runoff and 50 to 60 % is direct infiltration. In urban areas, roughly 50 to 60 % (at times up to 90 %) of all water that falls as rain runs off in urban areas; only 10 to 15% will actually infiltrate into the ground (*Runoff Coefficients for the Rational Method of Estimating Rainfall (McCuen, 1989)*).

Description of Area	Runoff Coefficients
Business	
Downtown	0.70-0.95
Neighborhood	0.50-0.70
Residential	
Single-family	0.30-0.50
Multiunit, detached	0.40-0.60
Multiunit, attached	0.60-0.75
Residential (suburban)	0.25-0.40
Apartment	0.50-0.70
Industrial	
Light	0.50-0.80
Heavy	0.60-0.90
Parks, cemeteries	0.10-0.25
Playgrounds	0.20-0.35
Railroad yard	0.20-0.35
Unimproved	0.10-0.30
It often is desirable to develop a composite runoff coefficient based on the percentage of different types of surface in the drainage area.	

- Runoff Impacts
 - Non-point source pollution poses the most serious threat to the water quality of urban lakes.
 - Non-point pollution in runoff includes: sediments, oil, anti-freeze, road salt, pesticides, yard wastes and pet and waterfowl droppings.
 - Urban runoff often contains excessive quantities of nutrients that accelerate eutrophication.
- Nutrient Effects
 - Increase in algae blooms
 - Odor problems
 - Oxygen supply depletion
 - Fish kills
 - Decrease in water clarity
 - Increase in the amount of rooted aquatic plants growing in the shallow near shore waters of a lake

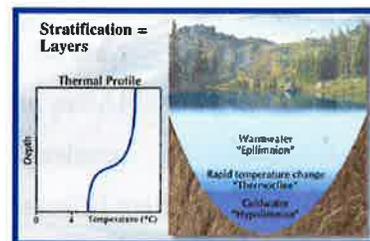
- Reduction in the recreational value of the lake
- Hinders swimming, boating, fishing
- Reduces overall aesthetics of the lake

Eutrophication Process and Impacts:



○ Impacts of Eutrophication

- Fish kills due to low oxygen or high metals
- Taste and odor problems, resulting in an increase in water treatment costs
- Floating algae mats, decaying vegetation
- Increased littoral vegetation in shallow areas
- Mobilization of sediment bound metals and ions during anoxic conditions (e.g., copper, ammonia, iron, sulfur, phosphorus)
- Increased temperature
- Reduced water clarity



- Nuisance algal blooms
 - Reduced dissolved oxygen in hypolimnion
 - Earlier onset and/or longer duration of periods of anoxia in hypolimnion
-
- Bacterial Contaminants: Wildlife can contribute significant amounts of fecal matter to a natural system. Estimates of microbial flora in animal feces have been summarized by Rheinheimer, (1991). Fecal Coliform (FC) and streptococci (FS) estimates for duck, mice, rabbits, and chipmunks were estimated as follows:
 - Ducks: FC = 33,000,000 FS = 54,000,000
 - Mice: FC = 330,000 FS = 7,700,000
 - Rabbits: FC = 20 FS = 47,000
 - Chipmunks: FC = 148,000 FS = 6,000,000
-
- Categories of management practices and remedial alternatives to protect urban lakes (http://mnlakes.org/main_dev/news/uniquechallenge.cfm)
 - Administrative alternatives: Local governmental units have jurisdiction over land use around urban lakes and can therefore play a major role in the prevention of lake degradation. Several tools are available to control the use and misuse of this land including:
 - Comprehensive Plans to guide long-term growth;
 - Zoning Ordinances to regulate land use of private lands;
 - Storm water and Surface Water Management Planning that considers data collection, land use, system site considerations, and design criteria for structures in setting goals for watershed runoff; and
 - Rules for Lake Uses such as where, when and how a lake can be used recreationally to control shoreline erosion, nutrient recirculation and overuse.

- Other administrative alternatives may include the development of fertilizer, yard waste, shoreline erosion and sedimentation control management programs. Education is still probably the best way to combat urban water quality issues.
 - Non-structural alternatives: Seasonal street cleaning, to capture sediments before they are conveyed through storm sewer systems to lakes, and urban best management practices, such as buffer strips around water bodies to filter out sediments and reduce nutrients, are examples of non-structural alternatives. Chemical inactivation/precipitation of in-lake phosphorus, chemical control of algae, dredging of accumulated sediments, and mechanical harvesting of aquatic vegetation are additional examples.
 - Structural alternatives: Storm water detention basins and wetland treatment systems are structural alternatives that detain runoff to control peak flow rates and control downstream flooding. They also allow pollutants to settle out of the water before reaching the lake. Diversions routing storm water away from the lake and in-lake aeration systems to oxygenate the water are other structural alternatives

Summary: Much of the problem with rural lakes in farming communities is with sediment, nutrient, and organic loading. Rural lakes can sometimes be described as having an excessive growth of weeds and algae, and watershed management techniques, or implementation of removal/inactivation methods are required to address the problem.



- Biological Control

- The Triploid Grass Carp is a biological control agent for aquatic plants, and is considered an attractive long-term method. However, the Grass Carp is not effective against cyanobacteria.



- Cultural/Physical

- Aeration & Water Quality Alteration: An aeration/circulation system has been installed in Lake Poway to circulate water, increase dissolved oxygen levels, and prevent anoxic conditions from forming. In stratified lake systems, or areas where organic matter accumulates, lake bottom waters become anoxic during the summer months. Properly designed aeration systems will promote nutrient reductions by supporting aerobic bacteria in bottom waters and oxidize nutrients to the hydrosol.

- Shading/Light Attenuation: A basic environmental manipulation method for aquatic plant control is light reduction or attenuation. Shading has been achieved in lakes by the application of natural and synthetic dyes. This action



effectively inhibits photosynthesis in young, bottom plant growth. Aquashade, or generics are primarily effective at depths of 2 feet or greater. Inhibition of planktonic algae blooms has also been proven. Aquashade is non-corrosive and will not stain bathing suits, fountain surfaces or other water features at use dilution rates. Aquashade and or a generic lake dye are not expected to be added to Lake Poway.

- Mechanical, Hand Harvesting nor Dredging of cyanobacteria are not practical control option.

A matrix that presents the control methods that have been reviewed for implementation at Lake Poway follows:

Matrix of Control Options

OPTION	METHOD	PRACTICAL	RANK
Watershed Management	Structural	Very	10
	Non Structural	Very	10
Biological Control	Grass Carp	No	1
Cultural Control	Aeration	Implemented	7
	Light Limitation	Not Practical	0
	Benthic Barriers	Not Practical	0
	Draw Down	Not Practical	0
	Hand Harvesting	Not Practical	0
	Sediment Removal	Not Practical	0
Mechanical Control	Diver Dredging	Not Practical	0
	Harvesting	Not Practical	0
Algaecides	Various	Very	8

APAP UPDATES: This APAP will be updated as the General Permit conditions change, any new algaecides or aquatic herbicides are needed for the aquatic vegetation management program, or as new control technologies are developed and become available.

END OF APAP

Attachments: Project Site Map

References

- Water Quality Order No. 2013-0002-DWQ, General Permit No. CAG990005, Statewide General National Pollutant Discharge Elimination System Permit for Residual Aquatic Pesticide Discharges to Waters of the United States from Algae and Aquatic Weed Control Applications.
- Watershed Sanitary Survey Update (2010), December 2010. Malcolm Pirnie.
- City of Poway Annual Water Quality Report - 2012

