RECEIVED
OCT 28 2013
DIVISION OF WATER QUALITY

Attachment E – Notice of Intent

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

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

I. NOTICE OF INTENT STATUS (see Instructions)

Mark only one item	A. New Applicator	B. X Change of Information: WDID# 5A29NP00004
	C. ☐ Change of ownership or responsibility: WDID#	

II. DISCHARGER INFORMATION

A. Name Nevada Irrigation District			
B. Mailing Address 1036 W. Main Street			
C. City Grass Valley	D. County Nevada	E. State CA	F. Zip 95945
G. Contact Person Jacqueline Longshore	H. E-mail address longshore@nidwater.com	I. Title Asst. Maintenance Supt.	J. Phone (530) 271-6897

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

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

IV. RECEIVING WATER INFORMATION

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

1. ☒ Canals, ditches, or other constructed conveyance facilities owned and controlled by Discharger.
   Name of the conveyance system: Nevada Irrigation District
2. ☐ Canals, ditches, or other constructed conveyance facilities owned and controlled by an entity other than the Discharger.
   Owner's name: _____
   Name of the conveyance system: _____
3. Directly to river, lake, creek, stream, bay, ocean, etc.
   Name of water body: _____

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

V. ALGAECIDE AND AQUATIC HERBICIDE APPLICATION INFORMATION

A. Target Organisms: ____
Algae and Aquatic Weeds

B. Algaecide and Aquatic Herbicide Used: List Name and Active ingredients
Green Clean Pro (Sodium Carbonate Peroxyhydrate)
Captain (Copper)
Cascade (Endothall)
Cutrine Plus (Copper)
Cutrine Ultra (Copper)
Nautique (Copper)
Roundup Custom (Glyphosate)

C. Period of Application: Start Date April 1 - Yearly End Date October 15 - Yearly

D. Types of Adjuvants Used: Inlet (Non-Ionic Wetter/Spreader Surfactant)

VI. AQUATIC PESTICIDE APPLICATION PLAN

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

If not, when will it be prepared? _____

VII. NOTIFICATION

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

VIII. FEE

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

IX. CERTIFICATION

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

A. Printed Name: Brian Powell

B. Signature: B. Powell **Date:** 10/25/13

C. Title: Maintenance Department Manager

XI. FOR STATE WATER BOARD STAFF USE ONLY

WDID:	**Date NOI Received:**	**Date NOI Processed:**
Case Handler's Initial:	**Fee Amount Received:** $	**Check #:**
☐ **Lyris List Notification of Posting of APAP**	**Date** _____	**Confirmation Sent** _____

October 2013

AQUATIC PESTICIDE APPLICATION PLAN

Prepared By:

NEVADA IRRIGATION DISTRICT
1036 West Main Street
Grass Valley, CA 95945-5424
T 530.273.6185 / F 530.271.6808

Jacqueline S. Longshore, PCA, QAL
Assistant Maintenance Superintendent – Vegetation Control

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Aquatic Pesticide Application Plan

NEVADA IRRIGATION DISTRICT
AQUATIC PESTICIDE APPLICATION PLAN
OCTOBER 2013

1. INTRODUCTION

Nevada Irrigation District (NID) is a public entity formed in 1921, with the mission to provide a reliable water supply for agricultural, municipal, commercial and recreational uses. Located on the western slope of the Sierra Nevada mountain range, NID operates and maintains a complex system of 21 reservoirs, 450 miles of open canals, 300 miles of pipeline and seven water treatment plants to capture and deliver both treated and untreated (raw) water. NID services approximately 22,000 customers within its 287,000-acre boundary, encompassing portions of Nevada, Placer and Yuba Counties.

The NID Management Plan includes an Aquatic Weed Management Program, the purpose of which is to control aquatic vegetation, in order to manage and maintain a reliable flow throughout NID's water conveyance system. The control of aquatic vegetation is essential to maintaining unrestricted water delivery to agricultural, municipal, commercial and recreational customers, and to prevent flood damage.

Under the Aquatic Weed Management Program, the application of pesticides to NID's water conveyance system began in the early 1960s. NID has found that the use of pesticides is the safest and most cost effective means for controlling aquatic vegetation in its waters. In 2004, NID obtained coverage under the Statewide General National Pollutant Discharge Elimination System (NPDES) Permit (Order 2004-0009-DWQ). With the expiration of the 2004 Permit set to occur at the end of 2013, NID will submit for coverage under the new 2013 Permit.

On March 5, 2013, the State Water Resources Control Board (SWRCB) adopted the NPDES Permit for Residual Aquatic Pesticide Discharges to waters of the United States from Algae and Aquatic Weed Control Applications (Order 2013-0002-DWQ). The NPDES Permit requires dischargers seeking Permit coverage to submit an Aquatic Pesticide Application Plan (APAP) with the NPDES Permit application package to SWRCB. Upon determination by the Deputy Director of SWRCB that the NPDES Permit application and APAP are complete, SWRCB will issue a Notice of Applicability (NOA), which allows a discharger to apply aquatic pesticides in accordance with NPDES Permit requirements.

The following APAP details the methods and procedures to be performed by NID, as a discharger, including: (i) determining the need for pesticide use; (ii) evaluating pesticide alternatives; (iii) identifying appropriate pesticide application; (iv) assessing application effectiveness; and (v) monitoring, documenting and reporting compliance. In following these methods and procedures, NID will maintain compliance with the NPDES Permit when applying pesticides to the waters of the United States.

As methods and procedures evolve during the life of the Permit, so too will the NID APAP. Major changes to the NID APAP will be submitted to the Deputy Director of SWRCB for approval, as required by the NPDES Permit.

2. WATER SYSTEM

NID's water supply originates in the upper reaches of the middle and south forks of the Yuba River, Bear River and Deer Creek watershed. Much of NID water has its origins in the snowpack from a 70,000 acre Sierra mountain watershed. By the time water reaches the end of the NID water conveyance system on the south side of the City of Lincoln, at an elevation of 150 feet above sea level, most of the water has dropped over 5,000 vertical feet and traveled over 100 miles.

The Deer Creek Service Area receives water supply from South Yuba Canal, as well as natural runoff from the Deer Creek watershed stored in Scotts Flat Reservoir. Major canals that divert water throughout this service area include the Cascade, D/S, Newtown, Tunnel and Tarr. Several laterals established off these major canals further distribute water into this service area, which includes most of the Nevada County portion of NID.

The Bear River Service Area receives water supply from diversions from Spaulding Reservoir, as well as from watershed located above the Rollins and Combie Reservoirs located on the Bear River. This service area includes the Placer County portions of NID, as well as the southwest portion of Nevada County. Major canals diverting water throughout this service area include the Camp Far West, Combie North, Combie-Ophir, Gold Hill and Auburn Ravine, with laterals further distributing the water.

3. TREATMENT AREA

The NPDES Permit defines *treatment area* as:

> *"… the area being treated by the algaecide or aquatic herbicide for algae and aquatic weed control and, therefore, the area being targeted to receive an appropriate rate of application consistent with product label requirements of algaecide or aquatic herbicide."*

The treatment areas subject to this NID APAP and NPDES Permit will include both flowing and non-flowing waters under NID jurisdiction. Non-flowing waters will include NID reservoirs. Flowing waters will include NID canals and associated sub-laterals.

Algaecide and aquatic herbicide applications will be scheduled to occur throughout the NID irrigation season (April 1st through October 15th). The applied pesticide formulation, dosage and rate of application will take into account the target algae and aquatic weed species and the rate of flow or amount of water within the treatment area. All algaecide and aquatic herbicide applications will be consistent with product label requirements.

TABLE 1: NID Treatment Areas

Auburn Ravine

Auburn Ravine Canal I
Auburn Ravine Canal II
Clark Jorstad Canal
Comstock-Gladding Canal
Doty North Canal
Doty South Canal
Fruitvale Canal
Hayt Canal
Lincoln Canal
Markell Canal
Musser Canal
Sohier Ahart

Camp Far West

Bogdanoff Canal
Camp Far West Canal
Camp Far West Canal Extension
Church Canal
Forbes Canal
Lateral 1 Canal
Lateral 2 Canal
Lateral 4 Canal
Lateral 5 Canal
Renken Canal
Wiswell-Gladding Canal

Chicago Park - Rattlesnake

Chicago Park Canal
Farm Canal
Forest Spring Canal
Kyler Canal
Ousley Bar Canal
Maben Canal
Rattlesnake Canal
Tunnel Canal Extension
Town Canal

China - Combie Ophir IV

China Union Canal
Combie Ophir IV Canal
Dudley Canal
Gold Blossom Canal
Little Ophir Canal
Meade Canal
Ousley Bar Canal
Spenceville Canal
St. Patricks Canal
Tunnel Canal Extension
Vernon Canal

Combie Ophir II/III - Lower Tarr

Bald Hill Canal
Beyers Canal
Columbia East Canal
Columbia West Canal
Combie Ophir II Canal
Edgewood Canal
Kemper Canal
Pearl Barnes Canal
Pet Hill Canal
Picket Canal
Picket North Canal
Smith Gordon Canal
Tarr Canal
Wolf Canal

Combie Phase II & II - Gold Hill I

Combie Phase II & III Canal
Gold Hill I Canal
Hayt Canal
Lincoln Canal
Markwell Canal
Sanford Struckman Canal
Wolf Hannaman Canal

Lone Star - Newtown - Keystone

Allison Ranch Canal
Keystone Canal
Lone Star Canal
Newtown Canal
Oest Canal
Ousley Bar Canal
Tunnel Canal Extension
Willits Canal

Magnolia - Combie - Phase II & III

Combie Phase II & III Canal
Gold Hill II Canal
Hayt Canal
Hemphill Canal
Lincoln Canal
Magnolia Canal
Magnolia II South Canal
Magnolia II North Canal
Magnolia III Canal
Markwell Canal
Sanford Struckman Canal
Wolf Hannaman Canal
Sanford Canal

Smith Gordon - Clear Creek - Tarr

B Canal
Bald Hill Canal
Beyers Canal
Casey Loney Canal
Clear Creek Canal
Cole Canal
Cole Viet Canal
Miller Canal
Pet Hill Canal
Smith Gordon Canal
Tarr Canal
Wolf Canal

Tunnel

Ousley Bar
Rex Canal
Riffle Box Canal
Rough & Ready Canal
Tunnel Canal
Tunnel Canal Extension

Valley View

Gold Hill II Canal
Kilaga Springs Canal
Old Whiskey Diggins Canal
Rielli Canal
Stringham canal
Thomas Canal
Valley View Canal
Whiskey Diggins Canal

Lower Tarr

Bald Hill Canal
Beyers Canal
Pearl Barnes Canal
Pet Hill Canal
Smith Gordon Canal
Tarr Canal
Wolf Canal

Reservoirs

Alta Hill
Loma Rica
Rex
Rough and Ready
Ruess
Sugar Loaf
Union

4. AQUATIC VEGETATION AND TARGET SPECIES

Floating, emerged and submersed aquatic weeds and algae can be found throughout the NID water conveyance system. The presence of these aquatic weeds and algae negatively impact the NID water conveyance system by reducing water storage capacity, obstructing flow, clogging screens and pumps, causing flooding, reducing water quality and creating undesirable taste and odor in drinking water.

The NID Aquatic Weed Management Program targets the weed species outlined below, due to the negative impacts they pose on the NID water conveyance system and the extensive challenges they pose to the NID water delivery mission. The following details provide brief descriptions of the current primary aquatic weed and algae targets.

4.1 Filamentous Algae

Filamentous algae are single algae cells that form long visible chains, threads or filaments. Filamentous algae usually begin growing along the bottom of shallow waters by attaching to structures, such as rocks or other plants. These filaments intertwine and form large string-like mats. Filamentous algae are often seen floating on the water surface in large mats that resemble what is commonly called “pond scum.” Filamentous algae prefer shallow, slow-flowing, warm, nutrient-rich conditions.

4.2 Elodea

Elodea is a rooted, multi-branched perennial plant that can also grow and thrive as free floating fragments. The dark green, blade-like leaves (3/5 inches long and 1/5 inches wide) are in whorls of three with finely toothed margins. Elodea also produces a flower having three white petals with a waxy coating that aids in floating. Elodea is often confused with Hydrilla and Egeria. Elodea is different than Hydrilla and Egeria in that it only has three leaves per whorl and no midrib teeth.

4.3 American Pondweed

American pondweed is a perennial weed that has both floating and submerged leaves in an alternate pattern. The floating leaves are elliptical to oval in shape, 4 to 7 inches long and 1 to 2 inches wide on long petioles. Submerged leaves are less abundant and are blade-like, somewhat transparent and smaller than floating leaves. The fruits are brownish to reddish spikes that usually stand above the water surface and are in sets of three, 1 to 2 inches long and 1/8 to 1/4 inches wide.

4.4 Curly-Leafed Pondweed

Curly-leafed pondweed is a non-native perennial weed originating from Europe. Curly-leafed pondweed is named after the wavy nature of its leaves. Mature leaves are toothed with a distinct midrib. Stems are flat and branchlike. Curly-leafed pondweed reproduces from small vegetative structures that form at the base of some leaves. Curly-leafed pondweed is fast growing under conditions that include warm and nutrient rich waters and will aggressively take over waters that maintain such conditions.

4.5 Horned Pondweed

Horned pondweed is a perennial weed recognized by its long, thread like leaves and string-like appearance. Its roots are also long and tendril-like and its seeds have a distinct horned shape, for which it is named. Unlike many lookalike aquatic plants that have flowers emerging from the water on spikes, horned pondweed has modest underwater flowers and fruits located at the base of its leaves. Horned pondweed favors conditions that include soft nutrient rich waters.

4.6 Sago Pondweed

Sago pondweed is a perennial plant that grows from thick matted rhizomes. Sago Pondweed stems are thin and long with extensive branching. Sago Pondweed leaves are very thin and filament-like, approximately 1/16 inches wide and 2 to 12 inches long and tapers to a point. Sago Pondweed leaves do not float. The fruits are nut-like, 1/8 to 1/4 inches long and 1/10 to 1/8 inches wide.

4.7 Cattails

Cattails are an emergent perennial weed with hardy creeping rhizomes. Colonies usually develop in shallow waters and can also be found growing in mud. Cattails have flat to slightly rounded leaves that twist slightly over their length and grow up to 10 feet in height. Cattail flowers are dark brown, cigar-shaped and located at the end of spikes (called the catkin). Cattails spread rapidly by seeds that blow in the wind and float on the water surface and also spread vegetatively by way of underground rhizomes.

4.8 Bulrush

Bulrush is a perennial plant, noticeable by its long triangular stems ranging from 5 to 8 feet in height. The leaves are slender with v-shaped blades. The Bulrush flowers are arranged in groups of spikelets that are an orange-brown color and usually occur just below the tip of the stem. Bulrush colonies grow from brown rhizomes that spread rapidly.

4.9 Yellow Nutsedge

Yellow Nutsedge is a perennial plant that resembles a grass. It grows in shallow water or moist soils and can reach 4 feet in height. Unlike grasses, the Yellow Nutsedge stem is triangular, and its leaves are arranged in groups of three and are much hardier than grass blades. It has three long, leaf-like bracts at the base of each yellow-brownish flower head. Yellow Nutsedge propagates by seed and vegetatively by rhizomes and tubers.

4.10 Common Waterplantain

Common waterplantain is a native perennial aquatic broadleaf weed, and grows in shallow waters and exposed mud. Common waterplantain propagates by seed and can also reproduce from side shoots of established plants.

4.11 Parrotfeather

Parrotfeather is a non-native perennial plant that was most likely introduced to the United States through the aquarium industry. It is a rooted, submerged perennial plant that is found primarily in shallow waters. Parrotfeather derived its name from the gray-green thick bunches of that leaves that rise above the water in whorled patterns, with frilly divisions that give it a feather-like appearance.

5. FACTORS INFLUENCING PESTICIDE USE

The NID Aquatic Weed Management Program considers aquatic pesticides and algaecides to be an integral component of its Integrated Pest Management approach to control vegetation. The decision to use aquatic pesticides and algaecides in the NID water conveyance system has been influenced by the fact that over many decades, the use of aquatic pesticides and algaecides has proven to be the most operationally and fiscally efficient and effective, as well as environmentally compatible, method of aquatic weed and algae control throughout NID's 450 miles of irrigation canals.

6. AQUATIC PESTICIDES AND ALGAECIDES

NID employs an Integrated Pest Management approach to its vegetation control efforts. NID's Integrated Pest Management approach includes mechanical removal, thermal steaming, grazing, barley straw and use of pesticides.

In effort to maintain control of the algae and aquatic vegetation growing within NID's 450 miles of irrigation canals, the NID Vegetation Control Program employs the use of only those algaecides and aquatic pesticides that are registered with the California Department of Pesticide Regulation. Throughout NID's vast canal system, algaecides and aquatic pesticides are the most effective, efficient and economically feasible tools available to control algae and aquatic vegetation.

The following will be the pesticides used to control algae and aquatic weeds throughout NID's water conveyance system.

6.1 Green Clean Pro

Green Clean Pro is a granular algaecide that will be used to spot treat filamentous algae. The Organic Materials Review Institute approved and listed Green Clean Pro for organic use. Sodium carbonate peroxyhydrate is the active ingredient. Green Clean Pro degradation byproducts include sodium carbonate, carbon dioxide, bicarbonate carbonate and hydrogen dioxide. Green Clean Pro does not bioaccumulate.

6.2 Captain

Captain is a chelated copper aquatic herbicide that will be used to target algae and elodea in NID's irrigation canals. Captain will be administered into canals through a drip method. The active ingredient in Captain is copper ethylenediamine complex. Copper is a naturally occurring element and is persistent in the environment. When in water,

the copper ion tends to adsorb to clays and dissolved organic carbon to form inorganic and organic complexes. A majority of copper applied to aquatic systems will eventually adsorb to sediments.

6.3 Cascade

Cascade is an aquatic herbicide that will be used to target the various pondweeds in NID's irrigation canals via subsurface drip method. The active ingredient in Cascade is dipotassium salt of endothall. German scientists first synthesized endothall in 1928, basing the endothall molecule on cantharidin, a naturally occurring chemical produced by blister beetles. Cascade is rapidly degraded in aquatic environments by indigenous microbes. Using endothall molecules as a source of food, microbial populations breakdown the endothall into organic acids, carbon dioxide and water. Cascade does not bioaccumulate.

6.4 Cutrine Plus

Cutrine Plus is a chelated copper aquatic herbicide that will be used to target algae and elodea in NID's irrigation canals. Cutrine Plus will be administered into canals through a drip method. The active ingredient in Cutrine Plus is copper ethanolamine complex. Copper is a naturally occurring element and is persistent in the environment. When in water, the copper ion tends to adsorb to clays and dissolved organic carbon to form inorganic and organic complexes. A majority of copper applied to aquatic systems will eventually adsorb to sediments.

6.5 Cutrine Ultra

Cutrine Ultra contains the same chelated copper formulation as Cutrine Plus, with an added emulsified surfactant/penetrant combination. The emulsified combination provides a more effective control of course (thicker cell wall) filamentous algae and elodea. Cutrine Ultra will be administered into NID's irrigation canals through a drip method. Copper is a naturally occurring element and is persistent in the environment. When in water, the copper ion tends to adsorb to clays and dissolved organic carbon to form inorganic and organic complexes. A majority of copper applied to aquatic systems will eventually adsorb to sediments.

6.6 Nautique

Nautique is a chelated copper aquatic herbicide that will be used to target elodea and pondweeds in NID's irrigation canals. Nautique will be administered into irrigation canals through a drip method. The active ingredient in Nautique is copper carbonate. Copper is a naturally occurring element and is persistent in the environment. When in water, the copper ion tends to adsorb to clays and dissolved organic carbon to form inorganic and organic complexes. A majority of copper applied to aquatic systems will eventually adsorb to sediments.

6.7 Roundup Custom

Roundup Custom is a non-selective aquatic and terrestrial herbicide. Roundup Custom will be used to control emerged aquatic weeds in NID's irrigation canals. Roundup Custom will be administered through spraying methods. The active ingredient in Roundup Custom is Glyphosate. Roundup Custom binds tightly to soil particles on both land and water, and rapidly disperses through microbial degradation. Roundup Custom requires the use of a nonionic surfactant for successful application. NID will use Roundup Custom and Inlet tank-mixes for the control of emerged aquatic weeds.

6.8 Inlet

Inlet is a nonionic wetter/spreader surfactant that will be used with Roundup Custom in a tank-mix for the control of emerged aquatic weeds. The active ingredient in Inlet is polyalkoxylated and non-alkoxylated aliphatics, alkanolamides and derivatives thereof. Inlet will be administered through a spraying method.

The following Table 2 summarizes the aquatic pesticides and algaecides that will be used by NID during the irrigation season.

TABLE 2: NID Aquatic Pesticides and Algaecides

PESTICIDE	ACTIVE INGREDIENT	METHOD OF APPLICATION
Green Clean Pro	Sodium Carbonate Peroxyhydrate	Spreader
Captain	Copper	Drip
Cascade	Endothall	Drip
Cutrine Plus	Copper	Drip
Cutrine Ultra	Copper	Drip
Nautique	Copper	Drip
Roundup Custom	Glyphosate	Backpump, Handgun and Spot Spray
Inlet	(surfactant)	Backpump, Handgun and Spot Spray

7. GATES AND CONTROL STRUCTURES

There are many gates and control structures throughout NID's water conveyance system. Prior to aquatic pesticide and algaecide applications, NID employees will close pertinent gates and structures to eliminate the risk of any potential impacts that may occur to receiving waters from residual aquatic pesticides and algaecides. Prior to applications, gates and structure will also be inspected for leaks. Detection of a leak will be communicated to applicators, and application will halt until the leak is resolved.

8. EXCEPTION PERIOD

NID has been granted a seasonal exception under the State Water Board Policy for *Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays and Estuaries of California (Policy), Section 5.3*. NID will apply aquatic pesticides and

algaecides containing copper to its water conveyance system during the NID irrigation season (April 1st through October 15th).

9. MONITORING AND REPORTING PROGRAM

NID will implement a Monitoring and Reporting Program (MRP) that conforms to the requirements set forth in Attachment C of the Permit. The MRP has been designed to answer two key questions as stated below.

> ***Question 1:*** *Does the residual algaecides and aquatic herbicides discharge cause an exceedance of receiving water limitations?*
>
> ***Question 2:*** *Does the discharge of residual algaecides and aquatic herbicides include 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?*

The NID MRP shall provide a logical framework in the evaluation of aquatic pesticides and algaecides applications, and exhibit an effective decision making process pertaining to establishing indicators, monitoring locations and frequency.

9.1 Location and Frequency

The following criteria were evaluated when establishing water quality monitoring locations:

a. Safety of access.

b. Permission from private property owners to access.

c. Irrigation season water flows sufficient for sampling purposes.

d. Representative of NID's water conveyance system, similar in hydrology, aquatic pesticide and algaecide use and influenced by factors affecting discharge.

The following Table 3 provides descriptions of the chosen water quality monitoring locations. Each of these locations is where NID-applied aquatic pesticide and algaecide treated waters enter natural waterways.

TABLE 3: NID Water Quality Monitoring Locations

MONITORING LOCATION	GPS COORDINATES	TREATMENT AREA	NEAREST ACCESS ROAD	PESTICIDE APPLIED
Squirrel Creek	39°12'51.468"N 121°12'24.088"W	Riffle Box Canal	Pleasant Valley	Copper, Glyphosate
Deadman's Ravine	38°56'27.156"N 121°7'55.095"W	Gold Hill I Canal	Joeger	Copper, Glyphosate
Sailor's Ravine	38°56'13.935"N 121°10'27.857"W	Livingston Canal	Mount Vernon	Copper, Glyphosate

Three specific sampling types shall be collected from these locations, including background monitoring, event monitoring and post-event monitoring. Background monitoring samples shall be collected upstream at the time of the application event or in the application area just prior to (up to 24 hours in advance of) the application event. Event monitoring samples shall be collected immediately downstream of the treatment area in flowing waters or immediately outside of the treatment area in non-flowing waters, immediately after the application event, but after sufficient time has elapsed such that treated water would have exited the treatment area. Post-event monitoring samples shall be collected within the treatment area within one week after application.

Each of these sampling types shall be collected from a minimum of six application events per year for each active ingredient at each monitoring location, except for glyphosate. If the results from six consecutive sampling events show concentrations that are less than the receiving water limitation/trigger for an active ingredient in the monitoring location, sampling shall be reduced to one application event per year for that active ingredient in that monitoring location. If the yearly sampling event shows exceedance of the receiving water limitation/trigger for an active ingredient in an environmental setting, then sampling shall return to six application events per year for that active ingredient at each monitoring location. For glyphosate, samples shall be collected from one application event per year from each monitoring location.

Prior to every NID irrigation season (April 1st through October 15th), an Aquatic Weed Control Schedule is established. The Schedule details the date, location and aquatic pesticide and algaecide application planned. The water monitoring and sampling events will coincide with the scheduled application dates for the Riffle Box, Gold Hill I and Livingston Canals. Background and event monitoring shall occur on the same days as applications. Post-event monitoring shall occur within one week after application event.

9.2 Staff and Equipment

Monitoring and sampling shall only be performed by trained NID staff. Prior to departure to the monitoring location, NID's trained staff shall ensure that all necessary monitoring tools and equipment are on hand, and the field meter is fully functioning and has been calibrated according to manufacturer specifications.

The following Table 4 serves as a checklist of tools and equipment necessary for collection of surface water and field measurements.

TABLE 4: Checklist of Monitoring Tools and Equipment

☐ Laboratory-Supplied Sample Bottles	☐ Watch
☐ Sample Bottle Labels	☐ Cellphone or HT Radio
☐ Waterproof Pens	☐ Camera
☐ Resealable Plastic Bags	☐ Meter
☐ Distilled Water	☐ Aquatic Pesticide Application Plan
☐ Ice Packs	☐ NID Maps
☐ Ice Chest	☐ Aquatic Pesticide [Field] Monitoring and Sampling Forms
☐ Gloves	☐ Chain of Custody Forms
☐ Rubber Boots or Waders	

9.3 Documentation and Forms

All monitoring activities shall be documented on an *Aquatic Pesticide [Field] Monitoring and Sampling Form* and stored in the Monitoring Report binder located in the NID office of the Assistant Maintenance Superintendent – Vegetation Control. All monitoring and sampling records shall include the following:

a. Date, time and exact place of sampling or measurement.

b. Name of individuals who performed sampling or measurement.

c. Dates that analyses were performed.

d. Name of individuals who performed analyses.

e. Analytical techniques or methods used.

f. Results of analyses.

See Appendix A herein for an *Aquatic Pesticide [Field] Monitoring and Sampling Form*. Also see Appendix B herein for a *Chain of Custody* form, which shall be completed and submitted with the associated samples to the laboratory.

9.4 Procedures

NID staff shall be trained in the proper monitoring and sampling procedures. Prior to performing the monitoring and sampling procedures independently, NID staff will demonstrate their ability to perform the procedures proficiently to the trainer.

The following tasks shall be performed for each monitoring and sampling event:

a. Complete sample label using waterproof pen (see Appendix C herein for *Sample Identification Code*).

b. Wade to mid-stream with sample bottle.

c. If necessary, wait for disturbed sediment to wash downstream.

d. Facing upstream, collect sample water at 3 feet below surface or at mid-water column depth, if water depth is less than 3 feet.

e. Cap sample bottle, place in resealable plastic bag and place in ice cooler.

f. Submerge multi-parameter field meter to same depth where sample was collected.

g. Record temperature, pH, turbidity, electric conductivity and dissolved oxygen data on *Aquatic Pesticide [Field] Monitoring and Sampling Form*.

h. Complete *Chain of Custody* form, make a copy and place with associated *Aquatic Pesticide [Field] Monitoring and Sample Form* in Monitoring Report binder.

i. Pack sample bottle appropriately for delivery.

j. Deliver sample to laboratory on day of or day after collection. Ensure that *Chain of Custody* form is complete and delivered with associated sample.

k. Decontaminate tools and equipment. Rinse multi-parameter field meter under tap water and store with probes in distilled water.

l. Check meter calibration schedule and perform calibration, if calibration is scheduled prior to next scheduled monitoring and sampling event.

9.5 Reporting

NID shall prepare the Permit-required (i) Annual Report, (ii) Twenty-Four Hour Report and (iii) Five-Day Written Report, if and when applicable.

Annual Report

The Annual Report shall cover the reporting period between January 1st and December 31st, and be submitted to the State Water Board Deputy Director and Central Valley Regional Water Board Executive Officer. The Annual Report shall include:

a. Executive summary discussing compliance or violation of this General Permit and the effectiveness of the APAP.

b. Summary of monitoring data, including the identification of water quality improvements or degradation as a result of the algaecide or aquatic pesticide application.

In addition, NID shall be prepared to submit annual information, when requested by the Deputy Director or Executive Officer. The annual information shall include:

a. Executive summary discussing compliance or violation of this General Permit and the effectiveness of the APAP to reduce or prevent the discharge of pollutants associated with algaecide and aquatic herbicide applications.

b. Summary of monitoring data, including (i) the identification of water quality improvements or degradation, as a result of the algaecide or aquatic pesticide application, if appropriate, and (ii) recommendations for improvements to the APAP, including proposed Best Management Practices (BMPs) and monitoring program based on the monitoring results. All receiving water monitoring data shall be compared to receiving water limitations and receiving water monitoring triggers.

c. Identification of BMPs currently in use and a discussion of their effectiveness in meeting the requirements of the Permit.

d. Discussion of BMP modifications addressing violations of the Permit.

e. Map showing the location of each treatment area.

f. Types and amounts of algaecides and aquatic herbicides used at each application event.

g. Information on surface area and/or volume of treatment areas, and any other information used to calculate dosage, concentration and quantity of each algaecide and aquatic herbicide used.

h. Sampling results shall indicate/include (i) the name of the sampling agency or organization detailed sampling location information (including latitude and longitude), (ii) a detailed map or description of each sampling area (address, cross roads, etc.), (iii) collection date, (iv) name of constituent/parameter and its concentration detected, (v) minimum levels, (vi) method detection limits for each comparison with applicable water quality standards, and (vii) description of analytical QA/quality control plan. Sampling results shall be tabulated so that they are readily discernible.

i. Summary of algaecide and aquatic herbicide application log.

Twenty-Four Hour Report

The Twenty-Four Hour Report shall be prepared and reported to the State Water Board and Regional Water Board if any noncompliance, including any unexpected or unintended effect of algaecide or aquatic herbicide uses that may endanger health or the environment. Any information shall be provided orally within 24 hours from the time NID becomes aware of the circumstances and must include:

a. Caller's name and telephone number.

b. Applicator's name and mailing address.

c. Waste Discharge Identification (WDID) number.

d. Name and telephone number of a contact person.

e. How and when NID became aware of the noncompliance.

f. Description of the location of noncompliance.

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

h. Description of any steps that the coalition or discharger has taken or will take to correct, repair, remedy, cleanup or otherwise address any adverse effects.

If NID is unable to notify the State and the appropriate Regional Water Board within 24 hours, NID shall do so as soon as possible and also provide the rationale for why notification was not provided within the 24 hours.

Five-Day Report

The Five-Day Written Report shall be submitted within five days of the time NID becomes aware of a noncompliance. The written submission shall include:

a. Date and time NID contacted the State Water Board and Regional Water Board notifying of the noncompliance, and any instructions received from the State and/or Regional Water Board.

b. Description of the noncompliance and its cause, including exact date and time and species affected, estimated number of individual and approximate size of dead or distressed organisms, other than the pests to be eliminated.

c. Location of incident, including the names of any waters affected and appearance of those waters (sheen, color, clarity, etc.).

d. Magnitude and scope of the affected area (e.g., aquatic square area or total stream distance affected).

e. Algaecide and aquatic herbicide application rate, intended use site (e.g., banks, above or direct to water), method of application, name of algaecide and herbicide product, description of algaecide and herbicide ingredients and U.S. EPA registration number

f. Description of the habitat and the circumstances under which the noncompliance activity occurred, including any available ambient water data for aquatic algaecides and aquatic herbicides applied.

g. Laboratory tests performed, if any, and timing of tests. Provide a summary of the test results within five days after they become available.

h. If applicable, explain why the coalition or discharger believes the noncompliance could not have been caused by exposure to the algaecides or aquatic herbicides from the coalition's or discharger's application.

i. Actions to be taken to prevent recurrence of adverse incidents.

10. CONTAMINATION PREVENTION

The risk of contamination to samples will be eliminated by:

a. Properly training NID staff in proper collection procedures.

b. Ensuring sample equipment and collection containers are kept separate from pesticides, pesticide containers and application equipment.

c. Tracking samples using a *Chain of Custody* form, to ensure integrity of sample collection and transportation process

11. BEST MANAGEMENT PRACTICES

11.1 Spill and Contamination Prevention

NID will minimize the risk of pesticide spill and spill contamination by providing bi-annual spill and contamination prevention training for NID pesticide applicators and through a regular inspection and maintenance program for pesticide equipment.

In the event of a spill, pesticides will be contained, collected and disposed of in accordance with label specifications. In addition, the pesticide handler will report the spill incident to their NID supervisor who will report to the appropriate regulatory agencies.

11.2 Accurate Pesticide Calculations and Measurements

NID's Assistant Maintenance Superintendent – Vegetation Control must possess a valid California Pest Control Advisor (PCA) License. Serving as NID's PCA, the Assistant Maintenance Superintendent – Vegetation Control identifies the target pest through site evaluation, examines pesticide labels to determine the best control and prepares the written recommendation in accordance with the label specifications, which includes the rate of application based upon the target weed.

NID pesticide applications are performed or supervised by NID'S PCA or staff that possess a valid California Qualified Applicator License or Certificate (QAL or QAC). NID staff receive regular training on topics related to pesticides, pest identification, pesticide safety, pesticide calculations and measurements, and pesticide equipment calibration and maintenance.

11.3 Applicator Education

NID staff that apply pesticides within NID's service area receive annual training pertaining to the pesticides and application equipment they will be using and how to avoid adverse effects associated with pesticides. Training topics shall include safety regulations for herbicide use, code of safe work practices for herbicide use, hazard communication, herbicide application equipment safety and personal protective equipment.

NID's licensed and certified staff are required to complete 20 to 40 hours of continuing education bi-yearly. NID provides the means for these staff to attend continuing education courses, where educational topics also cover how to avoid the adverse effects of pesticide applications.

11.4 Notification to Parties Receiving Waters

Each calendar year, at least 15 days prior to the first application of aquatic herbicide or algaecide, NID notifies all affected NID irrigation customers and potentially affected public agencies. NID also posts the notification and scheduled dates and locations on its website.

11.5 Fish Kill Prevention

Serving as NID's PCA, the Assistant Maintenance Superintendent – Vegetation Control shall identify the target pest through site evaluation, examine pesticide labels to determine the best control and prepares the written recommendation in accordance with the label specifications, which includes the rate of application based upon the target weed and any precautions to prevent adverse effects on fish.

NID pesticide applications are performed or supervised by NID'S PCA or staff that possess a valid California QAL or QAC. NID staff receive regular training on topics related to pesticides, pest identification, pesticide safety, pesticide calculations and measurements, pesticide equipment calibration and maintenance, and pesticide application precautions to prevent adverse effects on fish.

12. EVALUATION OF ALTERNATIVES

NID employs an Integrated Pest Management approach in its vegetation control efforts, which includes biological, mechanical and physical and chemical methods.

Although algaecides and aquatic pesticides are the most effective, efficient and economically feasible tools available to control aquatic weeds in the 450 miles of NID irrigation canal, NID will deploy alternative methods as spot treatments. Spot treatments are performed in locations where immediate attention is necessary and a chemical treatment option falls outside of regulatory notification requirements.

12.1 No Action

The "no action" alternative is not feasible, because uncontrolled growth of aquatic weeds would significantly reduce storage capacity, obstruct flow, reduce water quality and serve as a pest vector, thereby preventing the ability of NID to deliver water to its 22,000 customers. The "no action" alternative would cause significant, negative environmental and fiscal impacts to NID.

12.2 Prevention

The "prevention" alternative is not feasible, due to the fiscal and operational impossibility of eliminating each dynamic natural and manmade influence that cause and promote the growth of aquatic weeds in the 450 miles of NID irrigation canals.

12.3 Mechanical and Physical

Mechanical and physical alternatives will be deployed as a spot treatment option. Mechanical and physical removal of aquatic weeds have a greater fiscal, operational and environmental impact than algaecide and aquatic herbicides, if used on the entire NID irrigation canal system. Therefore, mechanical and physical removal will only be deployed as a spot treatment where algae and aquatic weed control is beyond effective and timely control by algaecide and/or aquatic herbicides. Mechanical alternatives will include the use of heavy equipment and hand tools to excavate excessive algae and aquatic weeds.

12.4 Cultural

Cultural alternatives will be deployed through the general maintenance of the irrigation canals that will not only control algae and aquatic weeds, but serve in a larger capacity, such as eliminating canal leaks. Cultural alternatives will include lining specific canal locations with concrete or black synthetic liner. The concrete and black synthetic liners will prevent leaks, as well as prevent aquatic vegetation from taking root.

12.5 Biological

Biological alternatives will be deployed for the control of algae and aquatic weeds in NID irrigation canals. Both barley straw and goat grazing will be deployed to inhibit the growth of algae and aquatic weeds. Barley straw will be strategically placed in locations where algae blooms are most common with the intent to inhibit algae growth. In addition, NID will deploy the use of goats to graze emersed weeds where feasible.

12.6 Algaecide and Aquatic Herbicides

Algaecides and aquatic herbicides will be the primary tools used by NID for the control of algae and aquatic weeds because they are the most effective, efficient and economically feasible options. The method used to apply algaecide and aquatic herbicides will be the least intrusive. The amount, rate of application and method of application of algaecides and aquatic herbicides will be based on a number of site factors, including species of algae and aquatic weeds present and the amount of water flowing at the treatment location.

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Appendix A:

Aquatic Pesticide [Field] Monitoring and Sampling Form

AQUATIC PESTICIDE MONITORING & SAMPLING

SAMPLE COLLECTED BY: _____ **DATE:** _____ **TIME:** _____

SAMPLE TYPE:

☐ **BACKGROUND MONITORING:** Sample collected upstream at the time of the application event or in the application area just prior to (up to 24 hours in advance of) application event.

☐ **EVENT MONITORING:** Sample collected immediately downstream of the treatment area in flowing waters or immediately outside of the treatment area in non-flowing waters, immediately after the application event, but after sufficient time has elapsed such that treated water would have exited treatment area.

☐ **POST-EVENT MONITORING:** Sample collected within the treatment area within one week after application.

SAMPLE INFORMATION:

SAMPLE ID: _____

FACILITY NAME: _____

FACILITY NO.: _____

LOCATION: _____

WATER BODY: _____

ANALYTE: _____

SAMPLE EQUIPMENT: _____

INSTRUMENT ID: _____

CALIBRATED: _____

WATER QUALITY MONITORING DATA:

TURBIDITY: _____ NTU

pH: _____ UNITS

H20 TEMP: _____ °F

CONDUCTIVITY: _____ mS/cm

DISSOLVED O2: _____ mg/L

WEATHER _____

AIR TEMP: _____ °F

FLOATING or SUSPENDED MATTER?
☐ No ☐ Yes, Describe: _____

DISCOLORATION?
☐ No ☐ Yes, Describe: _____

BOTTOM DEPOSITS?
☐ No ☐ Yes, Describe: _____

AQUATIC LIFE?
☐ No ☐ Yes, Describe: _____

VISIBLE FILMS, SHEENS, COATINGS?
☐ No ☐ Yes, Describe: _____

FUNGI, SLIMES, OR OBJECTIONABLE GROWTHS?
☐ No ☐ Yes, Describe: _____

POTENTIAL NUISANCE CONDITIONS?
☐ No ☐ Yes, Describe: _____

Appendix B:

Chain of Custody Form

BSK Associates Engineers & Laboratories

1414 Stanislaus St., Fresno, CA 93706
(559) 497-2888 Fax (559) 497-2893
www.bskassociates.com

ANALYTICAL CHAIN OF CUSTODY

*Required Fields

Temp:

Company/Client Name*:	Report Attention*:	Invoice To*:	Phone*:	Fax*:
	Additional cc's:	PO#:	E-mail*:	

Address*:	City*:	State*:	Zip*:
Project:		Project #:	

Regulatory Carbon Copies: CDPH ☐ ☐ Fresno Co; Merced Co ☐ ☐ Tulare Co; Madera Co ☐ ☐ Other: _____

Reporting Options: ☐ Trace (J-Flag) ☐ Swamp ☐ EDD Type: _____

How would you like your completed results sent?* ☐ E-Mail ☐ Fax ☐ Mail

Regulatory Compliance: ☐ EDT to California DPH System Number*: _____ ☐ Geotracker #: _____

Sampler Name (Printed/Signature)*:

TAT* **Surcharge: ☐ Standard - 10 Business Days ☐ **Rush: Date Needed _____

Matrix Types: SW=Surface Water BW=Bottled Water GW=Ground Water WW=Waste Water STW=Storm Water DW=Drinking Water SO=Solid

#	Sample Description*	Sampled* Date	Sampled* Time	Matrix*	Comments / Station Code / WTRAX								

Relinquished by: (Signature and Printed Name)	Company	Date	Time	Received by: (Signature and Printed Name)	Company
Relinquished by: (Signature and Printed Name)	Company	Date	Time	Received by: (Signature and Printed Name)	Company
Received for Lab by: (Signature and Printed Name)		Date	Time	Payment Received at Delivery: Check / Cash Date: Amount: PIA#: Init.	

Shipping Method: ONTRAC UPS GSO WALK-IN FED EX Courier: _____ Custody Seal: Y / N

Cooling Method: Wet Blue None Chilling Process Begun: Y / N

Payment for services rendered as noted herein are due in full within 30 days from the date invoiced. If not so paid, account balances are deemed delinquent. Delinquent balances are subject to monthly service charges and interest specified in BSK's current Standard Terms and Conditions for Laboratory Services. The person signing for the Client/Company acknowledges that they are either the Client or an authorized agent to the Client, that the Client agrees to be responsible for payment for the services on this Chain of Custody, and agrees to BSK's terms and conditions for laboratory services unless contractually bound otherwise. BSK's current terms and conditions can be found at www.bskassociates.com/BSKLabTermsConditions.pdf