Final

Application for State Implementation Policy Section 5.3 Exception for Use of Copper Aquatic Herbicides to Control Aquatic Weeds in Irrigation Canals

Prepared for

Byron-Bethany Irrigation District

April 2015

CH2MHILL®

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A Application of Aquatic Herbicide in District Water Conveyance Canals - Initial Study/Negative Declaration

B CEQA Documents

- Notice of Intent
- State Clearinghouse Letter, Comments, and Responses
- Notice of Determination
- Board Resolution
- Department of Fish and Wildlife Environmental Filing Fee Receipt

Required State Implementation Policy (SIP) Section 5.3 Exception Package Components

The following is provided to meet the requirements of the application for a SIP Section 5.3 Exception for use of copper aquatic herbicides to control aquatic weeds in Byron-Bethany Irrigation District (BBID) canals.

1. Description of Proposed Action

BBID is proposing to apply the aquatic herbicides Nautique and Captain to control algae and aquatic weeds in canals that serve its agricultural service areas. These aquatic herbicides contain copper, which has the potential to enter into Waters of the United States. BBID intends to maintain compliance with the general NPDES permit through conformance with their Aquatic Pesticides Application Plan (APAP), which includes specific water management measures to prevent the release of aquatic herbicides from treated canals to sensitive habitat and includes the implementation of a Water Quality Monitoring Plan. The monitoring plan includes both chemical water analysis by a certified laboratory, and observational monitoring to measure the effectiveness of water management measures.

Refer to Section 2.3 of the Initial Study/Negative Declaration (Attachment A), for a complete description of the proposed action.

2. Time Schedule

BBID would apply Nautique and Captain periodically throughout the irrigation season (March through October).

Refer to Section 2.3.3 of the Initial Study/Negative Declaration (Attachment A), for a complete project schedule.

3. Water Quality Monitoring Plan

BBID has developed an APAP and Monitoring Plan, which was approved by the State Water Resources Control Board in 2014. The approved plan is included in this package as Appendix A to the Initial Study/Negative Declaration (Attachment A).

4. Documentation of Compliance with CEQA

The required CEQA documents are included in this package as Attachment B. Attachment B includes the following:

- Notice of Intent
- Initial Study/Negative Declaration
- State Clearinghouse Response
- Notice of Determination
- Board Resolution
- Department of Fish and Game Environmental Filing Fee Receipt

5. Contingency Plans

If a SIP Exception is not granted, BBID will continue to use other aquatic herbicides that do not contain copper. Although these herbicides work well for “maintenance level” control of the nuisance aquatic vegetation, a stronger herbicide is occasionally needed to clear the vegetation out more completely. If the copper herbicides Captain and Nautique were not able to be used, another, more aggressive herbicide would be sought out to ensure consistent water delivery for BBID’s agricultural customers.

6. Identification of Alternative Water Supply

BBID's water supply is based on pre-1914 water rights with a point of diversion on the Intake Channel to the Harvey O. Banks Pumping Plant (a State Water Project facility). No viable alternative water supply exists.

7. Residual Waste Disposal Plans

BBID disposes of herbicide containers as directed by the label. Containers are emptied completely before recycling to minimize residual waste.

Attachment A

Public Draft

Application of Aquatic Herbicide in District Water Conveyance Canals

Initial Study/Negative Declaration

Prepared for

Byron-Bethany Irrigation District

January 2015

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B Biological Reconnaissance Survey of the Byron-Bethany Irrigation District Canal System and Receiving Waters Spill Points

C Toxicological Profile for Copper Ethylenediamine, Copper Triethanolamine Complex, and Copper Ethanolamine Complex in Aquatic Systems

Acronyms and Abbreviations

1-N	Pump Station 1-North
1-S	Pump Station 1-South
APAP	Aquatic Pesticides Application Plan
BAAQMD	Bay Area Air Quality Management District
BBID	Byron-Bethany Irrigation District
BLM	Biotic Ligand Model
CARB	California Air Resource Board
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
cfs	cubic feet per second
CNDDB	California Natural Diversity Database
CO_2	carbon dioxide
CRWQCB	California Regional Water Quality Control Board
CTR	California Toxics Rule
District	Byron-Bethany Irrigation District
DMC	Delta Mendota Canal
EPA	U.S. Environmental Protection Agency
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
GHGs	greenhouse gases
HCP	Habitat Conservation Plan
NPDES	National Pollutant Discharge Elimination System
NTR	National Toxics Rule
PM	particulate matter
RWQCB	Regional Water Quality Control Board
SIP	Statewide Implementation Plan
SWRCB	State Water Resources Control Board
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WDR	waste discharge requirements
WQO	Water Quality Objective

SECTION 1

Project Information

1.1 Project Title

Application of Aquatic Herbicide (Copper) in District Water Conveyance Canals for Control of Aquatic Weeds

1.2 Lead Agency Name and Address

Byron-Bethany Irrigation District
7995 Bruns Road
Byron, CA 94514

1.3 Lead Agency Contact Person and Phone Number

Rick Gilmore
General Manager
(209) 835-0375

1.4 Project Location

The project is located in Byron-Bethany Irrigation District's (BBID's) conveyance system including Pump Station 1-North (1-N) (37°48'51.74"N Latitude, 121°36'20.67"W Longitude) and Pump Station 1-South (1-S) (37°48'50.38"N Latitude, 121°36'17.62"W Longitude) in Alameda and Contra Costa Counties (Figure 1-1). The project is within the Clifton Court Forebay, Byron Hotsprings, Brentwood, and Woodward Island U.S. Geological Survey (USGS) 7.5-minute quadrangles (Townships 1 and 2 South, Ranges 3 and 4 East).

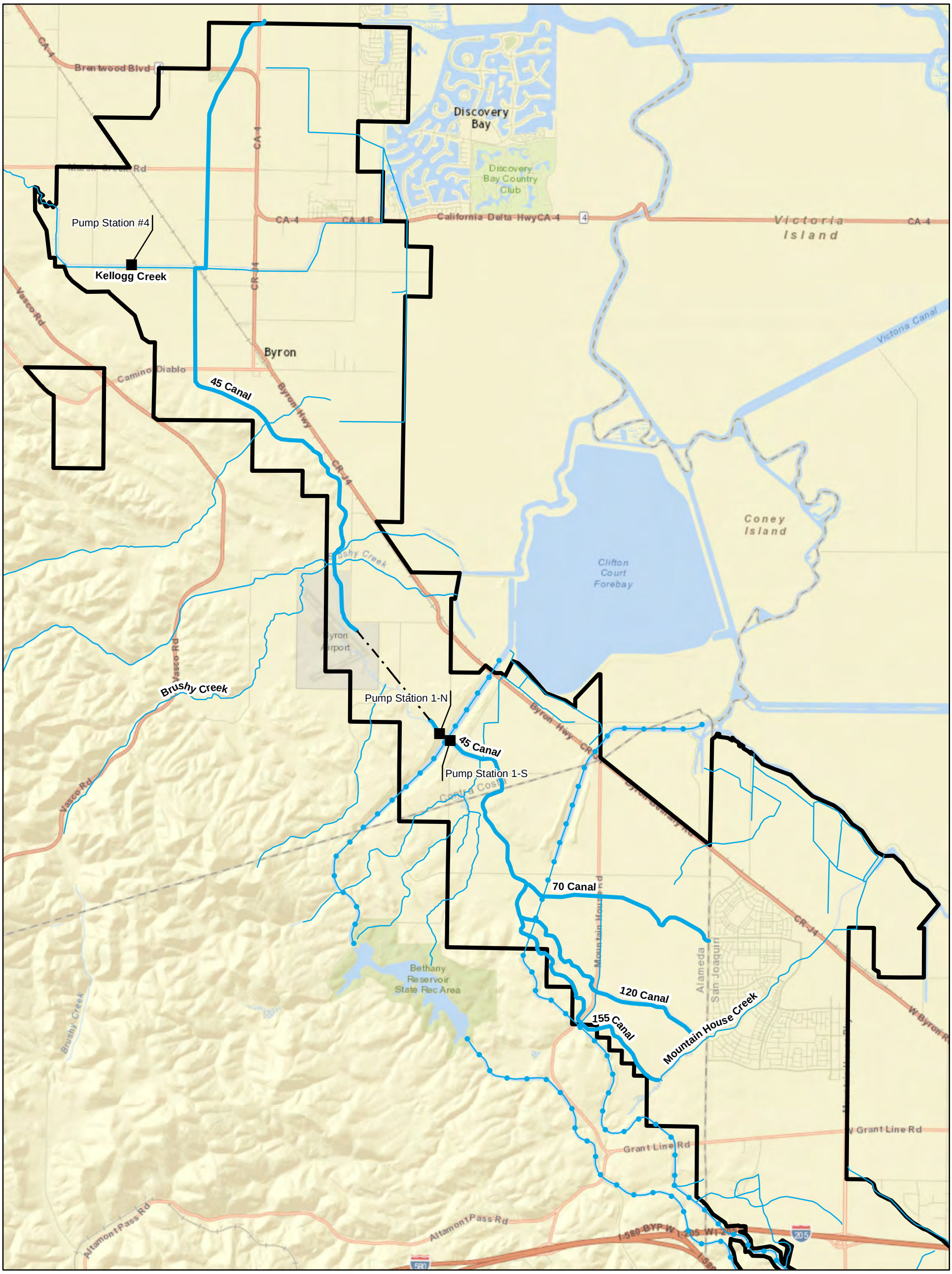
1.5 General Plan Designation

The General Plan land use designation at the project site is Agriculture.

1.6 Zoning

The project site spans the following zoning designations:

- Agricultural,
- Low-density residential, and
- Public recreational



LEGEND

- BBID District Boundary
- Pump Station
- Aqueduct
- Canal
- Waterway
- 96" Canal Siphon

Service Layer Credits: Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, iPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, 2013

FIGURE 1-1
BBID Canal System
Byron Bethany Irrigation District, California

SECTION 2

Project Background and Description

2.1 Background

This Initial Study/Negative Declaration (IS/ND) was prepared by the BBID (or District) to satisfy the requirements of the California Environmental Quality Act (CEQA) and in support of the SWRCB processing the proposed project as a categorical exception under Water Quality Order No 2001-12-Department of Water Quality Statewide general National Pollutant Discharge Elimination System (NPDES) permit for discharges of aquatic pesticides to waters of the United States (General Permit) No. CAG990003. BBID is proposing to apply the aquatic herbicides Nautique and Captain to control algae and aquatic weeds in canals that serve its agricultural service areas (Byron Division and Bethany Division; described below). These aquatic herbicides contain copper, which have the potential to enter into Waters of the United States. BBID intends to maintain compliance with the general NPDES permit through conformance with their Aquatic Pesticides Application Plan (APAP). BBID's APAP (Appendix A), which was approved by the State Water Resources Control Board (SWRCB) in 2014, includes specific water management measures to prevent the release of aquatic herbicides from treated canals to sensitive habitat and includes the implementation of a Water Quality Monitoring Plan. The monitoring plan includes both chemical water analysis by a certified laboratory, and observational monitoring to measure the effectiveness of water management measures.

2.1.1 General Setting

BBID is a multi-county special district formed under the provisions of the California Water Code, Section 20500 et seq. It is a public agency established for the purpose of providing water to lands within portions of Alameda, Contra Costa, and San Joaquin Counties. BBID is primarily an agricultural district, however it also provides raw water to municipal and industrial customers. This IS/ND document covers the application of aquatic pesticides in canals serving its agricultural service areas (Byron Division and Bethany Division) in Alameda and Contra Costa Counties. These canals originate at Pump Station 1-N and Pump Station 1-S and are shown on Figure 1-1. The discussion that follows is applicable only to the BBID agricultural service areas.

BBID owns, operates, and maintains approximately 20 miles of canals (including 11.5 miles of earthen canals and 8.5 miles of cement-lined canals) that convey water from BBID's two intakes along the California Aqueduct to water users within this service area. The service area is divided into two service divisions. The northern and central portions (Byron Division) of the District are located in Contra Costa County; the southern portion (Bethany Division) is located in Alameda County. Figure 1-1 shows the District's location and major water conveyance features. BBID currently encompasses approximately 10,500 irrigable acres.

2.2 Goals and Objectives

Control of algae is necessary to maintain canal capacity and ensure efficient conveyance through the canal system. In addition, maintenance of water quality is important for the agricultural water users that employ drip and sprinkler irrigation systems. These systems can become clogged if the irrigation water contains excessive algae. The primary objective of the project is to control aquatic weeds and algae in the BBID irrigation canals.

The project supports the following goals:

- Control algae growth and aquatic weeds in a cost-effective manner
- Maintain canal capacity and promote an efficient conveyance system
- Implement the District's APAP

2.3 Project Description

BBID is proposing to apply the aquatic herbicides Nautique and Captain to control algae and aquatic weeds in canals within its agricultural service area. The application of these herbicides could result in the discharge of copper to Waters of the United States pursuant to the provisions of an applicable general NPDES permit. Compliance with the NPDES permit would be accomplished through conformance with the District's APAP. Specific measures are included in the APAP to prevent the discharge of copper from treated canals to sensitive habitat.

Copper-based aquatic herbicides such as Nautique and Captain are biocides registered as herbicides to control algae and aquatic weeds in irrigation canals. The federal registrant for these products is SePRO. Nautique and Captain control the growth of algae and aquatic weeds (including Hydrilla and other aquatic weeds with a sensitivity to copper absorption) in irrigation systems. The use of copper herbicides for this purpose is a common practice in warm, dry areas of the Central Valley of California. BBID previously used acrolein to control aquatic weeds in its irrigation canals; however, they would like to broaden their herbicide options for added flexibility in treating their irrigation canals. In 2014, BBID began using endothall herbicides to control aquatic vegetation in the irrigation canals with moderate success, though a stronger herbicide is needed for complete control of the aquatic weeds. Mechanical removal or physical treatment are not cost-effective canal maintenance techniques for the District. BBID has therefore selected the copper herbicides Nautique and Captain as the most adequate and cost-effective compliment to endothall herbicides for ensuring canal functionality and control. BBID has an excellent record regarding safe herbicide use: only applicators holding a valid Qualified Applicator's Certificate apply the aquatic herbicides, herbicide labels are followed, applicable laws and regulations are followed, and Pest Control Recommendations are used.

2.3.1 Receiving Water Limitations

The general NPDES permit specifies receiving water limitations for copper with limitations based on the salinity of the receiving water. The general NPDES permit requires that an application event not result in the exceedance of water quality limits (namely, California Toxics Rule (CTR) standards): (1) outside of the Target Treatment Area at any time, or (2) either within or outside of the Target Treatment Area any time after the conclusion of application event. For herbicide application within the District, the conclusion of an application event is considered to be 24-hours following the application of the herbicide.

The addition of aquatic herbicides to irrigation water may cause exceedance of the CTR standard for a short time period within the canal to which it is applied. The potential for impact associated with the potential for an exceedance of the CTR is remote given:

- BBID keeps treated water within its systems and takes measures to prevent releases of treated water,
- BBID follows the labeling instructions pursuant to the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), and
- BBID operates with an applicable NPDES permit

Lowering canal water levels ensures that no treated water is released from BBID canals for at least 24 hours following treatment. During this time, all treated water within the canals is diverted by BBID customers and used as irrigation supply water. Applications of copper herbicides would be made consistent with the SWRCB-approved APAP, which includes measures to prevent the release of treated water to Kellogg Creek and Mountain House Creek, and includes chemical water quality monitoring and observational monitoring to measure and document the effectiveness of water quality control measures.

Because the application of copper herbicides could cause the irrigation water to exceed the CTR standard for a short time, BBID is conducting environmental review of the proposed algae and aquatic weed control activities to support the SWRCB in determining that a categorical exception is appropriate for the proposed

project. The SWRCB requires that agencies applying for the categorical exception submit a technical report and evidence that an environmental analysis has been completed under CEQA.

2.3.2 Summary of the Aquatic Pesticide Application Plan (APAP)

Compliance with the NPDES permit would be accomplished through conformance with BBID's APAP (Appendix A) which includes:

- Program oversight and license requirements
- An application schedule
- Specific water management measures to prevent the release of copper herbicides from treated canals to sensitive habitat
- Public noticing requirements
- Reporting requirements
- Project monitoring

Table 2-1 specifies the details of each of these project components.

TABLE 2-1
Aquatic Pesticides Application Plan Summary

Component	Provisions
Canal Maintenance Program Oversight and License Requirements	BBID's canal maintenance program includes the use of copper herbicides to control algae and aquatic weeds in canals serving agricultural customers. The canal maintenance program is overseen by the General Manager and is implemented by a qualified applicator. The General Manager holds a valid Agricultural Pest Control Adviser license and a Qualified Applicator's License.
Application Schedule	Application of copper herbicide typically can begin as early as March and as late as May, and extend through the end of irrigation season, which can go as late as October. Applications may occur several times in a season, depending on the presence of algae and/or aquatic weeds. The General Manager determines when an application is to occur. This determination is based on canal conditions.
Application Practices	Applications are conducted consistent with the manufacturer's application and safety manuals and product registration labels. The rate and duration of dosage are determined based on the application guidance within the manual, and are dependent on weed conditions, flow, and water temperature. Application guidance includes provisions for record keeping, equipment inspections, personal protective equipment, valve testing, valve opening, valve closure, hose connection, application monitoring, and shutdown procedures.
Application Locations	BBID proposes to treat its agricultural service area conveyance system with copper herbicides at two locations: Pump Station 1-N and Pump Station 1-S. In addition, spot treatments may be used within the agricultural service area to control localized growth of aquatic plants.
Water Management	**General**: During the application event, the canals are managed to prevent release of copper herbicide to Kellogg Creek and Mountain House Creek, which are the two potential receiving waters. Water levels in the canals are lowered specifically for the purpose of minimizing any risk of release of herbicide to the creeks. The canals are held in a lower water condition for 24 hours post-application. This prevents release outside of the treatment area to receiving waters. In addition to lowering water levels in the canals, a Pre-Application Checklist is completed to ensure that no water is spilling from the canal system and that it is in-fact a closed system during the time of application. Together, the lowering of water levels and completion of the Pre-Application Checklist ensure that spill from the treatment area into the creeks would not occur. These prevention techniques significantly reduce the possibility of fish kills and other aquatic impacts in the creeks because they control the risk of a spill. Within the retention period specified by the aquatic herbicide label instructions, all treated water within the canals is diverted by BBID customers and is not discharged outside the treatment area.

TABLE 2-1
Aquatic Pesticides Application Plan Summary

Component	Provisions
	After the retention period, normal canal operations are resumed and canal levels are raised to typical levels. **Byron Division:** In order to understand water delivery operations in the Byron Division, it is critical to understand the operations at the juncture of 45 Canal and Kellogg Creek. Pump Station 1-N supplies 45 Canal, the conveyance system for the Byron Division. 45 Canal flows north from 1-N to a radial gate located at the intersection of 45 Canal and Kellogg Creek. Kellogg Creek has four distinct channel sections, which are discussed in Section 3 and shown on Figure 3-1. These reaches are: (1) Reach 1: west of BBID, (2) Reach 2: from the BBID boundary to Pump Station 4, (3) Reach 3: from Pump Station 4 to 45 Canal, and (4) Reach 4: from the 45 Canal to Discovery Bay. • Reach 1 is located in the foothills to the west of BBID. This reach was not evaluated because it falls outside the project area. • Portions of reaches 2, 3, and 4 were included in the Biological Survey. Within these reaches, the creek bank is a modified and maintained channel; engineered uniform side slopes and a flat bottom are maintained by the District. • Reach 2 is an infrequently maintained section of channel that contains some riparian vegetation along the channel levee. Low ephemeral flows limit the establishment of significant wetland and emergent vegetation in the creek bottom. The terminus of this reach is Pump Station 4.
Water Management (continued)	Reach 3 is a flat, highly maintained section of the channel, approximately one-mile in length, which long ago was modified from its natural state and incorporated into the District's irrigation delivery system. This reach begins at Pump Station 4. The reach contains a few landscaped trees along the outside levee and no in-channel vegetation. The terminus of this reach is 45 Canal. A radial gate is located in Kellogg Creek immediately downstream of the perpendicular crossing of 45 Canal and Kellogg Creek. As irrigation water from the 45 Canal south of Kellogg Creek flows into Reach 3, the radial gate prevents irrigation water from flowing downstream into Reach 4 and allows the District to bifurcate irrigation flows between the northern extension of 45 Canal and Reach 3. As irrigation water ponds against the radial gate, the water surface elevation in Reach 3 rises, allowing water to 1) flow north into the continuation of 45 Canal and 2) flow upstream (west) into Reach 3. As water flows upstream into Reach 3, it ponds against a concrete weir located in Kellogg Creek at Pump Station 4. The impounded irrigation water is then conveyed via Pump Station 4 to District customers. During the winter months when irrigation water is not being delivered, the radial gate in Kellogg Creek is kept open to allow any potential storm flows to pass into Reach 4. Reach 4, which begins directly downstream of the radial gate, is channelized but is less maintained than Reach 3. Aquatic herbicides are applied at 1-N while canal flows remain in the 30 to 50 cubic feet per second (cfs) range. One day prior to the application event, diversions into 45 Canal are reduced to about 30 cfs to 50 cfs. This flow rate is adjusted as necessary to ensure that at least 12 inches of freeboard is maintained at the radial gate to prevent spill to Reaches 2 and 4 of Kellogg Creek. The system (45 Canal and Reach 3 of Kellogg Creek) is held in this low water condition for one day, and no release is made to Kellogg Creek for a minimum of 24 hours. During this time, water users at the end of the canal system may divert water for on-farm use. After the one-day holding time, water deliveries and canal operations resume normal operations. Gates are inspected on the day of application to ensure that they are operating properly and no leakage is occurring. **Bethany Division:** Pump Station 1-S supplies three main canals in the Bethany Division: 70 Canal, 120 Canal, and 155 Canal. These canals flow in a generally southern direction from 1-S. 70 Canal terminates just north of the Alameda-San Joaquin County line and does not spill to any natural creek or drainage. The drain inlet to the existing BBID drainage system at the terminus of 70 canal is sealed during herbicide application.

TABLE 2-1
Aquatic Pesticides Application Plan Summary

Component	Provisions
	120 Canal terminates just north of the Alameda-San Joaquin County line and before crossing Mountain House Creek. The 120 Drain located at the terminus of 120 Canal discharges into Mountain House Creek. During herbicide application, spill gates are closed, locked, and monitored to prevent any spills to the creek. 155 Canal terminates just north of the Alameda-San Joaquin County line after crossing Mountain House Creek at the Gate 57 Drain. The terminus structure can drain to new BBID drainage system, or can spill into Mountain House Creek. During herbicide application, gates are closed, locked, and monitored to prevent any spills to the creek. Aquatic herbicides are applied at Pump Station 1-S while flows range from about 30 to 50 cfs. One day prior to the application event at 1-S, diversions into 70 Canal are reduced to about 30 to 50 cfs. This flow rate is adjusted and check structures are adjusted as necessary to ensure that a minimum of 12 inches of freeboard is maintained at the terminus of all three canals. The system is held in this low water condition for one day, and no release is made to the drainage system. During this time, water users along the canal system may divert water for on-farm use. After the one-day flushing time, water deliveries and canal operations resume normal operations. Gates are inspected on the day of application to ensure that they are operating properly and no leakage is occurring.
Public Notice Requirements	**Drinking Water Providers:** Aquatic herbicide treated water does not discharge in the vicinity of any municipal drinking water intakes; therefore, no drinking water providers are informed of the District's applications. **Water Users:** The District notifies water users at the upstream end of the Byron Division prior to each aquatic herbicide application, which allows water users to adjust their irrigation schedules to ensure that the herbicide remains in the canal to serve its treatment purpose. Additionally, the District notifies organic growers within the District prior to each aquatic herbicide application to allow the water users to adjust their irrigation schedules to protect their organic certifications. Consistent with the requirements of the General Permit, the District would make an annual announcement of its plans to use copper herbicides and would provide a phone number that water users may call to obtain additional information regarding specific herbicide applications.
Reporting Requirements	Pursuant to the General Permit, at least 15 days prior to the first application of aquatic herbicide each year, the BBID would notify potentially affected public agencies. In addition, the BBID would submit an annual report to the California Regional Water Quality Control Board (CRWQCB) consisting of a summary of the past year's activities and certify compliance with all requirements of the General Permit. If there was no discharge of aquatic herbicides, their residues, or their degradation products, the BBID would certify that their aquatic herbicide application activities did not result in a discharge to any water body. Reports are to be submitted annually by March 1. The District also intends to comply with the additional reporting required by the Standard Provisions and Reporting portion of the General NPDES Permit. These include 24-hour and 5-day reporting of noncompliance and reporting of anticipated noncompliance. It should be noted that the District does not anticipate noncompliance.
Project Monitoring	The Monitoring and Reporting Program required under the General Permit specifies receiving water monitoring requirements. Monitoring is to include background monitoring, event monitoring, and post-event monitoring. A Monitoring Program has been developed and specifies the monitoring frequency, monitoring stations, quality assurance/quality control measures, and the monitoring parameters. The monitoring program includes visual, physical, and chemical monitoring.

2.3.3 Location and Schedule

The two locations where BBID is proposing to treat its conveyance system with Nautique and Captain include Pump Station 1-N and Pump Station 1-S, both of which are located in Contra Costa County.

The application of the Nautique and Captain would take place during the irrigation season (March through October), and would begin in spring of 2015, following approval of a Statewide Implementation Plan (SIP) exception. On treatment day(s), deliveries to irrigators would not be scheduled to occur. The District notifies water users at the upstream end of the District prior to each aquatic herbicide application, which allows water users to adjust their irrigation scheduled to ensure that the herbicide remains in the canal to serve its treatment purpose. The treated water is retained and used within the BBID agricultural service area as the herbicide degrades and becomes more diluted. BBID employees are notified of treatments so they can take appropriate steps to keep treated water in the system. Structures where water can exit a BBID system are locked as required.

2.4 Permits and Approvals

2.4.1 California State Water Resources Control Board – National Pollutant Discharge Elimination System Permit

BBID has determined that its copper herbicide application practices are regulated by a SWRCB general NPDES permit and that a categorical exception should be obtained to conduct its ongoing algae and aquatic weed control activities.

The discharge to Waters of the United States of aquatic pesticides applied for aquatic weed and pest control is regulated by NPDES provisions of the Clean Water Act. In 2013, the SWRCB adopted an updated General Permit applicable to aquatic weed control applications (Water Quality Order No. 2013-0002-DWQ). The permit imposes requirements on any discharge of residual algaecides and aquatic pesticides from public entities to Waters of the United States in accordance with the SWRCB's SIP, *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (SWRCB, 2005).

The U.S. Environmental Protection Agency (EPA) established numeric water quality criteria for Priority Pollutants, including copper, in the National Toxics Rule (NTR) and the California Toxics Rule (CTR). The SWRCB adopted the SIP to implement the CTR and applicable provisions of the NTR (SWRCB, 2005). The SIP established implementation provisions for: (1) chronic toxicity control, (2) priority pollutant criteria promulgated by the EPA through the NTR and CTR, and (3) priority pollutant objectives established by Regional Water Quality Control Boards (RWQCBs) in their Basin Plans.

Under the SIP, discharges of priority pollutants are subject to water-quality based effluent limitations. Section 5.3 of the SIP allows for "categorical exceptions" from its requirements for resource or pest management (e.g., vector or weed control, pest eradication, or fishery management) conducted by public entities to fulfill statutory requirements. The California Water Code Sections 22075-22078 et seq. provide that an irrigation district may treat water for the beneficial use of water users in its service area.

Copper is a priority pollutant, and water quality criteria for copper are established in the CTR (EPA, 2000). If an agency's use of copper (or other priority pollutants) may result in an exceedance of Water Quality Objectives (WQOs) in receiving waters, the agency must have been granted a categorical exception to exceed discharge limitations for the chemicals. The SWRCB requires that agencies applying for the categorical exception submit a technical report and evidence that an environmental analysis has been completed under CEQA.

SECTION 3

Statement of Findings and Determination

BBID conducted this Initial Study to evaluate the potential impacts of implementing the proposed project. The proposed project has been designed to avoid any potentially significant environmental effects identified; therefore, the preparation of an environmental impact report is not required. BBID has prepared an APAP to provide guidance in the controlled use of copper aquatic herbicides in its water conveyance canals.

The APAP defines appropriate measures to be taken for the use of the herbicide that would prevent potential release or discharge to the environment. These measures are consistent with the manufacturer's instructions for the safe use and handling of the product. The APAP also includes implementation of a Water Quality Monitoring Plan, which includes chemical water quality monitoring and observational monitoring to measure and document the effective of the water quality control measures.

Application of the herbicide in the District's water conveyance canals, consistent with provisions in the APAP, can be performed without exposing non-target environmental resources to the herbicide.

Notice of application to interested agencies and water users would be given in accordance with District procedures. Monitoring of herbicide concentrations in the canals would be performed to ensure the elimination of the herbicide from the conveyance system prior to returning the system to full operations.

In light of the whole record, there is no substantial evidence that the proposed project would have a significant effect on the environment. If substantial changes alter the character or impacts of the proposed project, an additional environmental impact determination would be necessary.

Pursuant to Section 21082.1 of the CEQA, BBID has independently reviewed and analyzed the Initial Study and Negative Declaration for the proposed project and finds that these documents reflect the independent judgment of BBID. It has been determined that the project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION has been prepared. No mitigation measures are required.

The attached Initial Study supports this determination.

Date of Draft Report_____

Date of Final Report_____

Approved by BBID_____

SECTION 4

Environmental Impacts Analysis/Checklist

4.1 Environmental Factors Potentially Affected

The environmental factors checked below would be potentially affected by the proposed project, involving at least one impact that is 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/Soils
☐ Greenhouse Gas Emissions	☐ Hazards and Hazardous Materials	☐ Hydrology/Water Quality
☐ Land Use/Planning	☐ Mineral Resources	☐ Noise
☐ Population/Housing	☐ Public Services	☐ Recreation
☐ Transportation/Traffic	☐ Utilities/Service Systems	☐ Mandatory Findings of Significance

DETERMINATION: (To be completed by the lead agency)

On the basis of this initial evaluation:

☒ 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 proposed 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 MIGHT have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MIGHT 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 potentially significant effects (1) have been analyzed adequately in an earlier ENVIRONMENTAL IMPACT REPORT or NEGATIVE DECLARATION pursuant to applicable standards, and (2) have been avoided or mitigated pursuant to that earlier ENVIRONMENTAL IMPACT REPORT or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed on the proposed project, nothing further is required.

Rick Gilmore _____ Date _____

Evaluation of Environmental Impacts

1. A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (for example, the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (for example, the project would not expose sensitive receptors to pollutants, according to a project-specific screening analysis).
2. Answers must take account of the whole action involved, including offsite as well as onsite, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.
3. After the lead agency has determined that a particular physical impact might occur, then the checklist answers must indicate whether the impact is "Potentially Significant," "Less than Significant with Mitigation," or "Less than Significant." "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect might be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an environmental impact report is required.
4. "Negative Declaration: Less than Significant with Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level.
5. Earlier analyses may be used where, pursuant to the tiering, program environmental impact report, or other California Environmental Quality Act process, an effect has been adequately analyzed in an earlier environmental impact report or negative declaration (Section 15063(c)(3)(D)). In this case, a brief discussion should identify the following:
    a) Earlier Analysis Used. Identify and state where they are available for review.
    b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.
    c) Mitigation Measures. For effects that are "Less than Significant with Mitigation Incorporation," describe the mitigation measures that were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.
6. Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (for example, general plans and zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.
7. Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.
8. This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.
9. The explanation of each issue should identify the following:
    a) The significance criteria or threshold, if any, used to evaluate each question
    b) The mitigation measure identified, if any, to reduce the impact to less than significant

4.2 Initial Study/Environmental Impacts Checklist

4.2.1 Aesthetics

Aesthetics Checklist

Would the project:	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporation	Less-Than-Significant Impact	No Impact
a. Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☒
b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
c. Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☐	☒
d. Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☐	☒

4.2.2 Setting

The proposed project is within the BBID service area, and would not constitute a permanent change to the visual nature of the area.

4.2.3 Impact Analysis

a. Would the project have a substantial adverse effect on a scenic vista?

NO IMPACT. The proposed project would not obstruct any scenic vista or area of unique or outstanding visual character. The project would not entail the construction of any new facilities that would change the physical character of the area.

b. Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

NO IMPACT. The proposed project would not damage scenic resources such as trees, rock outcroppings, and historic buildings within a state scenic highway. The project would not entail the construction of any new facilities that would change the physical character of the area.

c. Would the project substantially degrade the existing visual character or quality of the site and its surroundings?

NO IMPACT. The proposed project would not change the visual quality or character of the project site or its surroundings. The project would not entail the construction of any new facilities that would change the physical character of the area.

d. Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

NO IMPACT. The proposed project would not produce new sources of light and glare that would alter existing day or nighttime views. No new sources of light or glare would be established with implementation of the proposed project.

4.3 Agriculture and Forest Resources

Agriculture and Forest Resources Checklist

Would the project:	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporation	Less-Than-Significant Impact	No Impact
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 California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b. Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c. Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code (PRC) Section 12220(g)) or timberland (as defined in PRC Section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
d. Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
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?	☐	☐	☐	☒

4.3.1 Setting

The project would be within the BBID service area, and consists primarily of agricultural lands.

4.3.2 Impact Analysis

a. Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

NO IMPACT. The proposed project would not convert land from open space use/agricultural use to another use. No land use changes are proposed. The proposed activity is consistent and supportive of existing agricultural land uses.

b. Would the project conflict with existing zoning for agricultural use, or a Williamson Act contract?

NO IMPACT. The proposed project would not involve changes in the existing environment which could cause conversion of Farmland to non-agricultural use. No land use changes are proposed. The proposed activity is consistent and supportive of existing agricultural land uses.

c. Would the project conflict with existing zoning for, or cause rezoning of, forest land (as defined in PRC section 1220(g)) or timberland (as defined in PRC section 4526)?

NO IMPACT. No forest land or timberland is present at the project site or in the project vicinity. No forest land or timberland would be affected impacted by the project.

d. Would the project result in the loss of forest land or conversion of forest land to non-forest use?

NO IMPACT. No forest land is present at the project site or in the project vicinity. No forest land would be affected by the project.

e. Would the project involve other changes in the existing environment which, due to their location or nature, could result in the conversion of Farmland, to non-agricultural use?

NO IMPACT. The project would not involve other changes that could result in the conversion of farmland to non-agricultural use.

4.4 Air Quality

Air Quality Checklist

Would the project:	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporation	Less-Than-Significant Impact	No Impact
a. Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b. Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	☒	☐
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 (O3) precursors)?	☐	☐	☐	☒
d. Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☐	☒
e. Create objectionable odors affecting a substantial number of people?	☐	☐	☐	☒

4.4.1 Setting

The proposed project would occur in Alameda and Contra Costa Counties within the San Francisco Bay Area air basin. Under federal standards, Alameda and Contra Costa Counties are designated as nonattainment for ozone and particulate matter (PM) with aerodynamic diameter equal to, or less than, 2.5 microns ($PM_{2.5,}$) and as maintenance for carbon monoxide. Under state standards, the project area is designated as nonattainment for ozone, PM with aerodynamic diameter equal to, or less than, 10 microns (PM_{10}), and $PM_{2.5}$. The project area is designated as attainment/unclassified for all other pollutants.

Project activities have the potential to generate a small amount of air pollutants that degrade air quality and increase local human exposure to air contaminants. The Bay Area Air Quality Management District (BAAQMD) has published guidelines for evaluating, measuring, and mitigating a project's air quality impacts, including impacts associated with criteria air pollutants (such as ozone and particulate matter) and toxic air contaminants (BAAQMD, 2012).

4.4.2 Impact Analysis

a. Would the project conflict with or obstruct implementation of the applicable air quality plan?

LESS-THAN-SIGNIFICANT IMPACT. The proposed project would not conflict with or obstruct implementation of an air quality plan, including that of the Bay Area Air Quality Management District Clean Air Plan. Application of aquatic herbicides would not cause an increase in the emission of a pollutant addressed in an applicable air quality plan.

The most recent air quality plan prepared by BAAQMD in response to federal planning requirements is the *San Francisco Bay Area 2001 Ozone Attainment Plan for the 1-hour National Ozone Standard* (BAAQMD, 2001). BAAQMD also adopted the *Bay Area 2010 Clean Air Plan* in September 2010, which provides an integrated, multi-pollutant control strategy to reduce emissions of ozone, particulates, air

toxics, and greenhouse gases (GHGs) (BAAQMD, 2010a). Emissions associated with vehicles used to administer the aquatic pesticide application would cause a negligible increase to criteria pollutants within the BAAQMD. Additionally, copper herbicides are not registered as an air pollutant, nor would they be discharged into the air, therefore the impact is considered less-than-significant.

b. Would the project violate any air quality standard or contribute substantially to an existing or projected air quality violation?

LESS-THAN-SIGNIFICANT IMPACT. The proposed project is not expected to violate any air quality standard. Emissions associated with vehicles used to administer the pesticide would cause a negligible increase to criteria pollutants within the BAAQMD, therefore the proposed project would not increase the emission of any pollutant for which an air quality standard has been adopted.

c. Would the project 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)?

NO IMPACT. The proposed project would not increase the emission of any pollutant for which the project region is in non-attainment.

d. Would the project expose sensitive receptors to substantial pollutant concentrations?

NO IMPACT. There are no sensitive receptors within the vicinity of the proposed project, therefore there would be no impact.

e. Would the project create objectionable odors affecting a substantial number of people?

NO IMPACT. There are no sensitive receptors within the vicinity of the proposed project, therefore there would be no impact.

4.5 Biological Resources

Biological Resources Checklist

Would the project:	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporation	Less-Than-Significant Impact	No Impact
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 Wildlife (CDFW) or U.S. Fish and Wildlife Service (USFWS)?	☐	☐	☒	☐
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 CDFW or USFWS?	☐	☐	☒	☐
c. Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (CWA) (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☒
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?	☐	☐	☐	☒

Biological Resources Checklist

Would the project:	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporation	Less-Than-Significant Impact	No Impact
e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
f. Conflict with the provisions of an adopted Habitat Conservation Plan (HCP), Natural Community Conservation Plan, or other approved local or regional HCP?	☐	☐	☐	☒

4.5.1 Setting

Biological resources in the project area are documented in Appendix B; the following discussion is a summary of the information contained in the technical appendix.

BBID's general setting is typical of the San Joaquin Valley-Delta region. The area experiences a dry Mediterranean climate moderated by fog and strong winds. The landscape has been highly modified by a long history of farming and cattle ranching. The irrigation district is dominated by agricultural lands and escalating residential development. The canals are primarily located adjacent to the agricultural fields that they serve, including orchards, vineyards, and row crops.

Despite significant habitat modification and agricultural and residential development, the general area provides habitat for a wide range of common wildlife species. The creeks, swales, canals, and ditches provide habitat for amphibian species such as the Pacific treefrog (*Hyla regilla*). This species was heard at several locations during the reconnaissance visit. Perennial water sources such as stockponds likely support the non-native bullfrog (*Rana catesbeiana*). This species is abundant in the Delta Region and is considered to have a negative impact on native species such as California red-legged frog. Western fence lizard (*Sceloporus occidentalis*) is likely to be common in the project area, as are other reptile species such as the Pacific gopher snake (*Pituophis melanoleucus catenifer*). Observed bird species such as mourning dove (*Zenaida macroura*), American crow (*Corvus brachyrhynchos*), and Northern mocking bird (*Mimus polyglottos*) are common in residential and otherwise disturbed areas. Killdeer (*Charadrius vociferous*) were observed foraging in adjacent grassland areas. California ground squirrel (*Spermophilus beecheyi*) were present and sign of burrowing activity were evident throughout the area. Coyotes (*Canis latrans*) are likely common in the area, traveling between the Delta and the Altamont Hills.

The California Natural Diversity Database (CNDDB) and USFWS county and quadrangle-specific species lists were used to search for federal and state special-status plant and wildlife species known to occur in the general vicinity (CDFW, 2014; USFWS, 2014). The CNDDB and USFWS list searches were based on USGS topographical quadrangles (Midway, Clifton Court Forebay, Byron Hotsprings, Brentwood, and Woodward Island) in which BBID is located. Lands within BBID include documented habitat for a variety of special-status wildlife species. These include: fairy shrimp, California tiger salamander, burrowing owl, San Joaquin kit fox, California red-legged frog, western pond turtle, and the curved-foot hygrotus diving beetle. The beetle is the only species reported in the CNDDB records as having been observed within the canal system.

The following characterizes habitat conditions in the area:

- Habitat for fairy shrimp may be found in vernal pools in lands outside the canals.
- Tiger salamanders are active during the winter rainy season and may use BBID canals to cross portions of their grassland habitat; however, they are typically underground during the late spring and summer irrigation season.

- Burrowing owls and the San Joaquin kit fox may use the creeks and canal systems as movement corridors, but breeding habitat is not supported.
- California red-legged frogs and western pond turtles, typically associated with perennial deep water habitats, have been recorded in local stock ponds adjacent to Kellogg, Brushy, and Mountain House creeks. It is not likely that these species would be found in the shallow water of downstream habitat in Kellogg and Mountain House creeks. Kellogg Creek is ephemeral and is likely dry during the irrigation season. It is unlikely that the downstream portions of Kellogg Creek provide habitat for aquatic species such as the red-legged frog.
- The curved-foot hygrotus diving beetle has been known to occur in BBID canals and the surrounding creeks and stock ponds; however, the canal system is not considered high-quality habitat for this invertebrate species.

BBID canals include spill points into Kellogg and Mountain House creeks. Kellogg Creek is ephemeral and carries little to no water during the irrigation season. Due to past modification and ephemeral flows, Kellogg Creek is not expected to provide habitat for common and special-status species downstream of the spill location. 120 Canal includes a spill point to Mountain House Creek. Mountain House Creek is less ephemeral and provides better quality habitat primarily due to leakage from the California Aqueduct and the Delta Mendota Canal (DMC).

The BBID canals provide limited habitat. Vegetation control has been effective in keeping the canal beds free of significant rooted vegetation. The canals only hold water during the spring and summer irrigation season. The ephemeral flow and regular channel maintenance activities create unsuitable habitat conditions for aquatic plant and animal species, including special-status species. Therefore, it is unlikely that special-status species would be found in the canal channels during herbicide application periods and, therefore, they would be unlikely to be adversely affected.

4.5.2 Impact Analysis

a. Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS?

LESS-THAN-SIGNIFICANT IMPACT. Lands within BBID include documented habitat for a variety of special-status wildlife species. These include: fairy shrimp, the California tiger salamander, burrowing owl, San Joaquin kit fox, California red-legged frog, western pond turtle, and the curved-foot hygrotus diving beetle. The beetle is the only species reported in the CNDDB (USFWS, 2014) records as having been observed within the canal system.

It is unlikely that the BBID canal system itself provides significant habitat for special-status plant and wildlife species, particularly during the season of copper-based herbicides application. Therefore, the proposed project would not impact any species identified as a candidate, sensitive, or special-status species in the project vicinity.

b. Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the CDFW or USFWS?

LESS-THAN-SIGNIFICANT IMPACT. The proposed project area would not include sensitive natural communities identified in any local or regional plans, policies, or regulations, or by the CDFW (CDFW, 2014) or USFWS (USFWS, 2014).

California red-legged frogs and western pond turtles, typically associated with perennial deep water habitats, have been recorded in local stock ponds adjacent to Kellogg, Brushy, and Mountain House creeks. It is not likely that these species would be found in the shallow water of downstream habitat in Kellogg and Mountain House creeks. Kellogg Creek is ephemeral and is likely dry during the irrigation season. It is unlikely that the downstream portions of Kellogg Creek provide habitat for aquatic species

such as the red-legged frog during the spring and summer, when the canals are treated with copper-based herbicides. Because the potential for any environmental impact from an exceedance of the California Toxics Rule (CTR) is remote, the impact is therefore considered less-than-significant.

c. Would the project have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the CWA (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

NO IMPACT. The application of aquatic herbicides would not adversely affect existing wetlands. The proposed project would not include the removal, filling, discharge to, or hydrological interruption of any wetlands.

d. Would the project 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?

NO IMPACT. The application of aquatic herbicides would not interfere with the movement of any wildlife species, nor would it impact migratory wildlife corridors or impede the use of native wildlife nursery sites.

e. Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

NO IMPACT. The proposed project is located within the boundary of the San Joaquin County Habitat Conservation; however, the proposed project would not conflict with any provisions contained within the HCP. The HCP is focused on maintenance of the habitat value of open space. The continued delivery of water to agricultural lands supports the maintenance of open space.

f. Would the project conflict with the provisions of an adopted HCP, Natural Community Conservation Plan, or other approved local, regional, or state HCP?

NO IMPACT. The application of aquatic herbicides would not conflict with provisions of adopted applicable conservation plans.

4.6 Cultural Resources

Cultural Resources Checklist

Would the project:	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporation	Less-Than-Significant Impact	No Impact
a. Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☐	☐	☒
b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☐	☐	☒
c. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☐	☒
d. Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☐	☒

4.6.1 Setting

The proposed project is within the BBID canals, and would not modify any of the structures within the service system or cause any ground disturbance.

4.6.2 Impact Analysis

a. Would the project cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?

NO IMPACT. The proposed project would not change the scientific, cultural, or social value of a historic resource within the project area. The proposed project would not include the alteration of any scientific, cultural, or historical resources.

b. Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?

NO IMPACT. The proposed project is not expected to directly alter or change the context of the project's area. The scientific, cultural, or social value of an archeological resource would not be changed by the application of aquatic herbicides.

c. Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

NO IMPACT. The application of aquatic pesticides would not impact any paleontological resource or unique geologic feature. The proposed project would not include the alternation of any scientific, cultural, or historical resources

d. Would the project disturb any human remains, including those interred outside of formal cemeteries?

NO IMPACT. The application of aquatic pesticides would not result in physical changes to the landscape or cause the potential to disturb human remains. The proposed project would not include any activity that could result in the potential to disturb human remains.

4.7 Geology and Soils

Geology and Soils Checklist

Would the project:	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporation	Less-Than-Significant Impact	No Impact
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 a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☐	☒
ii) Strong seismic ground shaking?	☐	☐	☐	☒
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☐	☒
iv) Landslides?	☐	☐	☐	☒
b. Result in substantial soil erosion or the loss of topsoil?	☐	☐	☐	☒
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 onsite or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	☐	☒

Geology and Soils Checklist

Would the project:	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporation	Less-Than-Significant Impact	No Impact
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?	☐	☐	☐	☒
e. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒

4.7.1 Setting

The proposed project is within the BBID canals, and would not modify any of the structures within the service system or cause any ground disturbance.

4.7.2 Impact Analysis

a. Would the project 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 a known fault? Refer to Division of Mines and Geology Special Publication 42.

NO IMPACT. The application of aquatic herbicides has no effect on geological features, and therefore would not expose people or structures to geological hazards or related hazards as a result of seismic activities.

ii) Strong seismic ground shaking?

NO IMPACT. The application of aquatic herbicides has no effect on geological features, and therefore would not expose people or structures to geological hazards or related hazards as a result of ground shaking.

iii) Seismic-related ground failure, including liquefaction?

NO IMPACT. The application of aquatic herbicides has no effect on geological features, and therefore would not expose people or structures to geological hazards or related hazards as a result of ground failure.

iv) Landslides?

NO IMPACT. The application of aquatic herbicides has no effect on geological features, and therefore would not expose people or structures to geological hazards or related hazards as a result of landslides.

b. Would the project result in substantial soil erosion or the loss of topsoil?

NO IMPACT. The proposed project would not cause any ground disturbance and thus would not cause soil erosion to occur, nor would the project cause the loss of topsoil.

c. Would the project be located on a geologic unit or soils that is unstable, or that would become unstable as a result of the project, and potentially result in an onsite or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse?

NO IMPACT. The application of aquatic herbicides has no effect on geological features, and therefore would not cause soils to become unstable or result in an onsite or offsite landslide.

d. Would the project 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?

NO IMPACT. The proposed project would not entail the construction of any building and has no effect on expansive soil. The proposed project would not cause a substantial adverse effect to life or property.

e. Would the project have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?

NO IMPACT. No septic tanks or alternative wastewater disposal systems are proposed for this project.

4.8 Greenhouse Gas Emissions

Greenhouse Gas Emissions Checklist

Would the project:	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporation	Less-Than-Significant Impact	No Impact
a. Generate greenhouse gas (GHG) emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b. Conflict with any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of GHGs?	☐	☐	☒	☐

4.8.1 Setting

GHGs include both naturally occurring and anthropogenic gases that trap heat in the earth's atmosphere. GHGs include carbon dioxide (CO_2), methane, nitrous oxide, hydro-chlorofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Although there is disagreement as to the speed of global warming and the extent of the impacts attributable to human activities, the majority of the scientific community agrees that there is a direct link between increased emission of GHGs and long-term global temperature.

In the United States, the main source of GHG emissions is electricity generation, followed by transportation. However, in California, transportation sources (passenger cars, light-duty trucks, other trucks, buses, and motorcycles) compose the largest category of GHG-emitting sources (California Air Resources Board [CARB], 2014). In 2011, the annual California statewide GHG emissions were 458.68 million metric tons of CO_2-equivalent (CARB, 2014). The transportation sector accounts for about 36 percent of the statewide GHG emissions inventory. The electric power sector accounts for about 20 percent of the statewide GHG emissions inventory. The dominant GHG emitted is CO_2, primarily from fossil fuel combustion.

4.8.2 Impact Analysis

a. Would the project generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment?

LESS-THAN-SIGNIFICANT IMPACT. Currently, there are no GHG emission thresholds for construction activities in the BAAQMD's 2010 thresholds of significance. Rather, the guidelines suggest evaluating impact significance in relation to meeting GHG reduction strategies. The operational threshold for GHGs from stationary source operations is 10,000 metric tons per year. The threshold for other non-stationary source projects is 1,100 metric tons per year (BAAQMD, 2010b). The project would not exceed operational thresholds for GHGs from stationary or non-stationary sources because the project would not generate more than 25 daily vehicle trips (BAAQMD, 2010c). Based on the BAAQMD thresholds of

significance, projects that generate fewer than 2,000 vehicle trips per day are not considered major GHG emissions and do not require a technical GHG quality study.

GHG emissions would be temporary and would infrequently over the application season. GHG emissions would be negligible compared to the local and state GHG inventory. The minimal GHG emissions during application would not contribute substantially to the regional GHG emission inventory or contribute to global climate change. Therefore, the impact from GHG emissions would be less than significant.

b. Would the project conflict with any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of GHGs?

LESS-THAN-SIGNIFICANT IMPACT. The BAAQMD established a climate protection program in 2005 to explicitly acknowledge the link between climate change and air quality and has prepared a GHG emissions inventory to support its climate protection activities. Based on the BAAQMD inventory, total GHG emissions within the San Francisco Bay Area air basin were 95.8 million metric tons in 2007 (BAAQMD, 2010b).

Project GHG emissions would be negligible compared to the state or the BAAQMD GHG inventory and GHG emission goal in 2020. The project would not interfere with the Assembly Bill 32 Scoping Plan and the long-term goal of Assembly Bill 32 to reduce GHG emissions to 1990 levels by 2020. The project would not conflict with plans, policies, or regulations intended to reduce GHG emissions. Therefore, the impact would be less than significant.

4.9 Hazards and Hazardous Materials

Hazards and Hazardous Materials Checklist

Would the project:	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporation	Less-Than-Significant Impact	No Impact
a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
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?	☐	☐	☒	☐
c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
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?	☐	☐	☐	☒
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?	☐	☐	☐	☒
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?	☐	☐	☐	☒

Hazards and Hazardous Materials Checklist

Would the project:	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporation	Less-Than-Significant Impact	No Impact
g. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
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?	☐	☐	☐	☒

4.9.1 Setting

The project includes the application of Nautique and Captain, aquatic herbicides containing copper, to control algae and aquatic weeds in canals within its service area. The application of these herbicides may result in the discharge of copper compounds to Waters of the United States pursuant to the provisions of an applicable general NPDES permit.

4.9.2 Impact Analysis

a,b. Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials? Would the project 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?

LESS-THAN-SIGNIFICANT IMPACT. The proposed project may create a less than significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials; however, such hazards are unlikely. Aquatic herbicides would be transported using vehicles that are inspected regularly and a driver with a hazardous materials endorsement used, and Department of Transportation regulations would be followed. BBID would not dispose of hazardous materials, and properly return herbicide containers to the manufacturer as specified by the label instructions, therefore the impact would be less than significant.

c. Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

NO IMPACT. The proposed project would not include the use or handling of hazardous materials within one-quarter mile of an existing or proposed school.

d. Would the project 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?

NO IMPACT. The project site is not included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5, and the project is not expected to create a significant hazard to the public or environment. An investigation of the Envirostor database, also known as the Cortese List, did not identify contaminated sites within the project alignment (California Department of Toxic Substances Control, 2014).

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?

NO IMPACT. A portion of the proposed project area is located approximately one-quarter mile away from Byron Airport, a county-owned public use airport. The project would not result in a safety hazard for people residing or working in the project area because the project is confined to irrigation canals which do not affect airplane operations.

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?

NO IMPACT. There are no private airstrips within the project vicinity. The proposed project would not result in a safety hazard for people residing or working in the project area. Therefore, no impact would result.

g. Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

NO IMPACT. The project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. Therefore, no impact would result.

h. Would the project 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?

NO IMPACT. The proposed project would not 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 because the use of aquatic herbicides would not involve the use of fire.

4.10 Hydrology and Water Quality

Hydrology and Water Quality Checklist

Would the project:	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporation	Less-Than-Significant Impact	No Impact
a. Violate any water quality standards or waste discharge requirements (WDR)?	☐	☐	☒	☐
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)?	☐	☐	☐	☒
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 onsite or offsite?	☐	☐	☐	☒
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 onsite or offsite?	☐	☐	☐	☒

Hydrology and Water Quality Checklist

Would the project:	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporation	Less-Than-Significant Impact	No Impact
e. Create or contribute runoff water, which would exceed the capacity of existing or planned storm water drainage systems, or provide substantial additional sources of polluted runoff?	☐	☐	☐	☒
f. Otherwise substantially degrade water quality?	☐	☐	☒	☐
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?	☐	☐	☐	☒
h. Place within a 100-year flood hazard area structures, which would impede or redirect flood flows?	☐	☐	☐	☒
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?	☐	☐	☐	☒
j. Inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☒

4.10.1 Setting

Rolling hills and numerous swales direct surface water flow to four primary drainages within BBID: Kellogg, Frisk, Brushy, and Mountain House creeks (Frisk and Brushy creeks were not considered potential receiving waters during the Nautique and Captain application period because a spillway into them from the canals does not exist). These drainages flow northeast towards the San Joaquin Delta and have been highly modified as a result of past agricultural and cattle ranching practices. These creeks have been largely channelized and no longer follow their original courses. Upstream (west) of BBID, the creeks have been modified in various locations to create stock ponds.

The reconnaissance survey was conducted September 30, 2014, after a period of moderate rainfall. Kellogg Creek had some water flow. No water was present in Mountain House Creek

Receiving Waters Outside the Target Treatment Area

There are two natural drainages that may receive operational spills from District water delivery operations. These are Kellogg Creek, located in the northern part of the District (Byron Division), and Mountain House Creek, located in the southern part of the District (Bethany Division). During herbicide applications, measures are taken to prevent the spill of herbicide into Kellogg and Mountain House creeks.

Kellogg Creek. Kellogg Creek has four distinct channel sections. These reaches are:

- Reach 1: west of BBID
- Reach 2: from the BBID boundary to Pump Station 4
- Reach 3: from Pump Station 4 to 45 Canal
- Reach 4: from the 45 Canal to Discovery Bay

Reach 1 is located in the foothills to the west of BBID. This reach was not evaluated because it falls outside the project area.

Portions of reaches 2, 3, and 4 were included in the Biological Survey (Appendix B). Within these reaches, the creek bank is a designed and maintained channel; engineered uniform side slopes and a flat bottom are maintained by the District. Reach 2 is an infrequently maintained section of channel that contains some

riparian vegetation along the channel levee. Low ephemeral flows limit the establishment of significant wetland and emergent vegetation in the creek bottom. The terminus of this reach is Pump Station 4.

Reach 3 is a flat, highly maintained section of the channel, approximately one mile in length, which long ago was modified from its natural state and incorporated into the District's irrigation delivery system. This reach begins at Pump Station 4. The reach contains a few landscaped trees along the outside levee and no in-channel vegetation. The terminus of this reach is 45 Canal. A radial gate is located in Kellogg Creek immediately downstream of the perpendicular crossing of 45 Canal and Kellogg Creek. As irrigation water from the 45 Canal south of Kellogg Creek flows into Reach 3, the radial gate prevents irrigation water from flowing downstream into Reach 4 and allows the District to bifurcate irrigation flows between the northern extension of 45 Canal and Reach 3. As irrigation water ponds against the radial gate, the water surface elevation in Reach 3 rises, allowing water to 1) flow north into the continuation of 45 Canal and 2) flow upstream (west) into Reach 3. As water flows upstream into Reach 3, it ponds against a concrete weir located in Kellogg Creek at Pump Station 4. The impounded irrigation water is then conveyed via Pump Station 4 to District customers. During the winter months when irrigation water is not being delivered, the radial gate in Kellogg Creek is kept open to allow any potential storm flows to pass into Reach 4.

Reach 4, which begins directly downstream of the radial gate, is channelized but is less maintained than Reach 3. The channel is narrow (approximately 10 to 15 feet wide) and the banks are vegetated with dense black berry (*Rubus vitifolius*), small patches of willow (*Salix* sp.), and a variety of non-native plants. Low ephemeral flows limit the establishment of significant wetland and emergent vegetation in the creek bottom. District staff report that Reaches 2 and 4 are dry throughout the summer months when the canal system is in use.

Mountain House Creek. Mountain House Creek originates in the foothills east of the BBID service area boundary and flows in a westerly direction. The BBID canal system passes underneath the creek. However, a spillway can divert stormwater runoff and irrigation overflow into the creek. The creek is impounded just east of the DMC. Flow in the creek is perennial, primarily as a result of seepage from the California Aqueduct and the DMC. Residential development has recently been constructed near the lower reach of Mountain House Creek. Currently, in this reach, the creek is highly channelized.

Target Treatment Area

The Target Treatment Area is the area that the District treats for control of algae and aquatic weeds. The Target Treatment Area encompasses the District's canal system.

Byron Division: The Target Treatment Area within the Byron Division includes 45 Canal and Reach 3 of Kellogg Creek.

Bethany Division: The Target Treatment Area within the Bethany Division includes 70 Canal, 120 Canal, and 155 Canal.

Water Quality

Beneficial Uses. Kellogg Creek and Mountain House Creek are located within the Sacramento-San Joaquin Delta Hydrologic Region. Many individual creeks in the Sacramento and San Joaquin River basins do not have unique designated beneficial uses. Rather, all of the waterbodies within a given hydrologic unit are given the same set of designated beneficial uses. The *Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins* (CRWQCB, 1998) states that beneficial uses vary throughout the Delta, and that if necessary, site-specific determinations of beneficial uses can be made. The waterbodies within the Sacramento San Joaquin Delta Hydrologic Region, including Kellogg and Mountain House creeks, have the following designated beneficial uses (CRWQCB, 1998):

- Municipal Water Supply (MUN)
- Agriculture, Irrigation, and Stock Watering (AGR)
- Industry, Process (IND)
- Contact and Non-Contact Recreation (REC-I and REC-II)
- Warmwater Fisheries Habitat (WARM)
- Coldwater Fisheries Habitat (COLD)
- Migration (MIGR)
- Spawning (SPN)
- Wildlife Habitat (WILD)
- Navigation (NAV)

Receiving Water Limits. The general NPDES permit specifies receiving water limitations for copper with the limitations based on the salinity of the water. Given BBID's irrigation water is considered freshwater, the associated water quality limit is:

$$\text{Copper Chronic}^{1} = 0.960 \exp\{0.8545[\ln(\text{hardness})] - 1.702\}$$

The general NPDES permit requires that an application event not result in the exceedance of water quality limits (namely, CTR standards): (1) outside of the Target Treatment Area at any time, or (2) either within or outside of the Target Treatment Area any time after the conclusion of application event. For herbicide application within the District, the conclusion of an application event is considered to be 24 hours following the application of the herbicide.

[1] An estimate of the highest concentration of a material in surface water to which an aquatic community can be exposed indefinitely without resulting in an unacceptable effect

4.10.2 Impact Analysis

a. Would the project violate any water quality standards or WDR?

LESS-THAN-SIGNIFICANT IMPACT. The addition of aquatic herbicides to irrigation water may exceed the CTR standard for a short time period within the canal to which it is applied; however, because BBID keeps treated water within its systems and takes measures to prevent releases of treated water, follows the labeling instructions pursuant to FIFRA, and operates with an applicable NPDES permit, the potential for any environmental impact from an exceedance of the CTR is remote. Lowering canal water levels would ensure that no treated water is released from BBID canals for at least 24 hours following treatment. During this time, all treated water within the canals would be diverted by BBID customers and used as irrigation supply water. Applications of copper herbicides would be made consistent with the District's APAP, which includes measures to prevent the release of treated water to Kellogg Creek and Mountain House Creek, and includes chemical water quality monitoring and observational monitoring to measure and document the effectiveness of water quality control measures.

b. Would the project 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)?

NO IMPACT. The project would not use or extract groundwater and would not interfere with groundwater recharge.

c. Would the project 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 onsite or offsite?

NO IMPACT. The proposed project would not alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, and would not cause any erosion or siltation on- or off-site.

d. Would the project 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 onsite or offsite?

NO IMPACT. Aquatic herbicide application would not alter runoff. Applications are usually performed during dry summer months and, therefore, would not contribute to flooding.

e. Would the project create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff?

NO IMPACT. The application of aquatic herbicides to irrigation water would not create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. The systems treated are earthen ditches or concrete-lined irrigation channels, and are not part of any stormwater drainage system. Treated water would not allowed to run off as or into stormwater drainage. Treated water would be retained after application and eventually used within the BBID canal system.

f. Would the project otherwise substantially degrade water quality?

LESS-THAN-SIGNIFICANT IMPACT. Potential water quality impacts are discussed in Section 4.10.2.a. The application of aquatic herbicides to irrigation water would not otherwise substantially degrade water quality. Aquatic herbicides would be added to the irrigation system in order to maintain agricultural water delivery systems to convey high quality water for agricultural purposes. Aquatic herbicides would also eliminate odor and clarity issues associated with excessive algae growth.

g. Would the project 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?

NO IMPACT. No housing construction is proposed as a part of the project, and therefore would not place housing within a flood hazard area.

h. Would the project place within a 100-year flood hazard area structures which would impede or redirect flood flows?

NO IMPACT. No structures are proposed as part of this project, therefore, no impacts would occur.

i. Would the project 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?

NO IMPACT. The proposed project would not 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. The application of aquatic herbicides would not cause flooding or the failure of a levee or dam.

j. Would the project result in inundation by seiche, tsunami, or mudflow?

NO IMPACT. The project would not expose people, structures, or land to hazards such as seiches, tsunamis, or mudflows. Application of aquatic herbicides would not contribute to the kinds of seismic activities that would cause tsunamis or contribute to mudflows because of the relatively level ground on which these systems exist.

4.11 Land Use and Planning

Land Use and Planning Checklist

Would the project:	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporation	Less-Than-Significant Impact	No Impact
a. Physically divide an established community?	☐	☐	☐	☒
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?	☐	☐	☐	☒
c. Conflict with any applicable HCP or natural community conservation plan?	☐	☐	☐	☒

4.11.1 Setting

The proposed project is located within BBID service area, which is primarily rural. Land surrounding the project site and affected areas are zoned agricultural, forestry recreation, and low-density residential.

4.11.2 Impact Analysis

a. Would the project physically divide an established community?

NO IMPACT. The project would not divide an established community; therefore, there would be no impact.

b. Would the project 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?

NO IMPACT. The project would not 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 plans, specific plans, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect.

c. Would the project conflict with any applicable HCP or natural community conservation plan?

NO IMPACT. As stated in Section 4.5.1, the proposed project is located within the boundary of the San Joaquin County Habitat Conservation; however, the proposed project would not conflict with any provisions contained within the HCP. The HCP is focused on maintenance of the habitat value of open space. The continued delivery of water to agricultural lands would support the maintenance of open space.

4.12 Mineral Resources

Mineral Resources Checklist

Would the project:	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporation	Less-Than-Significant Impact	No Impact
a. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
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?	☐	☐	☐	☒

4.12.1 Setting

The proposed project is not in an area of known mineral resources.

4.12.2 Impact Analysis

a. Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

NO IMPACT. The project would not impact known mineral resources in the project area. Continued existence of the project canals and ditches would not impact the availability of mineral resources.

b. Would the project 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?

NO IMPACT. The project would not impact locally-important mineral resources in the project area. No physical barriers would be constructed as a result of adding aquatic herbicides to irrigation canals.

4.13 Noise

Noise Resources Checklist

Would the project:	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporation	Less-Than-Significant Impact	No Impact
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?	☐	☐	☐	☒
b. Exposure of persons to or generation of excessive ground borne vibration or ground borne noise levels?	☐	☐	☐	☒
c. A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☒
d. A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☒
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?	☐	☐	☐	☒
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?	☐	☐	☐	☒

4.13.1 Setting

The proposed project is located within BBID service area, which is primarily rural. Land surrounding the project site and affected areas is primarily used for agricultural operations. There are no sensitive receptors (for example homes, hospitals etc.) located near the pump stations where the product would be administered.

4.13.2 Impact Analysis

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?

NO IMPACT. The application of aquatic herbicides to irrigation water would not expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. The introduction of these chemicals to irrigation canals would involve small pumps that do not violate noise standards.

b. Exposure of persons to or generation of excessive ground borne vibration or ground borne noise levels?

NO IMPACT. The application of aquatic herbicides would not expose persons to or generate excessive ground-borne vibration or ground-borne noise levels. The introduction of aquatic herbicides to irrigation water would involve small pumps that do not create excessive ground-borne vibration or ground-borne noise levels.

c. A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

NO IMPACT. There would be no change to ambient noise levels in the project vicinity as a result of project implementation.

d. A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

NO IMPACT. There would be no change to ambient noise levels in the project vicinity as a result of project implementation.

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?

NO IMPACT. The project would not result in any change to existing noise levels from the air strip located Byron Airport.

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?

NO IMPACT. The project is not within 2 miles of a public airport or public use airport, so there would be no impact.

4.14 Population and Housing

Population and Housing Checklist

Would the project:	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporation	Less-Than-Significant Impact	No Impact
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)?	☐	☐	☐	☒
b. Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c. Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

4.14.1 Setting

The proposed project includes the application of aquatic herbicides, and would not result in any changes to population within or around the BBID service area.

4.14.2 Impact Analysis

a. Would the project 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)?

NO IMPACT. The project would not include the construction of new homes, businesses, or other infrastructure that would indirectly induce population growth in the area. Therefore, no impact would occur.

b. Would the project displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?

NO IMPACT. The project would not displace existing housing or necessitate the construction of replacement housing elsewhere. Therefore, no impact would occur.

c. Would the project displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?

NO IMPACT. The project would not displace any housing or businesses and would not necessitate the movement or demolition of any housing. Therefore, no impact would occur.

4.15 Public Services

Public Services Checklist

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:	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporation	Less-Than-Significant Impact	No Impact
a. Fire protection?	☐	☐	☐	☒
b. Police protection?	☐	☐	☐	☒
c. Schools?	☐	☐	☐	☒
d. Parks?	☐	☐	☐	☒
e. Other public facilities?	☐	☐	☐	☒

4.15.1 Setting

Public services and facilities are provided and maintained by County entities, including fire, police, and public works.

4.15.2 Impact Analysis

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?

NO IMPACT. The proposed project would not increase the demand for fire protection services in the project area; therefore, there would be no impact.

b. Police protection?

NO IMPACT. The project would not increase population and therefore, additional police protection is not needed and there would be no impact.

c. Schools?

NO IMPACT. The project would not generate additional population or students; therefore, there would be no impact.

d. Parks?

NO IMPACT. The project would not create an increased need for new park facilities and therefore would not require the construction or operation of new park facilities.

e. Other public facilities?

NO IMPACT. The project would not increase population during project construction or operation; therefore, the project would not affect other government services or public facilities.

4.16 Recreation

Recreation Checklist

		Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporation	Less-Than-Significant Impact	No Impact
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?	☐	☐	☐	☒
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?	☐	☐	☐	☒

4.16.1 Setting

There are no recreational opportunities within the BBID service canals.

4.16.2 Impact Analysis

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?

NO IMPACT. The project would not increase the demand for recreation facilities.

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?

NO IMPACT. The proposed project would not include the construction or operation of new recreation facilities, nor would it include or require the expansion of existing recreation facilities.

4.17 Transportation/Traffic

Transportation/Traffic Checklist

Would the Project:	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporation	Less-Than-Significant Impact	No Impact
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?	☐	☐	☐	☒
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?	☐	☐	☐	☒
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?	☐	☐	☐	☒
d. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
e. Result in inadequate emergency access?	☐	☐	☐	☒
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?	☐	☐	☐	☒

4.17.1 Setting

The project is surrounded by lands that primarily used for agricultural production. Traffic is within the BBID service area is on county roads and therefore traffic volumes are generally low.

4.17.2 Impact Analysis

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?

NO IMPACT. The proposed project would not entail actions that would increase traffic levels. The application of aquatic herbicides to irrigation water would not cause an increase in local traffic. The use of aquatic herbicides is designed to sustain agriculture by maintaining agricultural water delivery systems.

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?

NO IMPACT. The proposed project would not entail actions that would increase traffic levels. The application of aquatic herbicides would not result in any impacts to existing level of service standards for designated roads or highways.

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?

NO IMPACT. The project would have no impact on air traffic patterns.

d. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

NO IMPACT. The project would not include or exacerbate dangerous design features or incompatible uses.

e. Result in inadequate emergency access?

NO IMPACT. The proposed project would not entail any construction or operation that would impact any emergency access. The project would not result in changes to existing emergency access.

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?

NO IMPACT. The proposed project would not entail the construction or operation of any facilities. The project would not conflict with adopted policies, plans, or programs that support alternative transportation modes.

4.18 Utilities and Service Systems

Utilities and Service Systems Checklist

Would the Project:	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporation	Less-Than-Significant Impact	No Impact
a. Exceed wastewater treatment requirements of the applicable RWQCB?	☐	☐	☐	☒
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?	☐	☐	☐	☒
c. Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
d. Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	☒
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?	☐	☐	☐	☒

Utilities and Service Systems Checklist

Would the Project:	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporation	Less-Than-Significant Impact	No Impact
f. Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☐	☒
g. Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☒

4.18.1 Setting

The proposed project is within a rural setting. The proposed project would not expand or adversely affect utility services (water, wastewater, electricity, solid waste disposal).

4.18.2 Impact Analysis

a. Exceed wastewater treatment requirements of the applicable RWQCB?

NO IMPACT. The proposed project would not include the discharge of any wastes that are subject to wastewater treatment requirements. The proposed project would not entail the discharge of any regulated pollutant to a wastewater treatment facility. The application of aquatic herbicides to irrigation water would not exceed wastewater treatment requirements of the RWQCB, because the irrigation water to which the herbicide is applied would not be released from the District, nor would it require treatment in a wastewater treatment facility.

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?

NO IMPACT. The proposed project would not include the consumptive use of water supplies. The proposed project would not result in the generation of any wastewater. Therefore, the project would not create a demand for the construction and operation of upgraded or expanded wastewater treatment facilities.

c. Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

NO IMPACT. The proposed project would not include the alternation of any drainage patterns, nor would it include activities that would increase stormwater drainage. The proposed project would not require construction of new stormwater drainage to comply with flood control agency requirements. No significant adverse environmental effects related to existing stormwater drainage facilities would occur. Water treated with herbicide would not be directed into a stormwater drainage facility.

d. Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?

NO IMPACT. The proposed project would not include the consumptive use of water supplies. The project would not require additional water rights.

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?

NO IMPACT. The project would not affect wastewater treatment facilities. See the discussion in Section 4.18.2.a and 4.18.2.b.

f. Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?

NO IMPACT. The proposed project includes the disposal of empty herbicide containers. The containers would be triple rinsed, then recycled, as instructed on the Captain and Nautique labels.

g. Comply with federal, state, and local statutes and regulations related to solid waste?

NO IMPACT. The proposed project includes the disposal of pesticide containers in accordance with the applicable regulations and statutes.

4.19 Mandatory Findings of Significance

Mandatory Findings of Significance Checklist

		Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporation	Less-Than-Significant Impact	No Impact
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?	☐	☐	☒	☐
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?	☐	☐	☒	☐
c.	Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☒	☐

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?

LESS-THAN-SIGNIFICANT IMPACT. The proposed project may have the potential to minimally degrade the quality of the environment in channels outside BBID's systems on a very short-term basis; however as mentioned in Section 2.3.3, deliveries to irrigators would not be scheduled to occur on treatment day(s) to avoid potential impacts.

The project would not cause a fish or wildlife population to drop below self-sustaining levels, nor would it threaten to eliminate a plant or animal community, or reduce the number or restrict the range of a rare or endangered plant or animal. BBID canals provide limited habitat for special-status plant and wildlife species, particularly during the spring and summer seasons. Vegetation control has been effective in keeping the canal beds free of significant rooted vegetation. The ephemeral flow and channel maintenance is not conducive to aquatic species and local special-status species. Therefore, it is unlikely that special-status species would be found in the canal channels during spring and summer months when copper herbicides are applied.

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?

LESS-THAN-SIGNIFICANT IMPACT. The proposed project would not act in a cumulative manner with other past, current, or foreseeable future projects to cause a significant adverse effect on the environment. The proposed project incorporates measures to avoid the discharge of herbicide to the environment which could result in cumulative effects to other environmental resources. BBID's system is an isolated system. No other projects or activities of the District would act in a cumulative manner with the proposed project.

c. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

LESS-THAN-SIGNIFICANT IMPACT. The application of aquatic herbicides to irrigation water in conformance with District's APAP would not cause substantial adverse effects on human beings, either directly or indirectly. Because the District notifies all local water treatment plants and follows precise treatment schedules of copper herbicides, the local treatment plants avoid taking water which has been treated by the aquatic herbicide. BBID also follows all manufacturers labeling and FIFRA requirements, and a monitoring plan has been developed (see Section 5.).

SECTION 5

References

Bay Area Air Quality Management District (BAAQMD). 2001. San Francisco Bay Area 2001 Ozone Attainment Plan for the 1-hour National Ozone Standard. October.

Bay Area Air Quality Management District (BAAQMD). 2010a. Bay Area 2010 Clean Air Plan. September.

Bay Area Air Quality Management District (BAAQMD). 2010b. Source Inventory of Bay Area Greenhouse Gas Emissions. February.

Bay Area Air Quality Management District (BAAQMD). 2010c. California Environmental Quality Act (CEQA) Air Quality Guidelines. http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/Draft_BAAQMD_CEQA_Guidelines_May_2010_Final.ashx?la=en. May.

Bay Area Air Quality Management District (BAAQMD). 2012. California Environmental Quality Act Air Quality Guidelines. Updated May 2012. http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Updated-CEQA-Guidelines.aspx.

California Air Resources Board (CARB). 2014. California Greenhouse Gas Inventory for 2000-2012. http://www.arb.ca.gov/cc/inventory/data/tables/ghg_inventory_scopingplan_00-12_2014-03-24.pdf.

California Department of Fish and Wildlife (CDFW). 2014. Natural Diversity Database Program "Rarefind". California Natural Diversity Database (CNDDB). The Resources Agency, Sacramento.

California Department of Fish and Wildlife (CDFW). 2014. *California Natural Diversity Database (CNDDB)*. RareFind5. Electronic Database. Sacramento, California.

California Department of Toxic Substances Control. 2014. EnviroStor Database. http://www.envirostor.dtsc.ca.gov/public/. Accessed October 2014.

California Regional Water Quality Control Board, Central Valley Region (CRWQCB). 1998. *Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins*. Fourth edition.

SWRCB. 2005. *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California*. http://www.waterboards.ca.gov/water_issues/programs/state_implementation_policy/.

U.S. Environmental Protection Agency (EPA). 2000. Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California (California Toxics Rule). http://water.epa.gov/lawsregs/rulesregs/ctr/.

U.S. Fish and Wildlife Service (USFWS). 2014. Sacramento Fish and Wildlife Office Endangered Species Lists Website. Database Last Updated: September 3, 2014. Accessed on September 29. http://www.fws.gov/sacramento/es_species/Lists/es_species_lists-form.cfm.

Appendix A
Byron-Bethany Irrigation District's 2014 Aquatic Pesticides Application Program (APAP), as approved by the Board

NPDES Permit for Residual Aquatic Pesticide Discharges from Algae and Aquatic Weed Control Applications

Aquatic Pesticide Application Plan and Monitoring Program

Prepared for

Byron-Bethany Irrigation District

March 2014

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SECTION 1

Background

The Byron-Bethany Irrigation District (BBID or District) is a multi-county special district formed under the provisions of the California Water Code, Section 20500 et seq. It is a public agency established for the purpose of providing water to lands within portions of Alameda and Contra Costa counties.

BBID was enrolled under the 2004 State Water Resources Control Board (SWRCB) General Permit applicable to aquatic weed control (Water Quality Order No. 2004-0009-DWQ). In compliance with the General Permit requirements, BBID submitted a Notice of Intent (NOI) to comply with the permit, completed CEQA compliance documentation, and prepared an Aquatic Pesticides Application Plan (APAP) for the application of Magnacide H. BBID submitted annual reports under the General Permit, summarizing its use of aquatic pesticides and adherence to its APAP.

In 2013, a new SWRCB General Permit applicable to weed control was adopted (General Permit) (Water Quality Order No. 2013-0002-DWQ). The BBID has prepared this APAP with the information needed to enroll under the updated General Permit. Included within this report is a Monitoring Plan for the application of Magnacide H (acrolein), Nautique and Captain (formulations of chelated copper), and Cascade and Teton (formulations of endothall). Table 1-1 lists the required APAP Elements and their location within this document.

TABLE 1-1
Location of Required APAP Elements within this Document
Aquatic Pesticide Application Plan and Monitoring Program

APAP Element	Element Description	Report Section
C.1	Description of the water system to which algaecides and aquatic herbicides are being applied.	1.2.2
C.2	Description of the treatment area in the water system.	1.2.2
C.3	Description of the types of weed(s) and algae that are being controlled and why.	1.2
C.4	Algaecide and aquatic herbicide products or types of algaecides and aquatic herbicides expected to be used and if known, their degradation byproducts, the method in which they are applied, and if applicable, the adjuvants and surfactants used.	1.3
C.5	Discussion of the factors influencing the decision to select algaecide and aquatic herbicide applications for algae and weed control.	1.2.1
C.6	List the gates or control structures to be used to control the extent of receiving waters potentially affected by algaecide and aquatic herbicide application. Provide an inspection schedule of those gates or control structures to ensure they are not leaking.	1.2.2
C.7	If the Discharger has been granted a short-term or seasonal exception under 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 applications occur outside of the exception period, describe plans to ensure receiving water criteria are not exceeded.	1.1
C.8	Description of monitoring program.	2
C.9	Description of procedures used to prevent sample contamination from persons, equipment, and vehicles associated with algaecide and aquatic herbicide application.	2.7.1

TABLE 1-1
Location of Required APAP Elements within this Document
Aquatic Pesticide Application Plan and Monitoring Program

APAP Element	Element Description	Report Section
C.10	Description of BMPs to be implemented. BMPs should include, at the minimum:	
C.10.a	Measures to prevent algaecide and aquatic herbicide spill and for spill containment during the event of a spill.	1.2.2
C.10.b	Measures to ensure that only an appropriate rate of application consistent with product label requirements is applied for the targeted weeds or algae.	1.3
C.10.c	Plans for educating staff and herbicide applicators on avoiding adverse effects from the herbicide applications.	1.3.1
C.10.d	Planning and coordination with nearby farmers and agencies with water rights diversion so that beneficial uses of the water (irrigation, drinking water supply, domestic stock water, etc.) are not impacted during the treatment period.	1.5
C.10.e	Description of measures used for preventing fish kill when herbicides will be used for algae and aquatic weed controls.	1.2.2
C.11	Examination of possible alternatives to algaecide and aquatic herbicide use, including:	
C.11.a	Evaluating the following management options: • No action • Prevention • Mechanical or physical methods • Cultural methods • Biological control agents • Algaecides and aquatic herbicides	1.2.1
C.11.b	Using the least intrusive method of algaecide and aquatic herbicide application.	1.2.1.2
C.11.c	Applying a decision matrix concept to the choice of formulation.	1.2.1.3

1.1 Regulatory Setting

The discharge of residual algaecides and aquatic pesticides applied for aquatic weed and pest control to waters of the United States is regulated by National Pollutant Discharge Elimination System (NPDES) provisions of the Clean Water Act (Headwaters, Inc. vs. Talent Irrigation District). In 2013, the SWRCB adopted an updated General Permit applicable to aquatic weed control applications (Water Quality Order No. 2013-0002-DWQ). The permit imposes requirements on any discharge of residual algaecides and aquatic pesticides from public entities to waters of the United States in accordance with the SWRCB's *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (SIP) (SWRCB, 2000). Pursuant to the permit, discharges of residual algaecides and aquatic herbicides may not create a nuisance, and shall not cause or have a reasonable potential to cause an in-stream excursion in exceedances of water quality standards. Compliance with an APAP and implementation of water quality monitoring are both required conditions of the General Permit. In addition, the General Permit contains a Monitoring and Reporting Program (MRP) that describes monitoring requirements to be implemented as a condition of permit compliance. The MRP contains provisions specifying sampling procedures, monitoring frequency, retention of records, data to be contained in field records, device calibration and maintenance, sample parameters, sample timing, and reporting. The requirements vary for different pesticides.

Section 5.3 of the SIP allows public entities to apply for short-term exceptions from meeting priority pollutant criteria in receiving waters, if necessary to implement pest control measures. BBID applied for and was granted an exception for the use of acrolein. The District's exception period extends the duration of the weed management season, which was defined in the exception as March to October. BBID's acrolein applications are typically far below the receiving water limitation for acrolein (21 µg/L), however, a higher concentration is allowed under this exception. BBID's past use of acrolein under the General Permit has not triggered reliance on the SIP exception, as BBID's APAP implementation has protected defined receiving waters. However, due to the phase out of acrolein and the potential use of copper based products for canal maintenance, BBID will be applying for a SIP exception for the copper for the application period.

1.2 Water and Aquatic Weed Management

The BBID owns, operates, and maintains approximately 20 miles of canals (including 11.5 miles of earthen canals and 8.5 miles of cement-lined canals) that convey water from BBID's two intakes on the Intake Channel to the California Aqueduct to water users within the District's service area. The service area is divided into two service divisions. The northern and central portion (Byron Division) of the district is located in Contra Costa County; the southern portion (Bethany Division) is located in Alameda County. BBID currently encompasses approximately 10,500 irrigable acres.

BBID's canal maintenance program includes the use of algaecides and aquatic herbicides ("aquatic herbicides") to control algae and aquatic weeds (specifically pondweed) within the irrigation canals. Applications of these aquatic herbicides protects canal capacity and prevent restricted flow due to algae and weed growth. Additionally, control of algae is necessary to maintain water quality for agricultural water users that employ drip and sprinkler irrigation systems, which can become clogged if the irrigation water contains excessive algae. Application of aquatic herbicides is more cost effective on a large scale than mechanical weed removal, and prevents damage to canal structure due to heavy machinery use.

The canal maintenance program is overseen by the General Manager and is implemented by a qualified applicator. The General Manager holds a valid Agricultural Pest Control Adviser (PCA) license and a Qualified Applicator's License (QAL).

1.2.1 Aquatic Weed Management

Algae and aquatic weeds have been managed historically at BBID through the use of aquatic herbicides, specifically Magnacide H (acrolein).

1.2.1.1 Evaluation of Possible Alternatives

Alternatives to chemical weed management have been explored by the BBID. Methods explored are described in the sections below.

No Action. No action on algae and aquatic weed removal is not a viable alternative because it would result in a decline in the ability to convey water through the canals. In addition, allowing aquatic weeds to take hold in the canals could result in damage to the infrastructure as their root systems grow and damage the canal structures.

Prevention. Pondweed is prevalent throughout irrigation systems similar to BBID's. Prevention of pondweed establishment and growth is not practical in an open channel, earth-lined canal system. BBID has removed sediment from sections of canal to discourage growth, and has lined additional sections of canal to prohibit weed attachment to the bottom and sides of the canal. Complete prevention could be accomplished by converting the entire canal system to a piped system, however, that is a cost prohibitive approach.

Mechanical or Physical Methods. BBID has tried several physical methods of weed removal, including chaining, manual removal and chopping. Though these methods can be effective, they are extremely labor intensive and require an extensive time input, making them cost prohibitive for use throughout the BBID system.

Cultural Methods. It is not feasible to use cultural methods, such as drawdown and drying of the canals, during the irrigation season. However, during the non-irrigation season, the canals are drawn down and left empty (except for rain events) to discourage plant growth.

Biological Control Agents. Biological control agents, such as adding grass carp for vegetation removal, have been deemed not viable for these canals. The BBID canal system has fast moving water not ideal for carp survival, and the canal system does not contain water year-round. In addition, grass carp are a non-native species that could damage native ecosystems if accidently released.

Algaecides and Aquatic Herbicides. After careful consideration of the BBID's aquatic weed control needs and the available options, Magnacide H (acrolein) was chosen for weed control during the irrigation season. Magnacide H has been used with success by the District since 1986; however, is being phased out by its producer. For the 2014 irrigation season, BBID is considering the use of copper (Nautique/Captain) and endothall (Teton/Cascade) herbicides and has included these options in this APAP. The intention is to use the copper and endothall herbicides as the first line of defense, and only use Magnacide when canals conditions reach choked conditions.

1.2.1.2 Utilization of the Least Intrusive Application Method

BBID's aquatic herbicide application method is fairly unobtrusive. The aquatic herbicide is injected into the canal irrigation water via one of two application points within the district. These points were selected because of their ease of access for the applicator and established water management infrastructure, which enables the District to contain its application to the treatment area. No other portion of the canal is disturbed during application, and discharges are prevented from entering areas outside the treatment area.

1.2.1.3 Decision Matrix

The decision on the most appropriate aquatic herbicide is made throughout the application season. This decision is based on aquatic vegetation encountered within the BBID during prior irrigation seasons, the previous treatment methods and their efficacy, and the level of treatment required for the observed canal conditions.

As described in Section 1.3, the General Manager evaluates canal conditions on a regular basis and determines when an application is needed. Applications are conducted consistent with the manufacturer's application and safety manuals and product labels. See Section 1.3 for a complete discussion on rate and dosage decisions.

1.2.2 Water Management and Best Management Practices

BBID treats its conveyance system (treatment area) with aquatic herbicide at two locations: Pump Station 1-N and Pump Station 1-S. In addition, spot treatments may be used to control localized growth of aquatic plants. Pump Station 1-N supplies 45 Canal (Byron Division), and Pump Station 1-S supplies Canals 45, 70, 120, 155 (Bethany Division). During the application event, the canals are managed to prevent release of the herbicides to Kellogg Creek and Mountain House Creek, which are the two potential receiving waters. These conditions ensure that during aquatic herbicide application events, the BBID system is a closed system and all herbicide is contained within the canals or diverted by water users for on-farm use.

Prior to an application event, water levels in the canals are lowered to minimize risk of release of aquatic herbicide to the creeks. The canals are held in a lower water condition for 24 hours post-application. This prevents release outside of the treatment area to receiving waters. In addition to lowering water levels in the canals, a Pre-Application Checklist (Appendix A; discussed in 1.2.2.1) is completed to ensure that no water is spilling from the canal system and that it is in-fact a closed system during the time of application. Together, the lowering of water levels and completion of the Pre-Application checklist ensure that spill from the treatment area into the creeks will not occur. These prevention techniques significantly reduce the possibility of fish kills and other aquatic impacts in the creeks because they control the risk of a spill. Within the retention period specified by the aquatic herbicide label instructions, all treated water within the canals

is diverted by BBID customers and is not discharged outside the treatment area. After the retention period, normal canal operations are resumed and canal levels are raised to typical levels.

If a localized spill of herbicide was to occur (such as during application), directions for spill containment on the herbicide label would be followed to minimize environmental impact. Depending on the severity of the spill, containment devices could include kitty litter, booms, chemical reaction (addition of sodium carbonate to neutralize acrolein), or the addition of drop boards or check boards to weirs near the spill site to contain the spill.

1.2.2.1 Byron Division

In order to understand water delivery operations in the Byron Division, it is critical to understand the operations at the juncture of 45 Canal and Kellogg Creek. Pump Station 1-N supplies 45 Canal, the conveyance system for the Byron Division. 45 Canal flows north from 1-N to a radial gate located at the intersection of 45 Canal and Kellogg Creek.

Kellogg Creek has four distinct channel sections. These reaches are: (1) Reach 1: west of BBID, (2) Reach 2: from the BBID boundary to Pump Station 4, (3) Reach 3: from Pump Station 4 to 45 Canal, and (4) Reach 4: from the 45 Canal to Discovery Bay.

Reach 1 is located in the foothills to the west of BBID. This reach was not evaluated because it falls outside the project area.

Portions of reaches 2, 3, and 4 were included in the Biological Survey prepared for the CEQA documentation Within these reaches, the creek bank is a modified and maintained channel; engineered uniform side slopes and a flat bottom are maintained by the District.

Reach 2 is an infrequently maintained section of channel that contains some riparian vegetation along the channel levee. Low ephemeral flows limit the establishment of significant wetland and emergent vegetation in the creek bottom. The terminus of this reach is Pump Station 4.

Reach 3 is a flat, highly maintained section of the channel, approximately one-mile in length, which long ago was modified from its natural state and incorporated into the District's irrigation delivery system. This reach begins at Pump Station 4. The reach contains a few landscaped trees along the outside levee and no in-channel vegetation. The terminus of this reach is 45 Canal. A radial gate is located in Kellogg Creek immediately downstream of the perpendicular crossing of 45 Canal and Kellogg Creek. As irrigation water from the 45 Canal south of Kellogg Creek flows into Reach 3, the radial gate prevents irrigation water from flowing downstream into Reach 4 and allows the District to bifurcate irrigation flows between the northern extension of 45 Canal and Reach 3. As irrigation water ponds against the radial gate, the water surface elevation in Reach 3 rises, allowing water to (1) flow north into the continuation of 45 Canal and (2) flow upstream (west) into Reach 3. As water flows upstream into Reach 3, it ponds against a concrete weir located in Kellogg Creek at Pump Station 4. The impounded irrigation water is then conveyed via Pump Station 4 to District customers. During the winter months when irrigation water is not being delivered, the radial gate in Kellogg Creek is kept open to allow any potential storm flows to pass into Reach 4.

Reach 4, which begins directly downstream of the radial gate, is channelized but is less maintained than Reach 3.

Aquatic herbicides are applied at 1-N while canal flows remain in the 30 to 50 cubic feet per second (cfs) range. One day prior to the application event, diversions into 45 Canal are reduced to about 30 cfs to 50 cfs. This flow rate is adjusted as necessary to ensure that at least 12-inches of freeboard is maintained at the radial gate to prevent spill to Reaches 2 and 4 of Kellogg Creek. The system (45 Canal and Reach 3 of Kellogg Creek) is held in this low water condition for one day, and no release is made to Kellogg Creek for a minimum of 24 hours. During this time, water users at the end of the canal system divert water for on-farm use. After the one-day flushing time, water deliveries and canal operations resume normal operations. Gates

are inspected on the day of application to ensure that they are operating properly and no leakage is occurring. The Pre-Application Checklist is included as Appendix A.

1.2.2.2 Bethany Division

Pump Station 1-S supplies three main canals in the Bethany Division: 70 Canal, 120 Canal, and 155 Canal. These canals flow in a generally southeasterly direction from 1-S.

- 70 Canal terminates just north of the Alameda-San Joaquin County line and does not spill to any natural creek or drainage. The drain inlet to existing BBID drainage system at the terminus of 70 Canal is sealed during herbicide application.
- 120 Canal terminates just north of the Alameda-San Joaquin County line and before crossing Mountain House Creek. The 120 Drain located at the terminus of 120 Canal discharges into Mountain House Creek. During herbicide application, spill gates are closed, locked, and monitored to prevent any spills to the creek.
- 155 Canal terminates just north of the Alameda-San Joaquin County line after crossing Mountain House Creek at the Gate 57 Drain. The terminus structure can drain to new BBID drainage system, or can spill into Mountain House Creek. During herbicide application, gates are closed, locked, and monitored to prevent any spills to the creek.

Aquatic herbicides are applied at Pump Station 1-S while flows range from about 30 to 50 cfs. One day prior to the application event at 1-S, diversions into 70 Canal are reduced to about 30 to 50 cfs. This flow rate is adjusted and check structures are adjusted as necessary to ensure that at least of 12-inches of freeboard is maintained at the terminus of all three canals. The system is held in this low water condition for one day, and no release is made to the drainage system. During this time, water users along the canal system divert water for on-farm use. After the one-day flushing time, water deliveries and canal operations resume normal operations. Gates are inspected on the day of application to ensure that they are operating properly and no leakage is occurring. The Pre-Application Checklist is included as Appendix A.

1.3 Aquatic Herbicide Application Practices

Depending on the aquatic weed condition of the canals, application of aquatic herbicide can begin as early as March and as late as May, and extend through the end of irrigation season, which goes as late as October. Applications occur every 7 to 21 days, depending on the presence of algae and/or aquatic weeds and their interference with normal delivery of water. The General Manager evaluates canal conditions and determines when an application is to occur. Applications are conducted consistent with the manufacturer's application and safety manuals and product registration labels. The rate and duration of dosage are determined based on the application guidance within the manual or label, and are dependent on weed conditions, flow, and water temperature. Application guidance includes provisions for record keeping; equipment inspection; personal protective equipment; care and placement of the nitrogen tank and product tank (for acrolein); valve testing, opening and closure; hose connection; application monitoring; and shutdown procedures. Application rate consistent with product label requirements will be included on the aquatic herbicide application data sheet.

Aquatic herbicide is injected directly into the canals over a period of 4 to 6 hours to form a wave of treated water. The amount of herbicide required is primarily determined by the amount of water flow and weed density in the canal, although velocity, water temperature, and water quality must also be considered. Typical concentrations used to control aquatic weeds are shown in Table 1-2. As the aquatic herbicide proceeds down the canal, it moves like a chemical wave of acute toxicity to aquatic plants.

TABLE 1-2
Aquatic Herbicide Typical Application Concentrations, Methods, and Adjuvants Used
Aquatic Pesticide Application Plan and Monitoring Program

Herbicide	Typical Application Concentration	Application Method(s)	Adjuvant
Acrolein (Magnacide H)	1 to 15 ppm	Injection	None
Copper (Nautique, Captain)	0.2 to 1.0 ppm	Injection	None
Endothall (Teton, Cascade)	0.05 to 3.0 ppm	Injection	None

Since aquatic herbicide is added over a time interval, a wave of treated water is formed that moves downstream, temporarily bathing the weeds in herbicide. After the application is complete and the treated water within the canal has been diverted for on-farm use, the concentration of herbicide in the canal drops to zero. Flow is maintained in the canal throughout the application periods of application and diversion to farms. The aquatic herbicide passes through the canal and out to the fields in a continuous flow that is completely finished within 21 hours.

Spot treatments may infrequently be needed to control localized algae blooms within the canal system throughout the irrigation season. The General Manager will determine when a spot application is warranted, and that the location is such that no spill can occur.

1.3.1 Applicator Education Program

Annually, prior to the beginning of the irrigation season, BBID conducts a Worker Environmental Awareness Education Program. The program ensures that applicators are aware of and know how to avoid adverse effects from the application of aquatic herbicides. Educational materials are provided to all District staff engaged in the application of aquatic herbicides.

1.4 Receiving Water Limitations

The General Permit specifies receiving water limits for discharges of residual covered aquatic herbicides (Table 1-3). The General Permit requires that an application event not result in the exceedance of water quality limits: (1) outside of the treatment area at any time, or (2) either within or outside of the Target Treatment Area any time after the conclusion of application event. For aquatic herbicide application within the District, the conclusion of an application event is considered to be 24 hours following the application of the herbicide. Since Kellogg Creek and Mountain House Creek are designated WARM or COLD, receiving water limitations specified in Table 1-3 apply. The copper receiving water limitation is hardness-adjusted and therefore varies based on the measured hardness of the receiving water.

TABLE 1-3
Receiving Water Limitations for Aquatic Herbicide Application
Aquatic Pesticide Application Plan and Monitoring Program

Constituent/ Parameter	Beneficial Use Designation	Limitation (micrograms per liter)	Reference
Acrolein	WARM or COLD	**21**	U.S. EPA National Ambient Water Quality Criteria for Freshwater Aquatic Life Protection, Lowest Observed Effect Level (LOEL)
	MUN	320	California Toxics Rule
	Other than WARM, COLD, or MUN	780	California Toxics Rule

TABLE 1-3
Receiving Water Limitations for Aquatic Herbicide Application
Aquatic Pesticide Application Plan and Monitoring Program

Constituent/ Parameter	Beneficial Use Designation	Limitation (micrograms per liter)	Reference
Copper	All Designations	Dissolved Freshwater Copper Chronic = 0.960exp{0.8545 [ln(hardness^4)] – 1.702}	California Toxics Rule
Endothall	MUN	100	U.S. EPA MCL

Source: SWRCB, 2013 (General Permit)

If laboratory results indicate that receiving water limitations have been exceeded, non-compliance reporting will begin immediately (as described in Section 1.6.2). In addition to reporting, corrective actions will be developed and control measures will be reviewed, as described in Section IX.C.5 of the General Permit.

1.5 Public Notice Requirements

Several public notice requirements exist, and are outlined in the following sections.

1.5.1 Drinking Water Providers

Aquatic herbicide treated water does not discharge in the vicinity of any municipal drinking water intakes; therefore, no drinking water providers are informed of the District's applications.

1.5.2 Water Users

The District notifies water users at the upstream end of the Byron Division prior to each aquatic herbicide application, which allows water users to adjust their irrigation schedules to ensure that the herbicide remains in the canal to serve its treatment purpose. Additionally, the District notifies organic growers within the District prior to each aquatic herbicide application to allow the water users to adjust their irrigation schedules to protect their organic certifications. Consistent with the requirements of the General Permit, the District will make an annual announcement of its plans to use aquatic herbicides and will provide a phone number that water users may call to obtain additional information regarding specific herbicide applications.

1.5.3 Public Agencies

Pursuant to the General Permit, at least 15 days prior to the first application of aquatic herbicide each year, the BBID will notify potentially affected public agencies. 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 aquatic herbicide(s);
3. Purpose of use;
4. General time period and locations of expected use;
5. Any water use restrictions or precautions during treatment; and
6. A phone number that interested persons may call to obtain additional information from the Discharger.

1.6 Reporting Requirements

Reporting requirements, as outlined in the Permit, are outlined below.

1.6.1 Annual Report

As described in Attachment C of the General Permit, the BBID will submit an annual report to the Regional Water Board consisting of a summary of the past year's activities and certify compliance with all requirements of the General Permit. If there is no discharge of aquatic herbicides, their residues, or their degradation products, the BBID will certify that their aquatic herbicide application activities did not result in a discharge to any water body. The annual report will include:

- An executive summary discussing compliance or violations of the General Permit and the effectiveness of the APAP
- A summary of monitoring data, including the identification of water quality improvements or degradation as a result of the algaecide or aquatic herbicide application

Reports are to be submitted annually by March 1.

1.6.2 Non-Compliance Reporting

Two types of non-compliance reporting are required in the General Permit. The two types are described in the following sections.

1.6.2.1 Twenty-Four Hour Report

The BBID will report to the State Water Board and appropriate Regional Water Board any noncompliance, including any unexpected or unintended effect of an algaecide or aquatic herbicide use that may endanger health or the environment. Any information needs to be provided orally within 24 hours from the time the BBID becomes aware of the circumstances and must include the following information:

1. The caller's name and telephone number
2. Applicator name and mailing address
3. Waste Discharge Identification (WDID) number
4. The name and telephone number of a contact person
5. How and when the BBID became aware of the noncompliance
6. Description of the location of the noncompliance
7. Description of the noncompliance identified and the U.S. EPA pesticide registration number for each product the Discharger applied in the area of noncompliance
8. Description of any steps that the Coalition or Discharger has taken or will take to correct, repair, remedy, cleanup, or otherwise address any adverse effects

If the BBID is unable to notify the State and Regional Water Boards within 24 hours, the BBID must do so as soon as possible and also provide the rationale for why the Discharger was unable to provide such notification within 24 hours.

1.6.2.2 Five-Day Written Report

In addition to the 24-hour report, the BBID will also provide a written submission within 5 days of the time they become aware of noncompliance. The written submission will include the following information:

1. Date and time the BBID contacted the State Water Board and the appropriate Regional Water Board notifying of the noncompliance and any instructions received from the State and/or Regional Water Board
2. The information required for the 24-hour report
3. A description of the noncompliance and its cause, including exact date and time and species affected, estimated number of individual and approximate size of dead or distressed organisms (other than pests to be eliminated)
4. Location of the incident, including names of any waters affected and appearance of those waters (sheen, color, clarity, etc.)
5. Magnitude and scope of the affected area (e.g. aquatic square area or total stream distance affected)
6. Algaecide and aquatic herbicide application rate, intended use site (e.g. banks, above, or direct to water), method of application, and name of algaecide and herbicide product, description of algaecide and herbicide ingredients, and U.S. EPA registration number
7. Description of the habitat and circumstances under which the noncompliance activity occurred (including any available ambient water data for aquatic algaecides and aquatic herbicides applied)
8. Laboratory tests performed, if any, and timing of tests. Provide a summary of the test results within five days after they become available
9. If applicable, explain why the BBID believes the noncompliance could not have been caused by exposure to the algaecides or aquatic herbicides from their application
10. Actions to be taken to prevent recurrence of adverse incidents.

The State Water Board staff or Regional Water Board staff may waive the above-required written report under this provision on a case-by-case basis if an oral report has been received within 24 hours.

1.6.3 County Agricultural Commission Reporting

The District obtains an annual permit from the County Agricultural Commission (CAC) for the application of a restricted pesticide (acrolein; copper and endothall are not restricted). In addition, the District submits a Notice of Intent (NOI) to the CAC at least 24 hours before applying the restricted pesticide.

SECTION 2

Monitoring Program

2.1 Background

This monitoring program contains specific water management and herbicide application practices (BMPs) to prevent the release of aquatic herbicides to creeks. These BMPs are routinely and consistently implemented as part of the District's use of aquatic herbicides.

During periods of extended inundation, algal blooms and aquatic weeds (specifically pondweed) accumulate in the canals and create delivery system service problems. Though mechanical procedures can help alleviate this disturbance, such procedures can be time consuming and can damage the canal infrastructure. Since 1986, BBID has been controlling the majority of their in-channel growth with applications of Magnacide H, an aquatic herbicide containing the active ingredient acrolein. BBID intends to switch from Magnacide H (acrolein) to copper and endothall herbicides (Captain, Nautique, Cascade, and Teton) for the 2014 irrigation season.

This Monitoring Program was designed to meet the following objectives:

- Comply with the requirements of the General Permit Monitoring and Reporting Program
- Provide sufficient monitoring data to assess compliance with water quality limitations contained in the General Permit.

The requirements specified in the General Permit's MRP were developed to address the following:

- Does the residual algaecides and aquatic herbicides discharge cause an exceedance of receiving water limitations?
- Does the discharge of residual algaecides and aquatic herbicides, including active ingredients, inert ingredients, and degradation byproducts, in any combination cause or contribute to an exceedance of the "no toxics in toxic amount" narrative toxicity objective?

2.2 Basis of Sampling Design

The monitoring program was developed based on the basic hydrographic features of the area, including the application points, the closed system canal operation, and the potential points of discharge from the treatment area to receiving waters. The monitoring program also takes into account the understanding of the chemical properties of the identified herbicides. The conditions of the potential receiving waters, Kellogg Creek and Mountain House Creek, are understood and documented through a biological survey. Further, the monitoring sites, defined monitoring events, and the triggers for each type of monitoring are defined within the context of the MRP.

2.3 Monitoring Types and Locations

Representative monitoring locations were chosen for the Byron and Bethany Divisions, as well as the background sampling site. There are only two locations along the BBID canal system at which irrigation deliveries are able to spill to waters of the U.S.:

- **Byron Division:** 45 Canal Radial Gate, located at the intersection of Kellogg Creek and 45 Canal
- **Bethany Division:** 155 Canal Spillway at Mountain House Creek.

Table 2-1 lists the water quality monitoring locations and explains the basis for their selection.

TABLE 2-1
Key Water Quality Monitoring Locations
Aquatic Pesticide Application Plan and Monitoring Program

Station ID	Station Name (location)	Basis for Selection
Background Samples		
AQ	California Aqueduct	The California Aqueduct is the source water for both the Byron and Bethany Divisions.
Byron Division		
BYR	Byron Division/45 Canal (45 Canal upstream of the Radial Gate)	*Post-Event Monitoring Location* – The 45 Canal Radial Gate is the only location within the Byron Division at which improper water management could result in the spill of aquatic herbicide to a natural waterbody.
KLG	Kellogg Creek (Kellogg Creek downstream of the Radial Gate)	*Event Monitoring Location* – Kellogg Creek is a natural waterbody. The District's water management measures should prevent the release of aquatic herbicide to Kellogg Creek.
Bethany Division		
BTH	Bethany Division/155 Spillway (155 Canal and the 155 Spillway)	*Post-Event Monitoring Location* – The 155 Spillway is the only location within the Bethany Division at which improper water management could result in the spill of aquatic herbicide to a natural waterbody.
MTN	Mountain House Creek (Mountain House Creek downstream of the 120 Spillway)	*Event Monitoring Location* – Mountain House Creek is a natural waterbody. The District's water management measures should prevent the release of aquatic herbicide to Mountain House Creek.

2.4 Monitoring Types

The Order calls for three types of receiving water monitoring: (1) background monitoring, (2) event monitoring, and (3) post-event monitoring. The following describes the assumed purpose of each type of monitoring:

- **Background Monitoring:** Background samples are to be collected upstream at the time of the application event, or they may be collected at the treatment area just prior to the application event (up to 24-hours in advance). The purpose of background monitoring is to characterize the quality of the source water. In the case of BBID, the source water is the intake channel of the California Aqueduct. Background samples are to be taken before the application of aquatic herbicide commences.
- **Event Monitoring:** Event samples are to be collected immediately downstream of the treatment area in flowing waters. They are to be taken immediately after the application event, but after sufficient time has elapsed such that treated water would have exited the treatment area. The purpose of event monitoring is to characterize the quality of the receiving waters following the application event (i.e., Kellogg Creek and Mountain House Creek). The intent of this monitoring is to detect if residual herbicides are discharged to receiving waters (outside the treatment area) in levels exceeding receiving water limits during the application event. Since BBID operates as a closed system during its application event, Event Monitoring would only apply in the event of an observed spill during the application event. As a means of demonstrating that event monitoring was not required, photos of the potential spill locations will be taken at the end of each treatment event.
- **Post-Event Monitoring:** Post-event samples are to be collected within the treatment area within one week after the application event. The purpose of post-event monitoring is to characterize the quality of the canal water within one week of the resumption of normal canal operations. It is during normal canal

operations that spill to Kellogg Creek and/or Mountain House Creek could occur. The post-event monitoring is to occur when there is 3" of freeboard at the sample location. It is anticipated that this will occur on the day following the aquatic herbicide treatment.

Field sheets for all three types of monitoring are included as Appendix B.

2.5 Monitoring Frequency

The operation of the BBID canal system as a closed system during the treatment event informs the monitoring frequency determination. The following frequencies are

- Background monitoring will be conducted for each event.
- Pursuant to the General Permit, Event Monitoring is required a minimum of six application events in each environmental setting per year. Under BBID's APAP, a discharge would occur only if the closed system operation failed, resulting in a spill to a receiving water. To determine the need for Event sampling, an Event Inspection of the monitoring sites will be conducted (and photos taken) for each application event. If spill is not occurring or anticipated to occur, Event water quality samples will *not* be required because there is no discharge to receiving waters outside of the treatment area.
- Post-Event Monitoring will be conducted to determine if water quality standards are met following the conclusion of an application event. Within BBID, this event is defined as the time at which canal operations are no longer tightly controlled as a closed system, and there spill to natural water bodies could occur. Post-event monitoring will be conducted for each application event.

Samples will be collected from a minimum of six application events for each active ingredient in each environmental setting per year. The BBID only includes one environmental setting, flowing water. 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 an exceedance of the receiving water limitation/trigger for an active ingredient, then sampling shall return to six application events for that active ingredient.

In other words, sampling will be required at 100 percent of applications up to six applications, after which sampling may be reduced to one yearly sampling event if results are less than the receiving water limitation/trigger for that active ingredient. Sampling will be required at 100 percent of spot treatment application events (including all of the parameters discussed below, as for the regular sampling sites). Visual monitoring will occur at 100 percent of the sites for all application events.

2.6 Monitoring Parameters

Sample parameters are specified in the General Permit. Each event will include the analysis of samples for the parameters listed in Table 2-2.

2.6.1 Visual Monitoring

Visual monitoring is a key component of the District's monitoring plan. The importance of visual monitoring is its role in confirming that Event Monitoring (used to characterize water quality conditions downstream of the treatment area) was not required due to the maintenance of the closed system operation and the lack of flow typically present in the receiving waters. Visual monitoring is required during Background, Event, and Post-Event Monitoring, as outlined in Table 2-2. A visual/physical monitoring log is included in Appendix B, and includes the following information:

- Site description
- Photographs documenting freeboard and creek conditions

- Notes on the appearance of waterway, especially the presence or absence of:
  - Floating or suspended matter;
  - Discoloration;
  - Bottom deposits;
  - Aquatic life;
  - Visible films, sheens, or coatings;
  - Fungi, slimes, or objectionable growths; and/or
  - Potential nuisance conditions.
- Weather conditions (fog, rain, wind, etc.)
- Freeboard conditions
- Time of visual monitoring events

TABLE 2-2
Monitoring Parameters
Aquatic Pesticide Application Plan and Monitoring Program

Sample Type	Constituent/Parameter	Sample Method	Laboratory Method	Frequency
Visual	Site description Appearance of waterway Weather conditions	Visual observation	Not applicable	Every application event, for Background, Event, and Post-Event Monitoring; at both the Byron Division sites and at the Bethany Division sites.
Physical	Temperature[a] pH[a] Turbidity[a] Electrical conductivity/salinity[a]	Field measurement	Not applicable	Every application event up to six events annually; for Background and Post-Event Monitoring; at both the Byron Division sites and the Bethany Division sites.
Chemical	Active ingredient (acrolein, dissolved copper, or endothall)	Grab[b] (lab analysis)	Per USEPA guidelines (Acrolein: Method 8315 Dissolved Copper: Method 200.8 Endothall: Method 548.1)	Every application event up to six events annually; for Background and Post-Event Monitoring; at both the Byron Division sites and the Bethany Division sites.
	Nonylphenol or other surfactant[c]	Grab[b] (lab analysis)	Not applicable	
	Hardness ($CaCO_3$; dissolved)	Grab[b] (lab analysis)	SM2340B	
	Dissolved Oxygen[a]	Field measurement	Not applicable	

[a] These parameters are determined by field measurements using the Horiba U-10 water quality checker as discussed in Section 5.

[b] Grab samples shall be collected at three feet below the surface of the water or at mid water column depth if the depth is less than 3 feet.

[c] BBID does not use surfactants in its aquatic herbicide application. Consistent with past practice, District's sampling and analysis will not include monitoring for surfactants.

If visual monitoring indicates that a spill has occurred, then event monitoring will be required. Event monitoring in the case of a spill will include visual, physical, and chemical monitoring, as described in Table 2-2. In addition, non-compliance reporting (as described in Section 1.6.2) must begin.

2.6.2 Physical and Chemical Monitoring

The purpose of the water quality monitoring is not to verify treatment concentrations, but rather to insure that spill does not occur and that the aquatic herbicide is completely diluted and diverted from the canal prior to the resumption of normal irrigation delivery operations.

Tables 2-3 and 2-4 show the sampling events for stations within the Byron Division and Bethany Division, respectively. The first sample, taken at time T2, is a background sample that will be used to characterize the quality of the source water. The second sample, taken at time T3, is the event sample. The third sample, taken at time T5, is a post-event sample that will be used to verify that the pulse of aquatic herbicide has been completely removed from the canal through dilution and diversion.

TABLE 2-3
Byron Division Sampling Events
Aquatic Pesticide Application Plan and Monitoring Program

Time	Event	Required Sampling Station	Sampling Type	Frequency
T1	Canal level is lowered.	None	--	--
T2	Aquatic herbicide is applied.	AQ	Background	All Events
T3	Aquatic herbicide wave reaches the radial gate (BYR). Kellogg Creek is examined for spill.	KLG	Event	Only if spill to Kellogg Creek is observed
T4	Normal pumping begins at Pump Station 1-N.	None	--	--
T5	Freeboard at the radial gate (BYR) reduced to 3 inches or less.	BYR	Post-Event	All Events

TABLE 2-4
Bethany Division Sampling Events
Aquatic Pesticide Application Plan and Monitoring Program

Time	Event	Required Sampling Station	Sampling Type	Frequency
T1	Canal level is lowered.	None	--	--
T2	Aquatic herbicide is applied.	AQ	Background	All Events
T3	Aquatic herbicide wave reaches the 155 Spillway (BTH). Mountain House Creek is examined for spill.	MTN	Event	Only if spill to Mountain House Creek is observed
T4	Normal pumping begins at Pump Station 1-S.	None	--	--
T5	Freeboard at the 155 (BTH) Spillway reduced to 3 inches or less.		Post-Event	All Events

2.7 Sampling and Monitoring Procedures

2.7.1 Surface Water Sampling

Surface water samples will be collected so as not to cause cross-contamination. Special care will be taken during the collection of samples to ensure that field samplers do not handle aquatic herbicide application equipment prior to collection of the samples. The field sampler will measure and record pH, temperature, specific conductance, and dissolved oxygen at each surface water sampling point. The location where surface water or sediment samples are collected will be permanently marked (e.g., flagged stake in canal or creek bank).

The sample collection sequence will be as follows: (1) if the sample can be taken without disturbing the canal or creek bottom, obtain any background samples first, then the farthest downstream sample, and then move upstream toward the source or discharge point, (2) if sampling water only and the canal or creek bottom must be disturbed, start at the most downstream point and proceed upstream.

Samples shall be taken from the active, flowing portion of the canal or creek. Surface water samples will be collected by filling directly into a laboratory certified clean container that does not contain any preservatives with the inlet line located just below the surface.

Samples will be collected in bottles provided by the laboratory for the specific parameter being analyzed.

2.7.2 Sample Custody

Sample custody requirements include procedures to ensure the custody and integrity of the samples, beginning at the time of sampling and continuing through transport, sample receipt, preparation, analysis and storage, data generation and reporting, and sample disposal.

The following minimum information concerning the sample shall be documented on the chain of custody (CoC) form:

- Unique sample identification
- Date and time of sample collection
- Sample matrix (e.g., water)
- Source of sample (including name, location, and sample type)
- Designation of matrix spike/matrix spike duplicate (MS/MSD)
- Preservative used
- Analyses required
- Name of collector(s)
- Custody transfer signatures and dates and times of sample transfer from the field to transporters and to the laboratory or laboratories
- Any comments to identify special conditions or requests

All samples shall be uniquely identified, labeled, and documented in the field at the time of collection.

Samples collected in the field shall be transported to the laboratory as expeditiously as possible; the samples shall be packed in ice or chemical refrigerant to keep them cool during collection and transportation. Generally, electronic CoCs will be prepared prior to initiating field efforts. A copy of the signed CoC that is sent to the lab will be kept in the project file.

If an electronic CoC is not an option, a handwritten CoC must be used. Blank CoCs are provided by the lab, along with the sample containers, and the forms are in triplicate. Once the CoC is completed, the bottom form is to be torn off and filed in the field office. The other two copies of the CoC is to be sent to the lab, accompanying the samples. A photocopy of the top of the CoC should be made if the retained page is illegible.

Upon receipt by the laboratory, the sample custodian shall check and certify, by completing logbook entries, that the seals on coolers, boxes, or bottles are intact.

The coolers used to transport the samples to the laboratory will be prepared as follows:

1. Remove all previous labels used on the cooler.
2. Seal all drain plugs with tape (inside and outside).
3. Double-bag all ice in resealable plastic bags and seal.

The samples will be packed into the coolers using the following procedure:

1. Wrap glass jars with bubble wrap to prevent or minimize breakage.
2. Place the CoC form in the resealable plastic bag and tape it to the underside of the cooler lid.
3. Place ice on top of and between the samples.

Coolers will be packed with ice in resealable plastic bags to prevent melting ice from soaking the samples. Sample documentation will be enclosed in sealed plastic bags taped to the underside of the cooler lid. Coolers will be secured with packing tape and custody seals as described below.

1. Tape the cooler lid with strapping tape, encircling the cooler several times.
2. Place CoC seals on two sides of the lid (one in front and one on the side).
3. Place “This Side Up” arrows on the sides of the cooler.

The coolers will then be delivered to the appropriate laboratory by the sampling team the day of sample collection.

2.7.3 Equipment Calibration

A Horiba U-20-series meter, or equivalent, will be used to measure the pH, conductivity, temperature, turbidity, and dissolved oxygen. This instrument uses one standard solution for a single point calibration of pH, conductivity, turbidity, and dissolved oxygen. A beaker provided for calibration is filled with a standard solution, the probes are then immersed in this solution, and the calibration button pushed. All instrument calibration results will be recorded in a bound field notebook.

The operational performance of the field instruments can be assessed during use by the stability of the measurements observed. Widely fluctuating results or results that seem out of normal range indicate that the probe may not be functioning properly. If this condition is noted, it is recommended that the instrument be re-calibrated. If an instrument will not recalibrate correctly, then the instrument should be sent back to the supplier for servicing and a backup instrument employed for ongoing readings.

2.7.4 Field Measurements

Field measurements are made during the surface water sampling process to provide additional data for characterizing water quality. The field measurements shall be made as follows:

- Rinse the instrument sample container with the sample water prior to filling
- Probes within the sample container shall make the appropriate measurements.
- All field measurements shall be recorded in the field logbook with the sample location, time and date of measurement, and the sampler’s name.

The following subsections provide some specific requirements for field measurement including the number of places to which the result should be recorded and the acceptability criteria for repeatable or stable measurements. These same parameters will be measured “in-stream” for any surface water samples collected.

2.7.4.1 Dissolved Oxygen

Dissolved oxygen readings will be made by inserting the probe directly within the flowing water just downstream from the point to be sampled. Record the reading to the nearest 0.01 mg/L. Consecutive readings are considered as stable if they are within 0.1 mg/L or 10 percent of each other (whichever is greater).

2.7.4.2 Conductivity

Electrical conductivity readings will be made by inserting the probe directly within the flowing water just downstream from the point to be sampled. Record the reading to the nearest 1 μmhos/cm. Consecutive readings are considered as stable if they are within 5 μmhos/cm or 3 percent of each other (whichever is greater).

2.7.4.3 pH

Hydrogen ion activity (pH) readings will be made by inserting the probe directly within the flowing water just downstream from the point to be sampled. Record the reading to the nearest 0.01 pH unit. Consecutive readings are considered as stable if they are within 0.1 pH units of one another.

2.7.4.4 Temperature

Temperature readings will be made by inserting the probe directly within the flowing water just downstream from the point to be sampled. Record the reading to the nearest 0.1° C. Consecutive readings are considered as stable if they are within 0.2° C of one another.

2.7.4.5 Turbidity

Turbidity readings will be made by inserting the probe directly within the flowing water just downstream from the point to be sampled. Record the reading to the nearest 1 nephelometric turbidity unit (NTU). Consecutive readings are considered as stable if they are within 5 NTU of one another.

2.7.5 Lab Measurements

Samples will be sent to the lab after every event to be analyzed for the aquatic herbicide applied. Lab methods and standards are discussed in Section 2.8.

2.8 Quality Assurance/Quality Control Plan

A Quality Assurance/Quality Control Plan (QA/QC Plan) has been developed to provide guidance in determining the quality of results received from project monitoring efforts. Acceptable holding times, reporting limits, and recovery limits have been established as a metric for which project results will be compared (Table 2-5).

TABLE 2-5
Acceptable Limits for BBID NPDES Monitoring
Aquatic Pesticide Application Plan and Monitoring Program

Analyte	EPA Method	Reporting Limits (µg/L)	Recovery Limits	RPD	Holding Time
Acrolein (Magnacide H)	SW8315Am	5.0	65 to 135%	25%	3 days
Dissolved copper (Nautique/Captain)	200.8	0.5	65 to 135%	25%	1 day (if unpreserved)
Endothall (Teton/Cascade)	548.1	40	65 to 135%	25%	7 days

RPD: relative percent difference

Several types of QA/QC samples will be collected during field monitoring and laboratory analysis, and are discussed in the following sections.

2.8.1 Field QA/QC

To ensure the quality of field samples, several types of field QA/QC samples will be collected and analyzed alongside the environmental samples. QA/QC samples are typically collected at 10 percent of sampling events; for BBID, this equates to one set of field QC samples per monitoring season (assuming six sampling events). The types of field QA/QC samples to be collected include:

- **Field Duplicate –** Field duplicate samples are collected to determine the variability between samples taken at the same location. Variables in these samples can result from contamination at collection, a non-heterogeneous sample, or problems with lab analysis.
- **Field Blank –** Field blank samples are sample containers filled with deionized water, taken into the field and subjected to conditions similar to the environmental samples being collected. Variables in these samples can result from errors or contamination in sample collection and analysis.

2.8.2 Lab QA/QC

In order to evaluate the accuracy of lab results, several types of lab-generated QA/QC samples are run with each analytical batch. The types of lab QA/QC samples to be analyzed include:

- **Method Blanks –** Method blanks are lab-prepared samples run with each batch of analytical samples to analyze for contamination at the lab.
- **Lab Control Spikes –** Lab control spikes are prepared by the lab and run with each batch of analytical samples to analyze for potential background contamination. Lab control spikes consist of deionized water spiked with a known concentration of analyte.

2.8.3 Evaluation of Field and Lab Data

Field and lab results will be reviewed after each event to ensure it meets QA/QC standards. The review process will include answering the following questions –

- Were field/lab results within expected ranges?
- Were chain of custody protocols met?
- Were holding times met?
- Did trip blank results = ND (non-detect)?
- Did method blank results = ND?
- Were duplicate samples within an acceptable range (RPD <25%)?
- Were lab duplicate and spike results within acceptable recovery ranges?

If the answer to all of these questions is yes, it is determined that QA/QC protocols were met for that sampling event.

2.8.4 Lab Requirements and Information

Analyses shall be conducted at a laboratory certified for such analyses by the California Department of Health Services. All analyses shall be conducted in accordance with the latest edition of “Guidelines Establishing Test Procedures for Analysis of Pollutants”, promulgated by USEPA (Title 40 Code of Federal Regulations part 136).

The laboratory to be used is McCampbell Analytical, Inc., located in Pittsburg, California. The contact information and directions to the laboratory are included as Appendix C.

SECTION 3

Reporting and Records Retention

3.1 Reporting

3.1.1 General Permit Reporting

General Permit reporting includes annual reporting and noncompliance reporting, described in the sections below.

3.1.1.1 Annual Reports

In compliance with the General Permit, annual reports shall be filed with the Central Valley Regional Water Quality Control Board. The reports shall summarize the water quality results for the January 1 through December 31 time period, and shall be submitted to the CVRWQCB by March 1 of each year.

3.1.1.2 Noncompliance Reporting

The General Permit specifies that the District shall report any noncompliance that may endanger health or the environment. Any information will be provided within 24 hours from the time the District becomes aware of the circumstances. A written submission is also to be provided within five days of the time the District becomes aware of the circumstances. The written submission will contain a description of the noncompliance and its cause, the period of noncompliance (exact dates and times), and if the noncompliance has not been corrected, the anticipated time it expected to continue and steps taken or planned to reduce, eliminate, and prevent reoccurrence of noncompliance.

3.2 Records Retention

Records of all monitoring information, including all calibration and maintenance records and copies of all reports submitted pursuant to requirements of the General Permit. Records shall be maintained for a minimum of three years from the date of the sampling, measurement, or report. This period may be extended during the course of any unresolved litigation regarding the District's use of aquatic herbicide or when requested by the Executive Officer of the CVRWQCB.

3.3 Record Keeping

Field records sufficient to recreate all sampling and measurement activities will be maintained. The requirements listed in this section apply to all measuring and sampling activities. Requirements specific to individual activities are listed in the section that addresses each activity. The information shall be recorded with indelible ink in a permanently bound notebook with sequentially numbered pages.

The following additional information shall be recorded for all sampling activities: (1) sample type and sampling method, (2) the identity of each sample and depth(s), where applicable, from which it was collected, (3) the amount of each sample, (4) sample description (e.g., color, odor, clarity), (5) identification of sampling devices, and (6) identification of conditions that might affect the representativeness of a sample (e.g., refueling operations, damaged casing).

3.3.1 Deviations/Notes

Information relating to all field activities: field conditions, sampling events, equipment calibration; field measurements, shall be recorded in a hardbound field notebook or on appropriate field forms as described below.

3.3.1.1 Field Logbooks

Numbered logbooks will be used to record all sampling information. Information in the logbooks will include, at a minimum, the following:

- Name and title of the recorder, and date and time of entry
- General description of weather conditions
- Personnel involved with the activities
- Photographic log, if appropriate
- Sampling location and description
- Location of duplicate and QC samples, date and time of collection, parameters to be analyzed; sample identification (ID) numbers
- Time of sampling
- Depth to water from elevation mark on the casing
- Measured field parameters and field instrument calibration information
- Names of visitors, their associations, and purpose of visit
- Unusual activities such as departures from planned procedures
- References to important telephone calls

All logs will be completed, signed, and dated by the recorder. All logs will be written with waterproof ink. Corrections will be made by crossing out the error with a single horizontal line, initialing the correction, and entering the correct information. Crossed-out information shall be readable. The corrections should be initialed and dated. Daily entries will signed by the field recorder at the end of each day's activities.

The site logbook is the primary repository for information about actual site conditions. Because of this, it is an important link in the data quality and analytical chain. The logbook should be used to record any details that may be relevant to the analysis or integrity of the samples. Any unusual field conditions should also be noted such as heavy rain or problems with instrument calibration. At the completion of a sampling exercise, the logbook should be returned to the project file. The logbook is always kept as a permanent part of the file. Whenever, the information contained in the logbook is relevant to the samples being analyzed, that information should be copied and made available to the laboratory performing the analysis.

3.3.1.2 Field Sampling Data Sheet

Field Sampling Data Sheets are used during visual and physical monitoring to track in-stream field measurements and sampling activities. The form is formatted to list all required information during sampling activities. An example Field Sampling Data Sheet is included as Appendix B.

3.3.1.3 Aquatic Herbicide Application Log

A log will be kept of all aquatic herbicide applications. An example application log sheet is included in Appendix D. The application log contains the following:

- Date of application
- Location of application
- Name of applicator

- Type and amount of algaecide and aquatic herbicide used
- Application details, such as flow and level of water body, time application started and stopped, algaecide and aquatic herbicide application rate and concentration

3.3.1.4 Chain of Custody (CoC) Forms and Custody Seals

As described in Section 2, chain of custody forms shall be provided in each sample cooler being delivered to the laboratory. An example completed CoC form is provided as Appendix E. In addition, each cooler is sealed with custody seals as described in Section 2.7.2. The CoC procedures discussed in those sections, provides a documented trial of each sample from the time it is generated to the time it reaches the analytical laboratory.

At the analytical laboratory, a sample receiving logbook is used by laboratory staff to document the condition of custody seals and upon arrival. Deviations from acceptable conditions (i.e., elevated temperature blanks or holding time violations) are also noted on the original CoC forms. Information on the CoC forms is considered during the analytical data validation process. The completed CoC forms are also incorporated into the laboratory report deliverables and so, become a permanent part of the file records for those samples.

SECTION 4

References

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

SWRCB. 2013. *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.* March 5.

SWRCB. 2004. *Statewide General National Pollutant Discharge Elimination System Permit for the Discharge of Aquatic Pesticides for Aquatic Weed Control in Waters of the United States.* April 7.

SWRCB. 2000. *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California*. http://www.swrcb.ca.gov/iswp/final.pdf.

USEPA. 2000. Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California (California Toxics Rule). http://www.epa.gov/fedrgstr/EPA-WATER/2000/May/Day-18/w11106.htm.

Appendix A
Pre-Application Checklist

PRE-APPLICATION GATE CHECKLIST

EMPLOYEE NAME: _____ DATE: _____

NORTH END								
SANTANA DRAIN	☐	OPEN	☐	CLOSED	☐	LOCKED		
FISK DRAIN	☐	OPEN	☐	CLOSED	☐	LOCKED		
KELLOG-RADIAL GATE LEVEL	☐	NO SPILL	☐	LEVEL				
K-LINE K-14 DRAIN	☐	NO SPILL	☐	LEVEL				
BLUE LINE DRAIN	☐	SPILL	☐	NO SPILL				
COELHO DRAIN	☐	OPEN	☐	CLOSED	☐	LOCKED		

SOUTH END								
45 LAT SPILLWAY	☐	SPILL	☐	NO SPILL				
70 DRAIN GATE AT HOLCKS	☐	OPEN	☐	CLOSED	☐	LOCKED		
70 SPILLWAY	☐	OPEN	☐	CLOSED	☐	SPILL	☐	NO SPILL
120 SPILLWAY	☐	OPEN	☐	CLOSED	☐	SPILL	☐	NO SPILL
GATE 1 DRAIN	☐	OPEN	☐	CLOSED	☐	LOCKED		

Appendix B
Field Sheets for Monitoring Events

BBID AQUATIC HERBICIDE FIELD MONITORING AND SAMPLING RECORD

SAMPLE #1 - BACKGROUND SAMPLE
Collect upstream (or in the application area) within 24 hours of start of application.

DATE AND TIME:	**SAMPLER'S NAME:**
TYPE OF APPLICATION:	**TARGET VEGETATION:**
LOCATION OF APPLICATION:	**SITE DESCRIPTION:**

VISUAL MONITORING:

Do you see the following:	Yes	No	Comments
Floating or suspended matter			
Discoloration			
Bottom Deposits			
Aquatic life			
Visible films, sheens, coatings			
Fungi, slimes, growths			
Potential nuisance conditions			

PHYSICAL MONITORING:

pH		
Conductivity (ms/cm)		
Temperature (deg C)		
Turbidity (NTU)		
DO (mg/L)		
Flow		

Take photographs to document freeboard and creek conditions

BBID AQUATIC HERBICIDE FIELD MONITORING AND SAMPLING RECORD

SAMPLE #2 - EVENT SAMPLE
Collect immediately downstream of application area after application is complete and after sufficient time has passed so that treated water has exited the application area.

DATE AND TIME:	**SAMPLER'S NAME:**
TYPE OF APPLICATION:	**TARGET VEGETATION:**
LOCATION OF APPLICATION:	**SITE DESCRIPTION:**

Application Start Date & Time: _____

Application End Date & Time: _____

VISUAL MONITORING			
Do you see the following:	**Yes**	**No**	**Comments**
Floating or suspended matter			
Discoloration			
Bottom Deposits			
Aquatic life			
Visible films, sheens, coatings			
Fungi, slimes, growths			
Potential nuisance conditions			
Is there evidence of a spill?			
	If no, take photos of spillway conditions to document.		
	If yes, physical and chemical monitoring are required.		

PHYSICAL MONITORING: (IF SPILL OCCURS)		
pH		
Conductivity (ms/cm)		
Temperature (deg C)		
Turbidity (NTU)		
DO (mg/L)		
Flow		

BBID AQUATIC HERBICIDE FIELD MONITORING AND SAMPLING RECORD

SAMPLE #3 - POST-EVENT SAMPLE
Collect within the treatment area within one week of application

DATE AND TIME:	**SAMPLER'S NAME:**
TYPE OF APPLICATION:	**TARGET VEGETATION:**
LOCATION OF APPLICATION:	**SITE DESCRIPTION (status of vegetation):**

VISUAL MONITORING:

Do you see the following:	Yes	No	Comments
Floating or suspended matter			
Discoloration			
Bottom Deposits			
Aquatic life			
Visible films, sheens, coatings			
Fungi, slimes, growths			
Potential nuisance conditions			

PHYSICAL MONITORING:

pH		
Conductivity (ms/cm)		
Temperature (deg C)		
Turbidity (NTU)		
DO (mg/L)		
Flow		

Appendix C
Lab Contact Information and Directions

APPENDIX C

Lab Contact Information and Directions

Laboratory Information

McCampbell Analytical, Inc.
1534 Willow Pass Road
Pittsburg, CA 94565-1701
Telephone: (877) 252-9262
Fax: (925) 252-9269
Contact: Angela Rydelius

Directions

From Byron:

- Take CA-4W (toward Oakland)
- Take Exit 23 toward Harbor Street/Railroad Avenue
- Turn left onto California Avenue
- Turn right onto Railroad Avenue
- Take the Parkside Drive ramp
- Stay straight to go onto N. Parkside Drive
- Stay straight to go onto Willow Pass Road
- 1534 Willow Pass Road is on the right

Appendix D
Aquatic Herbicide Application Record

BBID AQUATIC HERBICIDE APPLICATION RECORD

DATE OF APPLICATION	**OPERATORS NAME**
TYPE OF HERBICIDE APPLIED	**CERTIFIED APPLICATOR'S NAME (if different from operator)**
LOCATION OF APPLICATION	**LICENSE NUMBER**

Aquatic weed(s) present:	**Gallons per hour: (calculated)**
Weed growth condition: A, B, C, etc.	**Gallons per hour: (actual)**
Application Concentration **gal/cfs**	**Orifice size:** **0.0 inches**
Flow rate in canal **cfs**	**Pressure setting:** **p.s.i.g.**
Treatment time: **hours**	**Application concentration:** **(gal/cfs x 1884)** **(time (min.))** **=ppm**
Water Temperature: **F**	
Container Number **gal**	
Start contents **gal**	
Quantity Used: (GPH x hours) (actual) **gal**	
Quantity remaining: **gal**	
Time started:	
Time ended:	
Time (actual) **hrs**	

Appendix E
Example Chain of Custody (CoC) Form

McCAMPBELL ANALYTICAL, INC.

1534 WILLOW PASS ROAD
PITTSBURG, CA 94565-1701
Website: www.mccampbell.com E-mail: main@mccampbell.com
Telephone: (877) 252-9262 Fax: (925) 252-9269

CHAIN OF CUSTODY RECORD

TURN AROUND TIME ☐ RUSH ☐ 24 HR ☐ 48 HR ☐ 72 HR ☐ 5 DAY

GeoTracker EDF ☐ **PDF** ☐ **Excel** ☐ **Write On (DW)** ☐

☐ **Check if sample is effluent and "J" flag is required**

Report To: Rick Gilmore **Bill To: BBID**

Company: Byron Bethany Irrigation District

Tele: (209) 835-0375 **E-Mail: admin@bbid.org**

Project #: **Fax: (209) 835-2869**

Project Location: BBID **Project Name: BBID Aquatic Herbicides**

Sampler Signature:

SAMPLE ID	LOCATION/ Field Point Name	SAMPLING Date	SAMPLING Time	# Containers	Type Containers	MATRIX Water	MATRIX Soil	MATRIX Air	MATRIX Sludge	MATRIX Other	METHOD PRESERVED ICE	METHOD PRESERVED HCL	METHOD PRESERVED HNO_3	METHOD PRESERVED Other	BTEX & TPH as Gas (602 / 8021 + 8015) / MTBE	TPH as Diesel (8015)	Total Petroleum Oil & Grease (1664 / 5520 E/B&F)	Total Petroleum Hydrocarbons (418.1)	EPA 502.2 / 601 / 8010 / 8021 (HVOCs)	MTBE / BTEX ONLY (EPA 602 / 8021)	EPA 505/ 608 / 8081 (Cl Pesticides)	EPA 608 / 8082 PCB's ONLY; Aroclors / Congeners	EPA 507 / 8141 (NP Pesticides)	EPA 515 / 8151 (Acidic Cl Herbicides)	EPA 524.2 / 624 / 8260 (VOCs)	EPA 525.2 / 625 / 8270 (SVOCs)	EPA 8270 SIM / 8310 (PAHs / PNAs)	CAM 17 Metals (200.7 / 200.8 / 6010 / 6020)	LUFT 5 Metals (200.7 / 200.8 / 6010 / 6020)	Lead (200.7 / 200.8 / 6010 / 6020)	Other: Filter sample for DISSOLVED metals analysis	Other: ACROLEIN	Other: DISSOLVED COPPER	Other: ENDOTHALL	Comments
2013-14-1																																			
2013-14-2																																			

** **MAI clients MUST disclose any dangerous chemicals known to be present in their submitted samples in concentrations that may cause immediate harm or serious future health endangerment as a result of brief, gloved, open air, sample handling by MAI staff. Non-disclosure incurs an immediate $250 surcharge and the client is subject to full legal liability for harm suffered. Thank you for your understanding and for allowing us to work safely.**

Relinquished By:	Date:	Time:	Received By:
Relinquished By:	Date:	Time:	Received By:
Relinquished By:	Date:	Time:	Received By:

ICE/t°_____ **COMMENTS:**
GOOD CONDITION_____
HEAD SPACE ABSENT_____
DECHLORINATED IN LAB_____
APPROPRIATE CONTAINERS_____
PRESERVED IN LAB_____
VOAS O&G METALS OTHER
PRESERVATION_____ pH< 2_____

** **Indicate here if these samples are potentially dangerous to handle:**

Appendix F
Label Information – Magnacide H, Cascade, Teton, Captain, and Nautique

Baker Petrolite

Baker Petrolite Corporation
A Baker Hughes Company
12645 W. Airport Boulevard
Sugar Land, TX 77478-5050

Emergency Telephone Numbers:
CHEMTREC: 1-800-424-9300
Baker Petrolite Corporation: 1-800-231-3606
Telephone Number for Information
(001) 281-276-5400

CHEMTREC Intl: 01-703-527-3887

PRECAUTIONARY STATEMENTS HAZARDS TO HUMANS AND DOMESTIC ANIMALS

DANGER

EXTREMELY FLAMMABLE AND IRRITATING VAPOR AND LIQUID. POISONOUS BY INHALATION, SKIN CONTACT OR SWALLOWING. DO NOT BREATHE VAPOR. **CORROSIVE.** CAUSES EYE AND SKIN DAMAGE. DO NOT GET IN EYES, ON SKIN OR ON CLOTHING. KEEP AWAY FROM FIRE, SPARKS AND HEATED SURFACES.

PESTICIDE PROTECTION EQUIPMENT (PPE) REQUIREMENTS

All certified applicators participating in the application during setting up and breaking down of application equipment and during visual inspection must wear:

- Long-sleeved shirt and long pants,
- Shoes and socks,
- Chemical resistant gloves made of butyl rubber, and
- A NIOSH-approved full face respirator with either
  - Organic-vapor removing cartridges with a prefilter approved for pesticides (MSHA/NIOSH approval number prefix TC-23C), or
  - A canister approved for pesticides (MSHA/NIOSH approval number prefix TC-14G).

Respirator fit testing, training and medical qualification:
Employers must ensure that all **MAGNACIDE™ H Herbicide** handlers are:

- Fit-tested and fit-checked using a program that conforms to OSHA's requirements (see 29CFR part 1910.134)
- Trained using a program that conforms to OSHA's requirements (see 29CFR part 1910.134).
- Examined by a qualified medical practitioner to ensure physical ability to wear the style of respirator to be worn. A qualified medical practitioner is a physician or other licensed health care professional who will evaluate the ability of a worker to wear a respirator. The initial evaluation consists of a questionnaire that asks about medical conditions (such as heart condition) that would be problematic for respirator use. If concerns are identified, then additional evaluations, such as a physical exam, might be necessary. The initial evaluation must be done before respirator use begins. Handlers must be reexamined by a qualified medical practitioner if their health status or respirator style or use-conditions change.

USER SAFETY REQUIREMENTS

If **MAGNACIDE™ H Herbicide** is spilled or leaked on clothing, gloves, or shoes, immediately remove them and wash thoroughly with soap and water. Users should remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.

Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry.

Discard clothing, gloves, shoes, and other absorbent materials that have come into contact with **MAGNACIDE™ H Herbicide**. Do not reuse them.

ENGINEERING CONTROLS

Handlers must use a closed system that is designed by the manufacturer to prevent dermal and inhalation exposures by removing the product from the container and applying the product below the water's surface. At any disconnect point, the system must be equipped with a dry disconnect or dry couple shut-off device that will limit drippage to no more than 2 ml per disconnect. The closed system must function properly and be used and maintained in accordance with the manufacturer's written operating instructions. Handlers must wear the personal protective equipment required on this labeling.

USER SAFETY RECOMMENDATIONS

Users should wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.

Users should remove PPE immediately after handling this product. Wash the outside of the gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

ENVIRONMENTAL HAZARDS

This pesticide is extremely toxic to fish and wildlife. Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans or other waters unless in accordance with the requirements of a National Pollutant Discharge Elimination System (NPDES) permit and the permitting authority has been notified in writing prior to discharge. Do not discharge this product to sewer systems without previously notifying the local sewage treatment authority. For guidance contact your State Water Board or Regional Office of the EPA. Do not contaminate water when disposing of equipment washwaters.

PHYSICAL AND CHEMICAL HAZARDS

DANGER: Extremely flammable. Contents under pressure. Keep away from fire, sparks, and heated surfaces. Do not puncture or incinerate container. Acrolein, the active ingredient in **MAGNACIDE™ H Herbicide**, is highly reactive chemically and readily forms polymers. If alkalies (such as ammonia and caustic) or strong acids are brought in contact with **MAGNACIDE™ H Herbicide** in a closed system, the herbicide can polymerize with sufficient violence to rupture the container. Do not apply with equipment used for acids and alkalies. Contamination of **MAGNACIDE™ H Herbicide** with any foreign matter must be avoided.

A supply of sodium carbonate (soda ash) and water should be readily available for deactivating spilled **MAGNACIDE™ H Herbicide**. All spills should be confined and deactivated before disposal. See the **MAGNACIDE™ H Herbicide** Application and Safety Manual for additional information.

NET WEIGHTS: Cylinder-370 lbs. Skid Tank-2450 lbs.

REV 05/13-06/13BPC01/14

RESTRICTED USE PESTICIDE

DUE TO A HIGH ACUTE TOXICITY
For retail sale to and use by Certified Applicators and only for those uses covered by the Certified Applicator's certification.

THIS PRODUCT MUST BE ACCOMPANIED BY AN EPA-APPROVED PRODUCT LABEL AND THE EPA-APPROVED '*MAGNACIDE™ H Herbicide Application and Safety Manual.*' THE *MAGNACIDE™ H Herbicide Application and Safety Manual* IS LABELING. READ AND UNDERSTAND THE ENTIRE LABELING AND MANUAL PRIOR TO USE. ALL PARTS OF THE LABELING AND MANUAL ARE EQUALLY IMPORTANT FOR SAFE AND EFFECTIVE USE OF THIS PRODUCT.

MAGNACIDE™ H HERBICIDE

(Acrolein, Stabilized)

CONTENTS UNDER PRESSURE

ACTIVE INGREDIENT:	
Acrolein	95.0%
INERT INGREDIENTS:	5.0%
TOTAL:	100.0%

This product contains the toxic inert ingredient hydroquinone.
(**MAGNACIDE™ H Herbicide** contains 6.7 pounds of active ingredients per gallon)

KEEP OUT OF REACH OF CHILDREN

DANGER/PELIGRO

FIRST AID

Call poison control center or doctor immediately for treatment advice.
Have the product container or label with you when calling a poison control center doctor, or going for treatment.

IF INHALED	▪ Move person to fresh air. ▪ If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible.
IF ON SKIN OR CLOTHING	▪ Take off contaminated clothing. ▪ Rinse skin immediately with plenty of water for 15-20 minutes.
IF IN EYES	▪ Hold eyes open and rinse slowly and gently with water for 15-20 minutes. ▪ Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eyes.
IF SWALLOWED	▪ Call a poison control center or doctor immediately for treatment advice. ▪ Have person sip a glass of water if able to swallow. ▪ Do not induce vomiting unless told to do so by the poison control center or doctor. ▪ Do not give anything by mouth to an unconscious person.

EPA Registration Number 10707-9
EPA Establishment Number.....080636-CA-001

MANUFACTURED BY:

BAKER PETROLITE CORPORATION
12645 WEST AIRPORT BLVD.
SUGAR LAND, TX 77478
EMERGENCY CONTACT (24 HOURS PER DAY) 800-231-3606

DANGER **POISON**

NOTE TO PHYSICIAN

Probable mucosal damage may contraindicate the use of gastric lavage. Measures against circulatory shock, respiratory depression and convulsion may be needed.

WARNING SIGNS AND SYMPTOMS: Liquid **MAGNACIDE™ H Herbicide** is absorbed by the skin and is particularly irritating to any lesion and to the eyes. The vapors act principally on the mucous membrane of the eyes and respiratory tract. Because of the extreme lachrymatory warning effect, the concentration tolerable by man is far below the minimum lethal concentration.

TREATMENT: Treat exposed area as a chemical burn. Thoroughly flush eyes with water and treat symptomatically. Persons exposed to **MAGNACIDE™ H Herbicide** vapors may have a delayed reaction and experience irritation of the respiratory tract. In severe cases, this may progress to pulmonary edema. Therefore, it is advisable to keep persons exposed to **MAGNACIDE™ H Herbicide** under observation for 24 hours following exposure.

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

Refer to **MAGNACIDE™ H Herbicide** manual for directions for use.

MAGNACIDE™ H Herbicide is a water soluble material for the control of submersed and floating weeds and algae in irrigation canals. This material must be applied in accordance with directions in the **MAGNACIDE™ H Herbicide** Application and Safety Manual by a certified applicator or under a certified applicator's supervision. Do not permit dairy animals to drink treated water. Do not use where waters will flow into potential sources of drinking water. Water treated with **MAGNACIDE™ H Herbicide** must be used for irrigation of fields, either crop bearing, fallow or pasture, where the treated water remains on the field OR held for 6 days before being released into fish bearing waters or where it will drain into them.

At least two certified applicators must be at the application site and able to maintain visual contact will all certified applicators participating in the application. The applicator is to contact a member of their organization no less than every two hours during the course of an application.
No handlers are allowed to participate in the application unless they are state certified (licensed) applicators and have completed the registrant's training program within the last 12 months.

All applications must be made during daylight hours.

Maximum number of applications: 8 applications per year.

Minimum retreatment interval: 2 weeks

MAGNACIDE™ H Herbicide use will be restricted to eight (8) applications per application point per calendar year. An individual application point, as defined, may consist of multiple treatments/ releases within a contiguous irrigation canal, to ensure aquatic weed control throughout the entire irrigation canal or portion thereof.

POSTING OF APPLICATION EQUIPMENT AREA

The Certified Applicator in charge of the application must post signs around the perimeter of the application equipment area (truck, hoses and skids). Signs must be no more than 15 feet apart and contain the following information:

- Skull and crossbones symbol
- DANGER/PELIGRO
- DO NOT ENTER/NO ENTRE: Pesticide Application/Aplicacion de Pesticidas
- The name of the product being applied
- The start date and time of application
- The end date and time of application
- The name, address and telephone number of the Certified Applicator in charge of the application

Signs must remain legible during the entire posting period and must be removed once the application is completed and no later than 3 days after treatment.

Applications with **MAGNACIDE™ H Herbicide** may only be made in canals with posted no swimming signs. Contact the local irrigation district if the signs are not posted.

STORAGE AND DISPOSAL

Do not contaminate water, food or feed by storage and disposal.

PESTICIDE STORAGE

All containers of **MAGNACIDE™ H Herbicide** should be stored in a secured, well-ventilated area, away from all other chemicals. No alkalies or oxidizing materials should be near. Any electrical equipment should be Class 1 – Division 2 and properly grounded.

PESTICIDE DISPOSAL

Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal law. If these wastes cannot be disposed of by use of according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

CONTAINER DISPOSAL

Refillable container. Refill this container with **MAGNACIDE™ H Herbicide** only. Do not reuse this container for any other purpose. Return empty containers to Taft Manufacturing Company. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. For cleaning and residue removal of cylinders, follow the Standard Operating Procedure: TMC-140. For cleaning and residue removal of skids, follow the Standard Operating Procedure: TMC-141.

NOTICE OF WARRANTY

To the extent consistent with applicable law, BAKER PETROLITE CORPORATION MAKES NO WARRANTY OF MERCHANTABILITY FITNESS FOR ANY PURPOSE, OR OTHERWISE, EXPRESSED OR IMPLIED concerning this product or its uses which extend beyond the use of the product under normal conditions in accord with the statements made on this label.

UN1092

Acrolein, Stabilized,
6.1,(3), PG I,
Poison-Inhalation Hazard,
Zone A,
Marine Pollutant, RQ

Read Product Material Safety Data Sheet prior to use. PRODUCT WARRANTY, DISCLAIMER AND LIMITATION OF LIABILITY ARE FOUND on the Product Material Safety Data Sheet. Unless inconsistent with applicable law, use of Product signifies agreement with these provisions.

Lea la Hoja de Seguridad del Producto antes de usarlo. LA GARANTIA DEL PRODUCTO, DECLINACION Y LIMITACION DE RESPONSABILIDAD SE ENCUENTRAN en la Hoja de Seguridad del Producto. A menos de que sea inconsistence con la ley, el uso del producto significa acuerdo con estas disposiciones.

CASCADE®

AQUATIC HERBICIDE

For aquatic plant control in irrigation systems and other flowing water aquatic sites and quiescent, or slow moving waters.

ACTIVE INGREDIENT:	
Dipotassium salt of endothall*	40.3%
OTHER INGREDIENTS:	59.7%
TOTAL	100.0%

Contains 4.23 lbs. dipotassium endothall* per gallon

*7-oxabicyclo [2.2.1]heptane-2,3-dicarboxylic acid equivalent 28.6%

KEEP OUT OF REACH OF CHILDREN

DANGER PELIGRO

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand the label, find someone to explain it to you in detail.)

FIRST AID

IF IN EYES:
- Hold eye open and rinse slowly and gently with water for 15-20 minutes.
- Remove contact lenses, if present, after the first 5 minutes, then continue rinsing.
- Call a poison control center or doctor for treatment advice.

IF SWALLOWED:
- Call a poison control center or doctor immediately for treatment advice.
- Have person sip a glass of water if able to swallow.
- Do not induce vomiting unless told by a poison control center or doctor.
- Do not give anything by mouth to an unconscious person.

IF ON SKIN OR CLOTHING:
- Take off contaminated clothing.
- Rinse skin immediately with plenty of water for 15-20 minutes.
- Call a poison control center or doctor for treatment advice.

IF INHALED:
- Move person to fresh air.
- If person is not breathing, call 911 or ambulance, then give artificial respiration, preferably mouth-to-mouth if possible.
- Call a poison control center or doctor for treatment advice.

HOT LINE NUMBER: Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 866-673-6671 (Rocky Mountain Poison Control Center) for emergency medical treatment information.

See inside for additional precautionary statements.

NOTE TO PHYSICIAN: Measures against circulatory shock, respiratory depression, and convulsion may be needed.

EPA Registration No. 70506-176

Batch/Lot No.: _____

Net Contents: _____

United Phosphorus, Inc.
630 Freedom Business Center, Suite 402
King of Prussia, PA 19406
1-800-438-6071

PRODUCT INFORMATION

Cascade is a liquid concentrate soluble in water which is effective against a broad range of aquatic plants. Dosage rates indicated for the application of Cascade are measured in parts per million (ppm) of dipotassium endothall.

PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS AND DOMESTIC ANIMALS

DANGER

CORROSIVE. CAUSES IRREVERSIBLE EYE DAMAGE. MAY BE FATAL IF SWALLOWED. HARMFUL IF INHALED OR ABSORBED THROUGH SKIN. DO NOT GET IN EYES, ON SKIN, OR ON CLOTHING. AVOID BREATHING VAPORS OR SPRAY MIST. PROLONGED OR FREQUENTLY REPEATED SKIN CONTACT MAY CAUSE ALLERGIC REACTIONS IN SOME INDIVIDUALS.

Personal Protective Equipment (PPE)

Mixers, Loaders, Applicators and other handlers must wear:

- Long-sleeved shirt and long pants,
- Shoes and socks,
- Chemical-resistant gloves made of any waterproof material,
- Protective eyewear,
- NIOSH-approved respirator with a dust/mist filter with MSHA/NIOSH approval number prefix TC-21C or any N, R, P, or HE filter.

  Exception: During application, the respirator need not be worn, provided that the pesticide is applied in a manner (such as direct metering or subsurface application from the rear of a vessel that is moving into the wind) such that the applicator will have no contact with the pesticide.

See Engineering Controls for additional requirements.

User Safety Requirements:

Follow the manufacturers' instructions for cleaning/maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry.

Discard clothing or other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them.

Engineering Controls:

When mixers and loaders use a closed system designed by the manufacturer to enclose the pesticide to prevent it from contacting handlers or other people AND the system is functioning properly and is used and maintained in accordance with the manufacturers written operating instructions, the handlers need not wear a respirator, provided the required respirator is immediately available for use in an emergency such as a spill or equipment breakdown.

When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d)(4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

User Safety Recommendations

User should:

- Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.
- Remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

ENVIRONMENTAL HAZARDS

Do not contaminate water by cleaning of equipment or disposal of equipment washwaters.

This pesticide is toxic to mammals.

Treatment of aquatic plants can result in oxygen loss from decomposition of dead plants. This loss can cause fish suffocation. Water bodies containing very high plant density should be treated in sections to prevent suffocation of fish.

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

Do not apply this product in a way that will contact workers or other persons, either directly or through drift.

- For quiescent or slow moving water treatments: Waters treated with Cascade may be used for swimming, fishing, and irrigating turf, ornamental plants and crops immediately after treatment with the following exceptions: Do not use the Cascade treated water to irrigate the following for 7 days after the treatment: annual nursery or greenhouse crops including hydroponics and newly seeded or transplanted annual crops, newly seeded or transplanted ornamentals, and newly sodded or seeded turf. Do not use treated water for animal consumption within the following periods:

  0.5 ppm dipotassium salt – 7 days after application

  4.25 ppm dipotassium salt – 14 days after application

  5.0 ppm dipotassium salt – 25 days after application
- For flowing water treatments: Waters treated with Cascade may be used for swimming, fishing, livestock watering, and irrigating turf, ornamental plants and crops immediately after treatment with the following exceptions: Do not use the Cascade treated water to irrigate the following: annual nursery or greenhouse crops including hydroponics and newly seeded or transplanted annual crops, newly seeded or transplanted ornamentals, and newly sodded or seeded turf.
- Phytotoxicity is not expected on plants or crops irrigated with Cascade treated water, however, all species and cultivars (varieties) have not been tested.
- Undiluted Cascade may be injurious to crops, grass, ornamentals or other foliage.
- Do not use Cascade treated water for chemigation as interactions between Cascade and other pesticides and fertilizers are not known.
- Do not use Cascade in brackish or saltwater.
- Wash out spray equipment with water after each operation.
- Avoid contact of spray concentrate (product) directly or by drift with non-target plants or crops as injury may result.

HOW TO APPLY:

Cascade is a contact herbicide; consequently, apply when target plants are present.

Cascade should be sprayed on the water or injected below the water surface. It may be applied as a concentrate or diluted with water depending on the equipment.

In instances where the plant(s) to be controlled is an exposed surface problem (i.e., some of the broad-leaved pond weeds) coverage is important. For best results, apply the concentrate with the least amount of water compatible with the application equipment.

Drinking Water (Potable Water)

Consult with appropriate state or local water authorities before applying this product to public waters. State or local agencies may require permits.

The drinking water (potable water) restrictions on this label are to ensure that consumption of water by the public is allowed only when the concentration of endothall acid in the water is less than the MCL (Maximum Contamination Level) of 0.1 ppm. Applicators should consider the unique characteristics of the treated waters to assure that endothall concentrations in potable drinking water do not exceed 0.1 ppm at the time of consumption.

For Lakes, Ponds, and other Quiescent Water Bodies:

- For Cascade applications, the drinking water setback distance from functioning potable water intakes in the treated water body must be greater than or equal to 600 feet.
- Note: Existing potable water intakes that are no longer in use, such as those replaced by a connection to a municipal water system or a potable water well, are not considered to be functioning potable water intakes.

For Irrigation Canals and other Flowing Water Bodies:

- Applicator is responsible to assure that treated water does not enter potable water intakes. For Cascade applications, potable water intakes must be closed when treated water is present at the intake. In the event the water intake cannot be closed, treatments must only be made downstream from the intake in order to assure Cascade treated water does not enter the potable water system.

QUIESCENT OR SLOW MOVING WATER TREATMENTS: SURFACE OR INJECTED APPLICATIONS

For aquatic plant control in quiescent or slow moving water, Cascade recommended use rates can be found in the following chart. Since the active ingredient is water soluble and tends to diffuse from the treated area, select the dosage rate applicable to the area to be treated. Marginal treatments of large bodies of water require higher rates as indicated.

Use higher labeled rates of Cascade when making treatments to small areas with an increased potential for rapid dilution or when treating narrow areas such as boat lanes or shoreline treatments where dilution may reduce the exposure of plants to Cascade.

Use lower labeled rates of Cascade for large contiguous treatment blocks or in protected areas such as coves where reduced water movement will not result in rapid dilution of Cascade from the target treatment area or when treating entire lakes or ponds.

PLANTS CONTROLLED AND CASCADE DOSAGE RATE CHART

	APPLICATION RATE			
	Entire Pond/Lake or Large Area Treatment		Spot or Lake Margin Treatment	
Aquatic Plant	ppm Dipotassium Endothall	gallons Cascade per Acre Ft.	ppm Dipotassium Endothall	gallons Cascade per Acre Ft.
Bur Reed, Sparganium spp.	3.0-4.0	1.9-2.6	4.0-5.0	2.6-3.2
Coontail, Ceratophyllum spp.	2.0-3.0	1.3-1.9	3.0-5.0	1.9-3.2
Horned Pondweed, Zannichellia palustris	2.0-3.0	1.3-1.9	3.0-5.0	1.9-3.2
Sago Pondweed, Stuckenia pectinata	1.0-2.0	0.6-1.3	2.0-5.0	1.3-3.2
Hydrilla, Hydrilla verticillata	1.0-4.0	0.6-2.6	2.0-5.0	1.3-3.2
Hygrophila*, Hygrophila polysperma	4.0-5.0	2.6-3.2	5.0	3.2
Milfoil, Myriophyllum spp.	2.0-3.0	1.3-1.9	3.0-5.0	1.9-3.2
Naiad, Najas spp.	2.0-4.0	1.3-2.6	3.0-5.0	1.9-3.2
Pondweed, Potamogeton spp.	0.75-3.0	0.45-1.9	1.5-5.0	1.0-3.2
Including:				
American, P. nodosus	2.0-3.0	1.3-1.9	3.0-5.0	1.9-3.2
Largeleaf (Bass Weed), P. amplifolius	2.0-3.0	1.3-1.9	3.0-5.0	1.9-3.2
Curlyleaf, P. crispus	0.75-1.5	0.45-1.0	1.5-5.0	1.0-3.2
Flatstem, P. zosteriformis	2.0-3.0	1.3-1.9	3.0-5.0	1.9-3.2
Floating-leaf, P. natans	1.0-2.0	0.6-1.3	2.0-5.0	1.3-3.2
Illinois, P. Illinoensis	1.5-2.5	1.0-1.6	2.5-5.0	1.6-3.2
Narrowleaf, P. pusillus	1.0-2.0	0.6-1.3	2.0-5.0	1.3-3.2
Threadleaf, P. filiformis	2.0-3.0	1.3-1.9	3.0-5.0	1.9-3.2
Variable Leaf, P. diversifolius	1.0-2.0	0.6-1.3	2.0-5.0	1.3-3.2
Parrotfeather, Myriophyllum aquaticum	2.0-3.0	1.3-1.9	3.0-5.0	1.9-3.2
Water Stargrass, Heteranthera spp.	2.0-3.0	1.3-1.9	3.0-5.0	1.9-3.2

* Suppression only

The following charts indicate the quantity of Cascade to be applied.

Gallons of Cascade to Treat One Acre-Foot of Water

	Rate (ppm)						
	0.75	**1.0**	**1.5**	**2.0**	**3.0**	**4.0**	**5.0**
	gallons/A-ft.						
1 acre ft.	0.45	0.6	1.0	1.3	1.9	2.6	3.2

Fluid Ounces of Cascade to Treat 1,000 Square-Feet per Foot of Depth

	Rate (ppm)						
	0.75	**1.0**	**1.5**	**2.0**	**3.0**	**4.0**	**5.0**
	fl. oz./1,000 ft.^{2}						
1,000 ft.^{2}	1.4	1.9	2.8	3.8	5.7	7.6	9.4

IRRIGATION SYSTEMS AND FLOWING WATER TREATMENTS: DRIP OR METERING SYSTEM APPLICATIONS

For aquatic plant control in flowing water, Cascade recommended use rates can be found in the following chart. Apply Cascade in a manner to achieve the desired rate and adequate mixing so product is distributed throughout the entire water column. Adequate concentration (rate) and exposure time (length of treatment) will impact Cascade efficacy on the target plant species. Although Cascade is a contact herbicide adequate exposure time is critical. The rates and the length of treatment are guidelines to control the target species. The following rate chart has been developed based on Concentration Exposure Time (CET) data for Cascade. The CET concept allows rates and the length of exposure to be adjusted for different treatment scenarios.

CASCADE APPLICATION RATES FOR FLOWING WATER TREATMENTS

	Length of Treatment (hours)							
	6	**8**	**12**	**18**	**24**	**36**	**48**	**72**
Plant Species	Rate (ppm)							
Pondweeds (Potamogeton spp.) Sago Pondweed (Stuckenia pectinata)	4.0-5.0	3.0-4.0	2.0-3.0	1.5-2.5	1.0-2.0	0.75-1.5	0.5-1.0	0.5
Milfoil (Myriophyllum spp.) Parrotfeather (Myriophyllum aquaticum) Coontail (Ceratophyllum spp.) Horned pondweed (Zannichellia spp.) Hydrilla (Hydrilla verticillata) Naiad (Najas spp.) Water Stargrass (Heteranthera spp.)	5.0	4.0-5.0	3.0-4.0	2.0-3.0	1.5-2.5	1.0-2.0	0.75-1.5	0.5-1.0

NOTE: Hygrophila (Hygrophila polysperma) may be suppressed at the higher application rates listed in this table.

Restrictions: Do not apply more than 30 ppm per growing season, not to exceed 5 ppm per application. Do not apply more than a total of 5 ppm within a 7-day interval.

Note: There is no Pre-harvest Interval (PHI) for crops irrigated with treated water.

To calculate the amount of Cascade required for a particular treatment use the following formula:

[Cubic Feet per Second (CFS) X Length of Treatment (hrs.) X Rate (ppm)] x 0.052947 = Gallons of Cascade Needed for Treatment

To calculate the amount of Cascade to be applied per hour use the following formula:

Gallons of Cascade per Hour = Total Gallons of Cascade / Length of Treatment (hrs.)

STORAGE AND DISPOSAL

Do not contaminate water, food, or feed by storage and disposal.

Pesticide Storage: Store in the original container. Do not store in a manner where cross-contamination with other pesticides, fertilizers, food or feed could occur. Storage at temperatures below 32°F may result in the product freezing or crystallizing. Should this occur the product must be warmed to 50°F or higher and thoroughly agitated. In the event of a spill during handling or storage, absorb with sand or other inert material and dispose of absorbent in accordance with the Pesticide Disposal instructions listed below.

Pesticide Disposal: Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

Container Handling:

(for Nonrefillable containers)

Nonrefillable container. Do not reuse or refill this container. Triple rinse or pressure rinse container (or equivalent) promptly after emptying.

For containers 5 gallons or less:

Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container 1/4 full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times.

Or

Pressure rinse as follows: Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 PSI for at least 30 seconds. Drain for 10 seconds after the flow begins to drip.

For containers more than 5 gallons:

Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container 1/4 full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times.

Or

Pressure rinse as follows: Empty the remaining contents into application equipment or a mix tank. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 PSI for at least 30 seconds. Pour or pump rinsate into application equipment or rinsate collection system. Drain for 10 seconds after the flow begins to drip.

Then offer for recycling if available or puncture and dispose of in a sanitary landfill, or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

(for Refillable containers)

Refillable container. Refill this container with pesticide only. Do not use this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10 percent full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times. Then offer for recycling if available or reconditioning if appropriate or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities.

EMERGENCY TELEPHONE NUMBERS

CHEMTREC: (800) 424-9300

MEDICAL: (866) 673-6671 Rocky Mountain Poison Control Center

IMPORTANT INFORMATION
READ BEFORE USING PRODUCT

CONDITIONS OF SALE AND LIMITATION OF WARRANTY AND LIABILITY

NOTICE: Read the entire Directions for Use and Conditions of Sale and Limitation of Warranty and Liability before buying or using this product. If the terms are not acceptable, return the product at once, unopened, and the purchase price will be refunded.

The Directions for Use of this product reflect the opinion of experts based on field use and tests, and must be followed carefully. It is impossible to eliminate all risks associated with the use of this product. Crop injury, ineffectiveness or other unintended consequences may result because of such factors as manner of use or application, weather or crop conditions, presence of other materials or other influencing factors in the use of the product, which are beyond the control of United Phosphorus, Inc. or Seller. Handling, storage, and use of the product by Buyer or User are beyond the control of United Phosphorus, Inc. and Seller. All such risks shall be assumed by Buyer and User, and Buyer and User agree to hold United Phosphorus, Inc. and Seller harmless for any claims relating to such factors.

TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, UNITED PHOSPHORUS, INC. AND SELLER MAKE NO WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE NOR ANY OTHER EXPRESS OR IMPLIED WARRANTY EXCEPT AS STATED ON THIS LABEL.

To the extent consistent with applicable law, United Phosphorus, Inc. or Seller shall not be liable for any incidental, consequential or special damages resulting from the use or handling of this product and **THE EXCLUSIVE REMEDY OF THE USER OR BUYER, AND THE EXCLUSIVE LIABILITY OF UNITED PHOSPHORUS, INC. AND SELLER FOR ANY AND ALL CLAIMS, LOSSES, INJURIES OR DAMAGES (INCLUDING CLAIMS BASED ON BREACH OF WARRANTY, CONTRACT, NEGLIGENCE, TORT, STRICT LIABILITY OR OTHERWISE) RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT, SHALL BE THE RETURN OF THE PURCHASE PRICE OF THE PRODUCT OR, AT THE ELECTION OF UNITED PHOSPHORUS, INC. OR SELLER, THE REPLACEMENT OF THE PRODUCT.**

United Phosphorus, Inc. and Seller offer this product, and Buyer and User accept it, subject to the foregoing conditions of sale and limitations of warranty and of liability, which may not be modified except by written agreement signed by the duly authorized representative of United Phosphorus, Inc.

Rev. 9/15/11

70506-176(092211-4049)

Made in U.S.A.

TETON®

AQUATIC ALGICIDE AND HERBICIDE

For algae and aquatic plant control in irrigation systems and other flowing water aquatic sites and quiescent or slow moving waters.

ACTIVE INGREDIENT:	
Mono(N,N-dimethylalkylamine) salt of endothall*	53.0%
OTHER INGREDIENTS:	47.0%
TOTAL	100.0%

*7-oxabicyclo [2.2.1] heptane-2,3-dicarboxylic acid equivalent 23.36%
Contains 2 lbs. endothall acid per gallon

KEEP OUT OF REACH OF CHILDREN

DANGER PELIGRO

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle.
(If you do not understand the label, find someone to explain it to you in detail.)

FIRST AID

IF IN EYES:
- Hold eye open and rinse slowly and gently with water for 15-20 minutes.
- Remove contact lenses, if present, after the first 5 minutes, then continue rinsing.
- Call a poison control center or doctor for treatment advice.

IF ON SKIN OR CLOTHING:
- Take off contaminated clothing.
- Rinse skin immediately with plenty of water for 15-20 minutes.
- Call a poison control center or doctor for treatment advice.

IF SWALLOWED:
- Call a poison control center or doctor immediately for treatment advice.
- Have person sip a glass of water if able to swallow.
- Do not induce vomiting unless told by a poison control center or doctor.
- Do not give anything by mouth to an unconscious person.

IF INHALED:
- Move person to fresh air.
- If person is not breathing, call 911 or ambulance, then give artificial respiration, preferably mouth-to-mouth if possible.
- Call a poison control center or doctor for treatment advice.

HOT LINE NUMBER: Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 866-673-6671 (Rocky Mountain Poison Control Center) for emergency medical treatment information.

See inside for additional precautionary statements.

NOTE TO PHYSICIAN: Probable mucosal damage may contraindicate the use of gastric lavage. Measures against circulatory shock, respiratory depression and convulsion may be needed.

EPA Registration No. 70506-175

Batch/Lot No.: _____

Net Contents: _____

United Phosphorus, Inc.
630 Freedom Business Center, Suite 402
King of Prussia, PA 19406
1-800-438-6071

PRODUCT INFORMATION

Teton is a liquid concentrate soluble in water and is a highly effective aquatic algicide and herbicide. Apply when target algae and plants are actively growing. Note: Susceptibility of algae may vary due to subspecies, strains or environmental conditions. Dosage rates are measured in parts per million (ppm) endothall acid.

PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS AND DOMESTIC ANIMALS

DANGER

CORROSIVE. CAUSES IRREVERSIBLE EYE DAMAGE AND SKIN BURNS. MAY BE FATAL IF SWALLOWED, OR ABSORBED THROUGH SKIN. HARMFUL IF INHALED. DO NOT GET IN EYES, ON SKIN OR ON CLOTHING. AVOID BREATHING VAPOR OR SPRAY MIST.

Personal Protective Equipment (PPE)

Mixers, loaders, applicators and other handlers must wear:

- Coveralls over long-sleeved shirt and long pants,
  Exception: When the product is applied in a manner in which the applicator will have no contact with the pesticide (such as direct metering or subsurface injection), coveralls need not be worn.
- Chemical-resistant footwear plus socks,
- Chemical-resistant gloves made of any waterproof material,
- Chemical-resistant headgear for overhead exposure,
- Protective eyewear,
- Chemical-resistant apron when mixing, loading, or cleaning equipment,
- NIOSH-approved respirator with a dust/mist filter with MSHA/NIOSH approval number prefix TC-21C or any N, R, P, or HE filter.
  Exception: During application, the respirator need not be worn, provided that the pesticide is applied in a manner (such as direct metering or subsurface release from the rear of a vessel that is moving into the wind) such that the applicator will have no contact with the pesticide.

See Engineering Controls for additional requirements.

User Safety Requirements:

Follow the manufacturers' instructions for cleaning/maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry.

Discard clothing or other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them.

Engineering Controls:

When mixers and loaders use a closed system designed by the manufacturer to enclose the pesticide to prevent it from contacting handlers or other people AND the system is functioning properly and is used and maintained in accordance with the manufacturers written operating instructions, the handlers need not wear a respirator, provided the required respirator is immediately available for use in an emergency such as a spill or equipment breakdown.

When handlers use closed systems, enclosed cabs or aircraft in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d) (4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

User Safety Recommendations:

User should:

- Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.
- Remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

ENVIRONMENTAL HAZARDS

Do not contaminate water by cleaning of equipment or disposal of equipment washwaters.

This pesticide is highly toxic to fish and aquatic invertebrates. This pesticide is toxic to wildlife.

Treatment of algae and aquatic plants can result in oxygen loss from decomposition of dead algae and plants. This loss can cause fish suffocation. Water bodies containing very high algae or plant density should be treated in sections to prevent suffocation of fish.

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

Do not apply this product in a way that will contact workers or other persons, either directly or through drift.

- For quiescent or slow moving water treatments: Waters treated with Teton may be used for swimming, fishing, and irrigating turf, ornamental plants and crops immediately after treatment with the following exceptions: Do not use the Teton treated water to irrigate the following for 7 days after the treatment: annual nursery or greenhouse crops including hydroponics and newly seeded or transplanted annual crops, newly seeded or transplanted ornamentals, and newly sodded or seeded turf. Do not use treated water for animal consumption within the following periods:
  0.3 ppm – 7 days after application
  3.0 ppm – 14 days after application
  5.0 ppm – 25 days after application
- For flowing water treatments: Waters treated with Teton may be used for swimming, fishing, livestock watering, and irrigating turf, ornamental plants and crops immediately after treatment with the following exceptions: Do not use the Teton treated water to irrigate the following: annual nursery or greenhouse crops including hydroponics and newly seeded or transplanted annual crops, newly seeded or transplanted ornamentals, and newly sodded or seeded turf.
- Phytotoxicity is not expected on plants or crops irrigated with Teton treated water, however, all species and cultivars (varieties) have not been tested.
- Undiluted Teton may be injurious to crops, grass, ornamentals or other foliage.
- Do not use Teton treated water for chemigation as interactions between Teton and other pesticides and fertilizers are not known.
- Do not use Teton in waters containing Koi or hybrid goldfish. Teton is not intended for use in small volume garden pond systems.
- Fish may be killed by dosages in excess of 0.3 parts per million (ppm).
- Do not use Teton in brackish or saltwater.
- Wash out spray equipment with water after each operation.
- Avoid contact of spray concentrate (product) directly or by drift with non-target plants or crops as injury may result.
- Do not treat more than 10% of the area at one time with doses in excess of 1 ppm.

HOW TO APPLY:

Teton is a contact algicide and herbicide. Apply when target algae and plants are present. Teton should be sprayed on the water or injected below the water surface. It may be applied as a concentrate or diluted with water depending on the equipment. Teton can be applied to floating algae mats as a surface application. In instances where the algae or plant(s) to be controlled is an exposed surface problem (i.e. some of the broad-leaved pond weeds) coverage is important. For best results, apply the concentrate with the least amount of water compatible with the application equipment.

Drinking Water (Potable Water)

Consult with appropriate state or local water authorities before applying this product to public waters. State or local agencies may require permits.

The drinking water (potable water) restrictions on this label are to ensure that consumption of water by the public is allowed only when the concentration of endothall acid in the water is less than the MCL (Maximum Contamination Level) of 0.1 ppm. Applicators should consider the unique characteristics of the treated waters to assure that endothall acid concentrations in potable drinking water do not exceed 0.1 ppm at the time of consumption.

For Lakes, Ponds, and other Quiescent Water Bodies:

- For Teton applications, the drinking water setback distance from functioning potable water intakes in the treated water body must be greater than or equal to 600 feet.
- Note: Existing potable water intakes that are no longer in use, such as those replaced by a connection to a municipal water system or a potable water well, are not considered to be functioning potable water intakes.

For Irrigation Canals and other Flowing Water Bodies:

- Applicator is responsible to assure that treated water does not enter potable water intakes. For Teton applications, potable water intakes must be closed when treated water is present at the intake. In the event the water intake cannot be closed, treatments must only be made downstream from the intake in order to assure Teton treated water does not enter the potable water system.

QUIESCENT OR SLOW MOVING WATER TREATMENTS: SURFACE OR INJECTED APPLICATIONS

Teton use is limited to algae and the following plants: Hygrophila*, Vallisneria, Hydrilla, Cabomba*, Bur Reed*, *Elodea canadensis*, and Brazilian Elodea. (* Not for this use in California.)

ALGAE CONTROL: Teton is effective on a broad range of planktonic, filamentous, and branched algae. Note: Susceptibility of algae may vary due to subspecies, strains or environmental conditions. Generally rates of 0.05 to 0.3 ppm (0.6-3.6 pints per acre foot) are effective for the control of algae. Repeat applications when algae reappear and reach treatment levels. Dosages may be increased (from 0.3 to 3.0 ppm) where greater longevity of control is desired or to improve efficacy on species that prove difficult to control. Due to the potential for fish toxicity at higher rates, it is suggested that applications above 0.3 ppm be made only by commercial applicators as marginal or sectional treatments.

SUBMERGED AQUATIC PLANTS: Apply Teton at 1 to 5 ppm (1.4 gallons to 6.8 gallons per acre foot) for control of aquatic plants. Teton is for use on the following aquatic plants: Hygrophila*, Vallisneria, Hydrilla, Cabomba*, Bur Reed*, *Elodea canadensis*, and Brazilian Elodea. (* Not for this use in California.) Due to potential fish toxicity, Teton use for submerged aquatic plant control is suggested to be made only by commercial applicators as marginal or sectional treatments. Use application rates over 1.0 ppm only on very narrow margins or in areas where some fish kill is not objectionable.

RATE OF APPLICATION:

Algae or Plant	Rate ppm endothall acid	Amount of Teton per Acre Ft.
Algae Planktonic, Filamentous, Branched (Use in California limited to Cladophora, Pithophora, Spirogyra, Chara)	0.05-3.0	0.6-36 pints
Bur Reed*	2-5	2.7-6.8 gals.
Cabomba*†	2-5	2.7-6.8 gals.
Brazilian Elodea	2-5	2.7-6.8 gals.
Elodea Canadensis	2-5	2.7-6.8 gals.
Hydrilla	1-5	1.4-6.8 gals.
Hygrophila*†	2-5	2.7-6.8 gals.
Vallisneria	2-5	2.7-6.8 gals.

* Not for this use in California
† Suppression only

FLOWING WATER TREATMENTS: DRIP OR METERING SYSTEMS

For algae and aquatic plant control in flowing water, Teton recommended use rates can be found in the following chart. Apply Teton in a manner to achieve the desired rate and adequate mixing so Teton is distributed throughout the entire water column. Adequate concentration (rate) and exposure time (length of treatment) will impact Teton efficacy on the target algae and plant species. Although Teton is a contact algicide and herbicide, adequate exposure time is critical. The rates and the length of treatment are guidelines to control the target species. The following rate chart has been developed based on Concentration Exposure Time (CET) data for Teton. The CET concept allows rates and the length of exposure to be adjusted for different treatment scenarios.

For irrigation systems, because of potential fish toxicity, rates of more than 0.3 ppm are to be used only in irrigation systems without return flows, or for making partial treatments to treat sections of the irrigation system where dilution of the treated water will result in concentrations of 0.3 ppm or less in return water.

RATE OF APPLICATION:

Target Species	Rate ppm endothall acid	Duration	Restrictions
Algae: Planktonic, Filamentous, Branched (Use in California limited to Cladophora, Pithophora, Spirogyra, Chara)	0.05 – 3.0 ppm	6 – 120 hours	A maximum of 30 ppm per growing season, not to exceed 5 ppm per application. Do not apply more than a total of 5 ppm within a 7-day interval. There is no Pre-harvest Interval (PHI) for crops irrigated with treated water.
Plants: Bur Reed* Cabomba*† Coontail Elodea Canadensis Hydrilla Hygrophila*† Milfoil (Myriophyllum spp.) Naiad (Najas spp.) Pondweed (Potamogeton spp.) Water Stargrass* Vallisneria Zannichellia	0.2 – 5 ppm	6 – 120 hours	

* Not for this use in California
† Suppression only

To calculate the amount of Teton required for a particular treatment use the following formula:

[Cubic Feet per Second (CFS) X Length of Treatment (hrs.) X Rate (ppm)] x 0.11198 = Gallons of Teton Needed for Treatment

To calculate the amount of Teton to be applied per hour use the following formula:

Gallons of Teton per hour = Total Gallons of Teton / Length of Treatment (hrs.)

STORAGE AND DISPOSAL

Do not contaminate water, food, or feed by storage and disposal.

Pesticide Storage: Store in the original container. Do not store in a manner where cross-contamination with other pesticides, fertilizers, food or feed could occur. In the event of a spill during handling or storage, absorb with sand or other inert material and dispose of absorbent in accordance with the Pesticide Disposal instructions listed below.

Pesticide Disposal: Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

Container Handling:

(for Nonrefillable containers)

Nonrefillable container. Do not reuse or refill this container. Triple rinse or pressure rinse container promptly after emptying.

For containers 5 gallons or less:

Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container 1/4 full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times.

Or

Pressure rinse as follows: Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 PSI for at least 30 seconds. Drain for 10 seconds after the flow begins to drip.

For containers more than 5 gallons:

Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container 1/4 full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times.

Or

Pressure rinse as follows: Empty the remaining contents into application equipment or a mix tank. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 PSI for at least 30 seconds. Pour or pump rinsate into application equipment or rinsate collection system. Drain for 10 seconds after the flow begins to drip.

Then offer for recycling if available or puncture and dispose of in a sanitary landfill, or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

(for Refillable containers)

Refillable container. Refill this container with pesticide only. Do not use this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10 percent full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times. Then offer for recycling if available or reconditioning if appropriate or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities.

EMERGENCY TELEPHONE NUMBERS

CHEMTREC: (800) 424-9300

MEDICAL: (866) 673-6671

Rocky Mountain Poison Control Center

IMPORTANT INFORMATION
READ BEFORE USING PRODUCT

CONDITIONS OF SALE AND LIMITATION OF WARRANTY AND LIABILITY

NOTICE: Read the entire Directions for Use and Conditions of Sale and Limitation of Warranty and Liability before buying or using this product. If the terms are not acceptable, return the product at once, unopened, and the purchase price will be refunded.

The Directions for Use of this product reflect the opinion of experts based on field use and tests, and must be followed carefully. It is impossible to eliminate all risks associated with the use of this product. Crop injury, ineffectiveness or other unintended consequences may result because of such factors as manner of use or application, weather or crop conditions, presence of other materials or other influencing factors in the use of the product, which are beyond the control of United Phosphorus, Inc. or Seller. Handling, storage, and use of the product by Buyer or User are beyond the control of United Phosphorus, Inc. and Seller. All such risks shall be assumed by Buyer and User, and Buyer and User agree to hold United Phosphorus, Inc. and Seller harmless for any claims relating to such factors.

TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, UNITED PHOSPHORUS, INC. AND SELLER MAKE NO WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE NOR ANY OTHER EXPRESS OR IMPLIED WARRANTY EXCEPT AS STATED ON THIS LABEL.

To the extent consistent with applicable law, United Phosphorus, Inc. or Seller shall not be liable for any incidental, consequential or special damages resulting from the use or handling of this product and **THE EXCLUSIVE REMEDY OF THE USER OR BUYER, AND THE EXCLUSIVE LIABILITY OF UNITED PHOSPHORUS, INC. AND SELLER FOR ANY AND ALL CLAIMS, LOSSES, INJURIES OR DAMAGES (INCLUDING CLAIMS BASED ON BREACH OF WARRANTY, CONTRACT, NEGLIGENCE, TORT, STRICT LIABILITY OR OTHERWISE) RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT, SHALL BE THE RETURN OF THE PURCHASE PRICE OF THE PRODUCT OR, AT THE ELECTION OF UNITED PHOSPHORUS, INC. OR SELLER, THE REPLACEMENT OF THE PRODUCT.**

United Phosphorus, Inc. and Seller offer this product, and Buyer and User accept it, subject to the foregoing conditions of sale and limitations of warranty and of liability, which may not be modified except by written agreement signed by the duly authorized representative of United Phosphorus, Inc.

Rev. 9/15/11

70506-175(092011-4050)

Specimen Label

Captain*

Liquid Copper Algaecide

For control of planktonic and filamentous algae and certain vascular plants in potable water sources, lakes, rivers, reservoirs, and ponds, slow-flowing or quiescent water bodies, crop and non-crop irrigation systems (canals, laterals, and ditches), fish, golf course, ornamental, swimming, and fire ponds, and fish hatcheries.

Active Ingredient	
Copper Carbonate†	15.9%
Other Ingredients	84.1%
TOTAL	100.0%

†Metallic copper equivalent, 9.1%.

Keep Out of Reach of Children

DANGER / PELIGRO

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand the label, find someone to explain it to you in detail.)

Precautionary Statements

Hazards to Humans and Domestic Animals

DANGER: Corrosive. Causes irreversible eye damage and skin irritation. Due to corrosive nature, may be harmful or fatal if swallowed. Do not get in eyes, on skin, or on clothing. Wear goggles, face shield or safety glasses, protective clothing and rubber gloves when handling. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash before reuse.

Environmental Hazards

Fish toxicity is dependent on the hardness of the water. In soft water, trout and other species of fish may be killed at application rates recommended on this label. Do not use in water containing trout or other sensitive species if the carbonate hardness of water is less than 50 ppm. Fish toxicity generally decreases when the hardness of water increases. Consult State Fish and Game Agency or other responsible Agency before applying this product to public waters. Do not treat more than one-half of lake or pond at one time to avoid depletion of oxygen levels due to decaying vegetation.

Do not apply undiluted solution of this product directly to, or otherwise permit it to come into contact with any desirable plants as injury may result. Wash spray equipment thoroughly before and after each application.

FIRST AID	
If in eyes	• Hold eye open and rinse slowly and gently with water for 15 - 20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. • Call a poison control center or doctor for treatment advice.
If on skin or clothing	• Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15 - 20 minutes. • Call a poison control center or doctor for treatment advice.
If swallowed	• Call a poison control center or doctor immediately for treatment advice. • Have person sip a glass of water if able to swallow. • Do not induce vomiting unless told to do so by a poison control center or doctor. • Do not give anything by mouth to an unconscious person.
If inhaled	• Move person to fresh air. • If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. • Call a poison control center or doctor for further treatment advice.
Have the product container or label with you when calling a poison control center or doctor, or going for treatment. In case of emergency endangering health or the environment involving this product, call **INFOTRAC** at **1-800-535-5053**.	

Note to Physician: Probable mucosal damage may contraindicate the use of gastric lavage.

Refer to inside of label booklet for additional precautionary information and Directions for Use.

Notice: Read the entire label before using. Use only according to label directions. **Before buying or using this product, read "Warranty Disclaimer," "Inherent Risks of Use"** and **"Limitation of Remedies"** inside label booklet.

For product information, visit our web site at **www.sepro.com**.

EPA Reg. No. 67690-9
FPL 022808

 SePRO Corporation 11550 North Meridian Street, Suite 600, Carmel, IN 46032 U.S.A.

Directions for Use

It is a violation of Federal Law to use this product in a manner inconsistent with its label directions.

GENERAL INFORMATION

Captain Aquatic Algaecide is a double chelated copper formulation that is effective in controlling a broad range of algae.

This product has also been proven effective in controlling the rooted aquatic plant, Hydrilla verticillata. The ethanolamines in this product prevent the precipitation of copper with carbonates and bicarbonates in the water. The application site is defined by this label as the specific location where Captain is applied. In slow moving and flowing canals and rivers, the application site is defined by this label as the target location for plant control. Use the lower recommended rate in Soft water (less than 50 ppm alkalinity) and the higher concentration in hard water (above 50 ppm alkalinity).

Water Use Restrictions

If treated water is a source of potable water, the residue of copper must not exceed 1 ppm. Waters treated with this product may be used for swimming, fishing, drinking, livestock watering or irrigating turf, ornamental plants or crops immediately after treatment. Always consult your State Fish and Game Agency or other responsible agency before applying this product to public waters.

Surface Spray/Injection Algaecide Application

For effective control, proper chemical concentration should be maintained for a minimum of three hours contact time. The application rates in the chart are based on static or minimal flow situations. Where significant dilution or loss of water from unregulated inflows or outflows occur (raceways) within a three-hour period, chemical may have to be metered in.

Identify the algae growth present as one of the following types: Planktonic (suspended), Filamentous (mat-forming), or Chara/Nitella.

Determine the surface acreage (1 acre = 43,560 sq. ft.) and average depth of infested area. Refer to chart (next column) to determine gallons of this product to apply per surface acre.

Application Rates (Gallons per Surface Acre)

Algae Type or species	Dosage PPM Copper	Rates Gallons/ acre foot	Treatment Comments
Planktonic	0.2	0.6 - 1.5	Apply lower dosage rates on light infestations. Use higher rates on heavy blooms and where algae masses are clumped and accumulated.
Filamentous	0.2 - 0.6	0.6 - 1.8	Apply lower dosage rates on early season, light infestations or treatment of regrowth. Apply higher rates on surface mats and species such as Pithophora, Cladophora, Lyngbya, and Hydrodictyon.
Chara/Nitella	0.4 - 0.8	1.2 - 2.4	Apply lower dosage rates on new infestations or early season growth. Apply higher rates on older, established calcified plants. Apply as close to top of plant growth as possible.

For dense infestations of filamentous algae or where the species of hydrodictyon, cladophora or pithophora are present, use the highest rate in the rate range.

For planktonic (suspended) algae and free-floating filamentous algae mats, application rates should be based on treating only the upper 3 to 4 feet of water where algae is growing. Under conditions of heavy infestation treat only 1/3 to 1/2 of the water body at a time to avoid fish suffocation caused by oxygen depletion from decaying algae. Before applying, dilute the required amount of this product with enough water to ensure even distribution with the type of equipment being used. For most effective results apply under calm and sunny conditions when water temperature is at least 60˚ F. Break up floating algae mats before spraying or while application is being made. Use hand or power sprayer adjusted to rain-sized droplets. Spray shoreline areas to avoid trapping fish.

Herbicide Application (for Hydrilla Control)

Control of Hydrilla verticillata can be obtained from copper concentrations of 0.4 to 1.0 ppm resulting from this product's treatment. Choose the application rate based upon stage and density of Hydrilla growth and respective water depth from the chart below.

Application Rates (Gallons per Surface Acre)

Growth Stage/ Relative Density	ppm Copper	Depth in Feet					
		1	2	3	4	5	6
Early Season/ Low Density	0.4	1.2	2.4	3.6	4.8	6.0	7.2
	0.5	1.5	3.0	4.5	6.0	7.5	9.0
	0.6	1.8	3.6	5.4	7.2	9.0	10.8
Midseason/ Moderate Density	0.7	2.1	4.2	6.3	8.4	10.5	12.6
	0.8	2.4	4.8	7.3	9.6	12.0	14.4
Late Season/ High Density	0.9	2.7	5.4	8.1	10.8	13.5	16.2
	1.0	3.0	6.0	9.0	12.0	15.0	18.0

Application rates for depths greater than six feet may be obtained by adding the rates given for the appropriate combination of depths. Application rates must not result in excess of 1.0 ppm copper concentration within treated water.

Diquat Tank-Mix
On waters where enforcement of use restrictions for recreational, domestic and irrigation use are acceptable, the following mixture can be used as an alternative Hydrilla control method.
Tank-mix 3 - 1/3 gallons of this product with 2 gallons of Diquat. Apply mixture at the rate of 5 - 1/3 gallons per surface acre. Dilute with at least 9 parts water and apply as a surface or underwater injection. Observe all cautions and restrictions on the labels of both products used in this mixture.

DRIP SYSTEM APPLICATION
For Use in Potable Water and Irrigation Conveyance Systems
This product should be applied as soon as algae or Hydrilla begins to interfere noticeably with normal delivery of water (clogging of lateral headgates, suction screens, weed screens, and siphon tubes). Delaying treatment could perpetuate the problem causing massing and compacting of plants. Heavy infestations and low flow may cause poor chemical distribution resulting in unsatisfactory control. Under these conditions increasing water flow rate during application may be necessary.

Prior to treatment it is important to accurately determine water flow rates. In the absence of weirs, orifices, or similar devices, which give accurate waterflow measurements, volume of flow may be estimated by the following formula:

Average Width (feet) x Average Depth x Velocity* (feet/second) x 0.9 = Cubic Feet per Second (C.F.S.)

*Velocity is the time it takes a floating object to travel a given distance. Dividing the distance traveled (feet) by the time (seconds) will yield velocity (feet/second). This measurement should be repeated at least three times at the intended application site and then averaged.

After accurately determining the water flow rate in C.F.S. or gallons/minute, find the corresponding drip rate in the chart below.

Water Flow Rate		Chemical Drip Rate		
C.F.S.	Gallon/Minute	Quart/Hour	MI/Minute	Fl. Oz./Minute
1	450	1	16	0.5
2	900	2	32	1.1
3	1350	3	47	1.6
4	1800	4	63	2.1
5	2250	5	79	2.7

Calculate the amount of product needed to maintain the drip rate for a treatment period of 3 or more hours by multiplying quart/hr. x 3; ml / min. by 180; or fl. oz. / min. x 180. Dosage will maintain 1.0 ppm copper concentration in the treated water for the treatment period. Introduction of the chemical should be made in the channel at weirs or other turbulence-creating structures to promote the dispersion of the chemical.

Pour the required amount of this product into a drum or tank equipped with a brass needle valve and constructed to maintain a constant drip rate. Use a stopwatch and appropriate measuring container to set the desired drip rate. Readjust accordingly if the canal flow rate changes during the treatment period. This product can also be applied by using metering pumps that adjust to flow rates in the canal.

Results can vary depending upon species and density of algae and vegetation, desired distance of control and flow rate, and impact of water quality on copper residues and efficacy. Consult an Aquatic Specialist to determine optimal use rate and treatment period under local conditions. Periodic maintenance treatments may be required to maintain seasonal control.

General Treatment Notes

The following suggestions apply to the use of this product as an algaecide or herbicide in all approved use sites. For optimum effectiveness:

- Apply early in the day under calm, sunny conditions when water temperatures are at least 60˚ F.
- Treat when growth first begins to appear or create a nuisance, if possible.
- Apply in a manner that will ensure even distribution of the chemical within the treatment area.
- Re-treat areas if regrowth begins to appear and seasonal control is desired. Allow one to two weeks between consecutive treatments.
- Allow seven to ten days to observe the effects of treatment (bleaching and breaking apart of plant material).
- Use a high-pressure surface spray application to break up dense floating algal mats.

Notice
Read and follow label directions carefully.

Contents may cause bluing where marcite has been etched.

Permits
Some states may require permits for the application of this product to public waters. Check with your local authorities.

Storage and Disposal

Do not contaminate water, food or feed by storage or disposal.

Storage Instructions: This product should be stored only in the original container and placed in a cool and dry locked storage area. Keep away from other pesticides, fertilizer, food, and feed to prevent cross-contamination. In case of spillage, dilute with water and wash up with water.

Container Disposal: Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide spray mixture, or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact your local State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

Pesticide Disposal: Do not reuse empty container. Triple rinse. Then offer for recycling, or reconditioning, or puncture and dispose of in a sanitary landfill, or incinerate, or if allowed by state and local authorities, by burning. If burned, stay out of smoke.

Warranty Disclaimer

SePRO Corporation warrants that the product conforms to the chemical description on the label and is reasonably fit for the purposes stated on the label when used in strict accordance with the directions, subject to the inherent risks set forth below. SEPRO CORPORATION MAKES NO OTHER EXPRESS OR IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER EXPRESS OR IMPLIED WARRANTY.

Inherent Risks of Use

It is impossible to eliminate all risks associated with use of this product. Plant injury, lack of performance, or other unintended consequences may result because of such factors as use of the product contrary to label instructions (including conditions noted on the label, such as unfavorable temperatures, soil conditions, etc.), abnormal conditions (such as excessive rainfall, drought, tornadoes, hurricanes), presence of other materials, the manner of application, or other factors, all of which are beyond the control of SePRO Corporation as the seller. All such risks shall be assumed by the buyer.

Limitation of Remedies

The exclusive remedy for losses or damages resulting from this product (including claims based on contract, negligence, strict liability, or other legal theories) shall be limited to, at SePRO Corporation's election, one of the following:

1. Refund of purchase price paid by buyer or user for product bought, or
2. Replacement of amount of product used.

SePRO Corporation shall not be liable for losses or damages resulting from handling or use of this product unless SePRO Corporation is promptly notified of such losses or damages in writing. In no case shall SePRO Corporation be liable for consequential or incidental damages or losses.

The terms of the *Warranty Disclaimer* above and this Limitation of Remedies can not be varied by any written or verbal statements or agreements. No employee or sales agent of SePRO Corporation or the seller is authorized to vary or exceed the terms of the *Warranty Disclaimer* or *Limitations of Remedies* in any manner.

Specimen Label

Nautique*

Aquatic Herbicide

For control of floating, emersed, and submersed vegetation in still or flowing aquatic sites such as potable water sources, lakes, rivers, reservoirs, and ponds, slow-flowing or quiescent water bodies, crop and non-crop irrigation systems (canals, laterals, and ditches), fish, golf course, ornamental, swimming, and fire ponds and aquaculture including fish and shrimp.

Active Ingredient	
Copper Carbonate†	15.9%
Inert Ingredients	84.1%
TOTAL	100.0%

†Metallic copper equivalent, 9.1%.

Keep Out of Reach of Children

DANGER / PELIGRO

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand the label, find someone to explain it to you in detail.)

Precautionary Statements

Hazards to Humans and Domestic Animals

DANGER: Corrosive. Causes irreversible eye damage and skin burn. May be fatal if absorbed through skin. Harmful if swallowed. Do not get in eyes on skin or on clothing. Wear goggles, face shield, or safety glasses, protective clothing and chemical-resistant gloves. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. Wash thoroughly with soap and water after handling and before eating, drinking and using tobacco. Remove contaminated clothing and wash before reuse.

Environmental Hazards

Fish toxicity is dependent on the hardness of the water. In soft water, trout and other species of fish may be killed at application rates recommended on this label. Do not use in waters containing trout or other sensitive species if the carbonate hardness of the water is less than 50 ppm. Fish toxicity generally decreases when the hardness of water increases. Do not treat more than one-half of lake or pond at one time to avoid depletion of oxygen levels due to decaying vegetation. Consult State Fish and Game Agency or other responsible Agency before applying this product to public waters.

First Aid	
If in eyes	• Hold eye open and rinse slowly and gently with water for 15 - 20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. • Call poison control center or doctor for treatment advice.
If on skin or clothing	• Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15 – 20 minutes. • Call a poison control center or doctor for treatment advice.
If swallowed	• Call a poison control center or doctor immediately for treatment advice. • Have person sip a glass of water if able to swallow. • Do not induce vomiting unless told to do so by a poison control center or doctor. • Do not give anything by mouth to an unconscious person.
If inhaled	• Move person to fresh air. • If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. • Call a poison control center or doctor for further treatment advice.
Note to Physician: Probable mucosal damage may contraindicate the use of gastric lavage. Have the product container or label with you when calling a poison control center or doctor, or going for treatment. In case of emergency endangering health or the environment involving this product, call **INFOTRAC** at **1-800-535-5053**.	

Refer to inside of label booklet for additional precautionary information and Directions for Use.

Notice: Read the entire label before using. Use only according to label directions. Before buying or using this product, read **"Warranty Disclaimer", "Inherent Risks of Use"** and **"Limitation of Remedies"** inside label booklet.

For product information, visit our web site at **www.sepro.com**.

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FPL 070705

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SePRO Corporation Carmel, IN 46032 U.S.A.

Directions for Use

It is a violation of Federal Law to use this product in a manner inconsistent with its label directions.

GENERAL INFORMATION

Nautique may be applied to potable water sources, lakes, rivers, reservoirs, ponds, slow-flowing or quiescent water bodies, crop and non-crop irrigation systems (ditches, canals, and laterals), fish, golf course, ornamental, swimming, and fire ponds, and aquaculture including fish and shrimp. In waters with greater calcium carbonate hardness, the higher use rates are recommended for improved plant control.

Target Species

Nautique Aquatic Herbicide is a double chelated copper formulation that provides effective control of floating, submersed, and emersed aquatic plants having a sensitivity to copper absorption including:

Coontail
Curlyleaf Pondweed
Egeria (*Brazilian Elodia*)
Elodea
Eurasian Watermilfoil†
Horned Pondweed†
Hydrilla
Naiads
Thin Leaf Pondweed
Vallisneria
Water Lettuce
Water Hyacinth
Widgeon Grass
Pondweed (e.g., Sago, American,)†

†Variable control may be obtained in waters with greater calcium carbonate hardness.

Timing of Treatments

When target vegetation is actively growing, apply Nautique Aquatic Herbicide to the area of greatest concentration of foliage in such a way as to evenly distribute the herbicide. In lakes, reservoirs, ponds, and static canals, the application site is defined by this label as the specific location where Nautique is applied. In slow moving and flowing canals and rivers, the application site is defined by this label as the target location for plant control. In order to maximize effectiveness, apply Nautique early in the day under bright or sunny conditions when water temperatures are at least 60˚ F (15˚ C). The activity of this product may be reduced if there is insufficient penetration of light into the water or if the plants and weeds are covered with silt, scale, or algae. If algae mats are thick, use high pressure when spraying to break up the algae mats.

Dissolved Oxygen Consideration

Treatment of aquatic plants and weeds can result in a reduction of dissolved oxygen due to the decomposition of the dead vegetation. This loss of dissolved oxygen can cause fish suffocation. To minimize this possible hazard treat 1/3 to 1/2 of the water area in a single operation, then wait 10 - 12 days before treating the remaining area. Begin treatment in the shallow areas, gradually proceeding outward in bands to permit the fish to move into the untreated area.

Application Options

Nautique Aquatic Herbicide can be applied directly as a surface spray, subsurface through trailing weighted hoses, or in combination with other aquatic herbicides and algaecides, surfactants, sinking agents, polymers, or penetrants. These products are used to improve the retention time, sinking, and distribution of the herbicide. For surface application, this product may be applied diluted or undiluted, whichever is most suitable to insure uniform coverage of the area to be treated.

Aquatic plants and weeds will typically drop below the surface within 4 - 7 days after treatment. The complete results of treatment will be observed in 3 - 4 weeks in most cases. In heavily infested areas a second application may be necessary after 10 - 12 weeks. Repeating application of this product too soon after initial application may have no effect.

Use the lower rates for treating shallow water and the higher rates for treating deeper water and heavier infestations. Surface applications may be made from shore into shallow water along the shoreline.

Nautique Aquatic Herbicide inverts easily using either tank-mix or multi-fluid mixer techniques. For submersed plants invert applications should be made through weighted hoses dragged below the water surface; for heavy infestations, direct application is preferable.

NO RESTRICTIONS ON WATER USE

Waters treated with Nautique may be used immediately after application for swimming, fishing, drinking, livestock watering, or irrigating turf and ornamental plants.

Permits

Some states may require permits for the application of this product to public waters. Check with your local authorities.

APPLICATION RATES

Recommended application rates in the chart below are based on minimal water flow in ponds, lakes, reservoirs, and irrigation conveyance or drainage systems. Treatments that extend chemical contact time with target vegetation will generally result in improved efficacy. In lakes, reservoirs, ponds, and static canals, the application site is defined by this label as the specific location where Nautique is applied. In conveyance systems where significant water flow results in rapid off-site movement of copper, consult the Flowing Water Treatment Instructions for the recommended application instructions.

APPLICATION RATES		GALLONS PER SURFACE ACRE				LITERS PER SURFACE HECTARE			
		Depth in Feet				Depth in meters			
Relative Density	**ppm**	**1**	**2**	**3**	**4[2]**	**0.5**	**0.75**	**1.0**	**1.25[2]**
Low	**.5**	1.5	3.0	4.5	6.0	12.0	24.1	36.1	48.2
Density	**.6**	1.8	3.6	5.4	7.2	14.9	29.8	44.7	59.6
Medium	**.7**	2.1	4.2	6.3	8.4	17.2	34.4	51.6	68.8
Density	**.8**	2.4	4.8	7.3	9.6	19.5	39.0	58.5	78.0
High	**.9**	2.7	5.4	8.1	10.8	21.8	43.6	65.4	87.2
Density	**1.0[3]**	3.0	6.0	9.0	12.0	24.1	48.2	72.3	96.4

[1] For depths greater than 4 ft. (1.25 m) add rates given for the sum of the corresponding depths in the chart.
[2] Do not apply more than 1.0 ppm copper per application.

Free-Floating Plants Apply Nautique at a rate of 8 - 12 gallons/acre for control of water hyacinth and salvinia and 4 - 6 gallons/acre for control of water lettuce. Add Nautique and appropriate surfactant to 100 gallons of water and use an adequate spray volume to insure good coverage of the plant.

TANK-MIX

Nautique + Sonar* A.S. Tank-Mix (Except CA)

The following mixture can be used to provide rapid control of dense infestations of coontail, duckweed, egeria, elodea, Eurasian watermilfoil, hydrilla, sago and American pondweed, naiads, and other susceptible species. Apply 1 to 4 gallons of Nautique per surface acre in conjunction with normal Sonar rates. Observe all cautions and restrictions on the labels of both products used in this mixture.

Nautique + Reward® Tank-Mix

The following mixture can be used to enhance control of coontail, duckweed, egeria, elodea, Eurasian watermilfoil, hydrilla, pondweeds (Potamogeton species), salvinia, water lettuce, water hyacinth, and other susceptible species. Tank-mix a ratio of 2:1 or 1.5:1 Nautique to Reward. This can be applied as a tank mix or metered in as a concentrate. The addition of a surfactant is recommended to enhance performance on floating plants. Observe all cautions and restrictions on the labels of both products used in this mixture. **DO NOT MIX CONCENTRATES IN TANK WITHOUT FIRST ADDING WATER.**

FLOWING WATER TREATMENT:

Drip System or Metering Pump Application for Canals, Ditches, and Laterals

This product should be applied as soon as submersed macrophytes begin to interfere with normal delivery of water (clogging of lateral head gates, suction screens, weed screens, and siphon tubes). Delaying treatment could perpetuate the problem causing massing and compacting of plants. Heavy infestations and low flows may result in pooling or uneven chemical distribution resulting in unsatisfactory control. Under these conditions increasing the water flow rate during application may be necessary. In flowing canals the application site is defined by this label as the target location for aquatic plant control.

To achieve desired control with Nautique herbicide in flowing waters, it is recommended that a minimum exposure period of three hours be maintained. Other factors to consider include: plant species and density of infestation and water temperature and hardness. Treatment on bright sunny days will tend to enhance efficacy of this product.

1. Treatment with Nautique requires accurate calculations of water flow rates. Devices that provide accurate flow measurements such as weirs or orifices are the preferred method, however, the volume of water to be treated may also be estimated using the following formula:

   Average width (ft.) x Average Depth (ft.) x
   Average Velocity (ft./sec.) = Cubic Feet per Second (CFS)

   The velocity can be estimated by determining the length of time it takes a floating object to travel a defined distance. Divide the distance (ft.) by the time (sec.) to estimate velocity (ft./sec). This measure should be repeated 3 times at the intended application site and then calculate the average velocity.

2. After accurately determining the water flow rate in C.F.S. or gallons/minute, find the corresponding drip rate in the chart below.

Water Flow Rate		ppm Copper	Chemical Drip Rate	
C.F.S.	Gal/Min.		Quart/Hr.	Ml/Min.
1	450	0.5 – 1.0	0.5 – 1.0	8.0 – 16.0
2	900	0.5 – 1.0	1.0 – 2.0	16.0 – 32.0
3	1350	0.5 – 1.0	1.5 – 3.0	23.5 – 47.0
4	1800	0.5 – 1.0	2.0 – 4.0	31.5 – 63.0
5	2250	0.5 – 1.0	2.5 – 5.0	39.5 – 79.0

Calculate the amount of product needed to maintain the drip rate for a treatment period of 3 or more hours by multiplying quart/hr x 3; ml / min. by 180; or fl. oz. / min x 180. Dosage will maintain 1.0 ppm copper concentration in the treated water for the treatment period. Introduction of the chemical should be made in the channel at weirs or other turbulence-creating structures to promote the dispersion of the chemical.

Pour the required amount of this product into a drum or tank equipped with a brass needle valve and constructed to maintain a constant drip rate. Use a stopwatch and appropriate measuring container to set the desired drip rate. Readjust accordingly if the canal flow rate changes during the treatment period. This product can also be applied by using metering pumps that adjust to flow rates in the canal.

Results can vary depending upon species and density of vegetation, desired distance of control and flow rate, and impact of water quality on copper residues and efficacy. Consult an Aquatic Specialist to determine optimal use rate and treatment period under local conditions. Periodic maintenance treatments may be required to maintain seasonal control.

Irrigation Ponds

When applying to irrigation ponds, it is best to hold water for a minimum of 3 hours before irrigating to ensure proper exposure of Nautique at targeted rates to plants. If water is to be continually pumped from the treated system during application, application techniques (drip, injection, or multiple spray applications) should be made to compensate for dilution of Nautique within the targeted area.

GENERAL TREATMENT NOTES

The following suggestions apply to the use of this product as an algaecide or herbicide in all approved use sites. For optimum effectiveness:

- Apply early in the day under calm, sunny conditions when water temperatures are at least 60˚ F.
- Treat when growth first begins to appear or create a nuisance, if possible.
- Apply in a manner that will ensure even distribution of the chemical within the treatment area.
- Re-treat areas if regrowth begins to appear and seasonal control is desired. Allow one to two weeks between consecutive treatments.
- Allow seven to ten days to observe the effects of treatment (bleaching and breaking apart of plant material).

Storage and Disposal

Store in a cool, dry place.

PESTICIDE DISPOSAL: Do not contaminate water, food or feed by storage and disposal. Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility. Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

CONTAINER DISPOSAL: Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or incinerate, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

Warranty Disclaimer

SePRO Corporation warrants that the product conforms to the chemical description on the label and is reasonably fit for the purposes stated on the label when used in strict accordance with the directions, subject to the inherent risks set forth below. SEPRO CORPORATION MAKES NO OTHER EXPRESS OR IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER EXPRESS OR IMPLIED WARRANTY.

Inherent Risks Of Use

It is impossible to eliminate all risks associated with use of this product. Plant injury, lack of performance, or other unintended consequences may result because of such factors as use of the product contrary to label instructions (including conditions noted on the label, such as unfavorable temperatures, soil conditions, etc.), abnormal conditions (such as excessive rainfall, drought, tornadoes, hurricanes), presence of other materials, the manner of application, or other factors, all of which are beyond the control of SePRO Corporation as the seller. All such risks shall be assumed by the buyer.

Limitation of Remedies

The exclusive remedy for losses or damages resulting from this product (including claims based on contract, negligence, strict liability, or other legal theories) shall be limited to, at SePRO Corporation's election, one of the following:

1. Refund of purchase price paid by buyer or user for product bought, or
2. Replacement of amount of product used.

SePRO Corporation shall not be liable for losses or damages resulting from handling or use of this product unless SePRO Corporation is promptly notified of such losses or damages in writing. In no case shall SePRO Corporation be liable for consequential or incidental damages or losses.

The terms of the Warranty Disclaimer above and this Limitation of Remedies can not be varied by any written or verbal statements or agreements. No employee or sales agent of SePRO Corporation or the seller is authorized to vary or exceed the terms of the Warranty Disclaimer or Limitations of Remedies in any manner.

Appendix B
Biological Reconnaissance Survey of the Byron-Bethany Irrigation District Canal System and Receiving Waters Spill Points

Biological Reconnaissance Survey of the Byron-Bethany Irrigation District Canal System and Receiving Waters Spill Points

PREPARED FOR: Byron-Bethany Irrigation District

PREPARED BY: Jessica Birnbaum/CH2M HILL

DATE: October 8, 2014

Introduction

A reconnaissance-level survey was conducted on September 30, 2014, to characterize the distribution and relative abundance of general and sensitive biological resources within the Byron-Bethany Irrigation District (BBID or District). The primary focus was to characterize the area's habitat and potential species residing in the canal system and receiving waters that are potentially influenced by waters treated with the copper-based herbicides Nautique and Captain. This included canal channels, spill point locations, and downstream areas of Kellogg and Mountain House Creeks. Emphasis was placed on areas that are located below the high-water mark. Observations of surrounding upland areas are anecdotal and provide information about the overall habitat within BBID. The survey focused on identifying potential special-status species habitat, wetlands, and wildlife movement corridors.

Survey Area Description

BBID encompasses approximately 19,000 acres within portions of Alameda and Contra Costa Counties. BBID manages approximately 20 miles of canals that provide water to 10,500 irrigable acres. BBID is divided into two service divisions, the Bethany and the Byron. The Byron Division extends from the California Aqueduct north to the western edge of Discovery Bay (Initial Study Figure 1-1). The Bethany Division extends along the eastern base of the Altamont Hills from Highway 580 north to the California Aqueduct. BBID is located on the Midway, Clifton Court Forebay, Byron Hotsprings, Brentwood, and Woodward Island U.S. Geological Survey (USGS) topographic quadrangles.

The irrigation district is dominated by agricultural lands and escalating residential development. The canals are primarily located adjacent to the agricultural fields that they serve, including orchards, vineyards, and row crops. Adjacent open land or ruderal[1] fields are used for grazing. Important habitat features that occur within the District include creeks, vernal pools, wetlands, reservoirs, and stock ponds.

Of BBID's 20 miles of canals, 8.5 miles are concrete lined, and the remaining 11.5 miles are maintained earthen channels. Canal inundation and water delivery is scheduled to coincide

[1] Ruderal: growing where the natural vegetational cover has been disturbed by humans.

with seasonal irrigation needs; therefore, operation typically starts by March and extends into October. The canal system crosses several natural drainages including Kellogg and Mountain House Creeks. Flow in the canals is siphoned under Mountain House creek. The canals include structures (spill points) that allow canal water to flow into the various creeks during high-flow periods. The canal also includes spill points into Kellogg and Mountain House Creeks. During the off-season, the Kellogg Creek and Mountain House Creek spill points are opened to prevent rainwater from accumulating in the canal system. The spill points are closed prior to irrigation season, when the canals are inundated. During canal use, spill into these two drainages is limited to events when canal capacity is exceeded.

During periods of extended inundation, algal blooms and pond weeds accumulate in the canals and create delivery system service problems. The copper herbicides Nautique and Captain are used to control the growth of algae and aquatic weeds (including Hydrilla and other aquatic weeds with a sensitivity to copper absorption) in irrigation systems. The use of copper herbicides for this purpose is a common practice in warm, dry areas of California's Central Valley. BBID previously used acrolein to control aquatic weeds in its irrigation canals; however, acrolein has been phased out by its producer. In 2014, BBID began using endothall herbicides to control aquatic vegetation in the irrigation canals with moderate success, although a stronger herbicide is needed for complete control of the aquatic weeds. Before 1986, aquatic weeds were controlled by mechanical means; however, mechanical removal or physical treatment are not cost-effective canal maintenance techniques for the District. BBID has therefore selected the copper herbicides Nautique and Captain as the most adequate and cost-effective complement to endothall herbicides for ensuring canal functionality and control. BBID does not spray access roads or canal banks.

Prior to each herbicide application event, canal water levels are dropped to minimize potential spill into Kellogg and Mountain House Creeks. Water levels are typically raised for 1 day following herbicide application.

Methods

Prior to the reconnaissance survey, relevant information from database and literature searches was compiled. The California Natural Diversity Database (CNDDB) and U.S. Fish and Wildlife Service (USFWS) county and quadrangle-specific species lists were used to search for federal and state special-status plant and wildlife species known to occur in the general vicinity (CNDDB, 2014; USFWS, 2014). The CNDDB and USFWS list searches were based on the USGS topographical quadrangles (Midway, Clifton Court Forebay, Byron Hotsprings, Brentwood, and Woodward Island) in which BBID is located.

The reconnaissance survey was conducted on September 30, 2014. Activities conducted during the survey included driving the levee roads of representative sections of the canal system and conducting foot surveys of the spill locations at Kellogg and Mountain House Creeks.

Results and Discussion

Database and Literature Search

The database and literature searches resulted in a list of special-status plant and wildlife species previously identified and/or potentially occurring in the vicinity of the surveyed

areas[2]. The list is included as a table in Attachment A. The table also includes habitat typically associated with each species, critical seasonal periods associated with the species' natural history, and general comments.

Reconnaissance Survey

The reconnaissance survey was performed during the early fall. Some early blooming annuals were not present during the survey because their blooming time is in spring and because overall wildlife activity was fairly low. The following results must be considered with these limitations. A general assessment was made regarding the biological resources in BBID and the potential for plant and wildlife species associated with the general vicinity. Background information from the literature search and database search results were instrumental in understanding the area's resource potential. Representative photographs were taken within the project area and are included at the end of this memo.

General Setting

BBID's general setting is typical of the San Joaquin Valley-Delta region. The area experiences a dry Mediterranean climate moderated by fog and strong winds. The landscape has been highly modified by a long history of farming and cattle ranching. The majority of the surrounding land is in agricultural production and residential development. Remaining open lands are characterized as nonnative grasslands and are used for cattle grazing. Some of these areas have retained their natural topography and continue to support habitat features such as swales and vernal pools. These areas provide important habitat for a variety of common and special-status species, and at some locations, these areas are preserved as mitigation banks (e.g., Brushy Creek Conservation Bank). Agricultural fields and open land is being converted to residential development. Large housing communities such as the Mountain House development have spread northwest into BBID from the City of Tracy.

BBID abuts the Altamont Hills and Diablo Range to the west. This region of the Coastal Range is primarily undeveloped and is dominated by large expanses of nonnative grassland that provide important habitat for a range of special-status species, including various fairy shrimp species, California tiger salamander (*Ambystoma californiense*), California red-legged frog (*Rana aurora draytonii*), and golden eagle (*Aquilla chrysaetos*).

Rolling hills and numerous swales direct surface water flow to four primary drainages within BBID: Kellogg, Frisk, Brushy, and Mountain House Creeks (Frisk and Brushy creeks were not considered potential receiving waters during the Nautique and Captain application period because a spillway into them from the canals does not exist). These drainages flow northeast toward the San Joaquin Delta and have been highly modified as a result of past agricultural and cattle ranching practices. Kellogg and Mountain House Creeks have been channelized and no longer follow their original courses. Upstream (west) of BBID, the creeks have been modified in various locations to create stock ponds.

The reconnaissance survey was conducted after a period of moderate rainfall. Kellogg Creek had some water flow. No water was present in Mountain House Creek. Flow in Kellogg

[2] The usefulness of the CNDDB and USFWS references depends upon the number of previous surveys performed in the area, and whether special-status species observations have been properly reported to the CNDDB database. Therefore, these references are only used as an indicator of the species that could potentially occur and are not intended to provide an exhaustive list.

Creek is primarily attributed to seepage from the California Aqueduct and Delta Mendota Canal (DMC) (Gilmore, 2014).

Vegetative Communities

At the time of the survey, the canals were filled to average height (Mehring, 2014), and sparse vegetation was growing above the water line where the channel was not lined with concrete (earthen channel). Rooted vegetation was limited to nonnative grasses in the earthen channel of the Kellogg Creek portion of the canal system. Aquatic species such as algae and pond weeds were present in the canals during the survey. To minimize irrigation delivery issues, BBID continues a long practice of vegetation management in the canal system.

Kellogg Creek. The majority of Kellogg Creek within the project area has a creek bank that is a modified and maintained channel with engineered uniform side slopes and a flat bottom. This channel is maintained by the District, and vegetation control is performed (Photo 1). Some riparian vegetation is found along the channel levee (Photo 2). Low ephemeral flows limit the establishment of significant wetland and emergent vegetation in the creek bottom. Portions of Kellogg Creek within the BBID boundary contain a few landscaped trees along the outside levee, and no in-channel vegetation (Photo 3). A radial gate is located in Kellogg Creek immediately downstream of the perpendicular crossing of 45 Canal and Kellogg Creek. As irrigation water from the 45 Canal south of Kellogg Creek flows, the radial gate prevents irrigation water from flowing downstream and allows the District to bifurcate irrigation flows of the northern extension of the 45 Canal.

Directly downstream of the radial gate, the 45 Canal is channelized but is less maintained. The channel is narrow (approximately 10 to 15 feet wide), and the banks are vegetated with dense black berry (*Rubus vitifolius*), small patches of willow (*Salix* sp.), and a variety of nonnative plants (Photo 4). Low ephemeral flows limit the establishment of significant wetland and emergent vegetation in the creek bottom.

Mountain House Creek. Mountain House Creek is located at the bottom of a deep and wide channel (Photo 5). Vegetation has been subjected to long-term cattle grazing, although cattails grow along the stream margins and occasional willows are located within the channel (Photo 6). Some small mammal activity occurs along the banks of Mountain House Creek (Photo 7). The BBID canal system passes underneath the creek; however, a spillway diverts off-season runoff and irrigation overflow into the creek. A creek restoration effort was observed immediately downstream of the BBID crossing, adjacent to a residential development, and includes public access trails along with riparian vegetation plantings.

Wildlife

Despite significant habitat modification and agricultural and residential development, the general area provides habitat for a wide range of common wildlife species.

The creeks, swales, canals, and ditches provide habitat for amphibian species such as Pacific treefrog (*Hyla regilla*). This species was heard at several locations during the reconnaissance visit. Perennial water sources such as stockponds likely support the nonnative bullfrog (*Rana catesbeiana*). This species is abundant in the Delta Region and is considered to have a negative impact on native species such as California red-legged frog.

Western fence lizard (*Sceloporus occidentalis*) is common in the area, as are other reptile species such as Pacific gopher snake (*Pituophis melanoleucus catenifer*).

Observed bird species such as the mourning dove (*Zenaida macroura*), American crow (*Corvus brachyrhynchos*), western scrub-jay (*Aphelocoma coerulescens*), American robin (*Turdus migratorius*), and Northern mocking bird (*Mimus polyglottos*) are common in residential and otherwise disturbed areas. Black phoebes (*Sayornis nigricans*) are typically associated with waterbodies and were observed hawking insects over the canals and creeks. Killdeer (*Charadrius vociferus*), great egrets (*Ardea alba*), and western meadowlarks (*Sturnella neglecta*) were observed foraging in adjacent grassland areas.

BBID uses rodenticides along the canals to prevent burrowing in levees. Small mammals such as California ground squirrel (*Spermophilus beecheyi*) are difficult to control, and signs of their burrowing activity were evident throughout the area. Ground squirrels and other small mammals provide prey for raptor species such as red-tailed hawks (*Buteo jamiacensis*), which were seen circling over grassland and agricultural fields. American kestrels (*Falco sparverius*) were observed perched on roadside utility lines. Coyotes (*Canis latrans*) are likely common in the area, traveling between the Delta and the Altamont Hills.

Special-Status Species

Lands within the area include documented habitat for a variety of special-status wildlife species. Vernal pools provide habitat for special-status fairy shrimp (for multiple species, see Attachment A) and also provide important breeding habitat for California tiger salamanders (*Ambystoma californiense*) that occupy burrows and other cover sites in the surrounding grassland areas adjacent to the canals. California tiger salamanders are active during the winter rainy season and likely crawl through the BBID canals that bisect portions of their grassland habitat. However, they are typically underground during the BBID late spring and summer irrigation season and would not be adversely affected by the application.

Burrowing owls (*Athene cunicularia hypugaea*) have also been observed in the grassland areas and also use ground squirrel burrows in modified areas such as the canal levees. San Joaquin kit fox (*Vulpes macrotis mutica*) likely use the creeks and canal systems as movement corridors. However, it is unlikely that these terrestrial species would be adversely affected by the regulated use of copper herbicides.

California red-legged frogs (*Rana aurora draytonii*) and western pond turtles (*Clemmys marmorata*) have been recorded in the CNDDB in local stock ponds adjacent to Kellogg and Mountain House Creeks. Both species are typically associated with perennial water habitats with deep water refugia. It is not likely that these species would be found in the shallow water of downstream habitat in Kellogg and Mountain House Creeks. California red-legged frogs and western pond turtles may use these portions of the creeks as movement corridors between habitats.

The BBID canal system itself is not likely to provide significant habitat for special-status plant and wildlife species. The ephemeral inundation of the canal system and the distribution of water through pumps, gates, and siphons are not conducive to aquatic species. The curved-foot hygrotus diving beetle (*Hygrotus curvipes*), a state species of concern, is the only species reported in the CNDDB records as having been observed within

the canal system. This species is also found in the surrounding creeks and stock ponds. Although this species has been known to occur in the BBID canals, the canals are not considered high-quality habitat for this invertebrate species.

Stock ponds and in-stream pools located along Kellogg and Mountain House Creeks upstream of the BBID canal crossings are known to provide habitat for special-status species such as California red-legged frogs and western pond turtles. Kellogg Creek is ephemeral and is likely dry during the irrigation season. It is unlikely that the downstream portions of Kellogg Creek provide habitat for aquatic species or for special-status species such as the California red-legged frog and the western pond turtle during the spring and summer.

Leakage from the California Aqueduct and DMC is responsible for maintaining Mountain House Creek as a perennial drainage. Spring and summer flows are likely of low volume but last long enough to support wetland and riparian vegetation and provide potential habitat for the California red-legged frog.

Conclusions

BBID is a historical agricultural area further developed by encroaching residential development. Areas not converted to crops or homes and business are used for cattle grazing. Native plant and wildlife species can be found throughout the area. Some special-status species remain in limited numbers in developed areas; however, the majority of potentially significant suitable habitat for these species exists in nonnative grassland areas.

The BBID canals provide limited habitat. Vegetation control has been effective in keeping the canal beds free of significant rooted vegetation. The canals only hold water during the spring and summer irrigation season. The ephemeral flow and regular channel maintenance activities create unsuitable habitat conditions for aquatic plant and animal species, including special-status species. Therefore, it is unlikely that special-status species would be found in the canal channels during copper-herbicide application periods and, therefore, they would be unlikely to be adversely affected.

References

Mehring, Scott/BBID. 2014. Personal communication with Scott Mehring/BBID. September 30, 2014.

California Natural Diversity Database (CNDDB). 2014. Midway, Clifton Court Forebay, Byron Hotsprings, Brentwood, and Woodward Island USGS topographical quadrangles. 2014. Sacramento, California: California Department of Fish and Game. State of California Resources Agency.

Gilmore, Rick/BBID. 2014. Personal communication with Rick Gilmore/BBID. September 30, 2014.

U.S. Fish and Wildlife Service (USFWS). 2014. Sacramento Fish and Wildlife Office Endangered Species Lists Web site. Database Last Updated: September 3, 2014. Accessed on September 29. http://sacramento.fws.gov/es/spp_list.htm.

Photographs

Photo 1. Northernmost reach of 45 Canal within BBID, looking southwest.

Photo 2. 120 Canal east of Mountain House Road within BBID, looking northwest.

Photo 3. 45 Canal where it runs just north of Kellogg Creek within BBID, looking east.

Photo 4. Kellogg Creek where it runs just south of 45 Canal within BBID, looking east.

Photo 5. Mountain House Creek where it intersects with 155 Canal within BBID, looking southwest.

Photo 6. Mountain House Creek where it intersects with 155 Canal within BBID, looking east. Housing development can be seen behind trees in background.

Photo 7. Small mammal burrows are visible along southeastern bank of Mountain House Creek.

Attachment A Special-Status Species Potentially Occurring in the Byron-Bethany Irrigation District Vicinity

Table A-1 Special-status Species Potentially Occurring in the BBID Vicinity

Common Name	Scientific Name	Status Federal/State	Critical Seasonal Periods and Comments
PLANTS			
Large-flowered fiddleneck	*Amsinckia grandiflora*	FE, 1B	Typically associated with woodland and grassland habitats.
Alkali milk-vetch	*Astragalus tener* var*. tener*	FSC, 1B	Associated with vernal pools, alkali flats, and low areas in grassland habitats.
Contra costa manzanita	*Arctostaphylos manzanita ssp. laevigata*	1B	Endemic to California.
Heartscale	*Atriplex cordulata*	FSC, 1B	Endemic to California. Typically associated with alkaline areas within chenopod scrub, meadows, and grassland habitats.
Brittlescale	*Atriplex depressa*	FSC, 1B	Endemic to California. Typically associated with alkaline areas of chenopod scrub, meadows, vernal pools, and grassland habitats.
San Joaquin spearscale (=saltbush)	*Atriplex joaquiniana*	FSC, 1B	Endemic to California. Typically associated with alkaline areas of chenopod scrub, meadows, and grassland habitats.
Big tarplant	*Blepharizonia plumosa* ssp*. plumosa*	FSC, 1B	Typically associated with grassland habitats. Often found on slopes and recently burned areas.
Round-leaved filaree	*California macrophylla*	1B	Typically associated with clay soils, Cismontane woodland, and valley and foothill grassland.
Mt. Diablo fairy-lantern	*Calocortus pulchellus*	1B	Typically associated with chaparral, Cismontane woodland; Riparian woodland, Valley and foothill grassland.
Lemon’s jewel flower	*Caulanthus lemmonii*	1B	Endemic to California. Typically associated with pinyon and juniper woodland, and valley and foothill grassland
Congdon’s tarplant	*Centromadia parryi ssp. congdonii*	1B	Typically associated with alkaline valley and foothill grasslands.

Table A-1 Special-status Species Potentially Occurring in the BBID Vicinity

Common Name	Scientific Name	Status Federal/State	Critical Seasonal Periods and Comments
Recurved larkspur	*Delphinium recurvatum*	FSC, 1B	Typically associated with alkaline soils in chenopod scrub, cismontane woodland, and grassland communities.
Hospital canyon larkspur	*Delphinium californicum ssp. interius*	1B	Typically associated with foothill woodlands. Usually occurs in non-wetlands, but occasionally found in wetlands.
Spiny-sepaled button-celery	*Eryngium spinosepalum*	1B	Typically associated with valley and foothill grassland, vernal pools.
Delta button-celery	*Eryngium racemosum*	FSC, CE, 1B	Endemic to California. Herbaceous biennial. Blooms June to September. Typically found in seasonally moist floodplains on heavy clay soils.
Diamond-petaled California poppy	*Eschscholzia rhombipetala*	FSC, 1B	Typically associated with alkaline and clay soils in grassland habitats.
Brewer's western flax	*Hesperolinon breweri*	1B	Typically associated with serpentine; Chaparral, Cismontane woodland, valley and foothill grasslands
Rose mallow	*Hibiscus lasiocarpus*	1B	Typically associated with freshwater marshes in the Delta.
Contra Costa goldfields	*Lasthenia conjugens*	FE, 1B	Associated with vernal pools, swales, and depressions in grassland and woodland habitats.
Delta tule-pea	*Lathyrus jepsonii* var. *jepsonii*	FSC, 1B	Endemic to California. Typically associated with freshwater and brackish marshes of the Delta.
Mason's lilaeopsis	*Lilaeopsis masonii*	FSC, 1B	Endemic to California. Typically associated with freshwater and brackish marshes, and riparian habitat. Usually grows in muddy or silty soils.
Showy madia	*Madia radiata*	FSC, 1B	Typically associated with clay soil in grassland, cismontane woodland, and chenopod scrub habitats.
Little mousetail	*Myosurus minimus* ssp. *apus*	FSC	Typically associated with vernal pool habitat.

Table A-1 Special-status Species Potentially Occurring in the BBID Vicinity

Common Name	Scientific Name	Status Federal/State	Critical Seasonal Periods and Comments
Shining navarretia	*Navarretia nigelliformis ssp. radains*	1B	Typically associated with vernal pools or on flats with alkaline or saline clay soils. It blooms February through May.
Antioch Dunes evening-primrose	*Oenothera deltoids ssp. howellii*	FE, 1B	Endemic to California. Typically associated with coastal dune communities.
Suisun marsh aster	*Symphiotrychum lentum*	1B	Endemic to California. Typically associated with freshwater and brackish-marsh habitats.
Showy Indian clover	*Trifolium amoenum*	FE, 1B	Typically associated with grassland and coastal bluff scrub habitat. Often grows in disturbed areas such as roadsides. Also found on serpentine soils.
Caper-fruited tropidocarpum	*Tropidocarpum capparideum*	FSC, CNPS	Typically associated with alkaline areas in grassland habitat.
INVERTEBRATES			
Conservancy fairy shrimp	*Branchinecta conservatio*	FE	Vernal pools in grassland habitat.
Longhorn fairy shrimp	*Branchinecta longiantenna*	FE	Endemic to the east foothills of the Central Coast Mountains. Found in vernal pools on sandstone depressions or grassland swales.
Vernal pool fairy shrimp	*Branchinecta lynchi*	FT	Endemic to California. Found in vernal pools.
Midvalley fairy shrimp	*Branchinecta mesovallensis*	FSC	Endemic to vernal pools in the Central Valley.
Vernal pool tadpole shrimp	*Lepidurus packardi*	FE	Found in vernal pools and swales in grassland habitat.
Longhorn fairy shrimp	*Branchinecta longiantenna*	FE	Endemic to the east foothills of the Central Coast Mountains. Found in vernal pools on sandstone depressions or grassland swales.
California linderiella fairy shrimp	*Linderiella occidentalis*	FSC	Vernal pools in grassland habitat.

Table A-1 Special-status Species Potentially Occurring in the BBID Vicinity

Common Name	Scientific Name	Status Federal/State	Critical Seasonal Periods and Comments
Valley elderberry longhorn beetle	*Desmocerus californicus dimorphus*	FT	Endemic to the Central Valley. Found on host plant, blue elderberry (*Sambucus mexicana*), and typically in riparian habitat.
Molestan blister beetle	*Lytta molesta*	FSC	Endemic to Central California.
Curved-foot hygrotus diving beetle	*Hygrotus curvipes*	FSC	Endemic to Alameda and Contra Costa counties. Highly aquatic.
FISHES			
River lamprey	*Lampetra ayresi*	FSC, CSC	Found in the Lower Sacramento, San Joaquin, and Russian rivers as well as coastal streams north of San Francisco.
Pacific lamprey	*Lampetra tridentata*	FSC	Parasitic. Anadromous. Found in the Sacramento-San Joaquin river system and Pacific coastal waters. Juveniles migrate from the sea between July and September to winter in freshwater until March. Spawn from April to July. The adults usually die after spawning. The eggs hatch and young burrow in mud for 5 to 6 years before migrating out to sea.
Green sturgeon	*Acipenser medirostris*	FC, CSC	Spawn in the Sacramento and Klamath rivers.
Longfin smelt	*Spirinchus thaleichthys*	FSC, CSC	Often associated with estuaries but can be found in fresh to saltwater habitats.
Delta smelt	*Hypomesus transpacificus*	FT, CT	Endemic to the Delta.
hardhead	*Mylopharodon conocephalus*	CSC	Often found at low to midelevations in relatively undisturbed habitats of larger streams with high water quality (clear, cool). In the Sacramento River, however, they are common in both the mainstem and tributaries.
Sacramento splittail	*Pogonichthys macrolepidotus*	FT, CSC	Endemic to the Delta where they are associated with areas of slow moving water.

Table A-1 Special-status Species Potentially Occurring in the BBID Vicinity

Common Name	Scientific Name	Status Federal/State	Critical Seasonal Periods and Comments
Central Valley steelhead	*Oncorhynchus mykiss*	FT	Found in the Sacramento and San Joaquin rivers and their tributaries.
Central Valley spring-run chinook salmon	*Oncorhynchus tshawytscha*	FT, ST	Found in the Sacramento and San Joaquin rivers and their tributaries.
Central Valley fall/late fall-run chinook salmon	*Oncorhynchus tshawytscha*	FC, CSC	Found in the Sacramento and San Joaquin rivers and their tributaries.
Winter-run chinook salmon	*Oncorhynchus tshawytscha*	FE, CE	Spawn in the Sacramento River.
eulachon	*Thaleichthys pacificus*	CSC	Known to spawns in the lower reaches of coastal rivers and streams from southeastern Alaska to northern California.
AMPHIBIANS			
California tiger salamander	*Ambystoma californiense*	FPT, CSC	Santa Barbara and Sonoma County population's emergency listed as federally endangered. Associated with grassland or open woodland areas of central California. In winter, tiger salamanders take upland refuge in mammal burrows or crevices. Following substantial fall and winter rains, they migrate to nearby ponds and vernal pools for breeding.
California red-legged frog	*Rana aurora draytonii*	FT, CSC	Range includes all valley drainages emptying into the Sacramento River from Shasta County south, as well as coastal drainages from Point Arena south into northwestern Baja California. Typically associated with dense riparian areas with sufficient deep pool cover or slow moving water. Require aquatic habitat for breeding and utilize upland habitat for dispersal and cover. Typically begin breeding with the onset of large rainfall events from November through April. . Much of the adult diet includes tree frogs and small mammals which they typically capture at night.

Table A-1 Special-status Species Potentially Occurring in the BBID Vicinity

Common Name	Scientific Name	Status Federal/State	Critical Seasonal Periods and Comments
Foothill yellow-legged frog	*Rana boylii*	FSC, CSC	Found in partially shaded rocky-bottom streams in a variety of habitats.
Western spadefoot toad	*Spea hammondii*	FSC, CSC	Found in valley and foothill grasslands with vernal pool breeding habitat.
REPTILES			
Western pond turtle	*Emys marmorata*	CSC, FSC	Highly aquatic and is typically associated with riparian habitat including streams, rivers, sloughs, ponds, and artificial water bodies. Deep pools, basking sites, and aquatic vegetation are important components to their preferred habitat. Breeding season is typically between April to August. Female turtles lay eggs in an excavated chamber in upland habitat as much as 100 meters away from the water.. Adult turtles hibernate in the winter by burying themselves in muddy bottoms underwater or in upland soil and vegetative litter.
Silvery legless lizard	*Anniella pulchra pulchra*	FSC, CSC	Associated with sandy or loose soils with sparse vegetation and high moisture.
California horned lizard	*Phrynosoma coronatum frontale*	FSC, CSC	Endemic to California and is found Shasta County south to Los Angeles. Associated with a variety of habitat types but are most often found in dry shrubby open areas with gravel and sandy soils. Most active from March to October. Retreat to small mammal burrows or burrow into lose soil for extended periods of inactivity.
Giant garter snake	*Thamnophis gigas*	FT, CT	Endemic to the Central Valley. Found in freshwater marsh habitats and low gradient streams. Also found in irrigation ditches and flooded fields. Highly aquatic.
San Joaquin coachwhip (=whipsnake)	*Masticophis flagellum ruddocki*	FSC, CSC	Found in open grassland and saltbush scrub habitat.
Alameda whipsnake	*Masticophis lateralis euryxanthus*	FT, CT	Endemic to the valley and foothill hardwood habitat in the Coast Range from Monterey to San Francisco.

Table A-1 Special-status Species Potentially Occurring in the BBID Vicinity

Common Name	Scientific Name	Status Federal/State	Critical Seasonal Periods and Comments
BIRDS			
White-tailed kite	*Elanus leucurus*	FSC	Often found in grassland and agricultural areas. Nests are typically located in riparian areas. Breeding occurs between February and May.
Yellow-headed blackbird	*Xanthocephalus xanthocephalus*	CSC	Occurs primarily as a migrant and summer resident from April to early October; breeds from mid-April to late July (Twedt and Crawford 1995). Small numbers winter, mainly in the southern Central Valley and the Imperial and Colorado River valleys.
Grasshopper sparrow	*Ammodramus savannarum*	CSC	An uncommon and local, summer resident and breeder in foothills and lowlands west of the Cascade-Sierra Nevada crest from Mendocino and Trinity cos. south to San Diego Co. Occurs in dry, dense grasslands, especially those with a variety of grasses and tall forbs and scattered shrubs for singing perches.
Short-eared owl	*Asio flammeus*	CSC	A widespread winter migrant, found primarily in the Central Valley, in the western Sierra Nevada foothills, and along the coastline. Usually found in open areas with few trees, such as annual and perennial grasslands, prairies, dunes, meadows, irrigated lands, and saline and fresh emergent wetlands. Breeding range includes coastal areas in Del Norte and Humboldt counties, the San Francisco Bay Delta, northeastern Modoc plateau, the east side of the Sierra from Lake Tahoe south to Inyo county, and the San Joaquin valley.
Golden eagle	*Aquilla chrysaetos*	CSC	Found throughout North America and Mexico. More common in southern part of the state. Found in a variety of rugged open areas with available nesting sites. Build or reuse large stick nests located on cliff ledges, large trees, or other platforms. Breeding season typically begins in January and extends into August. In most areas the golden eagle is a local migrant though birds within the northern range may migrate south and east.

Table A-1 Special-status Species Potentially Occurring in the BBID Vicinity

Common Name	Scientific Name	Status Federal/State	Critical Seasonal Periods and Comments
Swainson's hawk (nesting)	*Buteo Swainsoni*	FSC, ST	Typically nest in tall riparian trees. Often forage in agricultural fields.
Ferruginous hawk (wintering)	*Buteo regalis*	FSC, CSC	Found in open grassland, sagebrush flats, desert scrub, and forested habitats. Rely heavily on rabbit prey.
Northern harrier	*Circus cyaneus*	CSC	Northern Harriers breed and forage in open habitats that provide adequate vegetative cover, an abundance of suitable prey, and scattered hunting, plucking, and lookout perches such as shrubs or fence posts. Such habitats include freshwater marshes, brackish and saltwater marshes, wet meadows, weedy borders of lakes, rivers and streams, annual and perennial grasslands (including those with vernal pools), weed fields, ungrazed or lightly grazed pastures, sagebrush flats, and desert sinks.
White-tailed kite	*Elanus leucurus*	FP	Common yearlong resident in coastal and valley lowlands; rarely found away from agricultural areas. Inhabits herbaceous and open stages of most habitats mostly in cismontane California.
California black rail	*Laterallus jamaicensis coturniculus*	FSC, CT	Associated with pickleweed dominated salt marshes. Also found in fresh water and brackish marshes.
Song sparrow	*Melospiza melodia*	CSC	Restricted to California, where it is locally numerous in the Sacramento Valley, Sacramento–San Joaquin River Delta, and northern San Joaquin Valley. Exact boundaries of range uncertain, but mapped distribution is conservative relative to prior attempts, which may have exaggerated the western and, particularly, eastern limits.
Greater sandhill crane (nesting and wintering)	*Grus canadensis tabida*	ST	Winter in open fields of the Central Valley. California nest sites in the northeastern portion of the state.

Table A-1 Special-status Species Potentially Occurring in the BBID Vicinity

Common Name	Scientific Name	Status Federal/State	Critical Seasonal Periods and Comments
Mountain plover	*Charadrius montanus*	FPT, CSC	Breeds elsewhere but winters in central and southern California. Associated with open habitats with low growing vegetation where they primarily forage on a variety of insects. They generally arrive in California in October and leave in the early spring.
Long-billed curlew (nesting)	*Numenius americanus*	FSC, CSC	Nest sites are often located in grasslands and wet meadows. Typically found on gravelly soil and gently rolling hills.
Double-crested cormorant	*Phalacrocorax auritus*	WL	A yearlong resident along the entire coast of California and on inland lakes, in fresh, salt and estuarine waters. August to May, fairly common to locally very common along the coast and in estuaries and salt ponds.
Western burrowing owl	*Athene cunicularia hypugaea*	FSC CSC	Associated with open prairies and grassland communities. In California, often associated with ground squirrel activity centers. Utilize mammal burrows for nesting and cover. Breeding season typically begins in late March.
Loggerhead shrike (nesting)	*Lanius ludovicianus*	FSC, CSC	Nest in a variety of wooded to open habitats. Numerous in the BBID.
Tricolored blackbird	*Agelaius tricolor*	FSC, CSC	Nest in colonies associated with fresh-water marsh thickets of cattails, tule, bulrushes and sedges. Typically nests in April-June.
MAMMALS			
Pacific western big-eared bat	*Corynorhinus* (=*Plecotus*) *townsendii townsendii*	FSC, CSC	Found throughout western North America. Typical associated with arid western desert scrub and pine forest habitat. Maternity colonies in mines, caves, or buildings. Hibernate in caves and abandoned mines.
Small-footed myotis bat	*Myotis ciliolabrum*	FSC	Ranges from southwestern Canada to central Mexico. Rear young in rock-face cracks and under rocks. Found hibernating in caves and mines.

Table A-1 Special-status Species Potentially Occurring in the BBID Vicinity

Common Name	Scientific Name	Status Federal/State	Critical Seasonal Periods and Comments
Yuma myotis bat	*Myotis yumanensis*	FSC	Found throughout much of the western states from British Columbia to Baja California and east to Colorado and Mexico. Widespread in California, excluding the southeastern deserts areas. Associated with a variety of habitats but are most common in open forests and woodland habitats near water. Forage almost exclusively over water. Daytime summer roost sites are typically located in buildings, mines, caves, or crevices. Night roosts are generally located in more open locations. Males roost separately from females who congregate in large maternal colonies. Maternal colonies can number in the thousands. These roosts are warm and are often shared with other bat species. Yuma myotis mate in the fall and give birth in late May to July.
San Joaquin pocket mouse	*Perognathus inornatus*	FSC	Typically associated with grassland and blue oak savannas.
Riparian (San Joaquin Valley) woodrat	*Neotoma fuscipes riparia*	FE, CSC	Endemic to the riparian habitat along the San Joaquin, Stanislaus, and Tuolumne rivers.
San Francisco dusky-footed woodrat	*Neotoma fuscipes annectens*	FSC, CSC	Associated with forest and chaparral habitat.
Riparian brush rabbit	*Sylvilagus bachmani riparius*	FE, CE	Endemic to the riparian habitat on the San Joaquin River in Northern Stanislaus County.
San Joaquin kit fox	*Vulpes macrotis mutica*	FE, CT	Primarily associated with the grassland, woodland, and scrub communities of the Central Valley. Utilize underground or artificial burrows for cover and natal dens. Den locations are frequently moved. Natal den preparation often begins in September. Mating typically takes place in December to March. Pups are born in February to March. Young then disperse in August to September.

Table A-1 Special-status Species Potentially Occurring in the BBID Vicinity

Common Name	Scientific Name	Status Federal/State	Critical Seasonal Periods and Comments

Key to Status Codes:

Federal:
FE – Federal Endangered
FPE – Federal Proposed Endangered FPT-Federal Proposed Threatened
FT – Federal Threatened
FSC – Federal Species of Concern
FC – Federal Candidate Species

State:
CE – State Endangered
CT – State Threatened
CSC – California Species of Special Concern

Other:
CNPS – California Native Plant Society Listed
1B – Plants, rare, threatened or endangered in California and elsewhere and are rare throughout their range. According to CNPS, all of the plants constituting List 1B meet the definitions of Sec. 1901,
FP – Fully Protected
R – Rare

Appendix C
Toxicological Profile for Copper Ethylenediamine, Copper Triethanolamine Complex, and Copper Ethanolamine Complex in Aquatic Systems

Toxicological Profile for Copper Ethylenediamine, Copper Triethanolamine Complex, and Copper Ethanolamine Complex in Aquatic Systems

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DATE: October 20, 2014

1.0 Introduction

Copper is a naturally occurring metal that is an essential element for all living organisms. It is plentiful in the environment, is efficiently regulated in biological systems, and is found naturally in all plants and animals (ATSDR, 2004; USEPA, 2009; Eisler, 2000). Copper is mined in the United States and is most often used as the metal or as an alloy for manufacturing wire, pipes, sheet metal, and other metal products (ATSDR, 2004). Additionally, copper pesticides in the form of either elemental copper or the cupric ion are regularly used in agriculture. Tens of millions of pounds of copper pesticides are applied annually as a fungicide in crop applications and as an algaecide in aquatic applications (USEPA, 2009).

For nearly a century, copper compounds have been used to control unwanted species of freshwater algae and macrophytes. For example, copper sulfate has been used at low concentrations to control freshwater algae in Wisconsin since 1918 and is still in wide use today. Copper triethanolamine produces a higher concentration of cupric ions in the water column compared to some other copper compounds (e.g., copper sulfate) and therefore, has a greater efficacy per weight of copper applied (Wells, 1994). Organic compounds such as ethanolamines or ethanolamine complexes chelate copper, as does sulfate. A chelate is a metal such as copper that is attached to an anion (i.e., a negatively charged group). This chelate protects copper from precipitation and complexation with other ligands (Eisler, 2000), and produces a more effective algaecide in hard water (Wells, 1994).

There are many forms of copper-containing active ingredients, but the Cu^{+2} oxidation state or the cupric ion is of the greatest toxicological concern due to its reactive nature (USEPA, 2009). This toxicological profile is focused on three copper compounds. Copper ethylenediamine complex (CED) and copper triethanolamine complex (CTE) are the active incredients in the aquatic herbicide Nautique®, and copper ethanolamine complex (CE) is the active incredient in Captain®, a liquid copper algaecide. The product labels for both of these products indicate they are toxic to fish and aquatic invertebrates. Additionally, product application instructions for both state that certain water conditions, including low pH (<6.5), low dissolved organic carbon levels (3.9 mg/L or lower), and soft waters (alkalinity less than 50 mg/L) increase the potential for acute toxicity. It is also noted that the products should not be used in waters with trout or other highly sensitive fish if alkalinity is less than 50 mg/L as fish toxicity generally decreases as water hardness increases (SePRO, 2014a,b).

Information regarding the environmental chemistry and the aquatic toxicity of the three copper compounds used in Nautique® and Captain® are summarized in the following sections. Greater details on the toxicology of these copper compounds, as well as the cupric ion are presented in the Reregistration Eligibility Decision (RED) for Coppers (USEPA, 2009), the Hazardous Substances Data Bank (HSDB) (2009a,b), the Aquatic Life Ambient Freshwater Quality Criteria for Copper (USEPA, 2007), and copper reviews by the Agency for Toxic Substances and Disease Registry (ATSDR) (2004) and Eisler (2000).

2.0 Environmental Chemistry

The environmental chemistry, including chemical properties, persistence, and metabolism of CED, CTE, and CE are presented below. This information is very limited or not available for these three compounds; therefore, relevant environmental chemistry information for copper, copper compounds in general, copper salts, and/or the cupric ion is also included.

2.1 Chemical Properties

Copper is a soft, heavy metal that exists in four oxidations states (Cu^{0}, Cu^{+1}, Cu^{+2}, and Cu^{+3}) (Eisler, 2000). The cupric (Cu^{+2}) ion is the most important oxidation state of copper, and is the oxidation state of copper generally encountered in water (ATSDR, 2004). In water, Cu^{+2} binds to dissolved organics such as humic or fulvic acids and forms stable complexes with the -NH2, -SH and, to a lesser extent, -OH groups of these organic acids.

Copper ethylenediamine is a non-flammable, purple liquid that has an ammoniacal (or ammonia-like) odor and dissolves cellulose products (e.g., cotton and wood) (HSDB, 2009a). HSDB accounts for CTE and CE are not available, but the material safety data sheet (MSDS) describes Nautique® (which lists CTE and CED as active ingredients) as a dark purple liquid with a slight ammoniacal odor (SePRO, 2009). Captain®, which lists CE as the active ingredient, is described in the MSDS as a dark blue liquid with a slight ammoniacal odor that is miscible in water (SePRO, 2013). Copper makes up about 51 percent of the CED and CE and about 30 percent of CTE, though these percentages may vary slightly depending on molecular weight and percent copper calculated based on formula, as well as on manufacturing processes (USEPA, 2009). The copper compounds CED and CTE are copper salts, whereas CE is categorized under other copper compounds (USEPA, 2009). Cupric salts readily dissolve in freshwater to produce the aquo ion, $Cu(H_2O)_6^{+2}$. However, the solubility of copper salts is decreased under reducing conditions and can also be modified by water pH, hardness, and temperature, as well as size and density of suspended materials; concentration of dissolved organics; and rates of coagulation and sedimentation of particulates (Eisler, 2000).

2.2 Persistence

Copper is found naturally in the environment and is continuously cycling through natural geothermodynamic process that can bind or release copper ions. Copper can exist in organic and inorganic forms that include the cupric ion, the cuprous ion or Cu^{+1}, organic and inorganic complexes, and minerals (USEPA, 2009). The cuprous ion is unstable and oxidizes to the 2+ state in many aerated waters within the pH range of 6 to 8. In the aquatic environment, the fate of copper is determined by the formation of complexes. Copper concentrations remaining in solution depend on water chemistry, such as pH and temperature, and the concentration of other chemical species (ATSDR, 2004; USEPA, 2007).

The majority of copper released to surface waters is in particulate matter and settles out or quickly adsorbs to sediments. In both the water column and in sediment, copper adsorbs to hydrous iron and manganese oxides, organic matter, and clay (ATSDR, 2004). In fact, Harrison and Bishop (1984) report that a large fraction of the copper is adsorbed to particulate matter and sediments within the first hour of introduction to surface water, and equilibrium is usually obtained within 24 hours. Some copper complexes with both inorganic and organic ligands. A ligand is a complexing chemical such as an ion, molecule, or molecular group that interacts with copper (or other metal) to form a larger complex (USEPA, 2007).

Hydrolysis and precipitation reactions are important to the environmental fate of copper compounds in aquatic environments (HSDB, 2009b), and the copper ion is highly reactive in aquatic systems (USEPA, 2009). Soluble copper compounds sorb strongly to suspended particles, though complexing organic ligands can stabilize dissolved copper compounds and prevent this sorption. Biotic ligands play an important role in complexing copper (which affects precipitation and sorption behavior), and biological activity is a major factor in determining the distribution and occurrence of copper in the ecosystem (USEPA, 2007). A biotic ligand is a specific receptor within an organism where metal complexion occurs. An example is a chemical receptor site on a fish gill.

Free copper ions are the most bioavailable inorganic forms. The amount of bioavailable copper in sediment is controlled mostly by the concentration of the acid volatile sulfide (AVS) and organic matter (USEPA, 2007). Although copper is strongly bioaccumulated by all plants and animals (all organisms have active transport mechanisms for it), copper compounds do not biomagnify in higher trophic levels (HSDB, 2009b). The primary route of copper uptake by aquatic organisms is via dietary exposure (Eisler, 2000).

Information on the persistence and degradation of CED and CE was lacking, and very little is available for CTE. Wells (1994) applied CTE in a 1-hectare field trial with a surface application rate of 0.3 mg/L. Maximum levels of copper in surface water reached 0.6 mg/L (with considerable variance), but dropped to background levels within 6 to 12 hours. Copper levels were found to remain low downstream in the river due to dilution. In addition, this application did not increase copper concentrations in sediment collected within the treated area. Another copper compound that is widely used for algae control is copper sulfate. Studies of the use of this compound indicated that copper concentrations in the water column returned to pre-treatment levels a few days following application (USEPA, 2009). During this period, there was a reduction in dissolved copper that was concomitant with an increase in particulate copper, suggesting that the copper in copper sulfate was readily adsorbed to particulates in the water column.

Based on the limited information for two copper algaecides, as well as copper's propensity for sorbing to particulate matter and/or forming complexes and being removed from solution, copper concentrations in the water column are likely to return to pre-treatment levels within hours to days after treatment. However, this is highly dependent on the water quality parameters such as pH, alkalinity, temperature, and hardness. Additionally, copper bound to these particulates would be expected to settle to the bottom of the waterbody and may accumulate in sediment over time.

2.3 Metabolism

In algae, copper moves into the cells primarily by physical transport, with the plasmalemma as the initial site of copper binding (Eisler, 2000). Namely, the cupric ion binds to groups that include sulfidal, imidazoles, carboxyl, and phosphate or thiol groups causing non-specific denaturing of proteins (USEPA, 2007). This increases permeability of the plasmalemma and allows entry of copper into intracellular sites (Eisler, 2000).

Copper disrupts the peroxidase enzymes in mollusks and affects the functioning of the surface epithelia (USEPA, 2009). In fishes, copper enters the intracellular compartment in the gill surface where it may block essential biological functional groups, displace essential metal ions in molecules, or modify the active conformation of molecules (Eisler, 2000).

Copper is an essential element for animals as a component of metalloenzymes and respiratory pigments, iron utilization, function of enzymes in pigmentation, connective tissue formation and energy production. Several specific binding proteins for copper have been identified that are important in the uptake, storage, and release of copper from tissues (ATSDR, 2004). The metabolism of copper in vertebrates consists mainly of its transfer to and from various biotic ligands, usually sulfhydryl and imidazole groups on amino acids and proteins. It can form stable inhibitory complexes with some biotic ligands and in excess can damage, impair, or inhibit function of important cellular amino acids and proteins (e.g., NADPH-cytochrome C reductase) (Rand and Petrocelli, 1985).

3.0 Toxicity to Aquatic Organisms and Wildlife

Although aquatic organisms require copper as a nutrient, copper can be toxic at certain concentrations. For plants, copper compounds present at elevated concentrations can inhibit photosynthesis by binding to the chloroplast membrane and disrupting photosynthetic electron transport (Hallingse and Phlips, 1996). For aquatic organisms with gill or gill-like organs (invertebrates, amphibians, and fish) toxicity can occur through rapid binding of the cupric ion to the gill membrane. This causes damage and interferes with osmoregulatory processes (USEPA, 2009). Copper alters hematology, respiratory physiology, and cardiac physiology in fish and causes histological changes in the gills, kidneys, hematopoietic tissue, mechanoreceptors, and chemoreceptors in fish. Reproductive effects in fish include blockage of spawning, reduced egg production,

and abnormalities and reduced survival in young (Rand and Petrocelli, 1985). However, speciation is an important factor affecting the bioavailability and toxicity of copper to aquatic organisms and in hard water, much of the copper (up to 80%) is associated with suspended solids and not available to biota (Eisler, 2000).

In birds and mammals, copper forms stable inhibitory complexes with cytochrome P-450 and can impair the function of NADPH-cytochrome C reductase and inhibit heme biosynthesis. Copper can accumulate in the liver and reduces the liver's ability to excrete copper. It has also been found to be a teratogen and a possible carcinogen. In birds, it has been reported to decrease growth and food consumption (Rand and Petrocelli, 1985). Ozawa et al. (1993) documented that some Cu(II) complexes, including CED, cause DNA strand breakage. Later experiments indicate that the generation of hydroxyl radicals (· OH) from the reaction of Cu(II) complexes with biological reductants such as ascorbic acid, glutathione, acetylcysteine, and hydroquinone may cause this DNA strand scission (Ueda et al., 1998). Ascorbic acid, glutathione, and N-acetylcysteine are present in living cells, therefore, the authors concluded that Cu(II) complexes, including CED, may initiate DNA damage in the presence of these reductants.

USEPA (2009) limits the the application rate of copper compounds to a maximum copper concentration of 1 ppm (1,000 µg/L). Copper ethanolamine complex (as Captain®) applied at the prescribed rate (200 to 1,000 µg Cu/L) for control of algae and CTE and CED (Nautique®) applied at the prescribed rate (500 to 1,000 µg Cu/L) for control of aquatic vegetation may represent a risk to aquatic organisms. Eisler (2000) contains an exhaustive compilation of copper toxicity studies for aquatic plants and animals. For this toxicological profile, toxicity data specific to CTE, CE, and CED were identified and are presented in Table 1 at the end of this document. These data were either from published literature sources or from the USEPA ECOTOX Database (USEPA, 2014).

Of the studies available for CTE, rainbow trout (*Oncorhynchus mykiss*) had a 96-h median lethal concentration (LC_{50}) of 26 µg/L (range = 10-67 µg/L) and were the most sensitive group of aquatic organisms tested. However, LC_{50} values between 550 and 1,000 µg/L were also reported for rainbow trout. Although not specified in the ECOTOX Database, these differences may be attributable to the water hardness because the toxicity of copper compounds are reported to decrease with increasing water hardness (USEPA, 2007; 2009). LC_{50} values for the other represented fish species ranged from 970 µg/L (green sunfish, *Lepomis cyanellus*) to 72,400 µg/L (bluegill, *Lepomis macrochirus*). These results suggest that the salmonids are more sensitive to CTE than other fish species, particularly bluegill. Most invertebrates showed a low sensitivity to CTE, with *Daphnia* immobilized (EC_{50}) at concentrations ranging from 52,000 to 88,000 µg/L and saltwater crabs having LC_{50}s greater than 1,000,000 µg/L. Generally, aquatic vertebrates are more sensitive than invertebrates and salmonids were more sensitive than other fish species.

Fewer species were represented in the data for CE. However, for CE the *Daphnia* EC_{50} for immobilization (560-940 µg/L) was lower than the LC_{50}s for bluegill (3,500-6,000 µg/L) and rainbow trout (1,300-1,700 µg/L). Only one toxicity study for CED was available. In this study, LC_{10}s and LC_{50}s were calculated for golden shiner (*Notemigonus crysoleucas*) under hard water and soft water conditions. Mean LC_{10} and LC_{50} values for hard water (279 mg/L $CaCO_3$) were 410,000 and 630,000 µg/L, whereas the LC_{10} and LC_{50} values for soft water (20 mg/L $CaCO_3$) were 38,000 and 67,000 µg/L, respectively.

Acute and chronic water quality criteria are not specific to the CTE, CED, and CE but have been developed for copper in general by USEPA (2007). Previous aquatic life criteria documents for copper expressed these acute (i.e., the Criterion Maximum Concentration; CMC) and chronic (i.e., the Criterion Continuous Concentration; CCC), as a function of water hardness. However, the current CMC uses a Biotic Ligand Model (BLM), which is a metal bioavailability model that uses receiving water body characteristics to develop site-specific water quality criteria. The necessary water quality input parameters for BLM calculations are temperature, pH, dissolved organic carbon, major geochemical cations (calcium, magnesium, sodium, and potassium), dissolved inorganic carbon (DIC, the sum of dissolved carbon dioxide, carbonic acid, bicarbonate, and carbonate), and other major geochemical anions (chloride, sulfate). Dissolved iron and aluminum are not currently included in the BLM; however, USEPA (2007) recommends that these metals be

measured during routine monitoring as they may support future criteria applications. Not all of these input water quality parameters were available for Byron Bethany Irrigation District (BBID) irrigation waters; therefore, site-specific criteria for copper cannot be calculated. USEPA (2007) calculated a CMC of 2.337 µg/L with the following parameters: temperature = 20°C, pH = 7.5, DOC = 0.5 mg/L, Ca = 14.0 mg/L, Mg = 12.1 mg/L, Na = 26.3 mg/L, K = 2.1 mg/L, SO4 =81.4 mg/L, Cl = 1.90 mg/L, Alkalinity = 65.0 mg/L and S = 0.0003 mg/L. From this, a CCC of 1.45 µg/L was derived.

For the BBID irrigation waters, an average pH of 8.1 (range = 7.12 – 8.68) was measured during background sampling conducted March through September 2013 at the Distric intake from the California Aqueduct. USEPA (2007) provided a table that shows representative water quality criteria values using the BLM and Hardness equation approaches for waters with a range of pH, hardness, and DOC. This table is provided in Attachment A. As evidenced in this table, use of the BLM results in a wide range of CMCs when the DOC varies, even at a specific pH and water hardness. For example, at pH 8 (similar to BBID irrigation waters) and a hardness of 159 mg/L CaCO3, the CMC ranges from 18 to 142 µg/L as DOC varies from 2 to 16 mg/L. It should be noted that even the highest CMC in this table (259 µg/L) is lower than the 1,000 µg/L limit for copper pesticides. Therefore, aquatic life may be affected at the application rates for Captain® and Nautique®.

Birds and mammals may be exposed to the CTE, CED, or CE during application of the algaecide Captain® and the herbicide Nautique®, primarily through ingestion of contaminated water. Birds and mammals may be relatively tolerant to these three copper compounds. The LD50 for CE is >5,000 mg/kg body weight in mallard ducks (Anas platyrhynchos) and northern bobwhite quail (Colinus virginianus) fed CE in the diet for 8 days (USEPA, 2013). Avian toxicity data for CTE and CED are lacking. In mammals, the oral LD50 for CTE is 1,170 mg/kg for male rats and 1,312 mg/kg for female rats (USEPA, 2009). For CED, the oral LD_{50}s for rats are 527 and 462 mg/kg in males and females, respectively (USEPA, 2009). Mammalian toxicity data for CE are not available. Exposure could also occur through ingestion of prey (e.g., aquatic invertebrates, fish, and frogs) that have accumulated copper. However, the majority of copper released to surface waters readily adsorbs to particulate matter and sediments (ATSDR, 2004). Although copper is readily taken up by all organisms, it does not biomagnify within the food chain (Eisler, 2000; ATSDR, 2004; USEPA, 2007).

Toxicity data indicate that some species may be sensitive to CTE, CED, or CE (i.e., rainbow trout and other salmonids), and though some invertebrates and fish have a high tolerance to these pesticides, some aquatic organisms may be adversely affected at the application rate prescribed for Captain® and the herbicide Nautique®. However, the BBID canals provide limited habitat, with 8.5 miles of concrete-lined canals and 11.5 miles of maintained earthen channels. These canals only hold water during the spring and summer irrigation season and therefore, do not support the rainbow trout (the most sensitive receptor) or other fish, and only provide limited, poor quality habitat for other aquatic plant and animal species.

Summary

- Copper is readily taken up by all organisms, but it does not biomagnify within the food chain.
- Copper ethanolamine complex (as Captain®) applied at the prescribed rate (200 to 1,000 µg Cu/L) for the control of algae and copper triethylenediamine and copper triethanolamine complex (as Nautique®) applied at the prescribed rate (500 to 1,000 µg Cu/L) for the control of algae and aquatic vegetation may be harmful to some aquatic vertebrates and invertebrates tested in short-term studies, particularly rainbow trout.
- Aquatic vertebrates are more sensitive to CTE than invertebrates and salmonids are the most sensitive species tested (LC_{50} = 26 µg/L for rainbow trout). In contrast, the limited toxicity data for CE indicate that invertebrates are more sensitive than vertebrates and CED had very low toxicity to the one fish species tested (LC_{50}s >38,000 µg/L). Invertebrate toxicity data were not available for CED.
- CTE, CED, and CE appear to be of low to moderate toxicity to birds and mammals, with LD_{50}s ranging from 462 mg/kg > 5,000 mg/kg.

- Based on the limited information for CTE and copper sulfate, as well as copper's propensity for sorbing to particulate matter and/or forming complexes and being removed from solution, copper concentrations in the water column are likely to return to pre-treatment levels within hours to days after treatment. However, this is highly dependent on the water quality parameters such as pH, alkalinity, temperature, and hardness. Additionally, copper bound to these particulates would be expected to settle to the bottom of the waterbody and may accumulate in sediment over time.
- Some aquatic organisms may be adversely affected at the application rate, but the BBID canals only hold water during the spring and summer irrigation season and therefore, are do not support fish species, including the rainbow trout (i.e., the most sensitive receptor). Additionally, the managed canals are of low quality and often unsuitable habitat for other aquatic plant and animal species.

4.0 References

Agency for Toxic Substances and Disease Registry (ATSDR). 2004. *Toxicological Profile for Copper*. U.S. Department of Health and Human Services, Public Health Service, September. Available online at http://www.atsdr.cdc.gov/toxprofiles/index.asp.

Eisler, R. 2000. *Handbook of Chemical Risk Assessment: Health Hazards to Humans, Plants, and Animals*. *Volume 1: Metals*. Lewis Publishers, USA.

Finlayson, B.J. 1980. Acute toxicity of the herbicides Komeen and Hydrothol-191 to golden shiner (*Notemigonus crysoleucas*). *Bull Environm Contam Toxicol* 25:676-681.

Hallingse, M.E., and E.J. Phlips. 1996. Effects of Cutrine-Plus and Cide-Kick II on the growth of algae and cyanobacteria. *J Aquat Plant Manage* 34:39-40.

Harrison FL, Bishop DJ. 1984. A review of the impact of copper released into freshwater environments. U.S. Nuclear Regulatory Commission. Livermore, CA: Lawrence Livermore National Laboratory. NUREG/CR-3478.

Hazardous Substnaces Databank (HSDB). 2009a. Cupriethylenediamine. National Library of Medicine. Washington, DC. Accessed September, 2014 at http://toxnet.nlm.nih.gov/. Last updated April 16, 2009.

Hazardous Substnaces Databank (HSDB). 2009b. Copper Compounds. On-line Database. National Library of Medicine. Washington, DC. Accessed September, 2014 at http://toxnet.nlm.nih.gov/. Last updated April 16, 2009.

Koschnick, T.J. 2005. Documentation, Characterization, and Proposed Mechanism of Diquat Resistance in *Landoltia punctata* (G. Meyer) D.H.Les and D.J.Crawford. Ph.D Thesis, University of Florida, Gainesville, FL, 123 p.

Ozawa, T. J. Ueda, and Y. Shimazu. 1993. DNA single strand breakage by copper(II) complexes and hydrogen peroxide at physiological conditions. *Biochem Molec Bio Int* 31(3):455-461.

Rand, G.M. and S.R. Petrocelli. 1985. *Fundamentals of Aquatic Toxicology*. Hemisphere Publishing Corp., New York.

SePRO. 2009. Nautique® Aquatic Herbicide. Material Safety Data Sheet. Accessed September 2014. Available online at http://www.sepro.com/documents/Nautique_MSDS.pdf. January 15.

SePRO. 2013. Captain® Liquid Copper Algaecide. Material Safety Data Sheet. Accessed September 2014. Available online at http://www.sepro.com/documents/Captain_MSDS.pdf. February 15.

SePRO. 2014a. Nautique® Aquatic Herbicide. Product label. Accessed September 2014. Available online at http://www.sepro.com/documents/nautique_label.pdf.

SePRO. 2014b. Captain® Liquid Copper Algaecide. Product label. Accessed September 2014. Available online at http://www.sepro.com/documents/captain_label.pdf.

Sprecher,S.L., M.D. Netherland, and A.B. Stewart. 1998. Phytoene and carotene response of aquatic plants to fluridone under laboratory conditions. *J Aquat Plant Manage* 36:111-120

Ueda, J., M. Takai, Y. Shimazu, and T. Ozawa. 1998. Reactive oxygen species generated from the reaction of copper(II) complexes with biological reductants cause DNA strand scission. *Arch Biochem Biophys* 357(2):231-239.

United States Environmental Protection Agency (USEPA). 2007. *Aquatic Life Ambient Freshwater Quality Criteria – Copper, 2007 Revision*. USEPA, Office of Water. EP-822-R-07-001. February.

United States Environmental Protection Agency (USEPA). 2009. *Reregistration Eligibility Decision (RED) for Coppers*. USEPA Prevention, Pesticides and Toxic Substances. EPA 738-R-09-304. May.

United States Environmental Protection Agency (USEPA). 2013. Pesticide Ecotoxicity Database (Formerly: Environmental Effects Database (EEDB)). USEPA, Office of Pesticide Programs, Environmental Fate and Effects Division, Washington, D.C.

United States Environmental Protection Agency (USEPA). 2014. ECOTOX Release 4.0. Available online at http://cfpub.epa.gov/ecotox/. Accessed October, 2014.

Wells, R.D.S. 1994. The efficacy of copper-trethanolamine complex on water net (Hydrodictyon reticulatum). *Proc 47th N.Z. Plant Protection Conf*: 373-378.

TABLE 1

Copper Ethylenediamine, Copper Triehanolamine Complex, and Copper Ethanolamine Complex Effects on Representative Aquatic Organisms

Taxonomic Group, Organism, Concentration, and Other Variables	Effect	Reference[a]
Copper Triethanolamine Complex (CTE)		
Bacteria, Algae, and Macrophytes		
Freshwater algae, *Hydrodictyon reticulatum*		
≤ 600 µg/L or 3 kg/ha; 14 d - field	Decrease in abundance	Wells, 1994
≤ 600 µg/L or 3 kg/ha; 14 d - field	Decrease in biomass	Wells, 1994
10-10,000 µg/L or 3 kg/ha; 30 d - field	Increase in mortality	Wells, 1994
Freshwater algae, *Selanastrum capricornutum*		
2,100 µg/L; 5 d	EC50, growth	Hallingse and Phlips, 1996
Freshwater algae, *Spirogyra communice*		
880 µg/L; 5 d	EC50, growth	Hallingse and Phlips, 1996
Cyanobacterium, *Oscillatoria sp*		
1,730 µg/L; 5 d	EC50, growth	Hallingse and Phlips, 1996
Cyanobacterium, *Lyngbya wollei*		
1,630 µg/L; 5 d	EC50, growth	Hallingse and Phlips, 1996
Duckweed, *Landoltia punctata*		
100 µg/L; 48 h	NOEL; no decrease in chlorophyll	Koschnick, 2005
Invertebrates		
Shore crab, *Pachygrapsus crassipes*		
>1,000,000 µg/L; 96 h	LC50; adult	USEPA, 2013
Fiddler Crab, *Uca pugilator*		
2,200,000 µg/L mean (range 1,898,000- 2,549,000); 96 h	LC50 adult	USEPA, 2013
Marsh Grass Shrimp, *Palaemonetes vulgaris*		
>1,000,000 µg/L; 96 h	LC50	USEPA, 2013
68,000 µg/L mean (range 52,000-88,000); 96 h	LC50	USEPA, 2013
Daphnid, *Daphnia magna*		
55,700 µg/L mean (range 46,200-67,300) 48 h	EC50, immobilization	USEPA, 2013
6,200 µg/L; 48 h	NOEL, immobilization	USEPA, 2013

TABLE 1

Copper Ethylenediamine, Copper Triehanolamine Complex, and Copper Ethanolamine Complex Effects on Representative Aquatic Organisms

Taxonomic Group, Organism, Concentration, and Other Variables	Effect	Reference[a]
Virginia oyster, *Crassostrea virginica*		USEPA, 2013
450 µg/L for 48 h	EC50, immobilization	
687,000 µg/L mean (range 507,000-930,000); 96 h	EC50, immobilization	
Invertebrates (general)		
≤ 600 µg/L or 3 kg/ha; 14 d - field	0% mortality	Wells, 1994
Vertebrates		
Green sunfish, *Lepomis cyanellus*		
1,300 µg/L mean (range 970-1,740); 96 h	LC50	USEPA, 2013
Bluegill, *Lepomis macrochirus*		
17,600 µg/L mean (range 15,600-19,900); 96 h	LC50	USEPA, 2013
51,000 µg/L mean (range 45,000-58,000); 96 h	LC50	USEPA, 2013
57,000 µg/L mean (range 45,000-72,400); 96 h	LC50	USEPA, 2013
< 25,000 µg/L; 96 h	NOEL for mortality	USEPA, 2013
18,500 µg/L; 96 h	NOEL for mortality	USEPA, 2013
Rainbow trout, *Oncorhynchus mykiss*		
26 µg/L mean (range 10-67); 96 h	LC50	USEPA, 2013
840 µg/L mean (range 750-1,000); 96 h	LC50	USEPA, 2013
550-750 µg/L; 96 h	LC50	USEPA, 2013
Copper Ethanolamine Complex (CE)		
Bacteria, Algae, and Macrophytes		
American Frog's-Bit, *Egeria densa*		
1,000 µg/L; 24 h	LOEC; decreasing phytoene at shoot tip	Sprecher et al. 1998
1,000 µg/L; 24 h	NOEC; decreasing phytoene at shoot tip	Sprecher et al. 1998
Invertebrates		
Daphnid, *Daphnia magna*		
820 µg/L mean (range 560-940); 48 h	EC50, immobilization	USEPA, 2013
200 µg/L; 48 h	NOEL, immobilization	USEPA, 2013
Vertebrates		
Bluegill, *Lepomis macrochirus*		
4,200 µg/L mean (range 3,500-6,000); 96 h	LC50	USEPA, 2013
2,000 µg/L; 96 h	NOEL for mortality	
Rainbow trout, *Oncorhynchus mykiss*		

TABLE 1

Copper Ethylenediamine, Copper Triehanolamine Complex, and Copper Ethanolamine Complex Effects on Representative Aquatic Organisms

Taxonomic Group, Organism, Concentration, and Other Variables	Effect	Reference[a]
1,500 µg/L mean (range 1,300-1,700); 96 h	LC50,	USEPA, 2013
Copper Ethylenediamine Complex (CED)		
Vertebrates		
Golden shiner, *Notemigonus crysoleucas*		
410,000 µg/L mean; 96 h 279 mg/l CaCO3	LC10 (range 330,000-500,000 µg/L)	Finlayson, 1980
630,000 µg/L mean; 96 h 279 mg/l CaCO3	LC50 (range 560,000-710,000 µg/L)	Finlayson, 1980
38,000 µg/L mean; 96 h 20 mg/l CaCO3	LC10 (range 33,000-45,000 µg/L)	Finlayson, 1980
67,000 µg/L mean; 96 h 20 mg/l CaCO3	LC50 (range 60,000-75,000 µg/L)	Finlayson, 1980

Notes:

Data primarily from the United States Environmental Protection Agency's ECOTOX database (USEPA, 2014).

EC = effect concentration, value that follows EC indicates percentage of test individuals affected (e.g., EC50 is the median effect concentration)

LC = lethal concentration, value that follows LC indicates percentage of test individuals affected (e.g., LC50 is the median lethal concentration)

NOEL = no observed effect level

Attachment A
Appendix G of the EPA's "Aquatic Life Ambient Freshwater Quality Criteria – Copper"

Appendix G: Representative water quality criteria values using the BLM and the Hardness equation approaches for waters with a range in pH, Hardness, and DOC concentrations. The BLM calculation assumed that alkalinity was correlated with pH, and that other major ions were correlated with hardness based on observed correlations in EPA synthetic water recipes.

pH	Hardness	DOC	Hardness Equation Based Water Quality Criterion for Cu[1]	BLM Based Instantaneous Water Quality Criterion for Cu
	mg/L $CaCO_3$	mg / L	µg / L	µg / L
6.5	40	2	5.9	1.6
		4	5.9	3.3
		8	5.9	6.8
		16	5.9	14.3
	80	2	11.3	1.9
		4	11.3	3.8
		8	11.3	7.7
		16	11.3	16.0
	159	2	21.7	2.3
		4	21.7	4.5
		8	21.7	9.2
		16	21.7	18.9
	317	2	41.5	2.8
		4	41.5	5.6
		8	41.5	11.4
		16	41.5	23.1
7.0	40	2	5.9	3.9
		4	5.9	8.0
		8	5.9	16.4
		16	5.9	34.3
	80	2	11.3	4.4
		4	11.3	8.8
		8	11.3	18.0
		16	11.3	37.0
	159	2	21.7	5.1
		4	21.7	10.3
		8	21.7	20.7
		16	21.7	42.4
	317	2	41.5	6.2
		4	41.5	12.4
		8	41.5	24.9
		16	41.5	50.6

pH	Hardness	DOC	Hardness Equation Based Water Quality Criterion for Cu[1]	BLM Based Instantaneous Water Quality Criterion for Cu
	mg/L $CaCO_3$	mg / L	µg / L	µg / L
7.5	40	2	5.9	7.9
		4	5.9	15.8
		8	5.9	32.4
		16	5.9	67.3
	80	2	11.3	8.7
		4	11.3	17.4
		8	11.3	35.3
		16	11.3	72.5
	159	2	21.7	10.1
		4	21.7	20.1
		8	21.7	40.5
		16	21.7	82.4
	317	2	41.5	12.0
		4	41.5	23.9
		8	41.5	47.8
		16	41.5	96.8
8.0	40	2	5.9	13.8
		4	5.9	27.6
		8	5.9	55.8
		16	5.9	115.0
	80	2	11.3	15.5
		4	11.3	30.6
		8	11.3	61.4
		16	11.3	125.1
	159	2	21.7	18.0
		4	21.7	35.3
		8	21.7	70.3
		16	21.7	142.0
	317	2	41.5	21.5
		4	41.5	41.6
		8	41.5	82.3
		16	41.5	165.1

pH	Hardness	DOC	Hardness Equation Based Water Quality Criterion for Cu[1]	BLM Based Instantaneous Water Quality Criterion for Cu
	mg/L $CaCO_3$	mg / L	μg / L	μg / L
8.5	40	2	5.9	22.5
		4	5.9	43.3
		8	5.9	85.6
		16	5.9	172.9
	80	2	11.3	26.0
		4	11.3	49.1
		8	11.3	96.0
		16	11.3	191.6
	159	2	21.7	31.4
		4	21.7	58.0
		8	21.7	111.7
		16	21.7	220.6
	317	2	41.5	39.1
		4	41.5	70.3
		8	41.5	132.8
		16	41.5	259.6

Notes:

[1] : Hardness Equation: $\boldsymbol{CMC} = \boldsymbol{e}^{(0.9422\,[\ln(H)] - 1.7)}$

where:
H = water hardness (mg/L $CaCO_3$)

* Appendix updated as of March 2, 2007

Attachment B

Print Form

Appendix C

Notice of Completion & Environmental Document Transmittal

Mail to: State Clearinghouse, P.O. Box 3044, Sacramento, CA 95812-3044 (916) 445-0613
For Hand Delivery/Street Address: 1400 Tenth Street, Sacramento, CA 95814

SCH #

Project Title: Application of Aquatic Herbicide in District Water Conveyance Canals

Lead Agency: Byron-Bethany Irrigation District (BBID) Contact Person: Rick Gilmore

Mailing Address: 7995 Bruns Road Phone: 209-835-0375

City: Byron Zip: 94514-1625 County: Contra Costa

Project Location: County: Alameda & Contra Costa City/Nearest Community: Mountain House

Cross Streets: Byron Bethany Road & Bruns Road Zip Code: 94514

Longitude/Latitude (degrees, minutes and seconds): 37 ° 48 ' 50.38" N / 121 ° 36 ' 17.62" W Total Acres: N/A

Assessor's Parcel No.: N/A Section: ____ Twp.: ____ Range: ____ Base: ____

Within 2 Miles: State Hwy #: ____ Waterways: BBID Irrigation Canals

Airports: ____ Railways: ____ Schools: ____

Document Type:

CEQA: ☐ NOP ☐ Draft EIR NEPA: ☐ NOI Other: ☐ Joint Document
☐ Early Cons ☐ Supplement/Subsequent EIR ☐ EA ☐ Final Document
☒ Neg Dec (Prior SCH No.) ____ ☐ Draft EIS ☐ Other: ____
☐ Mit Neg Dec Other: ____ ☐ FONSI

Local Action Type:

☐ General Plan Update ☐ Specific Plan ☐ Rezone ☐ Annexation
☐ General Plan Amendment ☐ Master Plan ☐ Prezone ☐ Redevelopment
☐ General Plan Element ☐ Planned Unit Development ☐ Use Permit ☐ Coastal Permit
☐ Community Plan ☐ Site Plan ☐ Land Division (Subdivision, etc.) ☐ Other: ____

Development Type:

☐ Residential: Units ____ Acres ____
☐ Office: Sq.ft. ____ Acres ____ Employees ____
☐ Commercial: Sq.ft. ____ Acres ____ Employees ____
☐ Industrial: Sq.ft. ____ Acres ____ Employees ____
☐ Educational: ____
☐ Recreational: ____
☒ Water Facilities: Type Irrigation MGD ____
☐ Transportation: Type ____
☐ Mining: Mineral ____
☐ Power: Type ____ MW ____
☐ Waste Treatment: Type ____ MGD ____
☐ Hazardous Waste: Type ____
☒ Other: Aquatic Weed Management with Herbicides

Project Issues Discussed in Document:

☐ Aesthetic/Visual ☐ Fiscal ☐ Recreation/Parks ☒ Vegetation
☒ Agricultural Land ☐ Flood Plain/Flooding ☐ Schools/Universities ☒ Water Quality
☒ Air Quality ☐ Forest Land/Fire Hazard ☐ Septic Systems ☒ Water Supply/Groundwater
☐ Archeological/Historical ☐ Geologic/Seismic ☐ Sewer Capacity ☐ Wetland/Riparian
☒ Biological Resources ☐ Minerals ☐ Soil Erosion/Compaction/Grading ☐ Growth Inducement
☐ Coastal Zone ☐ Noise ☐ Solid Waste ☐ Land Use
☐ Drainage/Absorption ☐ Population/Housing Balance ☒ Toxic/Hazardous ☐ Cumulative Effects
☐ Economic/Jobs ☐ Public Services/Facilities ☐ Traffic/Circulation ☒ Other: Greenhouse Gas

Present Land Use/Zoning/General Plan Designation:

Agricultural, low density residential, public recreational

Project Description: *(please use a separate page if necessary)*

BBID is proposing to apply the aquatic herbicides Nautique and Captain to control algae and aquatic weeds in canals within its agricultural service area. The application of these herbicides could result in the discharge of copper to Waters of the United States pursuant to the provisions of an applicable general National Pollutant Discharge Elimination System permit (NPDES). Compliance with the NPDES permit would be accomplished through conformance with the District's Aquatic Pesticides Application Plan (APAP). Specific measures are included in the APAP to prevent the discharge of copper from treated canals to sensitive habitat.

Note: The State Clearinghouse will assign identification numbers for all new projects. If a SCH number already exists for a project (e.g. Notice of Preparation or previous draft document) please fill in.

Revised 2010

Reviewing Agencies Checklist

Lead Agencies may recommend State Clearinghouse distribution by marking agencies below with and "X".
If you have already sent your document to the agency please denote that with an "S".

X	Air Resources Board	____	Office of Historic Preservation
____	Boating & Waterways, Department of	____	Office of Public School Construction
____	California Emergency Management Agency	____	Parks & Recreation, Department of
____	California Highway Patrol	X	Pesticide Regulation, Department of
X	Caltrans District #4	____	Public Utilities Commission
____	Caltrans Division of Aeronautics	X	Regional WQCB #2
____	Caltrans Planning	____	Resources Agency
____	Central Valley Flood Protection Board	____	Resources Recycling and Recovery, Department of
____	Coachella Valley Mtns. Conservancy	____	S.F. Bay Conservation & Development Comm.
____	Coastal Commission	____	San Gabriel & Lower L.A. Rivers & Mtns. Conservancy
____	Colorado River Board	____	San Joaquin River Conservancy
X	Conservation, Department of	____	Santa Monica Mtns. Conservancy
____	Corrections, Department of	____	State Lands Commission
____	Delta Protection Commission	____	SWRCB: Clean Water Grants
____	Education, Department of	X	SWRCB: Water Quality
____	Energy Commission	____	SWRCB: Water Rights
X	Fish & Game Region #3	____	Tahoe Regional Planning Agency
X	Food & Agriculture, Department of	X	Toxic Substances Control, Department of
____	Forestry and Fire Protection, Department of	X	Water Resources, Department of
____	General Services, Department of		
____	Health Services, Department of	____	Other:
____	Housing & Community Development	____	Other:
____	Native American Heritage Commission		

Local Public Review Period (to be filled in by lead agency)

Starting Date January 26, 2015 Ending Date February 26, 2015

Lead Agency (Complete if applicable):

Consulting Firm: CH2M HILL
Address: 2485 Natomas Park Drive, Suite 600
City/State/Zip: Sacramento, CA 95833
Contact: Mark Leu
Phone: (916) 286-0230

Applicant: Byron-Bethany Irrigation District
Address: 7995 Bruns Road
City/State/Zip: Byron, CA 94514-1625
Phone: (209) 835-0375

Signature of Lead Agency Representative: _____ **Date:** 1/12/2015

Authority cited: Section 21083, Public Resources Code. Reference: Section 21161, Public Resources Code.

NOTICE OF INTENT TO ADOPT A NEGATIVE DECLARATION
APPLICATION OF AQUATIC HERBICIDE IN DISTRICT
WATER CONVEYANCE CANALS

PROJECT SPONSOR

Byron-Bethany Irrigation District (BBID)

ENVIRONMENTAL REVIEW PROCESS

BBID has prepared an Initial Study and proposed Negative Declaration for the Application of Aquatic Herbicide in District Water Conveyance Canals (proposed project). This notice is provided pursuant to noticing requirements found in the California Environmental Quality Act (CEQA) (Public Resources Code Sec. 21092), and the State CEQA Guidelines (Guidelines Sec. 15072).

PROJECT LOCATION AND DESCRIPTION

Project Location: The project is located in BBID's conveyance system including Pump Station 1-North (1-N) (37°48'51.74"N Latitude, 121°36'20.67"W Longitude) and Pump Station 1-South (1-S) (37°48'50.38"N Latitude, 121°36'17.62"W Longitude) in Alameda and Contra Costa Counties. The project is within the Clifton Court Forebay, Byron Hotsprings, Brentwood, and Woodward Island U.S. Geological Survey (USGS) 7.5-minute quadrangles (Townships 1 and 2 South, Ranges 3 and 4 East).

Project Description: BBID has prepared an Initial Study/Negative Declaration (IS/ND) to satisfy the requirements of the California Environmental Quality Act (CEQA) and support the SWRCB processing the proposed project as a categorical exception under Water Quality Order No 2001-12-Department of Water Quality Statewide general National Pollutant Discharge Elimination System (NPDES) permit for discharges of aquatic pesticides to waters of the United States (General Permit) No. CAG990003. BBID is proposing to apply the aquatic herbicides Nautique and Captain to control algae and aquatic weeds in canals that serve its agricultural service areas. These aquatic herbicides contain copper, which have the potential to enter into Waters of the United States. BBID intends to maintain compliance with the general NPDES permit through conformance with their Aquatic Pesticides Application Plan (APAP). BBID's APAP, which was approved by the State Water Resources Control Board (SWRCB) in 2014, includes specific water management measures to prevent the release of aquatic herbicides from treated canals to sensitive habitat and includes the implementation of a Water Quality Monitoring Plan. The monitoring plan includes both chemical water analysis by a certified laboratory, and observational monitoring to measure the effectiveness of water management measures.

Copper-based aquatic herbicides such as Nautique and Captain are biocides registered as herbicides to control algae and aquatic weeds in irrigation canals. The federal registrant for these products is SePRO. Nautique and Captain control the growth of algae and aquatic weeds (including Hydrilla and other aquatic weeds with a sensitivity to copper absorption) in irrigation systems. The use of copper herbicides for this purpose is a common practice in warm, dry areas

of the Central Valley of California. BBID previously used Acrolein to control aquatic weeds in its irrigation canals; however, they would like to broaden their herbicide options for added flexibility in treating their irrigation canals. In 2014, BBID began using Endothall herbicides to control aquatic vegetation in the irrigation canals with moderate success, though a stronger herbicide is needed for complete control of the aquatic weeds. Mechanical removal or physical treatment are not cost-effective canal maintenance techniques for the District. BBID has therefore selected the copper herbicides Nautique and Captain as the most adequate and cost-effective compliment to Endothall herbicides for ensuring canal functionality and control. BBID has an excellent record regarding safe herbicide use: only applicators holding a valid Qualified Applicator's Certificate apply the aquatic herbicides, herbicide labels are followed, applicable laws and regulations are followed, and Pest Control Recommendations are used.

PUBLIC REVIEW PERIOD: The Draft IS will be available for a 30-day public review period from January 26, 2015 to February 26, 2015. Written comments on this Draft IS should be addressed to: Byron-Bethany Irrigation District 7995 Bruns Road, Byron, CA 94514-1625 Attn: Rick Gilmore. All comments must be received in writing at the address shown above no later than 3 p.m. on February 26, 2015. Comments received and the responses to comments will be included as part of the record.

Copies of the Public Draft IS are available at the above address and at the following locations:

Byron-Bethany Irrigation District
7995 Bruns Road
Byron, CA 94514-1625

Alameda County Clerk-Recorder's office
1106 Madison Street
Oakland, CA 94607

Contra Costa County Clerk's office
555 Escobar Street
Martinez, CA 94553

An electronic copy of the document is also available via email request to: admin@bbid.org

STATE OF CALIFORNIA

GOVERNOR'S OFFICE *of* PLANNING AND RESEARCH

STATE CLEARINGHOUSE AND PLANNING UNIT

EDMUND G. BROWN JR.
GOVERNOR

KEN ALEX
DIRECTOR

February 23, 2015

RECEIVED

FEB 27 2015

Byron-Bethany
Irrigation District

Rick Gilmore
Byron Bethany Irrigation District
7995 Bruns Road
Byron, CA 94514-1625

Subject: Application of Aquatic Herbicide in District Water Conveyance Canals
SCH#: 2015012041

Dear Rick Gilmore:

The State Clearinghouse submitted the above named Negative Declaration to selected state agencies for review. On the enclosed Document Details Report please note that the Clearinghouse has listed the state agencies that reviewed your document. The review period closed on February 20, 2015, and the comments from the responding agency (ies) is (are) enclosed. If this comment package is not in order, please notify the State Clearinghouse immediately. Please refer to the project's ten-digit State Clearinghouse number in future correspondence so that we may respond promptly.

Please note that Section 21104(c) of the California Public Resources Code states that:

> "A responsible or other public agency shall only make substantive comments regarding those activities involved in a project which are within an area of expertise of the agency or which are required to be carried out or approved by the agency. Those comments shall be supported by specific documentation."

These comments are forwarded for use in preparing your final environmental document. Should you need more information or clarification of the enclosed comments, we recommend that you contact the commenting agency directly.

This letter acknowledges that you have complied with the State Clearinghouse review requirements for draft environmental documents, pursuant to the California Environmental Quality Act. Please contact the State Clearinghouse at (916) 445-0613 if you have any questions regarding the environmental review process.

Sincerely,

Scott Morgan
Director, State Clearinghouse

Enclosures
cc: Resources Agency

Document Details Report
State Clearinghouse Data Base

SCH#	2015012041
Project Title	Application of Aquatic Herbicide in District Water Conveyance Canals
Lead Agency	Byron Bethany Irrigation District

Type	**Neg** Negative Declaration
Description	BBID is proposing to apply the aquatic herbicides Nautique and Captain to control algae and aquatic weeds in canals within its agricultural service area. The application of these herbicides could result in the discharge of copper to Waters of the United States pursuant to the provisions of an applicable general National Pollutant Discharge Elimination System permit (NPDES). Compliance with the NPDES permit would be accomplished through conformance with the District's Aquatic Pesticides Application Plan (APAP). Specific measures are included in the APAP to prevent the discharge of copper from treated canals to sensitive habitat.

Lead Agency Contact

Name	Rick Gilmore		
Agency	Byron Bethany Irrigation District		
Phone	209 835 0375	*Fax*	
email			
Address	7995 Bruns Road		
City	Byron	*State* CA	*Zip* 94514-1625

Project Location

County	Alameda, Contra Costa		
City			
Region			
Lat / Long	37° 48' 50.38" N / 121° 36' 17.62" W		
Cross Streets	Byron Bethany Road & Bruns Road		
Parcel No.			
Township	*Range*	*Section*	*Base*

Proximity to:

Highways	
Airports	
Railways	
Waterways	BBID Irrigation Canals
Schools	
Land Use	Agricultural, low density residential, public recreation

Project Issues	Agricultural Land; Air Quality; Biological Resources; Toxic/Hazardous; Vegetation; Water Quality; Water Supply; Other Issues
Reviewing Agencies	Resources Agency; Department of Fish and Wildlife, Region 3; Delta Protection Commission; Department of Parks and Recreation; Department of Water Resources; California Highway Patrol; Caltrans, District 4; Air Resources Board; Regional Water Quality Control Bd., Region 5 (Sacramento); Department of Toxic Substances Control; Native American Heritage Commission; Delta Stewardship Council

Date Received 01/22/2015 *Start of Review* 01/22/2015 *End of Review* 02/20/2015

Note: Blanks in data fields result from insufficient information provided by lead agency.

California Water Boards

Edmund G. Brown Jr.
Governor

Matthew Rodriquez
Secretary for
Environmental Protection

clear
2/20/15

Central Valley Regional Water Quality Control Board

13 February 2015

Rick Gilmore
Byron-Bethany Irrigation District (BBID)
7995 Bruns Road
Byron, CA 94514

CERTIFIED MAIL
7014 2120 0001 3977 9654

COMMENTS TO REQUEST FOR REVIEW FOR THE NEGATIVE DECLARATION, APPLICATION OF AQUATIC HERBICIDE IN DISTRICT WATER CONVEYANCE CANALS PROJECT, SCH# 2015012041, ALAMEDA AND CONTRA COSTA COUNTIES

Pursuant to the State Clearinghouse's 22 January 2015 request, the Central Valley Regional Water Quality Control Board (Central Valley Water Board) has reviewed the *Request for Review for the Negative Declaration* for the Application of Aquatic Herbicide in District Water Conveyance Canals Project, located in Alameda and Contra Costa Counties.

Our agency is delegated with the responsibility of protecting the quality of surface and groundwaters of the state; therefore our comments will address concerns surrounding those issues.

Construction Storm Water General Permit

Dischargers whose project disturb one or more acres of soil or where projects disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres, are required to obtain coverage under the General Permit for Storm Water Discharges Associated with Construction Activities (Construction General Permit), Construction General Permit Order No. 2009-009-DWQ. Construction activity subject to this permit includes clearing, grading, grubbing, disturbances to the ground, such as stockpiling, or excavation, but does not include regular maintenance activities performed to restore the original line, grade, or capacity of the facility. The Construction General Permit requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP). 1-1

For more information on the Construction General Permit, visit the State Water Resources Control Board website at:
http://www.waterboards.ca.gov/water_issues/programs/stormwater/constpermits.shtml.

Phase I and II Municipal Separate Storm Sewer System (MS4) Permits[1]

The Phase I and II MS4 permits require the Permittees reduce pollutants and runoff flows from new development and redevelopment using Best Management Practices (BMPs) to the maximum extent practicable (MEP). MS4 Permittees have their own development standards, also known as Low Impact Development (LID)/post-construction standards that include a hydromodification component. The MS4 permits also require specific design concepts for LID/post-construction BMPs in the early stages of a project during the entitlement and CEQA process and the development plan review process.

For more information on which Phase I MS4 Permit this project applies to, visit the Central Valley Water Board website at:
http://www.waterboards.ca.gov/centralvalley/water_issues/storm_water/municipal_permits/.

For more information on the Phase II MS4 permit and who it applies to, visit the State Water Resources Control Board at:
http://www.waterboards.ca.gov/water_issues/programs/stormwater/phase_ii_municipal.shtml

1-1 cont.

Industrial Storm Water General Permit

Storm water discharges associated with industrial sites must comply with the regulations contained in the Industrial Storm Water General Permit Order No. 97-03-DWQ.

For more information on the Industrial Storm Water General Permit, visit the Central Valley Water Board website at:
http://www.waterboards.ca.gov/centralvalley/water_issues/storm_water/industrial_general_permits/index.shtml.

Clean Water Act Section 404 Permit

If the project will involve the discharge of dredged or fill material in navigable waters or wetlands, a permit pursuant to Section 404 of the Clean Water Act may be needed from the United States Army Corps of Engineers (USACOE). If a Section 404 permit is required by the USACOE, the Central Valley Water Board will review the permit application to ensure that discharge will not violate water quality standards. If the project requires surface water drainage realignment, the applicant is advised to contact the Department of Fish and Game for information on Streambed Alteration Permit requirements.

If you have any questions regarding the Clean Water Act Section 404 permits, please contact the Regulatory Division of the Sacramento District of USACOE at (916) 557-5250.

[1] Municipal Permits = The Phase I Municipal Separate Storm Water System (MS4) Permit covers medium sized Municipalities (serving between 100,000 and 250,000 people) and large sized municipalities (serving over 250,000 people). The Phase II MS4 provides coverage for small municipalities, including non-traditional Small MS4s, which include military bases, public campuses, prisons and hospitals.

Clean Water Act Section 401 Permit – Water Quality Certification

If an USACOE permit (e.g., Non-Reporting Nationwide Permit, Nationwide Permit, Letter of Permission, Individual Permit, Regional General Permit, Programmatic General Permit), or any other federal permit (e.g., Section 9 from the United States Coast Guard), is required for this project due to the disturbance of waters of the United States (such as streams and wetlands), then a Water Quality Certification must be obtained from the Central Valley Water Board prior to initiation of project activities. There are no waivers for 401 Water Quality Certifications.

Waste Discharge Requirements

If USACOE determines that only non-jurisdictional waters of the State (i.e., "non-federal" waters of the State) are present in the proposed project area, the proposed project will require a Waste Discharge Requirement (WDR) permit to be issued by Central Valley Water Board. Under the California Porter-Cologne Water Quality Control Act, discharges to all waters of the State, including all wetlands and other waters of the State including, but not limited to, isolated wetlands, are subject to State regulation.

For more information on the Water Quality Certification and WDR processes, visit the Central Valley Water Board website at:
http://www.waterboards.ca.gov/centralvalley/help/business_help/permit2.shtml. 1-1 cont.

Regulatory Compliance for Commercially Irrigated Agriculture

If the property will be used for commercial irrigated agricultural, the discharger will be required to obtain regulatory coverage under the Irrigated Lands Regulatory Program.
There are two options to comply:

1. **Obtain Coverage Under a Coalition Group.** Join the local Coalition Group that supports land owners with the implementation of the Irrigated Lands Regulatory Program. The Coalition Group conducts water quality monitoring and reporting to the Central Valley Water Board on behalf of its growers. The Coalition Groups charge an annual membership fee, which varies by Coalition Group. To find the Coalition Group in your area, visit the Central Valley Water Board's website at: http://www.waterboards.ca.gov/centralvalley/water_issues/irrigated_lands/app_approval/index.shtml; or contact water board staff at (916) 464-4611 or via email at IrrLands@waterboards.ca.gov.

2. **Obtain Coverage Under the General Waste Discharge Requirements for Individual Growers, General Order R5-2013-0100**. Dischargers not participating in a third-party group (Coalition) are regulated individually. Depending on the specific site conditions, growers may be required to monitor runoff from their property, install monitoring wells, and submit a notice of intent, farm plan, and other action plans regarding their actions to comply with their General Order. Yearly costs would include State administrative fees (for example, annual fees for farm sizes from 10-100 acres are currently $1,084 + $6.70/Acre); the cost to prepare annual monitoring reports; and water quality monitoring costs. To enroll as an Individual Discharger under the Irrigated Lands Regulatory

Program, call the Central Valley Water Board phone line at (916) 464-4611 or e-mail board staff at IrrLands@waterboards.ca.gov.

Low or Limited Threat General NPDES Permit

If the proposed project includes construction dewatering and it is necessary to discharge the groundwater to waters of the United States, the proposed project will require coverage under a National Pollutant Discharge Elimination System (NPDES) permit. Dewatering discharges are typically considered a low or limited threat to water quality and may be covered under the General Order for *Dewatering and Other Low Threat Discharges to Surface Waters* (Low Threat General Order) or the General Order for *Limited Threat Discharges of Treated/Untreated Groundwater from Cleanup Sites, Wastewater from Superchlorination Projects, and Other Limited Threat Wastewaters to Surface Water* (Limited Threat General Order). A complete application must be submitted to the Central Valley Water Board to obtain coverage under these General NPDES permits. 1-1 cont.

For more information regarding the Low Threat General Order and the application process, visit the Central Valley Water Board website at:
http://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/general_orders/r5-2013-0074.pdf

For more information regarding the Limited Threat General Order and the application process, visit the Central Valley Water Board website at:
http://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/general_orders/r5-2013-0073.pdf

If you have questions regarding these comments, please contact me at (916) 464-4684 or tcleak@waterboards.ca.gov.

Trevor Cleak
Environmental Scientist

cc: State Clearinghouse unit, Governor's Office of Planning and Research, Sacramento

STATE OF CALIFORNIA – CALIFORNIA NATURAL RESOURCES AGENCY
EDMUND G. BROWN JR., *Governor*

DEPARTMENT OF WATER RESOURCES
1416 NINTH STREET, P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791

CLEAR
2/20/15
p

February 18, 2015

Mr. Rick Gilmore
Byron-Bethany Irrigation District
7995 Bruns Road
Byron, California 94514-1625

Notice of Completion and Environmental Document Transmittal, Negative Declaration, Byron-Bethany Irrigation District, Contra Costa County, SCH# 2015012041

Dear Mr. Gilmore,

Thank you for the opportunity to review and comment on the Initial Study/Negative Declaration for the proposed application of aquatic herbicides in Byron-Bethany Irrigation District (BBID) water conveyance canals in Contra Costa County. DWR requests notification 48 hours prior to an aquatic herbicide application by BBID. Notification should be given to the Delta Field Division Area Control Center at (209) 833-2180. 2-1

If you have any questions, please contact Jeff Janik, Chief of DWR's O&M Water Quality Section, at (916) 653-5688.

Sincerely,

for David M. Samson, Chief
State Water Project Operations Support Office
Division of Operations and Maintenance

EXHIBIT 1

COMMENTS RECEIVED BY BYRON BETHANY IRRIGATION DISTRICT ON THE APPLICATION OF AQUATIC HERBICIDE IN DISTRICT WATER CONVEYANCE CANALS, INITIAL STUDY/NEGATIVE DECLARATION (SCN 2015012041)

This exhibit serves as response to comments received on Byron Bethany Irrigation District's (BBID) Application of Aquatic Herbicide in District Water Conveyance Canals Initial Study/Negative Declaration (IS/ND). A copy of the comment letters are attached to this exhibit.

This exhibit also includes revisions to the Draft IS/ND dated January, 2015 that was released for public review. This exhibit, combined with the Draft IS/ND constitutes the Final IS/ND.

Central Valley Regional Water Quality Control Board, letter dated February 13, 2015.

Comment: The letter identifies eight (8) permits (Construction Storm Water General Permit, Phase I and II Municipal Separate Storm Sewer System (MS4) Permits, Industrial Storm Water General Permit, Clean Water Act Section 404 Permit, Clean Water Act Section 401 Permit – Water Quality Certification, Waste Discharge Requirements, Regulatory Compliance for Commercially Irrigated Agriculture, and Low or Limited Threat General NPDES Permit) administered by the State and designed to protect quality of surface and groundwaters of the State. Applicability of these permits is to be considered for the proposed project.

Response: All permits and approvals required to implement the project are identified in Section 2.4, Permits and Approvals of the Initial Study. As indicated in Section 2.4, the discharge to Waters of the United States of aquatic pesticides applied for aquatic weed and pest control is regulated by National Pollutant Discharge Elimination System (NPDES) provisions of the Clean Water Act. In 2013, the State Water Resources Control Board adopted an updated General Permit applicable to aquatic weed control applications (Water Quality Order No. 2013-0002-DWQ). The permit imposes requirements on any discharge of residual algaecides and aquatic pesticides from public entities to Waters of the United States in accordance with the SWRCB's State Implementation Plan (SIP), *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (SWRCB, 2005). Under the SIP, discharges of priority pollutants are subject to water-quality based effluent limitations. Section 5.3 of the SIP allows for "categorical exceptions" from its requirements for resource or pest management (e.g., vector or weed control, pest eradication, or fishery management) conducted by public entities to fulfill statutory requirements. The California Water Code Sections 22075-22078 et seq. provide that an irrigation district may treat water for the beneficial use of water users in its service area.

Copper is a priority pollutant, and water quality criteria for copper are established in the California Toxics Rule (EPA, 2000). If an agency's use of copper (or other priority pollutants) may result in an exceedance of Water Quality Objectives in receiving waters, the agency must have been granted a categorical exception to exceed discharge limitations for the chemicals. Therefore, BBID intends to obtain a categorical exception to conduct its ongoing algae and aquatic weed control activities.

California Department of Water Resources, letter dated February 18, 2015

Comment: the letter requests that the Department of Water Resources, delta Field Division Area Control Center be notified forty-eight (48) hours in advance prior to BBID's application of the aquatic herbicide.

Response: BBID will call the phone number provided forty-eight (48) hours in advance of applying the aquatic herbicide.

Revisions to the Draft IS/ND

This section provides modifications and corrections to the IS/ND that was released in January, 2015. The changes to not alter the conclusions related to environmental impacts that were presented in the Draft IS/ND. Additions are indicated with underlined text and deletions are indicated in ~~strikethrough~~. The revisions described below occur on page 2-1 of the Draft IS/ND.

Project Background and Description

2.1 Background

This Initial Study/Negative Declaration (IS/ND) was prepared by the BBID (or District) to satisfy the requirements of the California Environmental Quality Act (CEQA) and in support of the SWRCB processing the proposed project as a categorical exception under Water Quality Order No 2013-0002-DWQ, the ~~01-12-Department of Water Quality~~ Statewide Ggeneral National Pollutant Discharge Elimination System (NPDES) P~~p~~ermit for Residual Aquatic Pesticide Discharges to Waters of the united States from Algae and Aquatic Weed Control Application (General Permit No. CAG990005). ~~discharges of aquatic pesticides to waters of the United States (General Permit) No. CAG990003.~~ BBID is proposing to apply the aquatic herbicides Nautique and Captain to control algae and aquatic weeds in canals that serve its agricultural service areas (Byron Division and Bethany Division; described below). These aquatic herbicides contain copper, which have the potential to enter into Waters of the United States. BBID intends to maintain compliance with the general NPDES permit through conformance with their Aquatic Pesticides Application Plan (APAP). BBID's APAP (Appendix A), which was approved by the State Water Resources Control Board (SWRCB) in 2014, includes specific water management measures to prevent the release of aquatic herbicides from treated canals to sensitive habitat and includes the implementation of a Water Quality Monitoring Plan. The monitoring plan includes both chemical water analysis by a certified laboratory, and observational monitoring to measure the effectiveness of water management measures.

Notice of Determination

To:

Office of Planning and Research
P.O. Box 3044
Sacramento, CA 95812-3044

County Clerk
Alameda County
1106 Madison Street, Oakland, CA 94607
Contra Costa County
555 Escobar Street, Martinez, CA 94553

From:

Byron Bethany Irrigation District
7995 Bruns Road, Byron, CA 94514

Contact: **Rick Gilmore**
209-835-0375

FILED
MAR 24 2015
J.E. CANCIAMILLA COUNTY CLERK
CONTRA COSTA COUNTY
BY M S Neal DEPUTY

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): **2015012041**

Project Title: **Application of Aquatic Herbicides in District Water Conveyance Canals.**

Project Applicant: **Byron Bethany Irrigation District**

Project Location (include county): **Within the Clifton Court Forebay, Byron Hotsprings, Brentwood and Woodward Island USGS 7.5 minute quadrangles (Townships 1 and 2 South, Ranges 3 and 4 East within Alameda and Contra Costa County.**

Project Description: **BBID is proposing to apply the aquatic herbicides Nautique and Captain to control algae and aquatic weeds in the canal system within its agricultural service area.**

This is to advise that the **Byron Bethany Irrigation District, as Lead Agency**, has approved the above described project on **March 17, 2015** and has made the following determinations regarding the above described project.

1. The project **will not** have a significant effect on the environment.
2. A **Negative Declaration was prepared** for this project pursuant to the provisions of CEQA.
3. Mitigation measures **were not** made a condition of the approval of the project.
4. A mitigation reporting or monitoring plan **was not** adopted for this project.
5. A statement of Overriding Considerations **was not** adopted for this project.
6. Findings **were** 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: **Byron Bethany Irrigation District, 7995 Bruns Road, Byron, CA 94514.**

Signature: _____ Title: General Manager

Date: 3/18/15 Date Received for filing at OPR:

Authority cited: Sections 21083, Public Resources Code.
Reference Section 21000-21174, Public Resources Code.

SECTION 4

Environmental Impacts Analysis/Checklist

4.1 Environmental Factors Potentially Affected

The environmental factors checked below would be potentially affected by the proposed project, involving at least one impact that is 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/Soils
☐ Greenhouse Gas Emissions	☐ Hazards and Hazardous Materials	☐ Hydrology/Water Quality
☐ Land Use/Planning	☐ Mineral Resources	☐ Noise
☐ Population/Housing	☐ Public Services	☐ Recreation
☐ Transportation/Traffic	☐ Utilities/Service Systems	☐ Mandatory Findings of Significance

DETERMINATION: (To be completed by the lead agency)

On the basis of this initial evaluation:

☒ 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 proposed 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 MIGHT have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MIGHT 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 potentially significant effects (1) have been analyzed adequately in an earlier ENVIRONMENTAL IMPACT REPORT or NEGATIVE DECLARATION pursuant to applicable standards, and (2) have been avoided or mitigated pursuant to that earlier ENVIRONMENTAL IMPACT REPORT or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed on the proposed project, nothing further is required.

Rick Gilmore

3/6/15
Date

RESOLUTION 2015-7

NOTICE OF DETERMINATION REGARDING THE APPLICATION OF AQUATIC HERBICIDE IN CONFORMANCE WITH AN AQUATIC PESTICIDE APPLICATION PLAN

WHEREAS, the Byron Bethany Irrigation District (BBID or District) proposes to apply aquatic herbicides to control algae and aquatic weeds in canals within the Byron and Bethany service areas; and,

WHEREAS, an Initial Study/Negative Declaration (IS/ND) was prepared to satisfy the requirements of the California Environmental Quality Act (CEQA) and in support of the State Water Resources Control Board (SWRCB) processing of the application of aquatic herbicides as a categorical exception under Water Quality Order No. 2001-12-Department of Water Quality Statewide General National Pollutant Discharge Elimination System (NPDES) Permit for discharges of aquatic herbicides to waters of the United States (General Permit) No. CAG990003; and,

WHEREAS, compliance with the General Permit will be accomplished through conformance with an Applied Pesticide Application Plan (APAP). The APAP, which was approved by the SWRCB in 2014, includes specific water management measures to prevent the release of aquatic herbicides from treated canals to sensitive habitat and includes the implementation of a Water Quality Monitoring Plan; and,

WHEREAS, notification of application to interested agencies and water users will be performed in accordance with District procedures. Monitoring of herbicide concentrations in the canals will be performed to ensure the elimination of the herbicide from the conveyance system prior to returning the system to full operations.

NOW THEREFORE, BE IT RESOLVED the Board of Directors of the District hereby approves the above described project, after complying with the California Environmental Quality Act, and has made the following findings:

1. The project will not have a significant effect on the environment;
2. A Negative Declaration was prepared for the project pursuant to the provisions of CEQA and that the Negative Declaration and record of the project approval may be examined at the District office;
3. Mitigation measures were not a condition of the approval of the project;
4. A Statement of Overriding Considerations was not adopted for this project.

PASSED AND ADOPTED at a Regular Meeting of the Board of Directors of the Byron Bethany Irrigation District on 17 March 2015, by the following vote:

AYES: **BROWN, ENOS, KAGEHIRO, M.MAGGIORE, T.MAGGIORE, MUSCO, TUSO**
NOES:
ABSENT:

Mr. Russell Kagehiro, President

SECRETARY'S CERTIFICATION

I, Rick Gilmore, Secretary of the Board of Directors of the Byron Bethany Irrigation District do hereby certify that the foregoing Resolution is a true and correct copy entered into the Minutes of the Regular Meeting on 17 March 2015, at which time a quorum was present, and that there has been no motion to amend or rescind the above Resolution.

Rick Gilmore, Secretary

State of California—Natural Resources Agency
CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE

2015 ENVIRONMENTAL FILING FEE CASH RECEIPT

RECEIPT# 07-2015-097

STATE CLEARING HOUSE # *(if applicable)*

SEE INSTRUCTIONS ON REVERSE. TYPE OR PRINT CLEARLY

LEAD AGENCY			DATE
Byron Bethany Irrigation District			03/24/2015
COUNTY/STATE AGENCY OF FILING			DOCUMENT NUMBER
Contra Costa			15-128

PROJECT TITLE
Application of Aquatic Herbicides in District Water Conveyance Canals

PROJECT APPLICANT NAME			PHONE NUMBER
Byron Bethany Irrigation District			(209) 835-0375
PROJECT APPLICANT ADDRESS	CITY	STATE	ZIP CODE
7995 Bruns Road	Byron	CA	94514

PROJECT APPLICANT *(Check appropriate box):*

☒ Local Public Agency ☐ School District ☐ Other Special District ☐ State Agency ☐ Private Entity

CHECK APPLICABLE FEES:

☐ Environmental Impact Report (EIR)	$3,069.75	$	0.00
☒ Mitigated/Negative Declaration (MND)(ND)	$2,210.00	$	2,210.00
☐ Application Fee Water Diversion *(State Water Resources Control Board only)*	$850.00	$	0.00
☐ Projects Subject to Certified Regulatory Programs (CRP)	$1,043.75	$	0.00
☒ County Administrative Fee	$50.00	$	50.00
☐ Project that is exempt from fees			
☐ Notice of Exemption (attach)			
☐ CDFW No Effect Determination (attach)			
☐ Other _____		$	

PAYMENT METHOD:

☐ Cash ☐ Credit ☒ Check ☐ Other #36101 TOTAL RECEIVED $ 2,260.00

SIGNATURE	PRINTED NAME AND TITLE
X M Neal	M. Neal, Deputy Clerk

County Receipt Number: 2222325

ORIGINAL - PROJECT APPLICANT COPY - CDFW/ASB COPY - LEAD AGENCY COPY - COUNTY CLERK DFG 753.5a (Rev. 11/14)