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Protection Agency

State Water Resources Control Board

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DIVISION OF WATER QUALITY

ATTACHMENT A

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 for WDID # **5B39NP00023**
	C. ☐ Change of Ownership or responsibility WDID#_____	

II. CONTROL AGENCY INFORMATION

A. Name South San Joaquin Irrigation District			
B. Mailing Address (physical address) 11011 East Highway 120			
C. City Manteca	D. County San Joaquin	E. State California	F. Zip 95336
G. Contact Person Jim Atherstone	H. Title: Environmental Compliance & Safety Officer	I. E-mail address jima@ssjid.com	J. Phone (209) 249-4627

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

A. Name **South San Joaquin Irrigation District**			
B. Mailing Address **P. O. Box 747**			
E. City **Ripon**	F. County **San Joaquin**	E. State **CA**	F. Zip **95366-0747**
G. Contact Person **Jim Atherstone**	H. Title: Environmental Compliance & Safety Officer	I. E-mail address **jima@ssjid.com**	J. Phone 209-993-7971

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: **District canals, pipelines, drainage ditches**

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: _____

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, submersed, floating and emergent aquatic vegetation**

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

2,4-D (Weedar®)
Acrolein (Magnacide-H®)
Copper (Bluestone or Nautique®)
Diquat Dibromide (Reward®)
Endothall (Cascade®)
Fluridone (Sonar®)
Glyphosate (AquaMaster®, Rodeo®, AquaPro®, Glypro®)
Imazamox (Clearcast®)
Imazapyr (Habitat®)
Penoxsulam (Galleon SC®)
Sodium Carbonate Peroxyhydrate (GreenClean®)
Triclopyr (Renovate®)

Note: Names listed in parentheses are example product names and may change.

C. Period of Application: Start Date: **January 1, 2014** End Date: **December 31, 2018 /or for the life of the permit if extended or amended.**

D. Types of Adjuvants Used:

Various non-ionic surfactants (Examples include, but not limited to: AgriDex, Silicone Super Wetter, etc.)

VI. AQUATIC PESTICIDES APPLICATION PLAN

Has Aquatic Pesticides 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

B. 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: ____Jeff Shields_____

B. Signature: _____ Date: __12 – 23 - 2013___

C. Title: _____General Manager, South San Joaquin Irrigation District_____

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** _____

SOUTH SAN JOAQUIN IRRIGATION DISTRICT

AQUATIC PESTICIDE APPLICATION PLAN

2013 Statewide General NPDES Permit for Discharges of Aquatic Pesticides

Prepared for:
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NPDES Wastewater Unit, Room 15-35A
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Acronyms

APAP	Aquatic Pesticide Application Plan
BMP	Best Management Practices
CAC	County Agricultural Commissioner
CFR	Code of Federal Regulations
DHS	Department of Health Services
DPR	Department of Pesticide Regulation
IMPs	Individual Monitoring Plans
MRP	Monitoring and Reporting Program
NPDES	National Pollutant Discharge Elimination System
QAP	Quality Assurance Plan
RPMP	Regional Pesticide Monitoring Program
RWQCB	Regional Water Quality Control Board
SSJID	South San Joaquin Irrigation District
SWRCB	State Water Resources Control Board

Preface

This Aquatic Pesticide Monitoring Plan was prepared to comply with 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. 2013-0002-DWQ, General Permit No. CAG990005). Dischargers eligible for coverage under this General Permit are public entities that conduct resource or pest management control measures, including local, state, and federal agencies responsible for control of algae, aquatic weeds, and other organisms that adversely impact operation and use of drinking water reservoirs, water conveyance facilities, irrigation canals, and natural water bodies. On June 28, 2004 South San Joaquin Irrigation District (SSJID or "District") was issued a Waste Discharge Identification Number (WDID#) 5B39NP00023.

SSJID delivers water to approximately 66,000 acres of farmland around the cities of Manteca, Ripon, and Escalon. District irrigation water is delivered from Woodward Reservoir, located just north of the City of Oakdale. The water flows through the Main Distribution Canal (MDC) which is approximately 26 miles long. The District has approximately 180 miles of lateral canals, 360 miles of underground pipelines, and 70 miles of drainage ditches. The District also has approximately 24 drain locations where water can leave District facilities and be discharged into the Lone Tree Creek / Little John Creek system or the District's French Camp Outlet Canal, both of which discharge into the San Joaquin River. The District also has five locations where waters can be released into the Stanislaus River. All 24 of the locations have "canal gates" which are closed and locked to prevent any unscheduled discharges. The SSJID regularly applies algaecides that are covered by the permit, as identified in the Notice of Intent submitted to the Central Valley Regional Water Quality Control Board (RWQCB) on May 20, 2004. Magnacide H (acrolein) and Rodeo/AquaMaster (glyphosate) are the herbicides used for weed and algae control. Since that time the District has added: Clearigate (herbicide/algaecide), Captain (algaecide), Clearcast (herbicide), Nautique (herbicide), two Endothal products; Cascade (aquatic herbicide) and Teton (algaecide and aquatic herbicide) to the District's original NPDES Permit to augment or replace the product Magnacide H.

The purpose of the Aquatic Pesticide Application Plan (APAP) is to describe the project and why it is needed, what practices, such as BMP's will be used to reduce water quality impacts and how potential water quality impacts will be monitored. Included in the APAP is a comprehensive description of the water bodies and aquatic weeds being treated, type of aquatic herbicide being used and how it is used, and a comprehensive monitoring plan.

1.0 SOUTH SAN JOAQUIN IRRIGATION DISTRICT

SSJID is located in San Joaquin County and its service area is shown on Figure 1. The District encompasses about 72,000 acres of land, with an estimated 66,000 acres of farm land. Approximately 59,000 acres of that total was irrigated in 2012.

SSJID annually diverts approximately 250,000 AF of high quality water for irrigation purposes. After passing through a number of water storage reservoirs and powerhouses on the Stanislaus River, water is diverted at Goodwin Dam and flows through approximately 13 miles of canals, tunnels and flumes into Woodward Reservoir. Woodward Reservoir is a 32,763 acre-foot off-stream storage facility constructed solely by SSJID. Water is released from Woodward into the SSJID Main Distribution Canal which passes in a southwesterly direction through Oakdale Irrigation District in Stanislaus County for a distance of 6 miles before it reaches San Joaquin County at the eastern border of SSJID. It is from this 18 mile long Main Distribution Canal, through 150 miles of concrete lined conveyance channels and 360 miles of pipelines, that SSJID delivers surface water to its irrigated agricultural lands.

Due to the gravity delivery nature of the system, there can be operational spills from the canal system that may enter into the San Joaquin River and the Stanislaus River. The District has approximately 25 drain locations where water can leave District facilities and be discharged into the Lone Tree Creek / Little John Creek system or the District's French Camp Outlet Canal, both of which discharge into the San Joaquin River. All spill locations have "canal gates" which are closed and locked to prevent any unscheduled discharges. The District also has five locations where waters can be released into the Stanislaus River.

2.0 AQUATIC VEGETATION PROGRAM

2.1 Vegetation Types

To prevent impacts to SSJID's water delivery, over the past 27 years the District has developed an aquatic vegetation control program using the aquatic herbicides, Magnacide-H and Rodeo/AquaMaster. Some of the most problematic aquatic vegetation includes American pondweed, water primrose, parrot feather, filamentous and several varieties of algae. Over the duration of the 2004 permit (Water Quality Order 2004-0009-DWQ) it has been necessary for SSJID to add four additional aquatic herbicides and algaecides when the use of Magnacide H was not possible. Aquatic herbicides that may be used as alternates to Magnacide H are Clearigate (herbicide/algaecide), Captain (algaecide), Clearcast (aquatic herbicide), and Nautique (aquatic herbicide). The active ingredient in Clearigate, Captain and Nautique is chelated copper; Clearcast contains the active ingredient imazamox. To further protect the District we have added two endothall products for the same reason; Cascade (aquatic herbicide) and Teton (algaecide and aquatic herbicide). These products are alternative aquatic algaecides and herbicides used to augment or replace Magnacide H aquatic herbicide. As needed, the district may elect to add additional aquatic herbicides to their Aquatic Vegetation Program. Alternative aquatic herbicides that contain the active ingredients 2,4-D, diquat dibromide, fluridone, Imazapyr, Penoxsulam, sodium carbonate peroxyhydrate or triclopyr may be used if needed.

SSJID is located in a Mediterranean climate zone with hot, dry summers; with a mean temperature of about 91°. The warm temperatures, associated with shallow, generally less then 6- feet deep, clear water, allow for rapid aquatic vegetative growth. During the peak of summer, weed and algae growth can exceed one inch per day.

Control of aquatic vegetation is necessary as the weeds clog the canals, preventing sufficient flows from reaching the customers. Blockages can become severe enough to dam up the water in the canals, threatening to overtop the canal banks, which would cause flooding. In order to conserve water and maximize the efficiency of irrigation, many landowners currently use sprinkler, drip, or micro irrigation systems. These systems are particularly susceptible to becoming plugged with algae and vegetative debris. When waterways become completely chocked with weed and algae growth, the matted vegetation can serve as host locations for vectors such as mosquitos and flies, and can create objectionable odors.

2.1.1 Growth Tolerance

SSJID typically targets weeds when they are small so that lower concentrations of herbicide can be used effectively. Application of Magnacide H at SSJID generally begins about three weeks after the beginning of the irrigation season or when noticeable weeds are present. The start of aquatic weed treatment is highly dependent on weather.

Through the experience of years, SSJID has found that controlling the pond weeds to less then 24-inches in length through frequent, low concentration treatments, requires a lower volume of aquatic herbicides use each year than if weeds were allowed to grow longer with less frequent treatments. This weed control strategy also prevents the spread of filamentous algae, and reduces the ability of submersed aquatic plants to fragment and spread through the system, or reach a growth stage where

they are reproductively viable. A 21-day schedule of Magnacide-H has been found to keep aquatic weeds and algae within the target growth tolerance.

Factors that can influence the application schedules of aquatic herbicides:

- Flows - If flows are insufficient to move the Magnacide through the reach of canal being treated, the treatment must be rescheduled. Insufficient flows can be caused by a lull in irrigation and canal maintenance.

- Weather - Changes in weather can change application schedules for a number of reasons. If the weather is cool there will be less weed growth, which will require less frequent treatments. Additionally, cool weather would also cause a lull in irrigation as described above. Warmer weather will increase aquatic weed growth, possibly requiring additional treatments.

- Visual Observations - Prior to each treatment, application personnel observe weed growth in the reach of canal to be treated, using Best Management Practices, (BMPs). If weed growth is not sufficient to require treatment, the application will be canceled.

Factors that influence Rodeo / AquaMaster applications;

Two aquatic pests that can block the District's drainage channels are parrot feather and water primrose. Both of these weeds grow in mats on the water, and their root systems lightly attach to the bottom of the channel. If a higher than normal flow goes down the channel these roots will break loose and the mat may float down the channel until it is caught by an obstruction such as a road crossing culvert. If these mats clog a road crossing, the channel will back up water and may damage to the road crossing and/or flood adjacent land. Visual inspections are conducted during the Irrigation Season to monitor for any potential problems. Through many years of experience, SSJID has found that a good practice is to make an application when mats are three to five feet in diameter.

Smartweed is a very hearty plant that translocates high quantities of water, and invades District channels and drains from the bank (side of the channel). This pest requires higher application rate of the Rodeo / AquaMaster / Roundup Custom to control this growth.

2.2 Aquatic Herbicides

The main aquatic herbicides used by the SSJID are Magnacide-H and Rodeo/AquaMaster/Roundup Custom. Alternative products for Magnacide H include; Nautique, Captain, Clearcast, Clearigate, Cascade and Teton. As required, aquatic-labeled adjuvants may be used to enhance the efficacy of an herbicide (i.e. glyphosate).

The district may elect to add additional aquatic herbicides to their Aquatic Vegetation Program. Alternative aquatic herbicides that contain the active ingredients 2,4-D, diquat dibromide, fluridone, Imazapyr, Penoxsulam, sodium carbonate peroxyhydrate or triclopyr may be used if needed.

2.2.1 Magnacide-H

Acrolein, is the active ingredient of Magnacide-H, it composes 92 to 98% of the product, with an additional 0.1 to 1% being Acetaldehyde. Inert ingredients, including water, make up a miniscule percentage of this product. Adjuvants, or surfactants, are not used with Magnacide-H. The degradation product of acrolein is 3-Hydroxypropionaldehyde or 3-HPA.

SSJID obtains Magnacide-H in 347-gallon portable skid tanks. The tanks are mounted on a flatbed truck for delivery to the application site and remain on the truck during application. On the routine application date for an application site, the truck and crew mobilize to the site. The crew first makes the determination that weed growth in the reach of canal justifies treatment or if another treatment alternative would be appropriate. Upon determination that a reach of canal needs treatment with Magnacide the crew dons the appropriate safety gear and begins setup of the equipment according to the *Magnacide-H Application and Safety Manual*, Baker Petrolite, Revised March 2005.

Magnacide H is applied directly to the water using a subsurface injection nozzle in a particular section of canal by placing the application hose into the water of the canal, below a drop or other turbulent location, to ensure thorough mixing. The Magnacide H is forced from the truck-mounted tank through the hose into the canal by applying Nitrogen gas to the tank. The target concentration in the canal is obtained by use of the proper orifice and Nitrogen pressure. Concentrations are related to weed growth, water temperature and flow and typically range between 1 and 5 ppm, but can go as high as 12.9 ppm. Label instructions indicate that 15 ppm should not be exceeded by any combination of dosage and application time.

2.2.1.1 Application Rates

Determinations of Magnacide H applications are made in terms of rates (gallons per hour) based on site-specific information, such as flow, temperature, and weed condition. The procedure for determining the application rate is specifically detailed on the product's label as well as in the safety manual and those guides should be followed in field. A summary of the application rate determination is presented below.

Once it has been determined that an application is necessary, the first procedure is to determine the weed condition in the treatment area. Weed condition is standardized in the label's application guide as follows:

Weed Growth Condition Chart for Temperatures above 60° F

Condition Code	Magnacide H gal per cfs (Dosage)
A Little algae and pondweed Less than 6 inches long	0.17
B Algae (non-floating) and Pondweed less than 12 inches long	0.25
C Algae (some floating) and Pondweed 12 to 24 inches long	0.50
D Algae (some floating) and Mature pondweed (over 24 inches)	1.0
E Choked Condition	1.5

The Condition Codes are used to describe the general treatment level. Once the dosage is determined from the weed condition chart, it is multiplied by the canal flow to determine the total gallons of Magnacide-H to be applied to the canal.

Magnacide-H is less soluble and plant reactivity is lower in cold waters, which will require higher amounts of Magnacide-H for treatment. If the water temperature is below 60°F, the application volume must be increased according to the following chart:

Temperature Correction Table

Water Temperature °F	Amount of Magnacide-H Increase
60-55	20%
55-50	50%
50 or below	100%

Once the treatment amount, and increase amount if needed, has been determined, then the application time must be determined. Application times can range from 15 minutes to 8 hours in length. Faster velocities require longer application times to insure good contact of the herbicide with the aquatic vegetation. The tables on pages 17-21 of the *Magnacide-H Application and Safety Manual* helps in choosing sufficient application times. Typically, SSJID has found that a 3 hour application works best with the velocity of our delivery system and typical weed growth. The treatment amount is then divided by the application time to determine an application rate in gallons of Magnacide-H per hour.

To apply at the desired rate requires choosing the proper orifice and nitrogen gas pressure. This information is provided in the table on page 22 of the Magnacide-H Application and Safety Manual.

2.2.1.2 Application & Treatment Areas

Application area of Magnacide H is typically done at the outlet from Dam #2 at Woodward Reservoir into the lower portion of the Main Supply Canal. This canal designation changes at the District's first takeout - Drop #1 on Victory Road - where the Main Distribution Canal begins. This same Main Distribution Canal becomes the Treatment Area throughout its length, passing the treated water through all lateral canals & pipelines that are delivering water onto cropland. As needed, a single Lateral may be treated separately if it did not have water flowing through it during the regularly scheduled application.

Water Bodies Treated with Magnacide H

Treated Water Bodies	Estimated total length treated	Estimated total surface area treated	Estimated typical range of flow rates	Designated beneficial uses
Lined canals	150 miles	545 acres	25-140 cfs	N/A
Unlined canals	26 miles	126 acres	350 - 700 cfs	N/A
Reservoirs	½ mile	14 acres	25 – 250 cfs	N/A
Underground pipelines	360 miles	N/A	25-50 cfs	N/A

Over the 28 years of using Magnacide-H in District canals, SSJID has developed an application program that provides effective aquatic weed control through most of its concrete lined canals.

2.2.2 Rodeo/AquaMaster (glyphosate)

Glyphosate, is the active ingredient of AquaMaster (also sold as Rodeo or Roundup Custom), formulated as Glyphosate,N-(phosphonomethyl)glycine, in the form of its isopropylamine salt it composes 53.8 % of the product. Inert ingredients including water make up the remaining 46.2%. Various nonionic surfactants with aquatic-approved labels may be used with this product as sticker-spreaders.

SSJID obtains AquaMaster in 30 gallon barrels. Material is metered out of the barrel into 2 ½ gallon containers for mixing into the Spray Truck. The application would be made by either the spray truck with a single 200 gallon mix tank or the spray truck that is set up with injector pump application using one large 500 gallon fresh water tank and three 15 gallon bulk concentrate tanks. Using BMP the applicator identifies the plant pest and concentration of glyphosate needed for control. BMPs also consider alternate methods of control, and other factors affecting the site to be treated. The applicator will use all appropriate Personal Protective Equipment (PPE) when making the application.

Glyphosate is applied directly onto the target pest through hand spraying or use of a boomless sprayer. Typical applications are 3% concentrated AquaMaster per volume but may go as high as 8%, as needed by BMPs or the product label. A typical application will also contain 1% Nonionic Surfactant; the manufacturer's surfactant label recommendations are followed to obtain best results.

2.2.2.1 Application Rates

The Condition Codes are used to describe the general treatment level. Each treatment requires that an application rate be determined. The rate (ounces/acre) to be applied to a canal depends on the condition dosage, temperature factor, canal rate of flow, and contact time. Equations and/or rate tables in the label instructions are used to determine the rate at the time of treatment. The resulting concentration percent (%) is a function of the dosage, and is another indicator of general treatment levels. Label instructions indicate that 8% should not be exceeded by any combination of dosage.

Weed Growth Condition Chart for Temperatures above 60° F

Condition Code	Rodeo/AquaMaster oz. per acre (Dosage)
A Parrots Feather or Prim Rose 1' to 3' mat	32 oz. per acre
B Parrots Feather or Prim Rose 3' to 10' mat	64 oz. per acre
C Smart weed 8" to 15" tall	64 oz. per acre
D Smart weed 12" to 24" tall	96 oz. per acre
E Choked Condition	Mechanical removal

2.2.2.2 Application & Treatment Areas

Application of Rodeo/AquaMaster is to control the formation of plant material in the District's drainage ditches. Two aquatic pests (parrot feather and water primrose) form mats of plant material which stay attached to the soil until there is an increase in flow through the channel/ditch. At the point the mat breaks free, it becomes a floating dam; when such a dam floats into a road crossing it will block the pipe crossing under the roadway causing flooding onto adjacent lands and/or potentially washing out the roadway.

Application Schedule consists of BMPs to monitor the growth and control the plant population throughout the Irrigation season.

Locations/Receiving Water Types include the District Drains 3, 4, 5, 7, 8 & 9 which eventually drain into the French Camp Outlet Canal and out through Lone Tree Creek. Several Drains 12, 13, 14, 15, 17 & 20 also eventually drain into Lone Tree Creek. The other locations are Drains 10 & 11 which drains into the Walthall Slew and into the San Joaquin River. Hall Drain is isolated from the Stanislaus River by an Canal gate mounted on a headwall at its west end, Drains 18 &

18a also have a headwall and canal gate or if necessary there is a pump that can be used for outflow into the Stanislaus River.

Table 1-2
Water Bodies Treated with Rodeo/AquaMaster

Treated Water Bodies	Estimated total length treated	Estimated total area treated	Estimated typical range of flow rates	Applied to vegetation in water?	Designated beneficial uses
Drains	100 to 400 feet	½ acre	5 cfs to 25 cfs	Yes	None

Application Concentrations/Rates follow BMPs depend upon age, plant species, size of matt coverage, etc.

2.2.3 Nautique (Copper Ethylenediamine Complex & Copper Triethanolamine Complex for aquatic weeds) and Captain (Copper Ethanolamine Complex for algae)

(Alternative for Magnacide H)

Nautique aquatic weed treatment would be made approximately every 21 days as needed to control Submerged weed growth. SePRO offers on-site assistance and technical support to assess the schedule and program. Treatment frequency and concentration may need adjusting to optimize the treatment program.

Nautique is applied through an injection system into the flowing water in a like manner as the Magnacide H aquatic herbicide.

Captain (algaecide) would be applied two weeks following the Nautique application, also on a 21 day schedule as needed to control several species of algae within the Main Distribution Canal and lateral canals. Captain is applied through an injection system into flowing water and the same injector may be used for both Nautique and Captain.

Application area of Nautique and Captain is a single location at the outlet from Dam #2 at Woodward Reservoir into the lower portion of the Main Supply Canal. This canal designation changes at the District’s first takeout [at Drop #1 on Victory Road], where the Main Distribution Canal begins. This same Main Distribution Canal becomes the Treatment Area throughout its length, passing the treated water through all lateral canals & pipelines that are delivering water onto cropland. A single Lateral may be treated separately if it did not have water flowing through it during the regularly scheduled application.

2.2.3.1 Application Rates

Determinations of Nautique and Captain applications are made in terms of rates (gallons per hour) based on site-specific information, such as flow, temperature, and weed condition. The procedure for determining the application rate is specifically detailed on each product's label as well as in the safety manual and those guides should be followed in field.

Water Bodies Treated with Nautique and Captain

Treated Water Bodies	Estimated total length treated	Estimated total surface area treated	Estimated typical range of flow rates	Designated beneficial uses
Lined canals	150 miles	545 acres	25-140 cfs	N/A
Unlined canals	26 miles	126 acres	350 - 700 cfs	N/A
Reservoirs	½ mile	14 acres	25 – 250 cfs	N/A
Underground pipelines	360 miles	N/A	25-50 cfs	N/A

2.2.4 Clearigate (Copper Ethanolamine's) (Aquatic herbicide & Algaecide)

Clearigate is a chelated copper product used to control aquatic weeds and algae throughout the District's distribution system. (Alternative to Magnacide H)

Clearigate is applied using two locations; starting at the outlet from Dam #2 at Woodward Reservoir into the lower portion of the Main Supply Canal. This canal designation changes at the District's first takeout [at Drop #1 on Victory Road] where the Main Distribution Canal, (MDC), begins. This same Main Distribution Canal becomes the Treatment Area throughout its length, passing the treated water through all lateral canals & pipelines that are delivering water onto cropland. The second location is at Drop 5 on the MDC where the PPM of the treatment zone would be brought up to 1 ppm to continue treatment through remainder of the Treatment Area.
A single Lateral may be treated separately if it did not have water flowing through it during the regularly scheduled application.

2.2.4.1 Application Rates

Determinations of Clearigate applications are made in terms of rates (gallons per hour) based on site-specific information, such as flow, temperature, and weed condition. The procedure for determining the application rate is specifically detailed on Clearigate product's label or may be calculated by a SePRO Representative and those guides should be followed in field.

Water Bodies Treated with Clearigate

Treated Water Bodies	Estimated total length treated	Estimated total surface area treated	Estimated typical range of flow rates	Designated beneficial uses
Lined canals	150 miles	545 acres	25-140 cfs	N/A
Unlined canals	26 miles	126 acres	350 - 700 cfs	N/A
Reservoirs	½ mile	14 acres	25 – 250 cfs	N/A
Underground pipelines	360 miles	N/A	25-50 cfs	N/A

2.2.4.2 Application

The recommended treatment time with moderate flows in the MDC would be a 5 hour application where the dosage would be in relation to the flow in the canal. As the Clearigate Treatment zone moves through the canal system the active ingredient will attach to organic plant material thus lowering the ppm and necessitating a second application to the 'Treatment Zone' at Drop 5 bring the dosage back to the 1 ppm needed to control aquatic vegetation. The more plant material that is present in the canal means that there will be a faster uptake of the active ingredient. A copper test kit would be used to monitor the application at each Drop on the MDVC ensuring that the application maintains a minimum level of active ingredient. This same test kit would be utilized to clear the canal after the treatment to ensure no treated waters are released through the drainage system.

2.2.5 Cascade (Dipotassium salt of endothall) (aquatic Herbicide and Teton (Mono(N,N-dimethylalkylamine) salt of endothall) (algaecide)

(Alternative for Magnacide H and Copper)

Cascade aquatic weed treatment would be made approximately every 21 days as needed to control submerged weed growth. The manufacturer, United Phosphorus, Incorporated, (UPI) offers on-site assistance and technical support to assess the schedule and program. Treatment frequency and concentration may need adjusting to optimize the treatment program. Cascade arrives in a 120 gallon bulk tank and is applied through an injection system into the flowing water in a like manner as the Magnacide H aquatic herbicide.

Teton (algaecide) may be applied at the same time as the Cascade application on a 21 day schedule as needed to control several species of algae within the Main Distribution Canal and lateral canals. Teton is delivered in a 30 gallon barrel and is applied through an injection system into flowing water and the same injector may be used for both Nautique and Captain.

Application area of Cascade and Teton is a single location at the outlet from Dam #2 at Woodward Reservoir into the lower portion of the Main Supply Canal. This canal designation changes at the District's first takeout [at Drop #1 on Victory Road] where the Main Distribution Canal begins. This same Main Distribution Canal becomes the Treatment Area throughout its length, passing the treated water through all lateral canals & pipelines that are delivering water onto cropland. A single Lateral may be treated separately if it did not have water flowing through it during the regularly scheduled application.

2.2.5.1 Application Rates

Determinations of Cascade and Teton applications are made in terms of rates (gallons per hour) based on site-specific information, such as flow, temperature, and weed condition. The procedure for determining the application rate is specifically detailed on each product's label as well as in the UPI Application Rate DVD used to calculate the 'Application Rate' for each application.

There is no test kit for endothall; a dye is injected into the water during the application and would be utilized to clear the canal after the treatment to ensure no treated waters are released through the

drainage system. There are several aquatic dyes available but the color blue is usually used because it is not as conspicuous to the casual passerby on the canal bank.

Water Bodies Treated with Cascade and Teton

Treated Water Bodies	Estimated total length treated	Estimated total surface area treated	Estimated typical range of flow rates	Designated beneficial uses
Lined canals	150 miles	545 acres	25-140 cfs	N/A
Unlined canals	26 miles	126 acres	350 - 700 cfs	N/A
Reservoirs	½ mile	14 acres	25 – 250 cfs	N/A
Underground pipelines	360 miles	N/A	25-50 cfs	N/A

2.2.6 Sonar Q

Sonar Q is a pelleted formulation containing 5% fluridone, used to control aquatic weeds in the District's small reservoirs (5 to 20 acre feet of water).

Sonar Q is dispersed out of a boat using a hand held fertilizer spreader following a pattern that will cover the complete bottom of the reservoir.

2.2.6.1 Application Rates

Application rates for Sonar Q are determined in pounds per acre:

- 4 foot depth of water at 15 pounds per acre
- 3.5 foot depth of water at 12 pounds per acre
- 3 foot depth of water at 10 pounds per acre

[Target concentration is 65 ppb per acre held for 90 days]

Water Bodies Treated with Sonar Q: North West Project Reservoir (Lateral R). Additional water bodies may be treated with fluridone-containing aquatic herbicides on an as needed basis.

2.2.6.2 Application

The recommended treatment time is 90 days; the application is made using the formula provided by the manufacturer in the product label. The application is made by December 12th so that the water can be irrigated out March 15th. Prior to delivering the treated water, it is sampled and analyzed using the "FasTEST assay"*. If the analysis shows the concentrations is less than 10 parts per billion (ppb), the treated water is then mixed with a source of untreated supply irrigation water and irrigated out onto established tree crops as per Label instructions.

*The FasTEST assay is provided by the Manufactures field Representative for SePRO.

2.3 Alternative Vegetation Control Options

SSJID has experimented with various methods of weed control over the last 100 years. Treatment of algae and aquatic weeds is determined factors discussed in Section 2.1. If a population of aquatic weeds equals or exceeds a threshold, an algaecide or aquatic herbicide application is made. Thresholds are met when aquatic weeds or algae cause problems, typically associated with capacity, flow impediment, sediment build-up, or issues with delivering irrigation water.

Algaecide and aquatic herbicide applications may also be made prior to threshold exceedance. For example, based on predicted growth rate and density, weather, water availability, and historical records and experience, aquatic weeds may reasonably be predicted to cause future problems. Accordingly, they may be treated soon after emergence. Even though aquatic weeds may not be an immediate problem at this phase, treating them before they mature reduces the amount of algaecide and aquatic herbicide needed because the younger aquatic weeds are more susceptible and there is less plant mass to target. Selection of appropriate algaecides and aquatic herbicides and rate of application is done based on the identification of the algae or aquatic weed and the appearance of that algae or aquatic weed on the product label.

2.3.1 No Action

As feasible, this technique is used. For example, consistent with the Aquatic Vegetation Program used by the District, a threshold is typically reached prior to treatment. Prior to reaching a threshold, no control is considered.

2.3.2 Prevention

Dyes that block ultraviolet light are sometimes used to prevent or control growth of aquatic weeds. However, it is usually not practical to use these materials in irrigation facilities because of the high flow rates required for water distribution. These dyes must remain in the water for long periods of time to be effective.

Manipulation of water level may also be an effective method of controlling aquatic vegetation. However, in order for this method to work, canals must be kept dry for a long enough period of time to completely kill the vegetation. During the irrigation season, this is usually not feasible because water must be kept flowing in the canals.

Preventive maintenance is a constant process at SSJID. A large part of the off-season maintenance program (winter time) is sediment removal from the lined part of the canal system. This results in a decrease in aquatic weed growth and lessens the amount of herbicide needed. SSJID is very proactive in the reduction of aquatic weeds before they become a problem. Based on the above considerations, SSJID has selected to continue to utilize Magnacide-H for its aquatic vegetation control program.

2.3.3 Mechanical

Mechanical vegetation removal, such as raking and chaining is significantly more costly and less effective than herbicide use. In addition, mechanical vegetation removal often results in generation of high levels of turbidity in the water. When highly turbid water is released to natural water bodies,

fish and other aquatic organisms may be adversely affected. Mechanical vegetation removal can result in sedimentation and clogging in irrigation equipment, as well as damage to the structural integrity of irrigation facilities that can result in costly maintenance requirements.

As a result of the 9th Circuit Federal Court of Appeals decision relating to the Talent Irrigation District legal case, aquatic herbicides were not used at all in the SSJID canal system during the first half of the 2001 Irrigation Season. Mechanical and hand weed removal were the only viable options available to keep water running in the canal system. This alternative proved to be very expensive and ineffective. The labor cost, materials cost and waste of water was enormous. Many active irrigation accounts were adversely affected because of the inability to control aquatic weeds and algae that fouled their irrigation sprinkler, drip and micro-irrigation systems.

2.3.4 Cultural

Cultural methods used to reduce the amount of aquatic herbicides used include modifying the timing of algaecide and aquatic herbicide and non-herbicide controls to prevent plants from reaching reproductive growth stages. Another cultural method is making applications before the density of algae or aquatic vegetation is high enough to require higher algaecide or aquatic herbicide application rates or additional applications to maintain algae or aquatic weed populations below threshold levels.

2.3.5 Biological

Goats and sheep are often used for grazing in and along riparian areas and levees. As discussed previously, grazing may be suitable for emergent and terrestrial weeds and is not suitable for submerged aquatic weeds or algae. Impacts to water quality from animal feces, increases in turbidity, nutrients, and bank erosion, and impacts to desirable species make this option unfeasible in some cases. The cost of hiring grazing animals is also generally more costly than algaecide and aquatic herbicide control alternatives. The nature of the conveyance system, presence of vehicle traffic, and lack of fencing limits where grazing could be implemented. Grazing will be considered as an alternative control, as feasible.

2.3.6 Algaecides and Aquatic Herbicides

The selection of and decision to use an algaecide or aquatic herbicide is based on the presence of a target weed and application site on a product label, or recommendation of a PCA. The PCA considers a variety of control options that may include mechanical and cultural techniques that alone or in combination with chemical controls are the most efficacious and protective of the environment.

Evaluating alternative control techniques is part of the District's Aquatic Vegetation Program; therefore an alternative treatment may be selected as part its program. Alternative control techniques and detailed description of each of these is presented in Section 2.3. In general, alternative control techniques are expensive, labor intensive, not as effective, and may cause temporary water quality degradation. The equipment and labor required to perform these techniques is not always readily available as it is required during the summer months that is typically a busy general maintenance period for the District. This may cause delays or sporadic plant material removal activity leading to increased plant growth and subsequently higher plant material removal cost.

The quantity of algaecide and aquatic herbicide required for an application is determined by a PCA that has followed the label directions in making a recommendation, or the presence of the application site and target vegetation on the product label. The rate at which an algaecide and aquatic herbicide is used is highly variable and depends on the type, time of year, location, and density and type of aquatic weeds, water presence, and goal of the application. All these factors are considered by the PCA when making a recommendation.

2.3.6.1 Using the Least Intrusive Method of Aquatic Herbicide Application

The District uses a variety of application methods including specialized mechanized vehicles (trucks, all-terrain vehicles, trailers, etc.) and personnel with backpack sprayers to make algaecide and aquatic herbicide applications. Combined with the need to hold, safely transport and properly apply algaecides and aquatic herbicides, the District's techniques are the least intrusive as feasibly possible.

2.3.6.2 Applying a decision matrix concept to the choice of the most appropriate formulation.

As previously stated, District staff and/or a PCA scouts the area to be treated, makes a positive identification of pest(s) present, checks appropriate algaecide and aquatic herbicide product label(s) for control efficacy, and the PCA prepares a written recommendation. The written recommendation includes rates of application, and any warnings or conditions that limit the application.

The PCA may also recommend that an adjuvant be used to enhance the efficacy of the algaecide or aquatic herbicide.

2.4 Best Management Practices (BMPs)

This section includes a description of the Best Management Practices (BMPs) implemented by the SSJID as part of our Standard Operating Procedures (SOPs). These BMPs help to minimize the extent and duration of impacts by aquatic herbicides and satisfy the requirements of the General Permit. The General Permit requires that the discharger must comply with all herbicide label instructions.

2.4.1 BMP Identification and Implementation

The following steps are followed to identify and implement appropriate BMPs that are designed to maximize efficacy of control efforts and minimize potential adverse impacts to the environment:

1. *Preliminary site evaluations.* Verify the need for treatment, options to treatment (including non-toxic and less toxic alternatives), and suitability of the site for treatment.

2. *Secondary site evaluations and pre-treatment monitoring.* Determine the type and intensity of treatment needed. This includes measurement and analysis of indicators to provide information on potential efficacy and water quality impacts within the irrigation system.

3. *Alternative Vegetation Control Options.* Evaluate other available BMPs and alternative control measures to determine if there are feasible alternatives to the selected aquatic herbicide

application project that could reduce potential water quality impacts.

4. *Treatment.* Immediately prior to treatment, examine a series of indicators and modify treatment plans accordingly. These indicators may include day length, precipitation, recreational activity, sunlight, tidal water exchange, water depth, water flows, water turbidity, and wind.

5. *Post-treatment.* Assess control efficacy and water quality impacts.

2.4.2 General BMPs

The following general BMPs are implemented by SSJID and are utilized for all aquatic herbicide applications. These BMPs are general in nature and reflect requirements such as notification of regulatory agencies.

- Obtain an annual permit from the CAC and submit a Notice of Intent to the CAC and the County 24 hours before applying a restricted herbicide.
- File a Notice of Intent form with the California Department of Fish and Wildlife (DFW) both annually and 24 hours prior to each application.
- Follow all herbicide label instructions.
- Comply with DPR and DHS regulations, and Use Permits issued by the CAC.
- Ensure that all personnel applying restricted aquatic herbicides are trained and licensed (State of California Qualified Applicator Certificates from DPR).
- Treat aquatic vegetation frequently when vegetation is small, in order to minimize buildup of vegetation and potential dissolved oxygen depletion due to decaying vegetation.
- Evaluate options to treatment (including non-toxic and less toxic alternatives).
- Verify need for treatment and suitability of the site for treatment prior to each application.

2.4.3 Magnacide-H Specific BMPs

The following section describes the specific BMPs utilized for application of Magnacide-H, including BMP checklists to be completed with each application project. These checklists are used to document that the SSJID is conducting the five BMP steps and all of these steps are conducted with each application.

- Verify that the last two gates at all potential release points downstream of the point of application are closed prior to treatment, and are kept closed until Magnacide H is no longer in the system. Also verify that the Control Box below the point of diversion on each pipeline is closed and locked.

- Prior to each treatment, make arrangements and schedules to irrigate out the treated water to appropriate sites. Verify that there will be no potential for crop damage, or for field runoff or drainage discharges to waters of the state (all irrigation water must be retained on site).

- If treated water is not irrigated out, hold water for a minimum of 6 days before releasing, per label instructions.

- Prior to opening gates, conduct the Magnacide H Alligare, Inc Field Test at potential release points. This field test should be used as a tool to assist in herbicide management practices, but is not a substitute for laboratory analysis. Results are generally accurate to approximately 0.1 ppm when acrolein concentrations are in the range of 0.1 to 5 ppm, but the field test does not have the ability to distinguish between active and degraded acrolein. Acrolein is toxic to aquatic life at levels down to 0.021 ppm, far below the levels of the test kit. If there is any doubt that the acrolein has been irrigated from the system, the gate will remain closed and additional water will be irrigated from the system.

- Accuracy may be reduced in water with a high turbidity or organic matter content. Currently Alligare, Inc. recommends first filtering the sample using a disposable 0.2 micron filter, with a luer lock to facilitate attachment to the sampling syringe, and then analyzing the sample according to the test kit instructions. Filtering the sample helps to avoid interference from other organics which may cause false positive readings. If test interference is suspected, follow filtration and calibration instructions provided by Alligare, Inc. Statistical review of data may identify a correlation between of field test results and corresponding laboratory results, and may assist in the interpretation of field test results for future monitoring and reporting.

- Complete the following checklist with each application.

BMP Checklist for Magnacide H Application

Application Point: _____	**List all mains and laterals treated:** _____ **MDC or** _____ **Lateral(s)** ____	**Planned Application Date:** ____-_____-_____
Section 1	Preliminary Site Evaluation/Alternative Control Measures	
	☐ Verify need for treatment -vegetative growth stage Weed length _____" Algae length _____"	
	☐ Inspection completed by (name)_____ Date:_____	
	Consider/Recommend options (mark one)	
	☐ Mechanical	
	☐ Chemical	
	☐ No treatment	
	☐ Other	
	Comments:	
	Prepare for treatment	
	☐ Notification form for Division Managers	
	☐ Pumps set to be turned off as necessary	
	☐ Department of Fish & Wildlife notifies	
	☐ CAC notified	
	☐ O.I.D. notified	
	Comments:	
Section 2	Secondary Site Evaluation / Pre-Treatment Monitoring	
	____ Control Room Check ____ Maintenance Superintendent check	
Name:	☐ Pumps are turned off as necessary	
Date:	☐ Gates are closed and sealed	
	Comments:	
Section 3	Treatment Monitoring - Field Indicators	
	☐ Precipitation Potential? ___Yes___No	
Date:	☐ Flow rate, Water Temperature, Air Temperature are on: _____ **Magnacide Application Form** _____	
	☐ Treatment rate determined on: **Magnacide Application Form**	
	Comments:	
	☐ Reschedule if necessary due to site conditions; Proposed Date: _____	
Section 4	Post-Treatment (six days after application cleared MDC)	
	Vegetative control effective?____Yes____No	
Name:		
Date:	Date/time review of **Magnacide Application Form** with water quality test results.	
	Division Managers contacted, Gates opened – date_____time_____	
	Comments:	

Notification for the scheduled application of Magnacide H aquatic herbicide.
Matt Macedo, Pest Control Applicator **Date**: _____

Receipt **Division 1**: _____
D.M. day of application D.M. day after app.
day _____ day _____
night _____ night _____

Fish Ponds notified: N/A
Organic Farming notified: N/A
Susceptible crops notified: N/A

Receipt **Division 2**: _____
D.M. day of application D.M. day after app.
day _____ day _____
night _____ night _____

Fish Ponds notified: ___ I Lateral – Kavanaugh – 838-3180
___ A Lateral – Espinola – 838-3753
___ F Lateral – Braman – 838-8929
___ F Lateral – Ian – 838-0675

Susceptible crops notified:
___ "rice" A Lateral – Scultz – 606-7960 (Henry Rd)

Water delivered in the following pipelines:
_____ pipeline and is locked down at _____ Control Box station _____.
_____ pipeline and is locked down at _____ Control Box station _____.
_____ pipeline and is locked down at _____ Control Box station _____.
_____ pipeline and is locked down at _____ Control Box station _____.
_____ pipeline and is locked down at _____ Control Box station _____.
_____ pipeline and is locked down at _____ Control Box station _____.
_____ pipeline and is locked down at _____ Control Box station _____.
_____ pipeline and is locked down at _____ Control Box station _____.

Receipt **Division 3**: _____

D.M. day of application D.M. day after app.
day _____ day _____
night _____ night _____

Fish Ponds notified: ___ Be Lateral – McGraw – 838-3530
___ Be Lateral – Balcita – 838-2673
___ Bf Lateral – Wendland – 838-7248
___ Drain 14 – John & Sara VanKlompenburg – 982-0443

Organic Farming notified: ___ Bk Lateral – John Lagier – 993-0872
Susceptible crops notified: N/A
Water delivered in the following pipelines:

_____ pipeline and is locked down at _____ Control Box station _____.
_____ pipeline and is locked down at _____ Control Box station _____.
_____ pipeline and is locked down at _____ Control Box station _____.
_____ pipeline and is locked down at _____ Control Box station _____.
_____ pipeline and is locked down at _____ Control Box station _____.
_____ pipeline and is locked down at _____ Control Box station _____.
_____ pipeline and is locked down at _____ Control Box station _____.
_____ pipeline and is locked down at _____ Control Box station _____.
_____ pipeline and is locked down at _____ Control Box station _____.

Receipt **Division 4**: _____

D.M. day of application D.M. day after app.
day _____ day _____
night _____ night _____

Fish Ponds notified: N/A
Organic Farming notified: Chincholo, Steve 599-2927, **and Cell – 456-2314**
Konzen, Paul **– 838-8461**
Susceptible crops notified: N/A

Water delivered in the following pipelines:

_____ pipeline and is locked down at _____ Control Box station _____.
_____ pipeline and is locked down at _____ Control Box station _____.
_____ pipeline and is locked down at _____ Control Box station _____.
_____ pipeline and is locked down at _____ Control Box station _____.
_____ pipeline and is locked down at _____ Control Box station _____.
_____ pipeline and is locked down at _____ Control Box station _____.

Receipt **Division 5: _____**

D.M. day of application
day _____
night _____

D.M. day after app.
day _____
night _____

Fish Ponds notified: N/A
Organic Farming notified: N/A
Susceptible crops notified: N/A

Water delivered in the following pipelines:

_____ pipeline and is locked down at _____ Control Box station _____.
_____ pipeline and is locked down at _____ Control Box station _____.
_____ pipeline and is locked down at _____ Control Box station _____.
_____ pipeline and is locked down at _____ Control Box station _____.
_____ pipeline and is locked down at _____ Control Box station _____.
_____ pipeline and is locked down at _____ Control Box station _____.

Receipt **Division 6**: _____

D.M. day of application
day _____
night _____

D.M. day after app.
day _____
night _____

Fish Ponds notified: N/A
Organic Farming notified: N/A
Susceptible crops notified: N/A

Water delivered in the following pipelines:

_____ pipeline and is locked down at _____ Control Box station _____.
_____ pipeline and is locked down at _____ Control Box station _____.
_____ pipeline and is locked down at _____ Control Box station _____.
_____ pipeline and is locked down at _____ Control Box station _____.
_____ pipeline and is locked down at _____ Control Box station _____.
_____ pipeline and is locked down at _____ Control Box station _____.

Receipt **Division 7**: _____

D.M. day of application
day _____
night _____

D.M. day after app.
day _____
night _____

Fish Ponds notified: ___ T Lateral – Joe Enos – 599-2988 (Murphy Rd)

Organic Farming notified: N/A
Susceptible crops notified N/A

Water delivered in the following pipelines:

_____ pipeline and is locked down at _____ Control Box station _____.
_____ pipeline and is locked down at _____ Control Box station _____.
_____ pipeline and is locked down at _____ Control Box station _____.
_____ pipeline and is locked down at _____ Control Box station _____.
_____ pipeline and is locked down at _____ Control Box station _____.
_____ pipeline and is locked down at _____ Control Box station _____.

Receipt **Division 8**: _____

D.M. day of application
day _____
night _____

D.M. day after app.
day _____
night _____

Fish Ponds notified: N/A
Organic Farming notified: N/A
Susceptible crops notified: N/A

Water delivered in the following pipelines:

_____ pipeline and is locked down at _____ Control Box station _____.
_____ pipeline and is locked down at _____ Control Box station _____.
_____ pipeline and is locked down at _____ Control Box station _____.
_____ pipeline and is locked down at _____ Control Box station _____.
_____ pipeline and is locked down at _____ Control Box station _____.
_____ pipeline and is locked down at _____ Control Box station _____.

Receipt **Division 9**: _____ _____

D.M. day of application
day _____
night _____

D.M. day after app.
day _____
night _____

Fish Ponds notified: ___ P Lateral – Ryan/Winters – 604-3188
___ U Lateral – Jack Tone Golf Course – 599-2973

Organic Farming notified: ___ Vb Lateral – Bill Sikna – 599-6651 (trees)
___ Vb Lateral – Kile Shipeed – 599-6041

Susceptible crops notified: N/A

Water delivered in the following pipelines:

_____ pipeline and is locked down at _____ Control Box station _____.
_____ pipeline and is locked down at _____ Control Box station _____.
_____ pipeline and is locked down at _____ Control Box station _____.
_____ pipeline and is locked down at _____ Control Box station _____.
_____ pipeline and is locked down at _____ Control Box station _____.
_____ pipeline and is locked down at _____ Control Box station _____.

2.4.4 Rodeo/AquaMaster Specific BMP's

- Apply only when wind speed is between 2 to 10 mph. If wind speed is below 2 mph or above 10 mph, reschedule treatment.
- Set up equipment to produce a large droplet size in order to avoid herbicide drift.
- Design application schedule so that small areas are treated at one time, in order to avoid large amounts of decaying vegetation and potential depletion of dissolved oxygen.
- Apply herbicide starting at downstream end and traveling upstream, in order to avoid concentration of herbicide in water.
- When treating vegetation in water, consider treating the area in strips to avoid oxygen depletion due to decaying vegetation.
- When practical, reduce or eliminate the flow of water in the treatment area during application.
- Complete the following checklist with each application.

BMP Checklist for Rodeo/AquaMaster Application

Date: _____ Site Location (water body): _____
☐ Application start point: _____
☐ Application end point: _____

Site Evaluation:	**"List water body (Site) to be treated above."**	**This BMP is for one site only.**
Section 1 ☐	Preliminary Site Evaluation/Alternative Control Measures	
☐ Name:	☐ Verify need for treatment -vegetative growth stage: ____ 2"-10", _____ 10"-24"	
	☐ Invasive weed(s):	
☐ Date:	Consider/Recommend options:	
	☐ Mechanical	
Time:	☐ No treatment	
	☐ Chemical Herbicide Application	
	☐ Type of treatment: _____ Spot spray invasive weeds. _____ Spray complete ditch from *TOB to TOB. _____ Broadcast spray inside bank. _____ Strip spray; _____ top edge of bank. ____Above water line. ____ Bottom *TOB = Top of Bank	
	☐ Practical to reduce or eliminate flow during application? ____Yes ____No	
	☐ Necessary to treat vegetation in water? ____Yes ____No	
	☐ Water Body Condition**: (circle number(s))** 1. Dry condition in bottom of ditch. 2. Moist condition in bottom of ditch. 3. Moist condition with puddeling in bottom of ditch. 4. Standing water in ditch or canal. 5. Overspray to moving water in ditch or canal. Approximate _____cfs. 6. Spot spraying into moving water in ditch or canal. Approx. _____ cfs.	
	Comments:	
Section 2 ☐	**Treatment**: ___ Without Monitoring, ___ With Monitoring for NPDES Permit	
Application Required	☐ Treatment Rate:	
	☐ Adjuvant:	
Applicator:	Measure Field Indicators	
	☐ Precipitation Potential? ___Yes. ___No.	
Date:	☐ Flow rate variance: _____ cfs. (To) _____ cfs.	
Time start:	☐ Water Temperature:_____, Air Temperature_____	
	☐ Wind speed_____ mph	
	☐ Water color: ___ Clear, ___ Turbid (light color), ___ Heavy turbidity (muddy)	
	☐ Other:	
	Comments:	
	• Water Samples taken: ___ Yes, ___ No	
	☐ Pre-application Water Samples taken: ___ Yes, ___ No	
Section 3 ☐	**Post-Treatment**	
	☐ Post Application Sample taken: ___ Yes, ___ No	
Inspector:	Seven day - post application vegetative control effective? ____Yes ____No	
	Comments:	
Date:		
Time:		

2.4.5 Gate Closures

SSJID has twenty-four laterals that have gates or control structures at their ends:

District Drains into Lone Tree Creek;

We128dd drains into Drain 9
We (end) drains into Drain 8a
Ya drains into Drain 8
Yb drains into Drain 7
Y drains into Drain 7
Z drains into Drain 7 at the box by Yosemite Avenue.
Za drains into the FCOC
Tb drains into Drain 4
T drains into the FCOC
Rf drains into Drain 3a
Rfc drains into Drain 3a
R 633 dd drains into Drain 3a
Rff drains into the FCOC
Rg drains into the FCOC
R (end) drains into the FCOC
Qo (end) drains into the FCOC
A sta (end) on Brennan Road
Bfa (end) on Zumwalt
Bfb (end) at Lone Tree Road
Ab (end) west of Brennan Road

District Drains into the Stanislaus River (4 total)

U station 357 / Moncure Drain
U station 242 / Vera Drain
Escalon Spill / MDC
Ripon Spill / MDC

The District has developed a BMP for Magnacide H Applications that makes it feasible to check every drain for each application. The BMP requires the Division Managers to lock down the last two Control Boxes on each pipeline they are delivering irrigation water through during the application. In addition the Control Box that is directly downstream from the last irrigated field on a specific pipeline or lateral canal during the application event would be secured (sealed) prior to the application event providing two or three closed gates between the treated water and receiving waters on each pipeline. It is noted here that the two main release points on the MDC are sealed prior to every application (Escalon Spill & Ripon Spill).

2.4.6 Spill Prevention and Procedures in the Event of a Spill

Applicators take care when mixing and loading algaecides and aquatic herbicides and adjuvants. All label language is followed to ensure safe handling and loading of algaecides and aquatic herbicides. Application equipment is regularly checked and maintained to identify and minimize the likelihood

of leaks developing or failure that would lead to a spill. If possible, algaecides and aquatic herbicides will be mixed and loaded in the District's yard before leaving for the application site(s).

If algaecides or aquatic herbicides are spilled, they will be prevented from entering any waterbodies to the extent practicable. District vehicles contain, and staff is trained in the use of, absorbent materials such as kitty litter, "pigs" and "pillows". Spills will be cleaned up according to label instructions, and all equipment used to remove spills will be properly contained and disposed of or decontaminated, as appropriate. Applicators will report spills as required by District policy and in a manner consistent with local, state and federal requirements.

2.4.7 Measures to Ensure Appropriate Use Rate

Prior to treatment, the District's PCA and/or qualified staff scout sites to evaluate the extent to which acceptable algae or aquatic weed thresholds have been exceeded. See Section 2.4.1. Thresholds are based on conveyance system capacity, flow maintenance, and ability to deliver irrigation water. If a location is deemed to have exceeded a threshold, or given algae or aquatic weed population is anticipated to exceed a threshold based on site and weather conditions, historic aquatic weed growth, or other information, an algaecide or aquatic herbicide application is considered. If the application can be made without negatively impacting the water quality, then an application is made.

Prior to application, a PCA licensed by DPR or District staff scouts the area to be treated, makes a positive identification of pest(s) present, checks applicable product label(s) for control efficacy, and the PCA prepares a written recommendation, including rates of application, and any warnings or conditions that limit the application so that non-target flora and fauna are not adversely impacted. Licensed PCAs must complete 40 hours of continuing education every 2 years to stay licensed, and therefore are up-to-date on the latest techniques for pest control.

All algaecide and aquatic herbicide applications are made according to the product label in accordance with regulations of the U.S. EPA, Cal/EPA, Cal OSHA, DPR, and the CAC. The District's DPR-licensed PCA and Qualified Applicator Certificate (QAC) or Qualified Applicator License (QAL) holders regularly monitor updates and amendments to the label so that applications are in accordance with label directions. QALs and QACs must complete 20 hours of continuing education every 2 years to stay licensed, and therefore are up-to-date on the latest techniques for pest control.

District QALs, QACs or District staff under the supervision of District QALs or QACs make applications or supervise applications recommended by the PCA. These District staff have knowledge of proper equipment loading, nozzle selection, calibration, and operation so that spills are minimized, precise application rates are made according to the label, and only target plants are treated.

2.4.8 The District's plan in educating its staff and herbicide applicators on how to avoid any potential adverse effects from the herbicide applications

See information above on the continuing education requirements of District staff responsible for selection and application of algaecides and aquatic herbicides.

2.4.9 BMP Effectiveness Evaluation

The effectiveness of BMPs will be continuously evaluated during the year, as well as in a comprehensive evaluation at the end of the year. The following data will be used to evaluate BMP effectiveness:

- Results of field testing
- Water quality monitoring laboratory analytical data
- BMP implementation success based on BMP inspection forms and checklists
- Feedback from field and technical staff, including staff resource requirements and practicality of implementation

The BMP checklists shall be completed with each herbicide application, and shall be reviewed on a monthly basis. Although individual checklists will not be submitted with the Pesticide Use Reports, they will be reviewed by the South San Joaquin Irrigation District's Pest Control Advisor, PCA, to ensure that BMPs are being implemented appropriately. If problems are identified, procedures will be reviewed and changes made as necessary. Results of field tests (such as the Baker Test Kit for Magnacide H) will be included in the checklists and will be checked to verify that herbicide is no longer present in water that is released.

Subsequent to each round of water quality monitoring, the laboratory results will be reviewed. If results indicate that herbicide may have been present in water at time of release or that the water quality in the treatment area and downstream areas does not return to pre-treatment conditions, the BMPs will be reevaluated and additional monitoring will be conducted during the next sampling round.

An annual effectiveness evaluation will be conducted in conjunction with completion of the annual information collection and Annual Report. The annual effectiveness evaluation will include an analysis of all water quality monitoring data collected during the year. In addition, feedback from field and technical staff will be solicited during this annual review. Based on the results, BMPs and/or monitoring practices may be modified for implementation the following year. BMPs may also be modified on an as-need basis if evaluation indicates that revisions are appropriate. If BMPs are significantly modified, a revised BMP description will be submitted to the RWQCB.

3.0 MONITORING & REPORTING PROGRAM

The Monitoring and Reporting Program for the General Permit states that "The discharger shall collect samples at six sites for each type of aquatic herbicide used for each type of application." Using BMP's the District applies Magnacide-H at one site (application area) and has selected three representative monitoring sites. These monitoring sites will be monitored during six applications of Magnacide-H unless/until sampling is able to be reduced. The District applies Rodeo/AquaMaster at various sites as needed to control aquatic vegetation in their Drainage facilities. One representative application of a glyphosate-based herbicide (i.e. Rodeo or AquaMaster) will be monitored per year.

If the results from six consecutive sampling events show concentrations that are less than the applicable receiving water limitation/trigger in an environmental setting, the District will reduce the sampling frequency for that active ingredient to one per year in that environmental setting. If the annual sampling shows exceedences of the applicable receiving water limitation/trigger, the District will be required to return to sampling six applications the next year, and until sampling may be reduced again.

The District's canals spill to the Stanislaus and San Joaquin Rivers, which are "Waters of the U.S." and "Waters of the State". Because the District canals are tributary to these waters, the canals are also considered "Waters of the U.S." and "Waters of the State". By law, all of the "beneficial uses" of main body streams are assigned to the tributaries, regardless of whether or not the tributaries (canals) contain those beneficial uses.

Even though all of the beneficial uses of the Stanislaus and San Joaquin Rivers are assigned to the canals to which SSJID applies aquatic herbicide, the only beneficial use that is applicable to the canals is for use as irrigation water. Treatment of canal waters does not affect this beneficial use as most agricultural crops are not susceptible to Magnacide-H or Rodeo/AquaMaster at treatment concentrations. Treated water is only released to fields with non- susceptible crops. The beneficial use of fishing and swimming do not apply to the canals as these actions are prohibited by SSJID, this is reinforced through "No Trespassing" and No Swimming" signs posted on all canals. Violations of these local ordinances are enforced by the San Joaquin County Sheriff's Department.

Fish and plant habitat are not beneficial uses of the SSJID canal system as the canals are drained each fall following the conclusion of the irrigation season and therefore do not provide continuous or suitable habitat for fish or plant life. Additionally, fish cannot enter the canals from Woodward Reservoir due to a fish screen or from the downstream outlets due to the height of the structures above the rivers.

Municipal uses are not affected, as aquatic herbicide applications do not occur above the Woodward Reservoir outlet into the Main Supply Canal. The Nick DeGroot Water Treatment Plant may utilize one of two inlet structures within Woodward Reservoir depending upon the capacity of the reservoir; this would be the only municipal connection to the District's water system.

However, in the case of this irrigation district, no impacts to beneficial uses are expected to result from application of herbicides to irrigation facilities. Impacts to beneficial uses would only occur if the treated water is released to natural water bodies while the herbicide is present at levels that cause adverse effects. Monitoring for permit compliance focuses on points of potential release.

The following sections present the monitoring approach for each herbicide:

3.1 Monitoring Approach

Magnacide H is applied only to manmade, irrigation canals and pipelines. When Magnacide H is applied to irrigation canals, the main concern would be impacts to beneficial uses due to release of the treated water from the canals. During all applications, release gates are kept closed until the Magnacide-H has dissipated or has been irrigated from the system. Permit compliance requires both monitoring and sampling of representative projects as well as visual observations at all application sites.

Generally, AquaMaster is applied only to banks of irrigation facilities and drains with no designated beneficial uses. AquaMaster is generally not applied directly to the water but is applied to vegetation growing along the banks of irrigation canals and drains. Glyphosate, the active compound in AquaMaster, is quickly immobilized by adsorption to soil/sediment particles and organic matter, and remains immobilized until degradation occurs. Therefore, glyphosate is not expected to be transported significantly in water.

Because AquaMaster is applied to vegetation growing in water, or there is some overlap onto the water surface when the herbicide is applied to vegetation growing on the banks. Representative monitoring projects are selected based on application directly over the water body. Monitoring for permit compliance will focus on points of potential release (points of discharge to natural water bodies).

3.1.1 Selection of Representative Projects

The permit requires that a minimum of six application events for each active ingredient be monitored each year for all active ingredients except for glyphosate and sodium carbonate peroxyhydrate. One application event for applications made with a glyphosate-based aquatic herbicide will be monitored each year. If sodium carbonate peroxyhydrate-containing herbicides are applied, no monitoring is necessary, but application records will be kept. Selection of the representative project sites is critical to obtaining data that is useful both in terms of determining compliance with the permit conditions and providing useful information to help modify BMPs. Because samples will be collected pre-event, during the application event and post-event, samples will be collected over a time period of up to one week, or until the application is complete. It is important to choose representative projects that will not have applications occur upstream immediately before the representative project's application event or anytime between the application event and the time when the post event sample is collected. Upstream applications could cause pre-event, event or post-event samples to test positive.

The District's canal system is complex with flows up to 850 cfs in the Main Distribution Canal (MDC) during the peak of the irrigation season and as low as 250 cfs at the beginning and again at the end of the irrigation season. Generally speaking, the upper laterals are larger, have higher flows and lower weed growth, while the lower laterals are narrow, have lower flows and moderate weed growth. To make the projects as representative as possible, it was decided to choose one project at a high flow in the MDC and one project at a low flow in the MDC. The two representative projects were selected based on the following criteria:

- Representative Project No. 1 - With a Magnacide H application at one of the high flow rates above 500 cfs in the MDC. Normally this would be with a target of 5 PPM and three hour application duration. All of the acrolein is irrigated out of the system within 36 hours.

- Representative Project No.2 - With a Magnacide- H application during a low flow in the MDC above 350 cfs and below 425 cfs. With a target of 5 ppm and a three hour application duration. All of the acrolein is irrigated out of the system within 40 hours.

3.1.1.1 Monitoring Locations and Frequency

Water quality sampling for glyphosate will be conducted for one application event from each environmental setting (flowing water and non-flowing water, as applicable) per year. No water quality sampling is required for applications of products that contain sodium carbonate peroxyhydrate. For application of all other algaecides and aquatic herbicides listed on the Permit, the District will collect samples from a minimum of six application events for each active ingredient in each environmental setting per year. If there are less than six application events in a year for an active ingredient, the District will collect samples for each application event in each environmental setting.

If the results from six consecutive sampling events show concentrations that are less than the applicable receiving water limitation/trigger in an environmental setting, the District will reduce the sampling frequency for that active ingredient to one per year in that environmental setting. If the annual sampling shows exceedences of the applicable receiving water limitation/trigger, the District will be required to return to sampling six applications the next year, and until sampling may be reduced again.

For each representative project, samples must be collected as follows:

- Background - A sample must be collected upstream of the application area during the application or may be collected in the treatment area up to 24-hours before the application.

- Event - The event monitoring (Event) sample for flowing water is collected immediately downstream of treatment area immediately after the application event, but after sufficient time has elapsed such that treated water would have exited the treatment area.

- Post-Event - Samples must be collected within the treatment area and immediately downstream of the treatment area within one week of the application event, or when the treatment is deemed complete.

Sites will be chosen to represent the variations in treatment that occur, including algaecide or aquatic herbicide use, hydrology, and environmental setting, conveyance or impoundment type, seasonal, and regional variations. The exact location(s) of sample site(s) will be determined after site scouting and a decision to make an aquatic herbicide application are made per the District's IPM approach.

Representative projects will be monitored during selected application events within the District. Generally, applications are conducted on a 21-day schedule for Magnacide and on an "as needed" basis for Rodeo/AquaMaster, during the irrigation season. The schedule can vary due to weather, temperature, water flows and irrigation schedules.

The calculations of site-specific times that the algaecide or aquatic herbicide samples will be collected are based on application rates, flow rates, and other factors. The calculations will be performed to determine the appropriate time for sample collection and will be recorded in the annual information collection. The data from each monitoring event will be reviewed and the calculations will be modified if necessary so that future monitoring events show when background water quality has been achieved after treatment.

Individual sampling locations will be determined by selecting representative application sites within the district. These will be sampled according to the monitoring frequency described above. Background, Event, and Post-Event sample sites for each representative application as described above, and in the Permit.

Typically, the District chooses representative sites by selecting an active pipeline that is in use for irrigation. Monitoring samples from active pipelines are typically taken below the last spill gate consistent with the timing described above, and in the Permit.

The GPS coordinates of each of sample locations will be recorded in the annual information collection.

3.1.1.2 Sample Collection and Analysis

Surface water samples are collected as grab samples. Grab samples characterize a medium at a particular point in space and time. Grab samples are collected by sample container immersion or using a transfer device, such as a stainless steel bucket.

If the water depth is 6 feet or greater the sample will be collected at a depth of 3 feet. If the water depth is less than 6 feet the sample will be collected at the approximate mid-depth. As necessary, an intermediary sampling device (e.g., long-handled sampling pole, bucket on a rope) will be used for locations that are difficult to access.

Thorough documentation in the field was used to ensure proper labeling and tracking of samples, identify potential sources of error, and maintain accountability among field personnel.

By using Best Management Practices there is no specific schedule for glyphosate applications. Flows in drainage facilities vary from two cubic feet per second to twenty-five feet per second depending upon the changes made in the water deliveries in the irrigation system up stream.

Sampling frequency shall be determined by the length of time it takes for the water passing by the treated area to reach the release point. This will be a site-specific calculation based on flow rates and distances. The first sample will be collected at the minimum time calculated (based on the treatment section closest to the release point). The third sample will be collected at the maximum time calculated (based on the treatment section furthest from the release point). The second sample will be collected at a time halfway between the first and third sample times.

3.1.2 Sample Collection Procedures

Grab samples will be collected at the representative project locations explained in section 3.1.1. Grab samples characterize a medium at a particular point in space and time. The grab samples will be collected by using a one gallon stainless steel bucket or other intermediary sampling device that can be cleaned between each sample. In some instances, a rope is utilized to lower the bucket up to eighteen feet into the waterway if required by site-conditions and sample location.

The following procedures will be used in the collection of surface water samples:

1. Upon arriving at the sampling location, the sample collection container (bucket) will be cleaned using a detergent solution and then rinsed with deionized water. After rinsing with the deionized water, the sample collection container will be thoroughly rinsed with canal water at the sample location. This step will be repeated at each sample location prior to collection of the sample.

2. The one gallon stainless steel bucket or other intermediary sampling container will be used to collect the sample directly from the canal. Care will be a high priority when collecting each sample deliberately and methodically to minimize disturbance of bottom sediments.

3. The appropriate laboratory-provided sampling container (i.e. two, 40-mL, preserved, VOA vials for glyphosate) will be opened and placed on a solid, clean surface, such as a pickup tailgate or walkway.

4. The sample will be gently poured from the bucket into the VOA vials or other sampling container by allowing the sample to trickle down the inside of the vial to avoid aerating the sample. Enough water will be added to create a positive meniscus on the vial. A small amount of water will be poured into the vial cap and the cap will be quickly put on the vial. The vial will be gently tapped to see whether any air bubbles have been trapped. If any air bubbles are present, the vial will be opened, tapped gently to allow the air bubble(s) to rise to the surface, more sample water will be added to the vial and the sample will be recapped. This procedure will be repeated until a bubble free sample is obtained, if required by the laboratory method.

5. The date, time and sample location will be written on the sample label and affixed to the sampling container.

6. The VOA vials or other sampling container will be placed in a zip-lock bag and placed in a cooler with ice. Placing bottles from each sample location in a different bag will avoid cross contamination if a bottle or vial breaks during shipping.

7. The samples will be hand delivered to Argon Laboratories of Ceres, CA (DHS Cert. # 2359) following proper chain of custody protocol. If the District chooses to use a different analytical laboratory, the same sampling procedures will be followed.

3.1.2.1 Quality Control Samples

In order to evaluate precision and the potential for field contamination, several samples will be collected in the field in addition to the environmental samples. These samples will include equipment blanks, trip blanks, and field duplicates.

Equipment Blanks - Equipment blanks will be obtained to verify that the sampling equipment is not a source of contamination. Deionized water will be passed through clean equipment and collected following normal sample collection procedures. These samples will be sent to the lab and analyzed along with environmental samples. One equipment blank should be collected and analyzed for each sampling event (each sampling round for each representative project).

Trip Blanks -Trip blanks are used to determine if sample contamination is introduced during sample transportation and delivery. Trip blanks must be requested from the laboratory when sample bottles are ordered. Trip blanks are prepared at the analytical laboratory by filling the sample bottle with deionized water and securing the bottle lid. Trip blanks are transported to and from the sampling site with normal sample bottles. Trip blanks are analyzed along with the environmental samples. One trip blank should be collected and analyzed for each sampling event.

Field Duplicates - Field duplicates are used to assess variability attributable to sample collection, handling, and matrix heterogeneity. Field duplicates will be collected at the same time and in the

same manner as, and analyzed with the environmental samples. Field duplicate samples should be collected at a frequency of at least 10%, or one per year.

3.1.2.2 Monitoring Team Training

All staff members that participate in water quality monitoring and water sample collection will review the Individual Monitoring Plan prior to conducting sampling activities. Staff will also be trained in water quality field monitoring (including instrument calibration, data recording procedures, and interpretation of collected data) and water sample collection (including quality assurance/quality control, completing laboratory chains of custody, ordering correct laboratory analysis, and proper handling of water samples). These training activities will be performed by a qualified Biologist and overseen by the District's QAC/QAL.

3.1.2.3 Procedures to Prevent Sample Contamination

Sample collection will be done no closer than 50 feet from application equipment and preferably upwind. Sample collection personnel will not be allowed to handle or come into contact with algaecide or aquatic pesticide application equipment, containers or personal protective equipment (PPE) used by applicators. Care will be taken by samplers to minimize into contact with any treated water or vegetation.

In the event that sampling equipment will be used in more than one location, the equipment will be thoroughly cleaned with a non-phosphate cleaner, triple-rinsed uncontaminated water, and then rinsed once with the water being sampled prior to its first use at a new sample collection location, as described in 8.8.4. Gloves will be changed between sites.

3.1.3 Monitoring Parameters

Monitoring of the representative projects will include both laboratory and field analysis.

3.1.3.1 Laboratory Analysis

Samples will be analyzed by a DHS Certified laboratory. The District typically uses Argon Laboratories of Ceres, CA (DHS Cert. # 2359), but may elect to use another lab as needed. Samples will be collected and submitted to the laboratory in containers consistent with those described in the Sample Analysis Method table.

In the laboratory, several additional samples will be collected and analyzed to evaluate precision, accuracy, and the potential for laboratory contamination. These samples will include method blanks, laboratory control spikes, and matrix spikes.

Method Blanks - For each batch of samples, method blanks should be analyzed by the laboratory to determine the potential for laboratory contamination. Method blanks are prepared by the laboratory from the collection of reagent grade deionized water. At a minimum, the laboratory should report method blanks at a frequency of 5% (one method blank for each batch of up to 20 samples).

Laboratory Control Spikes - For each batch of samples, laboratory control spikes should be analyzed to evaluate accuracy. Laboratory control spikes are prepared by the laboratory by spiking blank water with a known concentration of the target analyte. Laboratory control spikes should be analyzed at a minimum frequency of 5%.

Matrix Spikes - For each batch of samples, matrix spikes should be analyzed to evaluate accuracy and the potential for the sample matrix to interfere with recovery of the target analyte. Matrix spikes are prepared by the laboratory by spiking an aliquot of an environmental sample with a known concentration of the target analyte. Matrix spikes should be analyzed at a minimum frequency of 5%.

The procedures used in the collection of surface water samples are described in detail in the IMP.

Sample Analysis Methods

Analyte	EPA Method	Reporting Limit	Hold Time (Days)	Container	Chemical Preservative
Temperature[1]	N/A	N/A	N/A	N/A	N/A
Dissolved Oxygen[1]	360.1 or 360.2	0.0 mg/L	1	1L Amber Glass	None
Turbidity[2]	180.1	0.00 NTU	2	100 mL HDPE	None
Electrical Conductivity[2]	120.1	0 µS/cm	28	100 mL HDPE	None
pH[2]	150.1 or 150.2	1-14	Immediately	100 mL HDPE	None
Nonylphenol[3]	550.1m	0.5 µg/L	7	2 x 40 mL VOA	None
Hardness (dissolved)[4]	SM2340B	0.7 mg $CaCO_3$/L	1 Day if unpreserved; 180 Days if preserved	250 mL HDPE	HNO_3
*2,4-D	8151, 8150A, 615	0.5 µg/L	7	1L Amber Glass	None
*Acrolein	SW8315m or 8260	5.0 µg/L	3	2 x 40 mL VOA	DNPH
*Copper (dissolved)	200.8	0.5 µg/L	1 Day if unpreserved; 180 Days if preserved	250 mL HDPE	HNO_3
*Triclopyr	8151, 8150A, 615	0.5 µg/L	7	1L Amber Glass	None
*Diquat	549	40 µg/L	7	500 mL Amber HDPE	H_2SO_4
*Endothall	548.1	40 µg/L	7	100 mL Amber Glass or 2 x 40 mL VOA	None
*Fluridone	SePro FasTest, HPLC	1 µg/L	7	30 ml Amber HDPE	None
*Glyphosate	547	0.5 µg/L	14	2 x 40 mL VOA	None
*Imazamox	HPLC	50 µg/L	14	2 x 40 mL VOA	None
*Imazapyr	532m	100 µg/L	14	1 L Amber Glass	None
*Penoxsulam	532m	20 µg/L	7	1 L Amber Glass	None

Notes:

* Signifies algaecide or aquatic herbicide active ingredient. Chemical analysis is only required for the active ingredient(s) used in treatment.

Analysis not required for algaecides and aquatic herbicides containing sodium carbonate peroxyhydrate.

[1]Field measured.

[2]May be field or laboratory measured.

[3]Required only when a nonlyphenol-based surfactant is used.

[4]Required for copper applications only.

HPLC – High Performance Liquid Chromatography.

m – Modified extraction or analysis technique.

DNPH- Dinitrophenylhydrazine

3.1.3.2 Field Analysis

Temperature, EC, pH and DO will be measured by the use of an YSI 556 Multi Probe System probe, or similar, owned by the District. The probe is a submersible unit that is suspended in the canal from a bridge or walkway. The probe will be allowed to equilibrate in the water while the above described sample collection is performed. Once the probe has equilibrated, typically no less than 2 minutes, the water quality parameters will be read from the meter and recorded on the field data form. The YSI 556 will be calibrated according to the manual prior to the start of each day's fieldwork.

Turbidity measurements will be made with a field portable turbidity meter. The District uses a LaMotte 2020 Turbidity Meter, or a similar instrument. Turbidity measurements are made by pouring a small volume (usually 10 to 30 mL) of the sample water into the instrument's bottle. The bottle is then wiped clean and placed inside the instrument. The instrument shines a light through the bottle and a photocell determines the amount of light scattered or adsorbed by particles in the water. Turbidity can be calculated from the amount of light scatter. The instrument will be calibrated according to the manual prior to the start of each day's fieldwork.

3.1.4 Visual Observations

Basic visual observations are required by applicators at every application site during every treatment. The observations will describe the application site, note the weed growth in the treatment area, note the clarity and color of the canal water and describe the weather conditions during application. These observations are included in the BMP checklist found in Section 2.4.3 and Section 2.4.4.

Additionally, inspections of any control gates or spills that have been closed to prevent treated water from entering downstream water bodies will be made every two to four hours, or as feasible, to insure they remain closed.

3.2 Reporting

By March 1st of each year, SSJID will submit an annual report to the Regional Water Quality Control Board documenting the previous year’s aquatic herbicide application program. The report will comply with the requirements of the Permit and the "Standard Provisions and Reporting for Waste Discharge Requirements (NPDES)". The annual report will contain the following information as described in Attachment C of the Permit:

1. An Executive Summary discussing compliance or violation of the Permit and the effectiveness of the APAP; and
2. A summary of monitoring data, including the identification of water quality improvements or degradation as a result of algaecide or aquatic herbicide application.

The District will collect and retain all information on the previous reporting year. When requested by the Deputy Director or Executive Officer of the applicable RWQCB, the District will submit the annual information collected, including:

1. An Executive Summary discussing compliance or violation of the Permit and the effectiveness of the APAP to reduce or prevent the discharge of pollutants associated with herbicide applications;
2. A summary of monitoring data, including the identification of water quality improvements or degradation as a result of algaecide or aquatic herbicide application, if appropriate, and recommendations for improvement to the APAP (including proposed BMPs) and monitoring program based on the monitoring results. All receiving water monitoring data shall be compared to applicable receiving water limitations and receiving water monitoring triggers;
3. Identification of BMPs and a discussion of their effectiveness in meeting the Permit requirements;
4. A discussion of BMP modifications addressing violations of the Permit;
5. A map showing the location of each treatment area;
6. Types and amounts of aquatic herbicides used at each application event during each application
7. Information on surface area and/or volume of treatment area and any other information used to calculate dosage, concentration, and quantity of each aquatic herbicide used;
8. Sampling results shall indicate the name of the sampling agency or organization, detailed sampling location information (including latitude and longitude or township/range/section if available), detailed map or description of each sampling area (address, cross roads, etc.), collection date, name of constituent/parameter and its concentration detected, minimum levels, method detection limits for each constituent analysis, name or description of water body sampled, and a comparison with applicable water quality standards, description of analytical QA/quality control plan. Sampling results shall be tabulated so that they are readily discernible; and
9. A summary of aquatic herbicide applications made in the District.

Annual information collection will include recommendations for changes to the District's BMPs, if the results indicate changes are necessary. The annual information collection will contain a certification by a qualified biologist that the beneficial uses of the receiving waters that accepted treated water during the year have been restored.

The District will report to the SWRCB and appropriate RWQCB any noncompliance, including any unexpected or unintended effect of an algaecide or aquatic herbicide that may endanger health or the environment. The Twenty-Four Hour Report will be provided orally, by way of a phone call, to the SWRCB and appropriate RWQCB within 24 hours from the time the District becomes aware of any noncompliance. The Twenty-Four Hour Report will include the following information:

1. The caller’s name and telephone number;

2. Applicator name and mailing address;

3. Waste Discharge Identification (WDID) number;

4. How and when the District became aware of the noncompliance;

5. Description of the location of the noncompliance;

6. Description of the noncompliance identified and the USEPA pesticide registration number for each product the District applied in the area of the noncompliance; and

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

If the District is unable to notify the SWRCB and appropriate RWQCB within 24 hours, the District will do so as soon as possible and provide a rationale for why the District was unable to provide notification of noncompliance within 24 hours.

In addition to the Twenty-Four Hour Report, the District will provide a written submission within five (5) days of the time the District becomes aware of the noncompliance. The Five-Day Written Report will contain the following information:

1. Date and time the District contacted the State Water Board and the appropriate Regional Water Board notifying of the noncompliance and any instructions received from the State and/or Regional Water Board; information required to be provided in Section D.1 (24-Hour Reporting);

2. A description of the noncompliance and its cause, including exact date and time and species affected, estimated number of individual and approximate size of dead or distressed organisms (other than the pests to be eliminated);

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

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

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

6. Description of the habitat and the circumstances under which the noncompliance activity occurred (including any available ambient water data for aquatic algaecides and aquatic herbicides applied);

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

8. If applicable, explain why the District believes the noncompliance could not have been caused by exposure to the algaecides or aquatic herbicides from the District's application; and

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

The Five Day Written Report will be submitted within five (5) days of the time the District becomes aware of the noncompliance unless SWRCB staff or Regional Water Board staff waive the above described report if an oral report has been received within 24 hours.

3.3 Quality Assurance Plan

Accurate measurement is often difficult due to inherent properties of environmental samples, field sampling techniques, and analysis techniques. In order to assess and maximize data quality for water quality sampling, a Quality Assurance Plan (QAP) has been developed and will be implemented as an integral part of the monitoring program. This QAP is designed to enable an evaluation and validation of the analytical data for accuracy, precision, and completeness.

Accuracy of a water quality component is determined from the deviation of a measured value from the true value. Both laboratory control spikes measured in laboratory blanks and matrix spikes measured in environmental samples are used to assess accuracy. The acceptable upper and lower recovery limits of the spikes are part of the USEPA or Standard Method description and are typically included with lab data. The recovery limits of lab data will be checked to confirm accuracy of analyses.

Analytical precision is the measure of the degree of agreement among replicate analyses of a sample (i.e., the closeness of two or more measured values to one another). Duplicate sample results can be compared and a relative percent difference (RPD) calculated to determine the precision of water quality analysis. The RPDs are part of the USEPA or Standard Method description and are typically included with lab data. The recovery limits of lab data will be checked, or calculated as needed, to ensure acceptable RPDs for duplicate sample pairs to confirm precision of the analyses.

Completeness refers to the total percentage of samples that are both analyzed and validated, with respect to all the samples collected. The completeness goal for this project is 85%. This means that at least 85% of the water quality results must be acceptable without qualification in order to meet this criterion.

3.3.1 QAP Objectives

The primary goal of the specifications and procedures is for the provision of standardized procedures and references which are aimed at achieving quality defensible data. Procedures are established for documenting and reviewing the sampling, sample movement (from field to lab), sample analysis and data.

All field personnel involved in sampling will be required by their supervisors to both follow this QAP and have a copy of it.

3.3.2 Data Validation

The results of these precision, accuracy, and contamination checks will be reviewed and evaluated to determine how well the results represent the actual concentrations present in the environment. Data collected from the laboratory will be validated through the following procedure:

1. Chains of Custody - Verify that requested analyses were performed and that sampling dates are accurately noted in lab reports.

2. Holding Times - Check for holding times in excess of EPA guidelines.

3. Method Blanks - Review blank analyses for evidence of potential contamination.

4. Matrix Spikes - Review spike and spike duplicate recoveries and RPDs as a check for analytical precision and accuracy.

5. Laboratory Control Samples - Review control and control duplicate recoveries and RPDs as a check for analytical accuracy and precision.

6. Surrogates - Review surrogate recoveries as a check for sample specific accuracy.

7. Trip Blanks - Review trip blanks for evidence of potential contamination.

8. Field Duplicates - Review field duplicate analyses for agreement of results as a check for analytical precision.

At the conclusion of this evaluation qualifiers will be assigned to results associated with QA/QC elements that are outside control limits in accordance with EPA guidelines (USEPA 1994 and 1999).

3.3.2.2 Field Procedures and Sample Locations

Sample locations are selected as described in previous elements. The following are also considered: 1) closeness to our headquarters for ease of travel to the sampling sites, and 2) the proximity of the possible discharge sites to the application site.

Requirements of Field Sampling
Sampling and field equipment that contacted treated water must be decontaminated after a use in a sampling area.

Sample Holding Times, Storage and Preservation
All samples will be put into “iced” coolers very shortly after they are taken and kept refrigerated until they are shipped. They will then be shipped in coolers with regular or blue ice.

Documentation
Field activities must be documented in order to properly support any data interpretation and to ensure that data is defensible.

The following are some of the items that will be recorded during field sampling:

1) Name of person who took sample
2) Identification of the site sampling location
3) The time and date that each sample was collected
4) Any observations which may influence the results from the samples (such as if particles are in the water, weather conditions, conditions of the canal or drain, etc.)
5) If there were any problems that were encountered during the sampling.

Identification of Samples
Samples will be labeled with the following for identification: 1) sample time and date, 2) location where sampled (tentative), 3) analytical method requested, 4) identification number of the sample.

Field Staff Training
Personnel who conduct the sampling will receive training and supervision regarding the procedures to be followed.

Quality Control Samples
One field blank (a clean sample), and one pair of matrix spikes will be taken once per year for each active ingredient sampled. The monitoring data will be part of the annual information collection.

3.3.2.3 Sample Documentation and Custody Procedures

The possession of the samples from the time they are taken until the results are reported by the lab must be traceable.

Documentation
A master sampling log book shall be maintained for all the samples taken. The people doing the sampling will be responsible for the following:

- Initial and date all daily entries.
- Accurately record sampling activities on both the field form and the log book.
- Only make legible entries and use ink that is waterproof. The entries should accurately document the sample collection activities.
- If there are errors or changes in the entries then a single line should be used to cross each one out. The change must be initialed and dated.
- They must legibly and accurately complete the chain of custody forms.

Chain-of-Custody Form
After the samples are collected and just prior to release or shipment, a Chain-of-Custody form is filled out. Cross checking is done between the field documentation, the sample labels and the

Chain-of-Custody form to verify container type, amount of containers, sample volume and sample identification.

The following information is included in the Chain-of-Custody form:

- Date Sampled
- Time Sampled
- Sample Type
- Sample Identification
- Analysis Requested
- Release and Acceptance Signature Blocks
- Sample volume
- A Remarks Section (Can be used to record the method of shipment and courier name)
- Client Name and Information
- Special Handling Instructions
- Sample Condition

The signature blocks are signed on the Chain-of-Custody form anytime there is a change in the custody of the samples.

Sample Handling and Shipments
Sample shipments are always accompanied by a Chain-of-Custody form. A copy of the form is retained for project records. Temperature increase, bottle breakage and cross contamination can all be prevented during shipment to the lab in the following ways:

- Plastic reclosable bags are used to individually seal the sample containers.
- Some type of cushioning material (bubble wrap, etc.) between the bottles helps prevent breakage by not allowing them to touch each other.
- Coolers made of hard plastic are used to ship/transport the samples.
- The samples are packed with ice. The ice can be put into reclosable bags, but must contact the samples to about two inches deep on both the bottom and top of the cooler.
- Coolers are always sealed with Chain-of-Custody seals and taped shut.
- The sample control people at the laboratory will be notified just prior to sample shipment.
- Overnight delivery is used to assure that the samples arrive without a significant temperature increase.

3.3.2.4 Data Validation and Audit

Technical Audits Done in the Field
Project Managers with the District routinely check (through observation) to make sure that the proper sampling, sample handling and documentation procedures are followed. This is done to help ensure that this QAP is adhered to. A field audit checklist will be completed one to two times per year.

Data Validation (data quality audit) and Technical Systems Audit
Each quarter the California Regional Water Quality Control Board may perform a data quality audit on 1% of the generated data. This is done to verify that the analytical method was followed

properly with correctly calculated and reported results. The following items will be reviewed during the validation:

- Lab procedures documentation
- The Chain-of-Custody records
- That data was accurately reduced, transcribed, and reported
- That the parameters for quality control and the method specific calibration procedures were properly adhered to
- That the recorded results are precise and accurate.

The Regional Water Quality Control Board will also do an annual check of field procedures by conducting a technical systems audit. Audit results and recommendations will be given to South San Joaquin Irrigation District.

3.3.2.5 Data Assessment Procedures

Data will be assessed primarily through the use of the quality control samples. This will help determine if the program has met the quality assurance objectives. Data quality will be assessed and an attempt will be made to identify possible limitations on the use of data.

The laboratory is required to follow its own QAP. Any associated results from the analysis of laboratory quality control samples must be reported with sample results so District staff can evaluate the performance of the analytical process.

District staff must review all project data. A review is made on the results of each batch of samples that was analyzed by the lab. This must, of course, include any field and lab quality control samples that were analyzed.

The following steps will be included in the review of the project data:

- Lab and field data will be reviewed for completeness and accuracy in documentation, Chain-of-Custody procedures, compliance with acceptable holding times of samples in refrigeration and that the quality control samples were taken with the required frequency.
- Evaluate quality control blank sample results in order to identify contamination.
- Reviewing all spikes and split sample results to determine if a high enough degree of project accuracy and precision is being met.

3.3.2.6 Corrective Action

District personnel will make sure that procedures specified in the QAP are followed, particularly regarding sample collection, data documentation, sample preservation, proper shipment and data analysis.

Any field data problems that might require corrective action will be documented in either the field sampling form or data log.

4.0 SECTION 5.3 EXCEPTION

Section 5.3 of the State Water Resources Control Board's *Policy for Implementation of Toxic Standards for Inland Surface Waters, Enclosed Bays and Estuaries of California* allows for short-term or seasonal exceptions from certain requirements for public entities that discharge aquatic herbicides to waters of the United States. Canals and other man-made waterways are considered waters of the United States because they are tributary to other waters of the United States, in the case of SSJID, the Stanislaus and San Joaquin Rivers.

As waters of the United States and Waters of the State, receiving water limitations, quality standards, apply to the canals. In the case of acrolein, active ingredient of Magnacide-H, the receiving water limitation is 21 ug/L. This means that water outside of the treatment area cannot exceed 21 ug/L acrolein at any time and water inside the treatment area cannot exceed 21 ug/L acrolein after completion of the treatment event. It would not be possible to effectively treat District canals with Magnacide-H and comply with the receiving water limitations.

The Section 5.3 exception allows for short-term or seasonal exceptions to the receiving water limitations. A concrete definition of "short-term" has not been provided, but the permit implies that the intent is for some period of time up to several months. The District does not intend to exceed the water quality standards from anyone treatment for more than several days. Past experience indicates that the residual acrolein in the canal system is gone, either due to its own reactiveness or due to being irrigated out of the system, within one to two days of being applied. The intent is to utilize the exception to allow for the transport of treated water with residual concentrations through stretches of canal outside the treatment area to the locations where the water will be used for irrigation.

Monitoring of representative projects will confirm the short-term nature of the exceedences with post-event sampling being performed in downstream areas within one week after application. Due to the reactive nature of acrolein and the fact that water is constantly moving through a canal system, it is not likely that long-term exceedences would occur.

If the Control Agency has been granted a section 5.3 exemption, describe the exception period. If weeds are also controlled outside of this period, describe how it is ensured that receiving water criteria are not exceeded.

Section 5.3 of the policy allows for exceptions from its requirements for resource or pest management conducted by public entities. In order to qualify for an exception from the requirements to meet permit limitations that will achieve compliance the water quality standards and objectives, a public entity must comply with the requirements listed in section 5.3 for categorical exceptions, including providing California Environmental Quality Act (CEQA) documentation.

APPENDIX A
References

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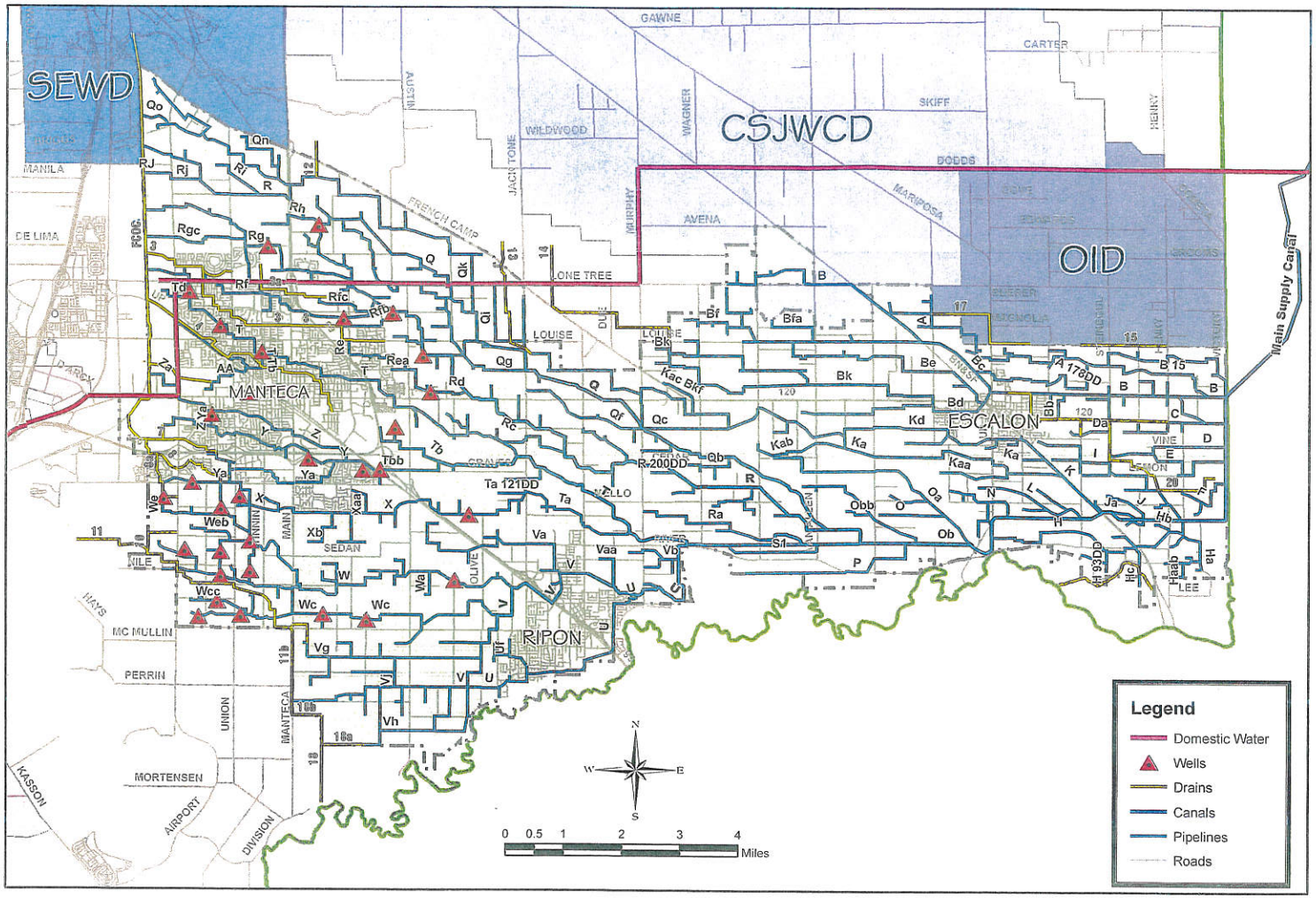
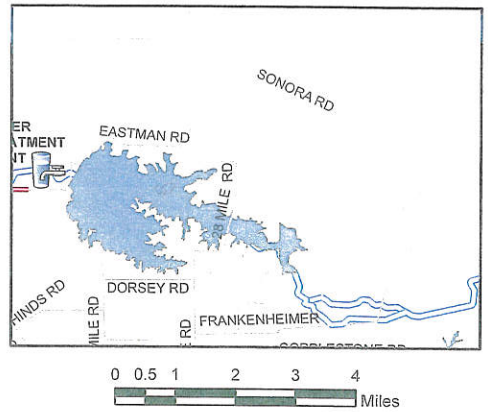
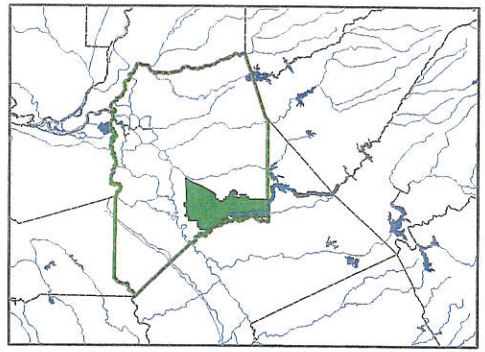


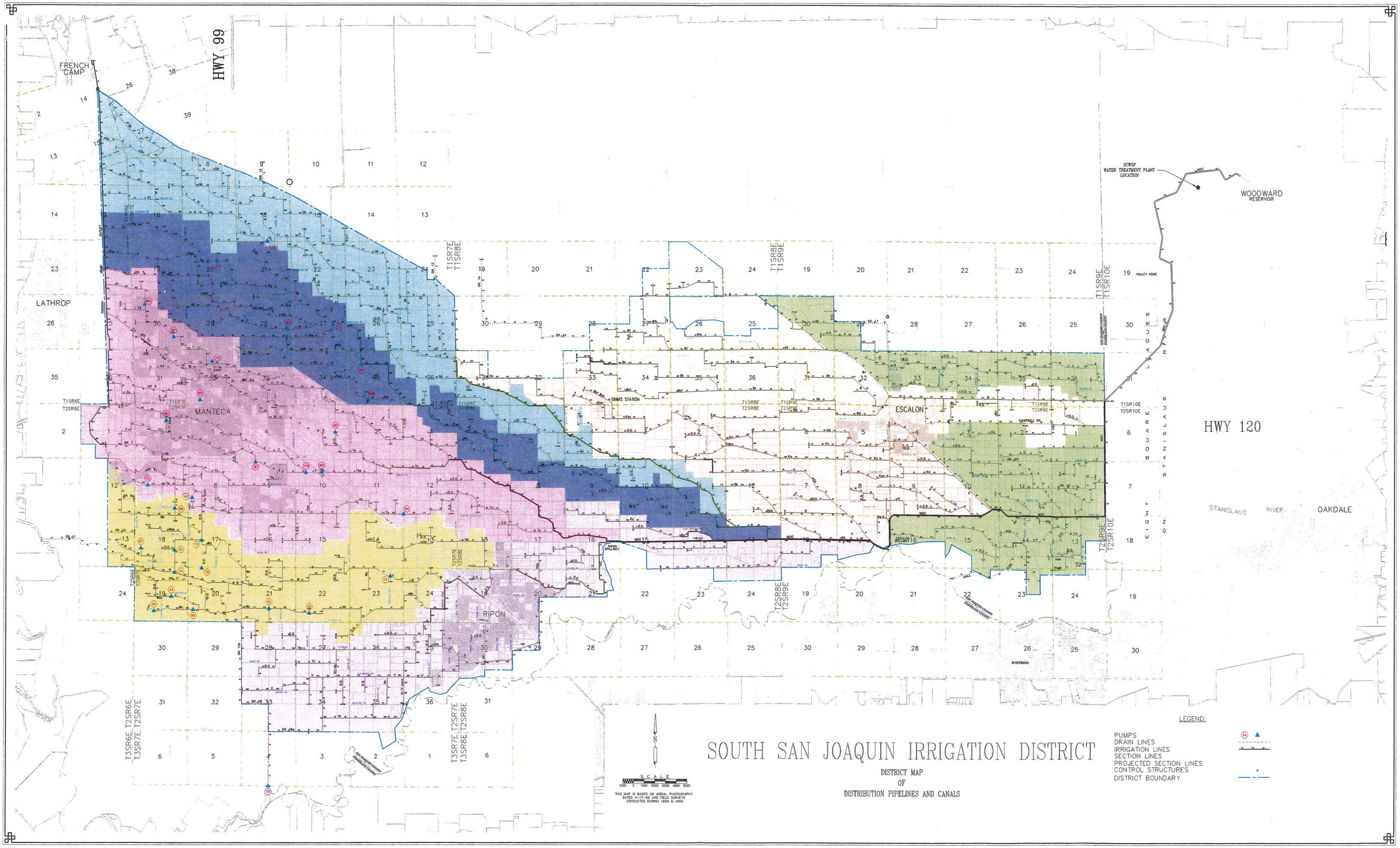


WOODWARD RESERVOIR



SYSTEM OVERVIEW

South San Joaquin Irrigation District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FRENCH CAMP
LATHROP
MANTECA
ESCALON
RIPON
SIMMS STATION
RIPON SPILLWAY
ESCALON SPILLWAY
SCWSP WATER TREATMENT PLANT LOCATION
WOODWARD RESERVOIR
VALLEY HOME
HWY 120
STANISLAUS RIVER
OAKDALE
EIGHT MILE ROAD
CAMPBELL DR.
RIVERBANK
T1SR7E T1SR8E
T1SR8E T1SR9E
T1SR9E T1SR10E
T1SR6E T2SR6E
T1SR10E T2SR10E
T2SR6E T2SR7E
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T3SR6E T2SR6E
T3SR7E T2SR7E
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SAN JOAQUIN COUNTY
STANISLAUS COUNTY
SCALE
THIS MAP IS BASED ON AERIAL PHOTOGRAPHY DATED 4-17-99 AND FIELD SURVEYS CONDUCTED DURING 1998 & 1999.
SOUTH SAN JOAQUIN IRRIGATION DISTRICT
DISTRICT MAP
OF
DISTRIBUTION PIPELINES AND CANALS
LEGEND:
PUMPS
DRAIN LINES
IRRIGATION LINES
SECTION LINES
PROJECTED SECTION LINES
CONTROL STRUCTURES
DISTRICT BOUNDARY