RECEIVED
MAY 09 2014
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) Change of Information: WDID# 5B24NP00007
C. ☐ Change of ownership or responsibility: WDID#

II. DISCHARGER INFORMATION

A. Name			
Central California Irrigation District			
B. Mailing Address			
1335 West I Street			
C. City	D. County	E. State	F. Zip
Los Banos	Merced	CA	93635
G. Contact Person	H. E-mail address	I. Title	J. Phone
Chris White	cwhite@ccidwater.org	Gen. Manager	(209) 826-1421

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: CCID conveyance system
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 & aquatic weeds surface & submerged

B. Algaecide and Aquatic Herbicide Used: List Name and Active ingredients

Rodeo/Aquamaster (glyhosate)
Copper Sulfate (copper sulfate pentahydrate)

C. Period of Application: Start Date Feb. 1 End Date Dec. 31

D. Types of Adjuvants Used: R11, nonylphenol

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 (not yet)

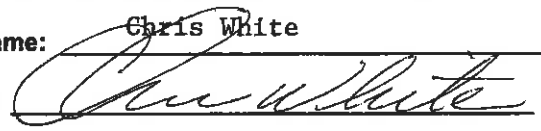
VIII. FEE

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: Chris White

B. Signature:  **Date:** May 1, 2014

C. Title: General 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** _____

AQUATIC PESTICIDE

APPLICATION PROGRAM

FOR THE

CENTRAL CALIFORNIA

IRRIGATION DISTRICT

MAY 1, 2014

Table of Contents

2 PROJECT DESCRIPTION

This section describes a proposed algaecide and aquatic pesticide application program for the Central California Irrigation District (C.C.I.D.). C.C.I.D. has been applying aquatic pesticides in the years of 2004, 2005, 2006, 2012 and 2013.

The program was previously regulated in 2013 under the State Water Resources Control Board (SWRCB) Statewide General National Pollutant Discharge Elimination System (NPDES) Permit for Discharges of Aquatic Pesticides (Water Quality Order No. 2004-0009-DWQ, General Permit CAG 990005). The proposed project would occur under a new General Permit and is expected to be equivalent to the 2013 program. The proposal would be implemented for a period of approximately five years or for the term of the new General Permit. No project conditions assumes that no control measure will be implemented to manage aquatic plants and algae in C.C.I.D. irrigation facilities, and this condition is likely to result in clogged irrigation equipment and economic losses.

2.1 PROJECT OBJECTIVES

Central California Irrigation District applies aquatic pesticides to its irrigation conveyance system to control aquatics and algaecide for algae that interfere with irrigation conveyance and clog canal reaches and irrigation machinery, like pumps, drip filter systems and control gates. Some of the most problematic aquatics include american pondweed. yellow primrose, parrot's feather and moss. To conserve water and maximize the efficiency of irrigation, many landowners use sprinkler, drip and micro irrigation systems and these require irrigation water to be clean and free of vegetative debris that will clog filter systems.

2.2 PROJECT CHARACTERISTICS

2.2.1 PROJECT LOCATIONS

The proposed project is located in the San Joaquin Valley in Central California. (Figure 2-1) The project area and vicinity are characterized by the San Joaquin River on the East side and other irrigated agriculture on the West in the Southern part of C.C.I.D. and on the Northern part of C.C.I.D., rolling foothills on the West and Grassland Water District on the east, with the Southern part being in Fresno and Merced Counties and the Northern part in Merced and Stanislaus Counties. The major cities are Mendota, Firebaugh, Dos Palos, South Dos Palos, Los Banos, Gustine and Newman.

2.2.1.1 DISTRICT LOCATIONS

Central California Irrigation District is located in Fresno, Merced and Stanislaus Counties and it covers 143,000 acres on the West side of the San Joaquin River, from Mendota Dam to about 2 miles north of Crows Landing on the North end of the District. The District owns and operates the Dam and makes diversion into its manmade earth canal system from Mendota Pool. The Pool is where the Delta Mendota Canal terminates. The Outside is fed from the Pool by gravity and it flows into the Sullivan Ditch at its end and the total length is 62.1 miles. The Main Canal is also fed from the Pool, and its length is 70.9 miles and ends North of Crows Landing. The Main Canal disperses irrigation water in the Poso Canal system, Colony System, Parson Ditch and Laguna systems which all furnish irrigation water to the Southern portion of C.C.I.D. The Main Canal on its route to its end does disperse irrigation water through the District's larger ditches with capacities up to 45 c.f.s. The smaller Helm Ditch also is supplied from Mendota Pool. The District has reservoirs at the end of the Colony System and Laguna System to capture and recover the system's fluctuating canals flows instead of having the flows lost into other District canals and drains. The Main Canal, north of Los Banos, has a regulating reservoir of some 40 acres to balance and store the canal fluctuating flows. The District has 21 drain low lift return pumps and 65 deep wells that supplement C.C.I.D.'s USBR supply of irrigation water during the irrigation season. C.C.I.D. is one of the four Entities that comprise the San Joaquin River Exchange Contractors Water Authority and its Contract with the USBR, supplies our Districts irrigation water.

2.2.2 Project Feature

2.2.2.1 **Proposed Algaecide and Pesticide Application**

All pesticides applied to surface water by C.C.I.D. are registered for use in California as aquatic pesticides. All algaecides to be used in the canal waters of C.C.I.D. are registered for use in California as algaecide. Before a pesticide or algaecide can be used for a specific type of application in California, the Department of Pesticide Regulation (DRP) evaluates it thoroughly during the registration process to ensure no unacceptable risk to human health of environment exists. For a pesticide to be evaluated for registration, the applicant must submit data on the product's toxicology, fate and transport characteristics, hazards to non target organisms, effects on fish and wildlife, degree of worker exposure and chemistry. The California DPR sometimes denies registration to products approved by the United States Environmental Protection Agency based on stricter requirements, or may impose use restrictions and mitigation measures beyond those on labels.

Central California Irrigation District regularly applies the following herbicides to its water distribution facilities and proposes to continue use of these under the new General Permit:

1 Rodeo / Aquamaster

2 Surfactant; nonylphenol

Central California Irrigation District would like to apply the following algaecide / herbicides to its water distribution facilities under the new General Permit;

1 Rodeo / Aquamaster (glyphosate)

2 Copper Sulfate (copper sulfate pentahydrate)

3 Surfactant; nonylphenol

Rodeo/Aquamaster is used for emerged aquatic weeds and terrestrial weeds on and in canals, drains and natural drains. Mechanical removal is the primary method for removal of emerged aquatic weed growth within drains and natural channels thoughout the irrigation water delivery system. The majority of Rodeo/Aquamaster is used on terrestrial weeds located on the water's edge of the manmade irrigation system. Water's edge applications normally require less than one foot of over spray on the waterside. Drains are typically sprayed in September through December, when they have no water. Water's edge spraying along our manmade canals typically occurs March through October, within the delivery system. Applications are recommended as necessary to control noxious aquatic and terrestrial weeds. Applications may occur system wide on a rotation basis.

Rodeo/Aquamaster is mixed with a surfactant registered for aquatic applications. Currently C.C.I.D. uses Rodeo. Rodeo/Aquamaster is applied by trained applicators usually using a truck equipped with an injection mixed spray rig applying the material by spray boom or handgun. The spray boom output is preloaded in the system's onboard computer system.

Table 2 - 3
Water Bodies Treated with Rodeo / Aquamaster

Treated Water Bodies Treated	Estimated Total Length Treated	Estimated Total Area Treated	Estimated Typical Range of Flow Rates	Applied To Vegetation In Water ?
Unlined canals	unknown		40 - 500 cfs	yes
Reservoirs		unknown		yes

Application concentrations range from .5 to 1.0 percent. Application rate, range from 2 to 3 quarts per acre on annual species. (The calculated p.p.b. of glyphosate in the treated area equates to 230 in the District's 2012 APAP.)

Surfactant; nonylphenol

Application rate range from 1 to 1.5 pints per acre on annual species.

Copper Sulfate (copper sulfate pentahydrate)

Copper Sulfate is used for algae control during the irrigation season (February 1 through November 30). Canals are monitored at various levels of personnel in C.C.I.D. Reported clogging of a grower's irrigation systems because of algae affecting water restrictions will be considered prior to a copper sulfate application. An application of copper sulfate will be scheduled when algae begins to break loose, and floating down the canal system or its affecting canal flows. This process may take place thoughout the irrigation season. Frequency of treatment will vary thoughout the season, because it is on as-needed basis. Based on other irrigation districts, applications might be on a two to four week rotation basis. No canal water will be allowed to leave the canal system during an application.

Copper sulfate granules will be applied by trained Qualified Aquatic Applicator/s down stream from check canal structures in C.C.I.D. canals. These locations allow for complete mixing of the material with the flowing irrigation water. The applicators will travel to the application sites in pickup trucks or flatbed trucks. Flows in the treated canal range from 20 to 500 c.f.s.

Applications will be applied to short reaches of the canal, so one will have more control over the application. The affected, treated section of the canal system, including a short overlap of applications, is computed based on the irrigation water flow in the canal to determine the next downstream application location if needed. The copper sulfate treated water block typically is distributed from the larger canal into takeout laterals located along the canal system onto the irrigated agricultural land of the consumer and the rest of the water block flows downstream to the canal's next reach. Some limited direct application of copper sulfate to dead end canal reaches occurs and thus will be distributed to the consumer's irrigated agricultural land.

Table 2 - 4
Water Bodies to be Treated with Copper Sulfate

Treated Water Bodies Treated	Estimated Total Length Treated	Estimated Total Area Treated	Estimated Typical Range of Flow Rates
Unlined canals	unknown		40 - 500 cfs
Reservoirs		unknown	

Application rate is 1 to 2 pounds /cfs of water flow.

2.2.3 Proposed Monitoring Locations and Sample Types

Control gates in C.C.I.D. conveyance are called canal weirs and they are operated by our canal tenders who receive orders from the C.C.I.D. Main Office, the watermaster. He instructs the various canal tenders to open and close the canal weirs in inches. C.C.I.D. will not be spilling any canal water that has had pesticides applied.

The APAP monitoring program will be run the same it has been in the past years. The samples and measurements taken as required shall be representative of the nature of the monitored discharge. All laboratory analyses shall be conducted at a laboratory certified for such analyses by the California Department of Public Health in accordance with California Water Code section 13176. A manual containing the procedures required for the instituted Quality Assurance-Quality Control Program for any on-site field measurements such as electric conductivity, pH, turbidity and temperature will be at the monitoring site. The following monitoring will include: (1) the date, exact place, and time of the sampling or measurements; (2) the individuals who performed the sampling or measurements; (3) the dates the analyszes were performed; (4) the individuals who performed the analyses; (5) the analytical techniques or methods used; (6) the results of the analyses. All of the monitoring instruments and devices used to fulfill the prescribed monitoring program will be properly maintained and calibrated as necessary to ensure their accuracy.

The monitoring location/s will vary due to the size of C.C.I.D, some 70 miles in length and up 11 miles in width, and also to what canal the pesticide will be applied to, and to what mile station of that particular canal.

The sampling data will include (1) background monitoring; (2) event monitoring; (3) post event monitoring. The background monitoring samples shall be collected upstream of the application event up to 24 hours ahead of the application event. The event monitoring will 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 with sufficient time has elapsed such the treated water would have exited the treated area. Post-event monitoring samples shall be collected within the treated area one week after application.

2.2.4 Receiving Water Monitoring

As stated above, the monitoring location/s will vary due to the size of C.C.I.D, some 70 miles in length and up 11 miles in width, and also to what canal the pesticide will be applied to, and to what mile station of that particular canal. The applications will always be applied in C.C.I.D. conveyance system and its event water will never flow beyond C.C.I.D. Right-of Way, meaning the event water will never reach any river, creek or reach any nearby drains, due to C.C.I.D.'s basic geographic and hydrographic location on the west side of the San Joaquin Valley. Both major creeks in the area, Los Banos and Orestimba cross over C.C.I.D.'s open canal system, so therefore there is no mixing of waters, no pesticides into the creek water systems that eventually end up into the San Joaquin River System.

2.2.5 Algaecide and Pesticide Data

Rodeo/Aquamaster

Rodeo as used per APAP is applied to surface aquatics in the canal system. Glyphosate, the active compound in Rodeo, is quickly immobilized by the adsorption to soil or sediment particles and remains immobilized until degradation occurs, therefore, glyphosate is not expected to be transported significantly in turbid canal waters. Rodeo is applied by spraying the aquatics by going from downstream to upstream in order not to create a block of pesticide flowing through the canal reach.

Copper compounds

Copper sulfate, like Rodeo, when applied to irrigation canal waters has no designated beneficial uses. When Copper sulfate is applied to irrigation canals, the main concern would be impacts to water quality due to the release of the treated water from the canal system. During all applications, all, if there are any, spill gates are kept closed until Copper sulfate is no longer in the canal system.

The dissolved copper ion, the most toxic and bioavailable form, generally does not remain in the water column at high concentrations, but copper can form hydroxide and sulfide compounds, precipitate out of solutions, adsorb to sediment particles, and accumulate in sediments with repeated applications. Half-lives of copper compounds used for algae control range from two to six days, depending on factors such as hardness and alkalinity. (The half-life represents the amount of time it takes for the copper concentration in the water column to decrease to half of the original concentration). (Murray-Gulde et al, 2002)

The pesticides that would be used are all registered for use in California as aquatic pesticides. The DPR evaluates the pesticide, including fate, and transport characteristics of the pesticide in water, soil and air, to ensure that no unacceptable risk to the environment occurs when used as instructed. The application of aquatic pesticides would be temporary in nature and would not affect any of the pollutants measured for air quality in the San Joaquin Valley; therefore, no conflict or obstruction of the applicable air quality plan would occur.

All the aquatic pesticides except Rodeo and Aquamaster are applied directly to the water and would not be airborne; therefore no impacts would occur to air quality standards. The application of Rodeo or Aquamaster to surface aquatics is typically applied by a spray rig with a spray boom. BMP's for Rodeo or Aquamaster application include applying Rodeo only when wind speeds are between 2 and 10 mph, and the application equipment is set up to produce a large droplet size to avoid pesticide drift. Thus, the use of the BMP's from the application of Rodeo or Aquamaster, impacts on air quality due to the application of aquatic pesticides would not be significant.

Because all the aquatic pesticides except Rodeo or Aquamaster are applied directly into the water, no increases in airborne pollutants would occur. Again, the application of Rodeo or Aquamaster would follow BMP's and would not result in a net cumulative increase of air pollutants.

Aquatic pesticide application is designed to remove existing vegetation that clogs irrigation water conveyance systems.

Under the proposed project, the pesticide application procedures in the C.C.I.D. would be essentially equivalent to practices that have occurred for the past number of years that pesticides have been applied under the APAP during which time water quality monitoring has been conducted and the BMP's implemented as required by the General Permit (existing conditions). C.C.I.D. complies with the label instructions and does not release treated water from irrigation facilities while the pesticide remains in the water. When applying herbicides directly to the water, C.C.I.D. will close all gates at potential release points during and after application to ensure that wetlands are not affected.

All reported bioaccumulation factor values for glyphosate in aquatic organisms are well below 100 (Elasco 1993; Hyden 1991; Wang et al 1994). The Hazardous Waste Identification Rule (USPDA 1999) identifies compounds that are recognized as having a low, medium or high potential for bioaccumulation. For bioaccumulation in aquatic systems, rankings were determined using bioaccumulation factors in fish or log Kow (octanol-water partitioning coefficient) values for organic compounds. Bioaccumulation potential is defined as follows:

Bioaccumulation potential	Bioaccumulation Factor (BAF)	Log Kow
High	BAF>= 10,000	log Kow >=4.0
Medium	10,000> BAF>= 100	4.0 >Log Kow >=2
Low	BAF< 100	log Kow<2.0

The highest bioaccumulation factor of 65.5 was reported for tilapia in fresh water (Wang et al 1994). Other studies report much lower bioaccumulation factors in the range of 0.03 to 1.6 for fish (Ebasco 1993). Most studies report rapid elimination and depuration from aquatic organisms after exposure stops (Ebasco 1993). Therefore, bioaccumulation of glyphosate is considered to be low and food-web transfer is not considered to be significant exposure route. Little or no data exist on bioaccumulation of surfactants and other herbicides mixture additives.

Glyphosate is a non selective herbicide, meaning that it kills all vascular plants indiscriminately, rather than selectively affecting certain types of plants, such as grasses or broadleaf herbs. Plants vary in their sensitivity to glyphosate exposure, mostly by variation in how easily it is absorbed and internally transported by plant tissues. It action is systemic, meaning that it is transported

within plant tissues from surfaces it contracts to affect remote parts of the plant, such as roots and rhizomes. Despite it's high toxicity to plants, it is relatively low in toxicity to animals due to its chemical nature and the physiological basis for its activity. Glyphosate is chemically similar to certain type of amino acids (components of proteins found in plants, but not in animals). When glyphosate interacts with the physiological processes of manufacturing proteins in plants, it profoundly disrupts all protein synthesis. Proteins are essential to all physiological processes in plants and thus glyphosate exposure is generally highly lethal to plants. Glyphosate does not poison protein synthesis in animals, because it does not act as an analogue of amino acids metabolized in animals. Glyphosate does not have other effects on animals; however, and so do some of the additives included in the spray mixes. Glyphosate is an acid, like amino acids, but is most commonly used as a salt form (isopropylamine salt) which is soluble in water . Its chemical name is N-(phosphonomethyl) glycine. The overall effect of glyphosate solutions depends on both the active ingredient and the surfactant. The only formulations of glyphosate currently approved for use in aquatic habitats omit surfactants. Certain surfactants approved for use in aquatic habitats must be added to aquatic-approved glyphosate formulations.

One ecologically significant feature of glyphosate is that it is strongly adsorbed by organic matter and fine sediments, such as clay or silt. Sediment films on plant surfaces strongly interfere with the update and activity of glyphosate. In its chemically bound, absorbed state glyphosate is chemically intact, but physiologically inactive. Actual decomposition of glyphosate in the soil or sediment is distinct from its inactivation by adsorption. Glyphosate also desorbs (releases) from soil particles, but its strong affinity for fine mineral and organic particles maintains the predominately bound, inactivated form (EXTOXNET; Ebasco 1993; Giesy et al 2000).

The primary breakdown product of glyphosate is aminophosphoric acid (AMPA), which is generally reported to be nontoxic to animals (EXTOXNET; Ebasco 1993). Glyphosate is decomposed by microbial activity in the soil. The reported rates of glyphosate decomposition and persistence in soil vary a great deal: most studies suggest rapid decomposition, while others detect persistence in the soil for more than a year (Ebasco 1993). Rates of decomposition by soil microbes vary with factors such as temperature, oxygen and pH. Glyphosate may be used as a food substrate by bacteria and can stimulate bacterial activity. It has been found to kill or inhibit the growth of some soil fungi in pure cultures; however, little is known about how glyphosate affects the microflora in realistic soil environments where important interactions, such as soil adsorption can occur (Ebasco 1993).

Laboratory tests of glyphosate generally indicate it to be nontoxic or low in toxicity to mammals and birds, at the concentrations or doses that occur in field conditions (EXTOXNET). Most information about glyphosate toxicity to mammals comes from experiments on rats, mice, rabbits and some on dogs. Little information is available on toxicity of glyphosate or its breakdown products on most wildlife species. Toxic effects of glyphosate are usually achieved in laboratory animals at very high doses (hundreds or many thousands of times the exposure expected from concentrations and doses applied in field conditions) comparable to portions of animal diets, are often required to generate acute effects (EXTOXNET; Ebasco 1993; Giesy 2000).

Three patented surfactants are approved for use with glyphosate in aquatic environments. They are known by trade names LI-700, Agridex and R-11. Toxic effects of spray mixes of glyphosate are due primarily to surfactants rather than the active herbicide. these surfactants are nonionic, meaning they do not dissociate into electrically charged particles in water, as do salts. They contain nonylphenol polyethoxylante (NPE) ingredients, which are made from nonylphenol.

Rodeo/Aquamaster is classified as practically nontoxic to aquatic invertebrates, exhibiting an LC50 of 930 mg/L, which represents the concentration that has been found to result in lethal effects to 50 percent of the test organisms (USDA/FS). Giesy et al (2000) reviewed the data available on glyphosate toxicity to fish. Acute toxicity LC50 values for glyphosate tested as isopropylamine salt ranged from 97 to greater than 1000 mg/L, and NOEC values ranged from <97 to 1000 mg/L. Data compiled by Ebasco (1993) on 1 day acute toxicity tests indicate EC 50 (concentration resulting in adverse effects to 50 percent of the test organisms) values ranging from 12.8 to 240 mg/L.

Acute toxicity of X-77, R-11 and LI-700 to fish can be moderate. Threshold LC50 for an anadromous salmonid fish tested (Atlantic Salmon, Salmo salar) was as low as .13 parts per million, and young fish or eggs are generally found to be more sensitive than adults. Despite the low threshold for concentrations for surfactant causing significant mortality, actual concentrations to which fish are likely to be exposed in actual estuarine environments are orders of magnitude lower. Research in Willapa Bay found that the highest average maximum concentrations of surfactant in water dispersed from sprayed estuarine mud with the first flooding tide - the highest concentration for exposure, a "worst-case scenario" for fish swimming into fresh sprayed sites - was 16 parts per billion (Paveglio et al. 1996).

Effects of glyphosate on birds have been tested on mallard ducks (dabbling ducks that ingest wetland sediment along with seeds, insects and vegetation and bobwhite quail. As with mammals, very high dietary concentrations of glyphosate (4640 mg/kg dietary concentration) resulted in no adverse reactions such as weight loss or mortality (Ebasco 1993). Little or no data is available on toxicity of surfactants to birds.

Ebasco (1993) compiled data on glyphosate toxicity to mammals commonly used in laboratory tests and found the LD 50 values (the dose resulting in lethal effects to 50 percent of the test organisms) ranged between 3800 and 5000 mg/kg body weight. Glyphosate is considered to be practically nontoxic to mammals. Toxicity of the aquatic-approved surfactants to mammals is reported to be very low: greater than 5 grams per kilogram body weight oral dosage of Agri-dex and LI-700 is the threshold for LC50. the level at which 50 percent mortality occurs in laboratory rat tests. (The corresponding LC50 for R-11 is reported to be 2 to 4 grams per kilogram body weight (USDA/FS 1997).)

No impacts to special-status species are known to have occurred due to pesticide use by the Merced Irrigation District located in Merced County of California, as C.C.I.D. is also located in Merced County. Therefore the proposed treatments are not likely to have a substantial adverse impact, either directly or through habitat modifications.

2.2.6 Receiving Water Monitoring - Surface

C.C.I.D. is located between Mendota Dam on the south to 1.5 miles north of Crows Landing on the north and our irrigation water flows from the south to the north, through an open gravity canal system that was built in the 1870's to1890's. Being on the west side of the San Joaquin Valley, between Mendota and Crows Landing, the land naturally slopes from the Coast Range to the San Joaquin River of which the San Joaquin River is C.C.I.D.'s east boundary in the southern half of the District. The southern part of the District has a small spill into the San Joaquin River at the end of the Riverside Canal, which is used very little, also this part of the San Joaquin River is dry, meaning there is no water in the River, all the water from Mendota Dam is stopped at Sack Dam and diverted into the San Luis Canal Company intake canal for their supply of irrigation water.

The other spill that C.C.I.D. has is located at Ike Crow Road, just north of Crows Landing, and it uses the Spanish Grant pipeline to gain access to the San Joaquin River below Crows Landing Road. Since C.C.I.D has had an automated canal gate system, this spill is used very, very little. As stated prior, there will be no pesticide applied to our canal irrigation waters and spilled through these two spills. Therefore, using pesticides in our canal waters would not cause any use impacts to the area.

In the past as per the District's APAP there have been no known or potential impacts from using our aquatic herbicide applications, which are the same as the District proposes to use in the future. As to the algaecide we propose to use, we have a irrigation water that has a high turbidity, algae has not been a problem for some 15 to 20 years. C.C.I.D. is supplied with Delta water and with the last some 20 miles of the Delta Mendota Canal being unlined, the water starts out being turbid and ends up being turbid at Mendota Dam, which is at the start of the District's conveyance canals. C.C.I.D. will only be using the algaecide if a problem arises with getting the desired flows through the canal system, without having irrigation canal water overtopping the canal banks or causing a canal break. Since Merced Irrigation District has not had any known or potential impacts, and they are known for their clear, non-turbid canal waters, C.C.I.D. knows of no known impacts that applying the proposed algaecide and aquatic herbicide will have on its canal water quality, risk and use, besides the known benefits of providing interrupted service to our customers with a supply being free of aquatics and algae, which tends to find it's way to the customer's siphon pipes and or to the customer's drip line filter stations.

C.C.I.D.'s service area is very large at 143,000 acres and the area of problems arising from algae and aquatics are not known until a few days before when our irrigation canal water can't flow through a particular canal reach without overtopping its banks, with the canals stretching the whole length of the District, some 70 miles, one can't decrease the canal flow down quickly, it might take a two to three days. This is when the District might use some algaecide or aquatic herbicide, if C.C.I.D. has time enough to notify the other Entities as required by the District's APAP.

If an algaecide or aquatic herbicide is going to be used then as previous stated, pre-event, event and post-event will be done as per the APAP and the algaecide and aquatic sampling methods will be as stated in Table C-1 on the following page as per "Order No. 2013-0002-DWG."

As per "Order No. 2013-0002-DWG," a log will be kept of the receiving water conditions and its sampling, throughout the reach bounded by the treatment area, attention shall be given to the presence or absence of:

1. Floating or suspended matter;
2. Discoloration;
3. Bottom deposits;
4. Aquatic life;
5. Visible films, sheens, or coatings;
6. Fungi, slimes, or objectionable growths; and
7. Potential nuisance conditions

Notes on receiving water conditions shall be summarized in the monitoring report.

CENTRAL CALIFORNIA IRRIGATION DISTRICT

AQUATIC PESTICIDE APPLICATION PLAN

REPORT FOR THE YEAR OF 2012

EXECUTIVE SUMMARY

The Central California Irrigation District was in full compliance of the District's APAP during the calendar year of 2012. The effectiveness of having an APAP showed our District, according the attached records, that spraying of aquatics rarely produced no pollutants associated with aquatic pesticides that were used.

RECOMMENDATIONS FOR IMPROVEMENTS

Based on the monitoring results for the year 2012, there is no need for improvements because there was no degradation that took place on the receiving waters.

IDENTIFICATION OF BMP'S

The previous mentioned BMP's listed in our APAP are the following:

1. **Licensing Pesticide Labeling and Permits:** All aquatic pesticides applied by the District will be done under the rules and guidelines set forth by the Department of Pesticide Regulations (DPR) he District will have a staff supervisor, processing a Qualified Applicator Certificate, to oversee all the aspects of all pesticide applications on behalf of the District.

2. **Notification Requirements:** The District will notify the U.S. Fish & Wildlife Service (USFWS) and the California Department of Fish and Game (CDF&G) of the District's plan to apply to or spray waterways that discharge onto their properties. The District only applies approved aquatic pesticides like Glypro or Aquamaster. These chemicals have been approved and recommended by both the USFWS and the CDF&G for application over water. Both the USFWS and the CDF&G will receive a copy of the District's Aquatic Pesticide Application.

3. **Primary Site Evaluation:** A primary site evaluation will be conducted to determine a need to a apply herbicides. This evaluation will identify targeted aquatics and their impact on the efficient water management A determination will be made as to the method of control, if it is to be mechanical, aquatic pesticide, draining or no control.

4. **Secondary Site Evaluation and Pre-Treatment Monitoring:** A secondary site evaluation and pre-treatment monitoring will be conducted by the District to determine the type and intensity of treatment needed. Monitoring of weed growth stages will help determine the most effective timing for chemical control. Site evaluation will consider existing conditions of channels such as flow and discharge and any potential harmful impacts that may be created due to aquatic pesticides being applied. A secondary evaluation may produce a recommendation to halt flow or delay delivery in a channel until after the proposed application has been dissipated.

5. **Alternative Control Measures:** Alternative methods will be considered in all evaluations. Mechanical methods are effective in aquatic management but are time consuming and are not as effective. Excavation can produce the desired results and also hinder future aquatic growth by the type of designed excavation. Spraying is allowed on a year around basis and has less harmful impacts to the local environment.

   The District's consideration of dewatering is not an option for an Irrigation District, since its main service is to furnish irrigation water to its landowners, who own the District.

   The use of chains to clear aquatic vegetation has been used by the District; however it is very time consuming and costly. During the summer time the District has two chaining crews and employs additional personnel to remove the dislodged aquatics at the downstream weirs and consumer takeouts. Chaining is very manpower demanding.

   The District will try and evaluate various approved products to improve efficacy of the applications and to experiment with the percentage of applied material to try to reduce overall herbicide use.

6. **Treatment** Prior to any aquatic spray application the District will evaluate the existing conditions surrounding the targeted area and determine if aquatics are the primary cause of the problem.

   a. Wind can have a severe effect on the application of any spray material. Wind can cause undesired drift of materials and poor coverage on the targeted area. If wind conditions, at the time of application, are found to be detrimental to the application then the job will be rescheduled.

   b. Weather conditions will be evaluated prior to the application. Rain could reduce effectiveness and thus require additional and unnecessary applications. Spraying would rescheduled if rain is eninent.

c. Water elevation levels can hinder coverage. If canal levels are extremely high, coverage on targeted plants may be severely reduced thus requiring an additional application. The District has found that when water elevations are dropped, for the purpose of exposing aquatic vegetation to the spray application, the effectiveness of control is greatly improved.

d. Water flows do not pose a problem with the District's system. Most canals and ditches do not have a flow problem until there is an aquatic vegetation problem. Then the flow has to be reduced, and if the aquatic vegetation suddenly explodes, an unreduced flow has caused the water level to overtop the canal banks. The District plans to have significant lead time in order not to have this type of problem. Since Glyphosate requires direct contact on the targeted plant, the District normal canal flows do not submerge the plants or cause splashing. If it is possible to lower canal water levels or reduce canal flows, the District will do that to increase plant exposure.

e. The District is always prepared to reschedule any spray application for any reason that may present itself. No spraying would be done if public safety, livestock or any wildlife could be potentially be harmed due to any application of aquatic pesticides.

As previously stated in our APAP, at the present time the best possible solution to aquatic weed control within our District is the use of non-toxic chemicals such as Glyphosate. The District is always open to any alternative methods that would improve water quality. Many alternatives that are discussed may not impair water quality, but are harmful to the immediate, local environment and not preferred by wetlands standards. The District has an obligation to protect its nearby wetland habitat, since it delivers water to the Grassland Water District and a number of Federal and State wildlife refuges. The District has chosen a method that has a 20 year history of no reported damage to fish or nearby wildlife.

BMP'S MODIFICATIONS ADDRESSING VIOLATIONS:
There are no known violations of our General Permit.

RECOMMENDATIONS TO IMPROVE THE MONITORING PROGRAM, BMP'S, AND APAP TO ASCERTAIN

COMPLIANCE WITH THIS GENERAL PERMIT
There are no recommendations at his time since compliance was achieved.

PROPOSED CHANGES TO THE APAP AND MONITORING PROGRAM:
There are no proposed changes at his time.

AQUATIC PESTICIDE APPLICATION PLAN

Respectively submitted,

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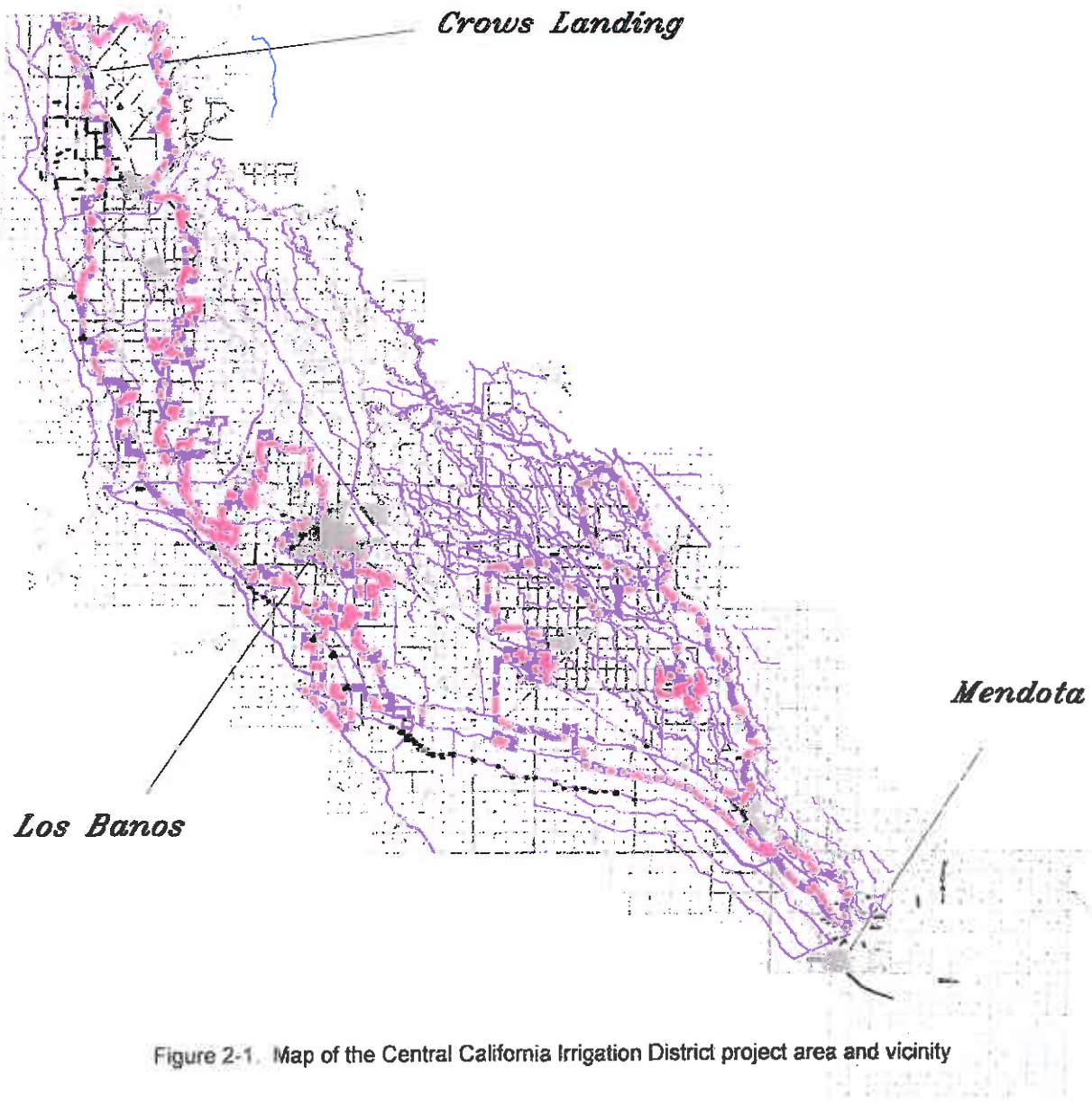

Figure 2-1. Map of the Central California Irrigation District project area and vicinity

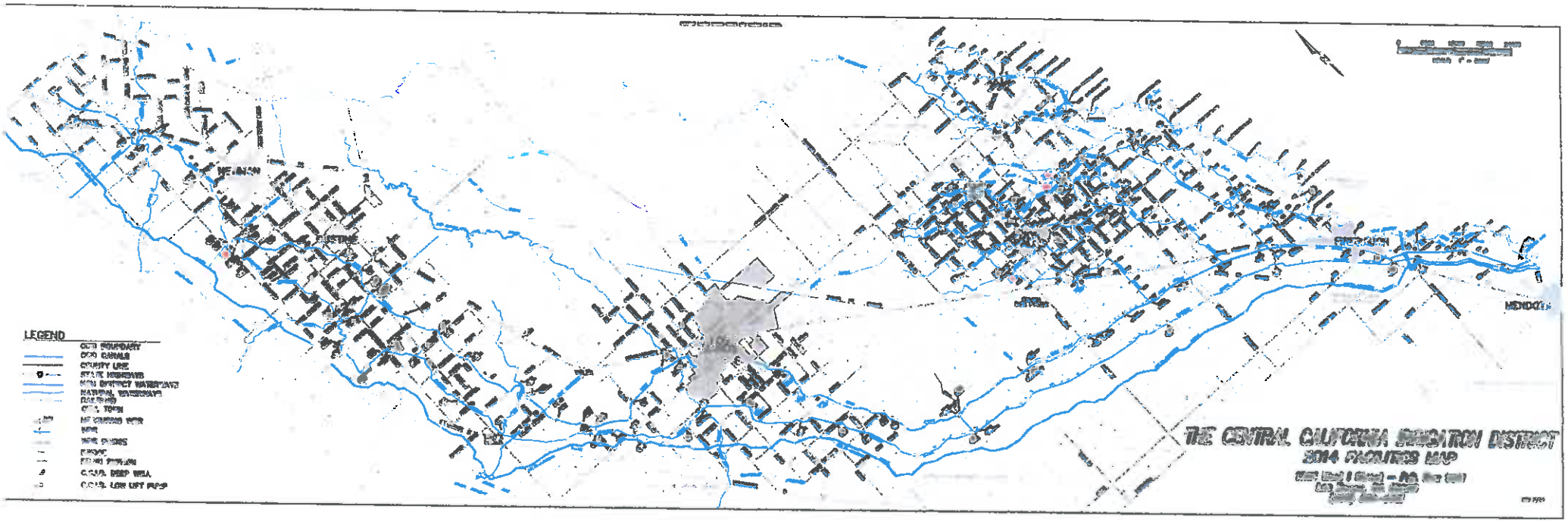

Figure 2-2 Typical Application Areas of Rodeo / Aquamaster (2006)

Central California Irrigation District
1335 West I Street
Los Banos, California 93635
209-826-1421

Aquatic Pesticide Application Plan

Location Map #1 for 2006 Applications and Treatment Areas

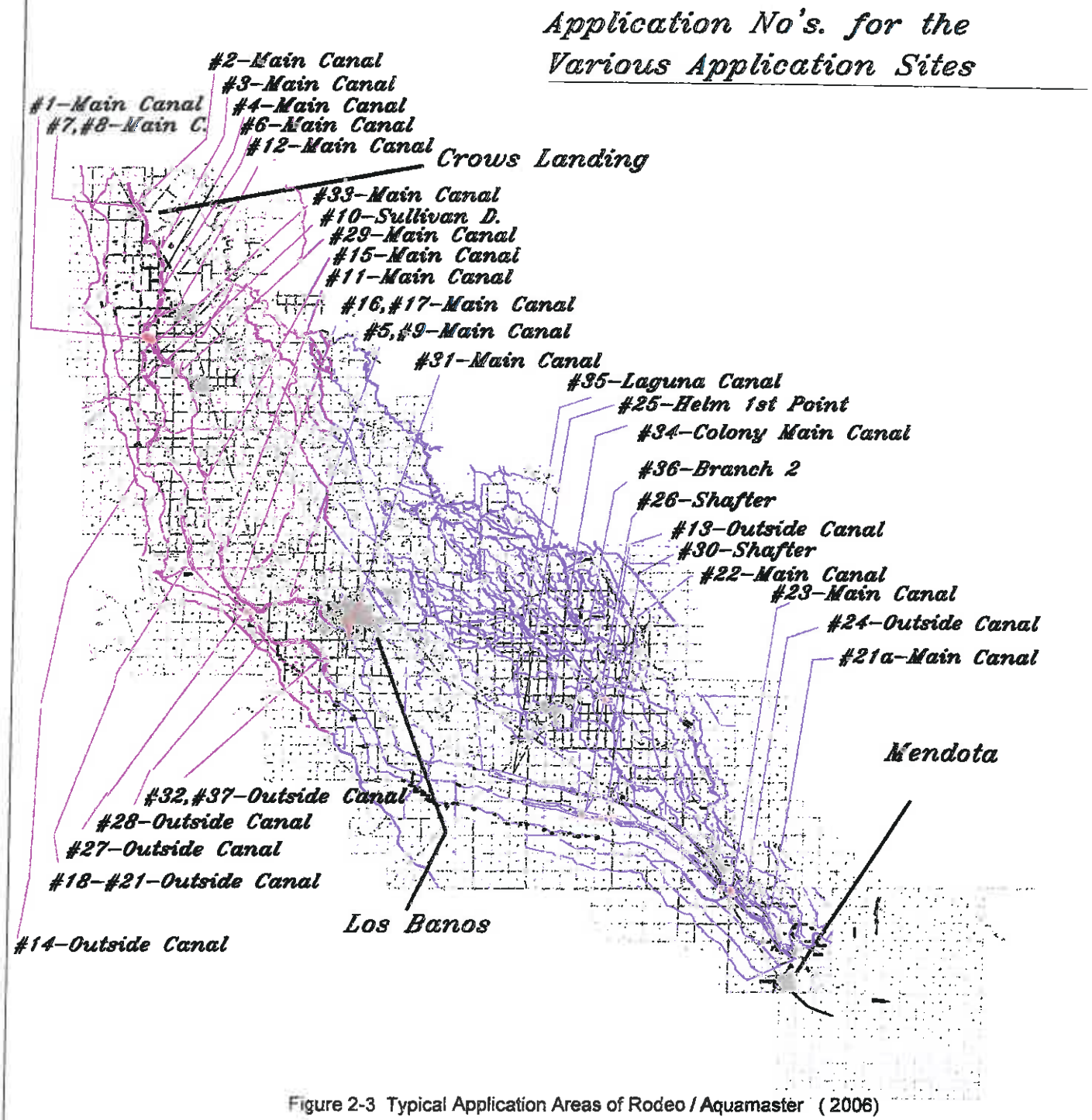

Figure 2-3 Typical Application Areas of Rodeo / Aquamaster (2006)

Central California Irrigation District
1335 West I Street
Los Banos, California 93635
209-826-1421

Aquatic Pesticide Application Plan

Location Map #2 for 2006 Applications and Treatment Areas

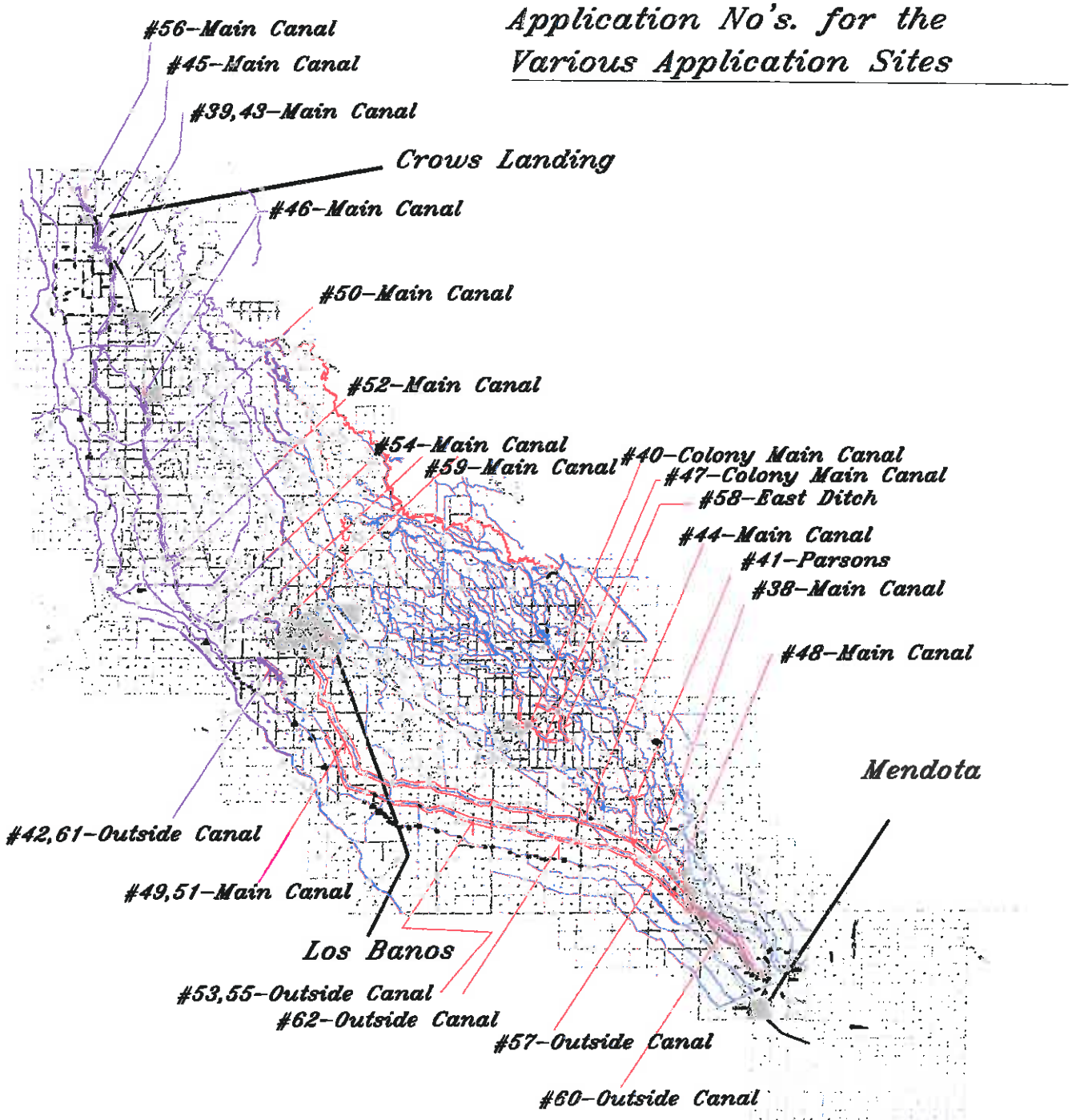

Figure 2-3a Typical Application Areas of Rodeo / Aquamaster (2006)

NEW ADDED PAGES TO ORIGINAL APAP

1. TABLE C-1
2. APAP CHECK LIST
3. CHECK LIST NO. C-1 to C-9
4. CHECK LIST NO. C-9 and C-11

Table C-1. Monitoring Requirements

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

Footnotes:

(1) All applications at all sites.

(2) Field testing.

(3) Field or laboratory testing.

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

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

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

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

(8) It is required only when a surfactant is used.

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

No.[1]	Permit requirements	√[3]	Staff comments
C.1.	Describe the water system where the pesticide[2] will be applied.		
C.2.	Describe the treatment area.		
C.3.	Types of weeds to be controlled and why		
C.4.	- Pesticide products to be used.		
	- Degradation byproducts of pesticide used if known.		
	- Method of application.		
	- Surfactant and adjuvants to be used		
C.5.	Discuss factors influencing the decision of using pesticide for weed control.		
C.6	- List of gates or control structures to be used in receiving water.		
	- Inspection schedule of the gates and control structures.		
C.7	For those with SIP exception:		
	- exception period (begging date to ending dates)		
	- justification for exception period		
	- describe plans to ensure compliance if applying pesticide outside the exception period.		
C.8	Describe monitoring program		
C.9	How to prevent sample contamination.		
C.10	Minimum content of BMPs:		
	a. How to prevent pesticide spill and spill contamination;		
	b. Ensure only minimum and consistent amount of pesticide used for targeted weeds;		
	c. Plan for educating applicators on avoiding adverse effect from pesticide application;		
	d. Plan on informing the farmers and agencies who have water rights on the receiving water;		
	e. Plan on preventing fish kill from pesticide application;		
C.11	a. Evaluation of alternatives: i. no action.		
	ii. Prevention.		
	iii. Mechanical method.		
	iv. Cultural method.		
	v. Biological control.		
	vi. Pesticide control.		
	b. Use least intrusive method of weed control;		
	c. Apply decision matrix concept for choosing the most appropriate formulation.		

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

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

No.	Permit Requirements

C. 1. **Describe the water system where the pesticide will be applied.**

As addressed under 2.2.2., paragraph 3 in the APAP. Essentially the pesticides will be applied in the C.C.I.D. water conveyance system, which cover some 231 miles in length, where ever the aquatics and algae become a irrigation water flow problem. The site/s is not pre-known.

C. 2. **Describe the treatment area.**

As addressed under 2.2.2. and 2.1, in the APAP. Essentially the pesticides will be applied in the C.C.I.D. water conveyance system, which cover some 231 miles in length, where ever the aquatics and algae become a irrigation water flow problem. The site/s is not pre-known.

C. 3. **Types of weeds to be controlled and why.**

As addressed under 2.1, in the APAP. Essentially the pesticides will be applied to problematic aquatics such as american pondweed, yellow primrose, parrots feather, and algae. Many farmers in order to conserve water and maximize the efficiency of irrigation water, use sprinkler,drip and micro sprinklers and these require irrigation water to be clean and free of vegetative debris that will clog filter systems.

C. 4. **Pesticide products to be used**

As addressed under 2.2.2.1, paragraph 3, in the APAP. Essentially the pesticides will be Rodeo Aquamaster and Copper sulfate.

Degradation byproducts of pesticide used if known.

None.

Method of application

As addressed under 2.2.2.1, paragraph 5, in the APAP. Essentially the pesticides will be applied with a boom sprayer, output is calculated by the on-board computer system.

Surfactants and adjuvants to be used.

As addressed under 2.2.5. page 2, paragraph 5, in the APAP. Essentially LI700, Agri-dex and R11.

C. 5. **Discuss factors influencing the decision of using pesticide for weed control.**

As addressed under 2.2.7. item 3, 4 and 5 and 2.2.6. third paragraph in the APAP.

C.6. **List of gates or control structures to be used in receiving water.**

There are over 1200 takeout gates and 100 control structures or weirs on our system, a list will be provided if need be, the list would be worthless not knowing where the aquatic or algae problem might be located. As to date, C.C.I.D. does not intend to use any of them, unless one wants to over-topped the canal banks and cause a canal bank break and be sued, canal breaks and law suits go hand in hand.

Inspection schedule of the gates and control structures.

Does not apply to the District's APAP, but otherwise they are inspected annually.

C.8. **Describe monitoring program**

As addressed under 2.2.3. fourth paragraph in the APAP. C.C.I.D. will be following the items on Table C-1.

C.9 **a. How to prevent sample contamination.**

Samples in separate plastic lab supplied bottles with caps, labeled, will be taken directly to the Lab. Otherwise, there should not be sample contamination. The samples shall be collected by trained personnel that have either a qualified applicator/certificated license.

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

No.	Permit Requirements

b. Ensure only minimum and consistent amount of pesticide used for targeted weeds.

Will be using the pesticide as per label instructions, our spray truck has a on-board computer system just for this purpose.

c. Plan for educating applicators on avoiding adverse effect from pesticide applications

The trained applicator/s will be given the labels to read and understand prior to the application of the pesticide by them.

d. Plan on informing the farmers and agencies who have water rights on the receiving water.

There will be "no spills" from C.C.I.D. canal system, canal tenders who have takeouts delivering irrigation water to consumers, will notify the consumer, by phone or by person, 24 hours in advance of the planned application to find out if they want to keep irrigating or have their irrigation water shut off and have a later delivery of irrigation water.

e. Plan on preventing fish from pesticide application.

C.C.I.D will be using the pesticide label recommendation regarding fish kill prevention.

C.11. **a. Evaluation of alternatives:**

i. **No action.** This would equate to letting the weeds grow and having the canals over flow or shutting the irrigation water flow off, neither would be appropriate.

ii. **Prevention.** This would be same as not every having the aquatics to have seed pods that would germinate in later years, C.C.I.D. is past that point in time, or sterilizing the canal's wetted perimeter, this would be to costly. The best prevention is using pesticides at the earliest siting of the aquatics has proven to be the best prevention in C.C.I.D.

iii. **Mechanical method** This option is very time consuming, the use of chaining or removal by back-hoes or escavators, and demands a lot of man-hours by extra personnel.

iv. **Cultural method.** The use of establishing of competitive vegetation in a flowing canal system is not appropriate when C.C.I.D. does not want any vegetable matter in its canal system. Even the smallest amount of debris in the flowing water causes clogging of various filter systems using the irrigation water.

v. **Biological control.** The only living agent are probably fish, in the end when all aquatics are gone, the fish would probably die, an this would cause another problem.

vi. **Pesticide control** Pesticides provide the most effective and time-efficient method of managing weeds and algae.

b. Use least intrusive method for weed control:

This would equate to doing nothing, like "no action" on the weed problem

c. Apply decision matrix concept for choosing the most appropriate formulation.

There are only a few pesticides for aquatics, and their active ingredient is glyphosate, C.C.I.D. has used Rodeo and Aquamaster for several years in the past, and they have done the job, and Copper sulfate will cause the least of problems in controlling algae, using other pesticides would have greater problems. I will let someone else use your decision matrix concept, I don't believe this is the place to use this above mentioned concept.