

RECEIVED

APR 29 2014

Attachment E – Notice of Intent

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

DIVISION OF WATER QUALITY

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

I. NOTICE OF INTENT STATUS (see Instructions)

Mark only one item	A. New Applicator	<input checked="" type="radio"/> B. Change of Information: WDID# <u>SA04AP00006</u>
	C. <input type="checkbox"/> Change of ownership or responsibility: WDID#	

II. DISCHARGER INFORMATION

A. Name <u>Reclamation District # 833</u>			
B. Mailing Address <u>P.O. Box 247</u>			
C. City <u>Gridley</u>	D. County <u>Butte</u>	E. State <u>CA</u>	F. Zip <u>95948</u>
G. Contact Person <u>Chuck Nichols</u>	H. E-mail address <u>rd833@outlook.com</u>	I. Title <u>manager</u>	J. Phone <u>530-846-3303</u>

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):

- Canals, ditches, or other constructed conveyance facilities owned and controlled by Discharger.  
Name of the conveyance system: Reclamation District # 833
- 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: \_\_\_\_\_
- 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: Primrose & Parrotfeather

B. Algaecide and Aquatic Herbicide Used: List Name and Active ingredients  
Aqua Neat - glyphosate

C. Period of Application: Start Date April 7 End Date October 1

D. Types of Adjuvants Used: Patrol 25-0-0

**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: Charles Nichols

B. Signature: Charles Nichols

Date: 4-25-14

C. Title: manager

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

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

The Staff of Reclamation district #833 prepared this Aquatic Pesticides Application /Project monitoring Plan / Quality assurance plan as part of RD#833's Aquatic pesticide application program. This Document provides a description of RD#833's Aquatic Pesticides Application Project, Monitoring plan, and Quality assurance objectives to be followed by RD#833 staff. RD#833 staff will periodically review this document and may periodically revise this document as necessary to update procedures or information#833's Management must approve all revisions.

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Charles O Nuchols  
District Manager.

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Date

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- B. Aquatic Pesticides specimen Labels
- C. Standard Operating Guidelines

**Distribution List**

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Jeremy Pagan California Regional Water Quality Control Board- Central Valley Region/Redding  
Charles O Nuchols, Reclamation District # 833  
Board of Trustees, Reclamation District # 833  
Russel Norman, State Water Resources Control Board



## **Section 1: Introduction.**

### **1.1 Background.**

Located 70 miles north of Sacramento in Butte County, California, Reclamation District #833 (RD. 833) was formed in 1915 by a vote of the state legislature. The objective of this District was to reduce the level of the water table which had been raised by irrigation, and to reclaim and drain certain lands so they would produce paying crops. With an elected 3 member board and 2 employees RD. 833 provides drainage for domestic and agricultural uses.

Reclamation District #833 finds beneficial use of non-restricted use pesticides in the management of it's facilities. RD. #833 is committed to the safe use of these pesticides in conformance with all applicable laws and regulations governing protection of employee health and safety, public welfare, and the environment.

With over a 150 miles of drainage ditches to manage inside it's 38,000 acre boundaries. RD.#833 applies aquatic pesticides to areas of the system as needed to maintain water flow.

### **1.2 Objectives .**

The objective of this Aquatic Pesticide Application Project (APAP)/Monitoring Plan/Quality Assurance Project Plan (QAPP) is to document compliance with General Permit requirements. The basic requirements of the general permit's Aquatic pesticide application project is to describe the project, the need for the project, what will be done to reduce water quality impacts, and how those impacts will be monitored. Specifically, the APAP must contain the following:

- Description of the water body or water body systems being controlled;
  - Description of what weed(s) are being controlled and why;
  - Discussion of control tolerances ( i.e., how much growth can occur before action is required);
  - Discussion of factors influencing the decision to use aquatic pesticides in regards to those tolerances (pros and cons);
  - Type(s) of aquatic pesticides used, the method in which they are applied, and the adjuvants used (if any);
- (1)

- Description of the application area and the treatment area in the system;
- Other control methods used (alternatives) and what their limitations are;
- How much product is needed and how this is determined;
- Monitoring plan, including the location of representative site(s);
- If applicable, list the gates or control structures and inspection schedule of those gates or control structures to ensure that they are closed;
- If the Control Agency has been granted a 5.3 exception to the state implementing policy, describe the exception period. If weeds are controlled outside of this period, describe how it is ensured that receiving water criteria is not exceeded;
- Description of the Best Management Practices (BMPs) to be implemented; and
- Evaluation of other BMPs to determine feasible alternatives to the selected aquatic pesticide application project that could reduce potential water quality impacts.

The format of this APAP/Monitoring Plan/QAPP is organized to meet the requirements above and contained in the General Permit.

- Section 2 describes RD#833's aquatic pesticide applications project.
- Section 3 describes RD#833's program safeguards ,evaluation and use of alternative controls,and BMPs to be implemented.
- Section 4 describes water monitoring tasks proposed to comply with the general permit.
- Section 5 describes the various records and reports this APAP impacts.
- Appendix A contains copies of the Water Quality Order No.2004-0009-DWQ, and general permit CAG-990005.
- Appendix B contains a copy of RD#833's NOI package.
- Appendix C contains contains specimen labels of the aquatic pesticides that RD#833 currently uses.
- Appendix D contains RD#833's Standard Operating Procedure for ensuring data quality during the collection, handling, and shipping of water samples to the laboratory .

## **Section 2: Aquatic Pesticides Application Project.**

### **2.1 Treatment Area**

As mentioned earlier RD#833 has 38,000 acres and 157 miles of drainage ditches within it's facility. All of these drainage ditches have the potential to be treated annually depending on weed growth. The RD#833 Manager will make the determination on which drains will get treated and when. During the application season (approximately April 1-October 1) There are drains that are treated annually, and will be indicated on a map showing all the drainage ditches with their lateral names as part of RD#833 aquatic applications project is provided in figure 1.

### **2.2 Aquatic Pesticides**

RD#833 finds beneficial use of a registered aquatic pesticide Containing the element Glyphosate, N-(phosphonomethyl)glycine, to effectively control and limit the growth of aquatic weeds within RD#833's system. The product that will be used by RD#833 is called Aqua Neat ( EPA Registration No. 228-365) manufactured for Nufarm Americas Inc. of Burr Ridge, IL. It contains 53.8% Glyphosate, N-(phosphonomethyl)glycine, and 46.2% inert ingredients (unlisted). The Surfactant used is Patrol the active ingredient is Alkylaryl Polyoxyalkane Ether and Alkyl Polyglycoside, Both of which are non-restricted materials.

### **2.3 Application Method**

The need for Aquatic pesticide application arises simultaneously during summer when there are longer periods of sunlight and higher temperatures causing rapid growth of aquatic weeds. Treatment is started early to get control over aquatic weeds to prevent their growth state from being such that it can not be readily managed.

When the decision is made to treat a lateral within RD#833's system , the District Manager will notify the application crew. The crew will then be briefed on the Lateral and the target site within that lateral. Site observations will be recorded on the Daily Pesticide Report Form, then the Application crew (3)

donning the appropriate personal protective equipment will apply the aquatic pesticide to the lateral by hand spraying or the use of a spray boom depending on the size and condition of the Lateral.

## **Section 3: Project safeguards**

### **3.1 Potential Impacts**

Application according to the Glyphosate,N-(phosponomethyl)glycine pesticide label is safe for water reservoirs, and crop and non-crop irrigation and drainage conveyance systems. Has a low level of toxicity to fish, aquatic invertebrates and other non-target organisms under field use conditions.

Furthermore use of this product has potential hazards to humans. The pesticide label reads:(Handlers must wear personal protective equipment, long-sleeved shirt, long pants, and shoes plus socks. Wash PPE separately from other laundry. Users should wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet. Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.)

### **3.2 Evaluation and use of Alternative Controls**

Knowledgeable of the potential impacts described above, RD#833 takes great care in the handling and use of aquatic pesticides . The use of these pesticides is limited to those laterals in which their use will have the most beneficial results. RD#833 is looking for results where our laterals will be free of aquatic weeds or the weeds will be held back to allow an unrestricted flow.

RD#833 has evaluated other available control methods to determine if they are feasible alternatives to it's selected aquatic pesticide application project within the RD#833 system that could reduce potential water quality impacts. Among the alternatives evaluated include the following:

- **Do Nothing** – The 'Do Nothing' alternative was evaluated and is used in certain laterals that do not require annual maintenance. These laterals are evaluated by the District Manager and left untouched unless the need arises.
- **Other Chemical Controls-** The “Other Chemical Controls” alternative was evaluated (4) and discarded , due to cost, permitting, and the potential impacts to employees.

- **Increase Physical/Mechanical Removal Methods-** RD#833 utilize physical and mechanical removal methods to control Noxious weed growth in the RD#833 system . RD#833 uses this method on approximately 10% of it's laterals per year depending o weather and farming conditions . These methods are limited to the winter and early spring due to farming practices in our system.
- **Biological Controls-** Plant consumers (herbivores), microbial bio-augmentation (micro-organisms), plant pathogens (diseases), and competitive species are under study as “natural approaches to controlling noxious vegetation. While some have shown promise under some scenarios, the introduction of exotic organisms carries with it unknown ,long-term ecological consequences. Due to uncontrollable water flows this method was discarded as impractical.
- **Bottom Barriers-**Bottom barriers made of plastic, rubber, fiberglass screen or nylon are available to prevent or inhibit rooted growth in selected areas. They are installed during periods of draw down or periods when growth is not present. Unfortunately RD#833's system has no such period to allow installation as they are in contentious use. Therefore the Bottom Barriers alternative was evaluated and discarded as impractical.

### 3.3 Best Management Practices

Reclamation District No. 833 utilizes Best Management Practices (BMP's) that are designed to maximize the efficacy of it's control efforts and simultaneously minimize potential adverse impacts to the environment. RD#833 practices the following categories of BMP's.

- **Licensing-**RD#833 is registered with the office of Butte County Agricultural Commissioner (BCAC) for non-restricted pesticide applications on it's right of ways (Operator Identification No. 0406025). The only product utilized is registered by the manufacturer for the intended use as an aquatic herbicide. This in not a restricted-use pesticide requiring special permits, licensing, or certification for use in California. RD#833's use is consistent with the directions on the pesticide label, and training per RD#833's Herbicide Applications Program.
- **Notifications-**The BCAC is knowledgeable of RD#833's Herbicide Applications Program and it's pesticide use through past and ongoing communications, including the required Monthly Summary Pesticide Use Reports. With the advent of the NPDES General Permit, the SWRCB is now knowledgeable of RD#833's aquatic pesticides application project through receipt of the General Permit Form N-NOI. The California Regional Water Quality Control Board, through Central Valley Region (RWQCB) is also knowledgeable of RD#833's aquatic pesticide applications project through receipt of this APAP. Furthermore, as a potentially affected governmental agency, the RWQCB will receive every calender year, prior to the first application of aquatic pesticides, notification of RD#833's intent to apply aquatic pesticides, including the name of the pesticide(s), purpose of use, general(5) time periods and locations of expected use, and a phone number that interested persons may call to obtain additional information form RD#833. This notification

will be made within the Annual Report, due to RWQCB by March 1 of each year.

- **Preliminary Site Evaluations-** RD#833 conducts periodic site inspections to verify the need for treatment, options to treatment(including non-toxic and less toxic alternatives), and suitability for site treatment.
- **Secondary Site Evaluations and Pretreatment Monitoring -** Prior to and during application season treatments, RD#833 evaluates the growth status of aquatic vegetation and the need for treatment. Factors that can affect control efficacy or increase potential environmental impacts are noted. If these observations indicate the potential for reduced control efficacy and/or heightened water quality impacts, the treatment schedule would be modified.
- **Alternative Control Measures-** As discussed in the sub-section above, RD#833 evaluates other available BMP's and alternative control measures to determine if there are feasible alternatives to the selected aquatic pesticide application project that could reduce potential water quality impacts. As one alternative control measure for aquatic invasive weeds, RD#833 performs mechanical cleaning during the non-application season which happens approximately between November and April of each year.
- **Treatment-** Using adaptive management techniques developed over a span of approximately thirty five years of treatment, RD#833 has already refined the type and intensity of treatment needed. This evaluation has included analysis of indicators to provide information on potential efficacy, including identification of the target pests to be controlled (parrot feather, prim rose,tules and berry vines. ), and monitoring of water flow in treated and non-treated laterals.
- **Post-Treatment-** During and following treatments, RD#833 assesses the control efficacy and water quality impacts of it's pesticide application project. Daily inspections of the system confirm the effectiveness of treatment, and resulting water flow improvements. RD#833 evaluates the results of this assessment to continually refine its project operations through an adaptive management process. Project refinements have included reducing treatment dosage in concentration and intervals between treatments to the minimal level that is still effective.
- **Pesticide Spill Prevention & Spill Contamination Prevention-** To prevent pesticide spills Containers are stored indoors to prevent weathering. We also load our chemicals in small measuring containers to prevent loss of grip due to weight. Chemicals are also directly loaded into spray tanks filled and latched. In the occurrence that we did have a spill it would be cleaned up immediately accourting to Manufacture's instructions and disposed of properly.
- **Amounts of pesticides used-** We use the least amount of product needed for the treatment area and conditions, based on the type of vegetation we are targeting.(6)
- **Applicator Education-** applicators are given hands on training as well as safety

handouts and pamphlets.

- **Notification** – Water delivery agencies are given notification Annually of our application season.
- **Fish kill prevention-** We use a low toxicity to fish Chemical legal for use in waterways.

## **Section 4: Water Quality Monitoring**

### **4.1 Water Quality Standards**

The United States Environmental Protection Agency established water quality criteria for priority pollutants in the “National Toxics Rule”(US EPA, 1992 and subsequent revisions) and the “California Toxics Rule” US EPA, 2000). The RWQCB established water quality objectives for priority pollutants in Water Quality Control Plan (Basin Plan) for the Sacramento River Basin and San Joaquin River Basin (RWQCB, 1998). The SWRCB has adopted the Policy for Implementation of Toxic Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (commonly referred to as the State Implementation Policy, or SIP) (SWQCB, 2000) that contains implementation provisions for these water quality criteria and objectives. The RWQCB's A Compilation of Water Quality Goals (RWQCB , 2000) contains numerous numerical water quality standards, criteria, objectives, and goals . RD#833 is doing its best to adhere to these standards.

### **4.2 Monitoring Locations**

Project monitoring locations have been selected for representative sites within the RD#833 system, and marked by GPS coordinates. Lateral E-1 starting point at Lat 39.36272 Long -121.74050 end point at Lat 39.36262 Long -121.75353

### **4.3 Monitoring Sequence**

Samples shall be collected according to the general permit guidelines,

- **Background monitoring-** Background samples will be collected up stream of the application area or event just prior to the application event ( up to 24- hours in advance).
- **Event Monitoring-** Event monitoring samples will be collected immediately downstream of the treatment area in flowing waters or immediately outside of the treatment area in (7) non-flowing waters, after sufficient time has passed that treated water will have exited the treatment area.

- **Post-Event Monitoring**-Post- event monitoring samples will be taken within the treatment area within one week after application.

## 4.4 Collection sequence

The collection sequence for each application will vary depending on water flow in the lateral being sampled, as water flows are not controllable within the RD#833 system, as there are no gates or control structures in place Controlled or operated by Reclamation District #833.

## 4.5 Field Methodology

An RD#833 employee or manager will conduct the sampling for this project. Water Quality sampling will be conducted in accordance with RD#833's Standard Operating Guideline for Surface Water Sampling, included as Appendix D1. Appendix D2 presents RD#833's standard Operating Guideline for Field Measurement of pH and Temperature. Dissolved Oxygen field measurement will be conducted in accordance with RD#833's Standard Operating Guideline, Included as appendix D3. Standard chain of custody protocol shall be observed from the time of sample collection through laboratory analysis if needed included as appendix D4. Sample handling will be conducted in accordance with RD#833's Standard Operating Guideline for Transporting, Packaging, and Shipping Samples, included as Appendix D5.

## 4.6 Laboratory Analysis

Samples shall be submitted under standard chain-of-custody protocol to a Laboratory that is certified by the California Department of Health Services Environmental Lab Accreditation Program (ELAP) to perform the Physical and chemical laboratory analysis.

The physical and chemical monitoring parameters required by Water Quality Order 2004 – 0009-DWQ are specified in the Monitoring & Reporting Program Attachment C to General Permit No. CAG99005. Specifically, for this aquatic pesticides application project, the physical and chemical parameters to be monitored will include the following as described further in Table 2:

- Temperature;
- pH;
- Electrical conductivity (Specific conductance);

- Dissolved oxygen;
- Turbidity;

Laboratory analysis shall be conducted in accordance with contract Laboratory's Quality Assurance Plan. Laboratory analytical reports from the contract Laboratory shall be delivered with Level 2 Quality Assurance/Quality Control Documentation. A copy of the Laboratory's Quality Assurance Plan is incorporated with the annual if used.

## **Section 5: Project Records and Reports**

### **5.1 Application Log**

RD#833 shall maintain a log for each aquatic pesticide application containing the following information:

- The date of the application;
- The location of the application;
- The name of the applicator(s);
- The name(s) of the water bodies treated;
- Flow or level of the treated water body;
- Confirmation that sand-trap waste gates closed prior to application and during treatment;
- Time application started and stopped;
- Name, formulation, concentration, and amount of pesticide used;
- Observed conditions at time of application, including growth status of aquatic vegetation, appearance of waterway, weather conditions; and
- Signature certifying that the applicator(s) followed the RD#833 Herbicide Applications Program/Aquatic Pesticides Application Project.

### **5.2 Monthly Pesticide Use Reports**

In accordance with State DPR and requirements of the Butte County Agriculture Commissioners Office, RD#833 already completes a Monthly Summary Pesticide Use Report. This report summarizes the registered names of the pesticides applied, the total amount of each pesticide applied during the reporting month, and the number of applications for the month. By regulation, this report must be submitted to county agriculture commissioners office by the 10<sup>th</sup> of the month following the (9) month in which the applications were performed. Reports are hand-delivered or mailed, the postmark serving as the date of delivery for mailed reports.

### 5.3 Project Annual Report

The Agency will submit a calendar year Annual Report to the RWQCB by March 1<sup>st</sup> of the year following the year for water quality monitoring data collected. The Annual Report will contain tabular summaries of the pesticide monitoring data obtained during the previous year in a format that satisfies the requirements for inclusion in the DPR's surface water database. The DPR's Description of Data Format for the Department of Pesticide Regulation's Surface Water Database (DPR, November 2001) describes the minimum data required for inclusion in the database. This data includes the following:

- Name of the sampling agency or organization;
- Date that each sample was collected;
- Date of each sample analysis;
- County where sample were taken;
- Detailed sampling location information; detailed map, or description of each sampling site;
- Name or description of water body sampled;
- Name of the active ingredient analyzed for; concentration detected (with unit of measurement), and limit of quantitative; and
- Description of analytical QA/QC plan, or statement that no formal plan exists.

Although not required for inclusion in the database, the following chimerical analysis information will be submitted if available:

- QA/QC documentation;
- Time of day each sample was collected;
- Collection method (e.g., grab sample, time integrated sample, equal-width increment, etc.);
- Type of sample (e.g., whole water, filtered, split, etc.);
- Date of sample extraction;
- Reporting limit or method detection limit, including units of measurement;
- Method of analysis;
- Analytical laboratory name;
- Type of sampling equipment used; and
- All associated water quality information (e.g., pH, dissolved oxygen, temperature, etc.)

In accordance with the Monitoring & Reporting Program requirements of the general Permit,(10) the Annual Report to the RWQCB shall include the above-required information and the following:

- An executive summary discussing General Permit compliance or violation and the effectiveness

of the APAP to reduce or prevent the discharge of pollutants associated with aquatic pesticide applications;

- A summary of monitoring data, including the identification of water quality improvements or degradation, and recommendations for improving to the APAP (including proposed BMP's) based on the monitoring results. Receiving water monitoring data shall be compared to applicable water quality standards;
- Identification of BMP's and a discussion of their effectiveness in meeting the General Permit;
- A discussion of BMP modifications addressing violations of the general Permit;
- A map showing the location of each application treatment areas;
- Types and amounts of aquatic pesticides used at each application event during each application;
- Information on surface area and/or volume of treatment area and other information used to calculate dosage and quantity of each aquatic pesticide used;
- List of gates in the treatment area that may discharge to surface waters, time of gate closure and reopening, including calculations used to determine closure and reopening times, if applicable;
- Recommendations to improve the monitoring program, BMP's and APAP to ascertain compliance with the General Permit; and
- Proposed changes to the APAP and monitoring program.

RD#833 will also make use of the Annual Report to provide the required advance notification of its proposed aquatic pesticide application schedule to occur between April 1<sup>st</sup> to October 1 for the next season.

## **References**

- DPR, 14 November 2001. Description of Data Format for the Department of Pesticide Regulation's Surface Water Database. Memo to Interested Parties, <http://www.cdpr.ca.gov/dpcs/surfwatr/req.htm>
- OWID, 24 August 2001. Attachment A to water Quality Order No. 2001-12-DWQ, Statewide General National Pollutant Discharge Elimination System (NPDES) Permit for discharges of Aquatic Pesticides to Waters of the United States (General Permit), general Permit No. CAG990003 (Form A). OWID submitted to SWRCB, including \$400.00 Application Fee.
- OWID, 11 March 2002 (revised 12 April 2002). Monitoring Plan / Quality Assurance Project Plan for Aquatic Herbicide Applications Program General permit No. CAG990003.
- RWQCB, Central Valley Region, 1998. *The Water Quality Control Plan (Basin Plan) for the California Regional Water Quality Control Board, Central Valley Region, Fourth Edition-1998. The Sacramento River Basin and the San Joaquin River Basin.*
- RWQCB, Central Valley Region, August 2000. *A Compilation of Water Quality Goals.*
- RWQCB, Central Valley Region, 27 March 2002. Letter to Tom Venus, OWID, re: Monitoring Plan for General Aquatic Pesticides NPDES Permit – Butte County.
- SWRCB, 2 March 2000. *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed bays, and Estuaries of California.* [Http://www.swrcb.ca.gov/iswp/index.htm](http://www.swrcb.ca.gov/iswp/index.htm)
- SWRCB, 7 August 2001. Letter to Aquatic Pesticides Applicators: Water Quality Control No. 2001-12-DWQ, Statewide General National Pollutant Discharge Elimination System (NPDES) Permit for Discharges of Aquatic Pesticides to Waters of the United States (General Permit), General Permit No. CAG990003. Received by OWID 10 August 2001.
- SWRCB, 8 June 2004. Letter to Aquatic Pesticides Dischargers and Interested Parties: Adoption of Water Quality Order No. 2004-0009-DWQ, Statewide General National Pollutants Discharge Elimination System Permit for the discharge of Aquatic Pesticides for Aquatic Weed Control in Waters of the United States, General Permit No. CAG 990005. received by RD#833 on 14 June 2004.
- US EPA, Office of Water, April 1999. *National Recommended Water Quality Criteria – Correction.* EPA 822-Z-99-001, <http://www.epa.gov/ost/pc/revcom.pdf>.
- US EPA, Thursday, 18 May 2000. *Water Quantity Standards: Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California* [California Toxics Rule]. Federal Register, VOL. 65, No. 97, pp 31682-31719

## **Table 1: Project Roles and Responsibilities**

<b>Agency</b>	<b>Name</b>	<b>Responsibilities</b>
State of Water Resources Control Board PO Box 100 Sacramento, CA 95812-0100	Larry Nash Water Resources Control Engineer (916) 341-5586	Aquatic Pesticides Program Coordinator, Recipient of: Notice of Intent, APAP, and Annual Report
Regional Water Quality Control Board 415 Knollcrest Dr Ste 100 Redding, CA 96002	Jeremy Pagan Water Resources Control Engineer (530) 224-4850	Recipient of: APAP/Monitoring Plan/QAPP; Annual Reports
Butte County Office of Agriculture Commissioner 316 Nelson Road Oroville, CA 95965-3318	Richard Price Agricultural Commissioner (530) 891-538-7381	Designates Pesticide Operator use Numbers; Forwards Monthly Summary Pesticide Use Reports to DPR
Reclamation District #833 PO Box 247 Gridley, CA 95948	Chuck Nuchols Manager (530) 846-3303	Manage RD#833 Operations
Minasian, Spruance, Baber, Meith, Soares & Sexton, LLP 1681 Bird Street Oroville, CA 95965-1679	Tony Soares Attorney at Law (530) 533-2885	Provide Legal Risk Management Counsel to RD#833 Regarding Aquatic Herbicide Application issues

**Table 2: Quality Assistance Objectives for Water Samples**

<b>Parameters</b>	<b>Method</b>	<b>Precision<sup>(a)</sup></b>	<b>Accuracy <sup>(h)</sup></b>	<b>Completeness <sup>(c)</sup></b>
Temperature	Field	NA <sup>(d)</sup>	NA <sup>(d)</sup>	90
pH	4500-H <sup>+(e)</sup>	20	75-125	90
Conductivity	2510 <sup>(e)</sup>	20	75-125	90
Turbidity	2130 <sup>(e)</sup>	20	75-125	90
Dissolved Oxygen	4500-O <sup>(e)</sup>	NA <sup>(d)</sup>	NA <sup>(d)</sup>	90

(a) Precision defined as recovered percent difference.

(b) Accuracy defined as average percent recovery.

(c) Completeness defined as percent of parameters falling within quality assurance criteria and subsequently being reported.

(d) Not available.

(e) Standard Methods for the Examination of Water and Wastewater, 18<sup>th</sup> Edition, 1992.

## **Figures**

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**Appendix A**

Notice of Intent Application Package

## **Appendix B**

Aquatic Pesticide Specimen Labels

## **Appendix C**

C1 – Surface Water Sampling

C2 – Field Measurement of pH and Temperature

C3 – Field Measurement of Dissolved Oxygen

C4 – Creating and Filling Out Chain-of-custody Record

C5 – Transporting, Packaging and Shipping Samples

### **APPENDIX C1**

#### **SURFACE WATER SAMPLING**

##### **Standard Operating Guidelines**

## **INTRODUCTION**

This guideline describes field procedures typically followed by Reclamation District #833 personnel to obtain surface water samples from drainage ditches. Methods of sampling are directly affected by study objectives and parameters that are to be analyzed. To help ensure efficient sampling and useful results, decision regarding appropriate techniques and equipment employed must be made at the beginning of a project and incorporated in the comprehensive sampling plan.

## **EQUIPMENT**

### **Land Based Surface Water Sampling Equipment**

- Suitable sample containers and caps (that fit). Containers should be clean and of appropriate type and size for the chemical component sampled.
- Container labels and waterproof marking pens.
- Manual sample retrieval of equipment. This equipment can include a scoop or container, for surface sampling.
- Waterproof field notebook.
- Ice chest with sufficient ice to last for the duration of sampling and transport.
- Packing materials for transport.
- Chemical preservatives.
- Transfer funnels.
- Portable analytical equipment, if necessary (Ph, DO, conductivity, temperature, etc.)
- Chain of custody forms.

## **DEFINITIONS**

There are general types of surface water sampling in which samples are retrieved for immediate or eventual analysis.

- 1.** Grab Sampling (at water surface). A grab sample is a single sample taken at a point in time. It can be obtained by using a pump, scoop or vacuum or b using a hand held dipping device. The receiving container is of specified material and of a size appropriate to the analysis required. Grab samples are collected to:
  - Characterize water quality at a particular time
  - Provide information about minimum and maximum values
  - Allow collection of variable volume of material
- 2.** Composite or Continues Sampling (at water surface). A composite sample is formed by mixing discrete samples taken periodically of during a continues portion of the flow. A sequential

composite sample is a series of short grab samples, each of which is held in an individual container and later composited to cover a longer time period. Composite samples are sometimes taken at volumes proportional to source flow. Composite sampling are collected to:

- Determine average concentrations over a specified period
  - Determine mass loading as a function of concentration and flow
- 3.** Grab Sampling (at depth). Grab sampling at depth is identical to surface grab sampling, except that it allows a discrete sample to be taken at a particular depth in the water column. An example of grab sampling at depth is sampling in a lake where water chemistry exhibits variation as a function of depth (stratification)
  - 4.** Composite or Continuous Sampling (at depth). Composite sampling sat depth is similar to composite surface sampling, except that it allows multiple or continuous samples to be taken at a discrete water column depth. In general, a mechanical device, such as a pump, is required to carry out this type of sampling.

## **TYPICAL PROCEDURES**

- 1.** Review project and research objectives to develop an appropriate sampling plan.
- 2.** Consult with the laboratory regarding sampling procedures, type and size of containers required, sample preservatives, holding times, and shipping recommendations.
- 3.** Prepare a sample bottle (if it does not already contain preservative) by rinsing it out two or three times with the water to be collected.
- 4.** If a remote sample retrieval device, such as a Kemmerer sampler, is being used, rinse it out with distilled or deionized water between samples.
- 5.** Treat each sample individually with regards to the substances to be determined. In other words, use the recommended preservative and containers for the particular substance of interest.
- 6.** For most samples, fill the container completely. Space can be left for some microbiological analysis. For samples tat are to be shipped, leave an air space of about 1 percent of the container to allow thermal expansion. For volatile and semi volatile analysis, no head space should be allowed.
- 7.** Collect water samples using pre-cleaned Teflon or stainless steel bailers, disposable bailer.
- 8.** Make a record of every sample collected, indicating date, time, location, sample ID, sample, type, and name of sample taker. Make sure this information is indicated on the sample container label and recorded in the field notebook. Also, record other pertinent observations, such as weather conditions, water level, flow, proximity to underwater or surface discharges, etc.
- 9.** Close container caps and lids securely and pack samples in a cooler (if cooling is required) or

other receptacle.

- 10.** Use packing materials to fill any voids in the cooler or receptacle. Close and fasten the lid securely, using tape or elastic cords if necessary.
- 11.** Fill out chain of custody forms and deliver samples to the laboratory as soon as possible, either in person or by shipping.
- 12.** Clean all sampling equipment thoroughly and return each component to its designated storage space.

## CONSIDERATIONS

- 1.** Before beginning field sampling operations, determine appropriate containers, preservatives, and holding times for the parameters to be sampled. Consult the laboratory and standard methods (APH, AWWA, APCF 1985) or 40 CFR 136 (EPA 1987)
- 2.** Because of the chemical and/or biological volatility of certain sampled substances, immediate analysis in the field might be required. In other cases, preservation of samples in addition of chemicals or by cooling is required while they are transported to the laboratory for analysis. The following parameters usually need immediate field testing:
  - Dissolved gases
  - Residual chlorine
  - Soluble Sulfide
  - Temperature
  - pH
- 3.** In general, do not composite samples that can degrade chemically or biologically.
- 4.** Clean sampling equipment as soon as possible after fieldwork to prevent dried residues and/or biological growth on the equipment.
- 5.** Determine all locations to be sampled and the number of samples required before going into the field.
- 6.** Determine the most accessible routes to the sampling site and determine whether special equipment, such as waders are required.
- 7.** Consider obtaining from the analytical laboratory containers that have preservatives already included for specific parameters.

## QUALITY ASSURANCE CONTROL

1. Thoroughly clean sampling equipment after each use. Depending on the project goals, cleaning equipment may require washing in a laboratory soap solution and rinsing in deionized water.
2. Do not reuse sample containers.
3. Change gloves or wash hands between sample collections.
4. Typically, collect ten percent blind duplicate samples and submit them to the laboratory blind for analysis unless alternative QA/QC procedures are identified in the sampling plan.
5. Protocol for particular chemical analysis, such as VOC's may require the use of travel and field blanks.

## **EQUIPMENT CLEANING**

Sampling equipment must be decontaminated immediately after use, according to the procedure outlined in the QA/QC plan for the project. Disposable gloves and sampling equipment are placed in a plastic garbage bags and disposed of in accordance with methods identified in the work plan.

## **INVESTIGATION-DERIVED WASTES**

No wastes, other than the small amount of material submitted to the laboratory for analysis, should be generated during sampling. Generally, the laboratory arranges for disposal of samples of potentially hazardous material.

## **REFERENCES**

- APHA, AWWA, WPCF. 1985. *Standard methods for the Examination of Water and Wastewater*. Edition 16. American Public Health Association, Washington, D.C.
- U.S Environmental Protection Agency. 1976a. *A Survey of Commercially Available Automatic Wastewater Samplers*, EPA-600/4-76-051. U.S EPA Instrumentation Development Branch, Environmental Monitoring and Support Laboratory, Cincinnati, OH.
- U.S Environmental Protection Agency. 1976A. *Handbook for Sampling and Sample Preservation of Water and Wastewater*. EPA-600/4-76-051. U.S EPA Quality Assurance branch, Environmental Monitoring and Support Laboratory, Cincinnati, OH.
- U.S Environmental Protection Agency. 1987. *Regulations on test Procedures for the Analysis of Pollutants* (40 CFR 136) U.S EPA, Washington, D.C.

## **APPENDIX C2**

### **FIELD MEASUREMENT OF pH AND TEMPERATURE**

#### **Standard Operating Guideline**

## **INTRODUCTION**

This guideline describes the procedure that will be used by Reclamation District #833 personnel during performance of field pH and temperature measurements.

## **EQUIPMENT**

- Portable pH meter with potassium chloride (KCl) probe and temperature probe
- Extra KCl filling solution
- 50 ml plastic jar or other suitable container
- Squirt bottle and supply of de-ionized (DI) water
- pH 7, 10 and 4 buffer solutions

## **TYPICAL PROCEDURES**

- 1.** Calibrate meter according to manufacturers instructions. Prior to first measurement, check calibration against pH 7 buffer and again periodically over the course of the day, and recalibrate if the reading is more than 0.1 units from 7.
- 2.** Use 50 ml plastic jar or suitable containers for measurement readings. Rinse sample test container with sample water three times prior to measurement.
- 3.** Immerse pH probe and temperature electrode in sample water. Gently stir sample for thorough mixing. Read and record pH to nearest 0.1 unit once pH reading has stabilized. Many pH meters possess an automatic feature that indicates final stabilized measurement.
- 4.** Rinse or bathe pH and temperature probes with DI water or soak in DI water between measurements. Changing DI water batch between measurement stations increases accuracy of measurements.

## **INSTRUMENT CALIBRATION – GENERAL PROCEDURE**

Calibrate pH meter in the field at the beginning of each day of fieldwork and when the standard check is out of calibration.

- 1.** Rinse pH and temperature probes in DI water.
- 2.** Turn on meter and immerse pH and temperature probe in a pH 7 buffer solution. Calibrate meter pH 7, allowing enough time for meter to stabilize.
- 3.** Rinse pH and temperature probe with DI water.
- 4.** Immerse pH and temperature probe either a pH 4 or pH 10 buffer solution, depending on

whether expected pH of samples is above or below pH 7. If expected sample pH is above pH7, use pH 10 solution for the second calibration. If expected sample pH is below pH7, use pH 4 for the second calibration. Calibrate meter to second pH solution, allowing enough time for meter to stabilize.

- 5.** Rinse pH and temperature probe with DI water.
- 6.** Perform occasional rechecking of meter calibration to pH 7 calibration solution during usage. Repeat the calibration process (steps 2-4) if value for final pH check is more than 0.1 units from pH 7.0.

## **MAINTENANCE**

- 1.** Store meter in case with pH electrode immersed in a pH 7 buffer solution.
- 2.** Inspect pH and temperature probes for crack and scratches.
- 3.** Inspect pH probe for containing adequate amount of KCl solution. If amount is low refill as needed.
- 4.** Carry spare batteries and screwdriver in the meter case.
- 5.** Carry a copy of the instruction manual with meter.

## **APPENDIX C3**

### **FIELD MEASUREMENT OF DISSOLVED OXYGEN**

#### **Standard Operating Guideline**

## **INTRODUCTION**

This guideline describes the procedures that will typically be followed by Reclamation District # 833 personnel during field measurement of dissolved oxygen.

## **EQUIPMENT**

- Dissolved oxygen meter
- Spare membranes
- Electronic solution
- De-ionized water
- Sodium Sulfite solution (zero O<sub>2</sub> solution)
- D.O bottle (BOD bottle)

## **PROCEDURE**

- 1.** Inspect dissolved oxygen meter for damage. Inspect probe for sufficient electrolyte and to determine if oxygen sensor membrane is in good condition. Replace the membrane if torn or wrinkled. Inspect for air bubbles beneath the membrane. If bubbles are present, remove membrane and add electrolyte solution. Replace membrane so no air bubbles are entrapped.
- 2.** Rinse probe with de-ionized water.
- 3.** Calibrate probe and meter according to manufacture's instruction.
- 4.** Take a grab sample, using a D.O bottle so it is filled without head space, flush water by inserting tube into bottle or fill bottle while submerged. Insert probe into bottle, allowing time for stabilization.
- 5.** Read and record dissolved oxygen concentration.

## **APPENDIX C4**

### **CREATING AND FILING OUT A CHAIN-OF-CUSTODY RECORD**

#### **Standard Operating Guidelines**

## **Purpose**

A chain-of-custody record (COC) is an appropriate format to record important data associated with each individual sample. Normally, a COC is used to record three types of information: field information, laboratory information, and the people who handle the sample. This SOG discusses the procedures for the third item, handling the sample. The other two items are discussed in other SOG's.

## **Definitions**

- 1.** Chain-of-Custody (COC) is a legal document designed to track persons who are responsible for the preparation of the sample container, sample collection, sample delivery, and sample analysis.
- 2.** A Sample Number is a unique number given to a sample, usually attached to the sample container with label tape (SOG D1).

## **TYPICAL PROCEDURES**

### **Creating the COC**

A Specific COC is created for each study. A COC normally has three sections: field information, laboratory information, and the signatures of the people who handle the sample. The form is generally a three page carbon less form, including a white (original), yellow, and pink sheet.

- 1.** Field Information – The COC must contain places to enter the following field information: study number, sample number, sampling date, and type of sample. Other field information may be recorded as specified in the study protocol.
- 2.** Laboratory Information - The COC must contain places to enter to enter the following laboratory information: reporting limit of each analyte, the result of analysis, date of extraction, date of analysis, and the signature of the person performing the extraction and analysis. Other laboratory information may be recorded as specified in the study protocol.
- 3.** Signatures – The COC must contain places for all people who handle the sample to sign his/her name. This is a record of persons who had custody of the sample during all steps of the process from container preparation, sample collection, sample storage and transport and sample analysis. There should be signature lines to relinquish custody of the sample and to receive custody of the sample.

### **Filing out the COC**

The first “relinquish by: line is normally signed by the person who prepared the sample container. The “received by” line is normally signed and dated by the person collecting the sample, that person then signs to relinquish the sample. This process is repeated for the person who transports the sample to the

laboratory. In case there are additional steps in the process requiring another person or persons to take custody of the sample, the form has additional lines for signatures. The laboratory signs the last “received by” line.

No erroneous information may be erased on the COC. Errors must be lined out and initialed, and the correction written in. Furthermore, a COC may not be destroyed or discarded and must be retained by the Project Manager.

- 1. Container Preservation** – The COC should be initialed at the time the containers are prepared. The COC at that time should include the study number, the sample number (which should correspond with a unique number of the sample container), chemicals to be analyzed if known, and the signature of the person preparing the sample container and date prepared.
- 2. Sample Collection** – The personnel who received the sample containers, transport them to the field collect the samples, and place them into containers normally sign their name on the COC under the first received by column and write the date and time the sample container was received on the line next to it. They also fill in the information required tracking database, at which point they should be given to the Project Manager.
- 3. Sample Storage** - When samples are relinquished to the sample custodian, that person will sign the COC on the next received by line, and will write date and time. The pink copy of the COC is detached from the other two copies. Pink COC sheets are to be retained at the sample storage facility until they are entered into the sample tracking database, at which point they should be given to the Project Manager.
- 4. Sample Delivery** – Once the sample is delivered to the lab, the laboratory personnel will sign and date the “received by” line located at the bottom of the COC.
- 5. Laboratory Analysis** – The analyzing laboratory will record the reporting limit of each analyte, the results of analysis, date of extraction, date of analysis, and the signature of the person performing extraction and analysis. When the analysis is completed and approved by the laboratory, white COC sheets will be given to the sample custodian. The yellow copy is retained by the laboratory.
- 6. Data Review and COC Delivery** – The appropriate information is entered into the sample tracking database. If a quality assurance officer is assigned to the study, they will review the analytical data. The white COC is then forwarded to the Project Manager.

## **APPENDIX C5**

### **TRANSPORTING, PACKAGING AND SHIPPING SAMPLES**

#### **Standard Operating Guidelines**

## **INTRODUCTION**

This guideline describes the procedures that will typically be followed by Reclamation District #833 personnel for packaging and transporting samples after they have been collected, its purpose is to ensure that samples are adequately packed in the field to avoid breakage and that samples are stored at the appropriate temperature for each media.

## **MATERIALS**

- 1.** Coolers or ice chests
- 2.** Appropriate ice (Wet, Blue or Dry)
- 3.** Sorbent Material
- 4.** Appropriate packing material for sample containers
- 5.** Bubble wrap
- 6.** Strapping tape
- 7.** Labels and pens
- 8.** Chain of Custody forms
- 9.** Chain of Custody seals

## **PROCEDURES**

### **Preparation for Sample Collection**

- 1.** Before leaving the warehouse (sometime prior to sample collection), an ice chest should be filled with the appropriate ice. This is to ensure that the samples are chilled immediately after collection.
- 2.** If the study is conducted under Good Laboratory Practices, a Hobo Temp Data Logger or Min/Max Temperature Recorder should be placed in each ice chest.

### **Sample Transport from the Field**

- 1.** Labels of samples may get wet. Use of waterproof pens and labels is desirable for identification of sample containers. Use of clear tape to cover each affixed sample label is helpful in ensuring sample identification.
- 2.** Place samples in Styrofoam holders or other containers in ice chests immediately after sampling

in the field,

- 3.** Surround the samples with sufficient ice to chill to the appropriate temperature.
- 4.** If the study is conducted under Good Laboratory Practices, the time and date the samples were placed in the ice chest should be recorded in the field notebook.
- 5.** Check the samples, often, making sure there is enough ice to maintain the required temperature. Add more ice when necessary, and drain off water as wet ice melts.

#### **ADDITIONAL NOTES**

It should be noted that samples retained by the analytical laboratory which are not chosen for analysis may be assessed a fee for disposal. Often a disposal fee is assigned to a sample, typically soil, that has been retained beyond standard analytical holding periods. Therefore, consultation with project management is recommended to determine which samples may be of interest. Contacting the selected analytical laboratory regarding disposal policies is also recommended. Arrangements may be made with the analytical laboratory for return of the analytical samples for later disposal to the area of origin.