

Water Hyacinth Control Program 2011 Annual Report

Submitted Pursuant to: Statewide General NPDES Permit (CAG990005)

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate information submitted. Based on my inquiry of the persons who manage the program, Terri Ely – *Senior Environmental Scientist*, or those persons directly responsible for gathering the information, *Paul Ryan –Water Hyacinth Control Program Environmental Scientist*, 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 and imprisonment for knowing violations.

Lucia C. Becerra, Acting Director

Date

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EXECUTIVE SUMMARY

Water hyacinth (*Eichhornia crassipes*) is a non-native, free-floating, invasive aquatic plant. It grows in wetlands, marshes, shallow water bodies, slow moving waterways, lakes, reservoirs, and rivers. Water hyacinth negatively influences biodiversity, recreation, and agriculture. It de-stabilizes dissolved oxygen (DO) cycles, shades out important shallow water fish habitat, prevents boat passage, and blocks agriculture intakes.

In 1982, SB 1344, Chapter 2, Article 2, Sec.64 amended the statutes of the California Harbors and Navigation Code to designate the California Department of Boating and Waterways (DBW) as the lead agency for controlling water hyacinth in the Sacramento-San Joaquin Delta (Delta), its tributaries, and the Suisun Marsh.

This program operates under the regulations imposed by the National Pollutant Discharge Elimination System (NPDES) Statewide General Permit (CAG990005) issued by the State Water Resources Control Board (SWRCB) and administered by the Central Valley Regional Water Quality Control Board (CVRWQCB), the U.S. Fish and Wildlife Service Biological Opinion (USFWS BO) (1-1-02-F-157 and 1-1-03-F-0114), and the National Oceanic and Atmospheric Administration Biological Opinion (NOAA Fisheries BO) (151422SWR2005SA00681:JSS).

As part of the permit and biological opinions, a monitoring program and reporting schedule have been developed to evaluate the effects of the Water Hyacinth Control Program (WHCP) on water quality and federally listed threatened and endangered species. This annual report fulfills reporting requirements for the above named permits. The report also records the progress and evolving changes the program has made over the time the program has been in effect.

In 2011, the WHCP used 449 gallons of 2, 4-D, 253 gallons of glyphosate, and 286 gallons of Agridex. 2011 was different in that circumstances did not allow any herbicide treatments until September 1. Even with the delay, the program was still successful in treating 788 acres in the Delta and its surrounding tributaries. Had the delay not occurred, control would have exceeded the 1024 acres treated in 2010. With the Plant material left over from 2011 and with a fairly mild winter, it will be expected that the program will exceed 1000 acres for 2012.

1 INTRODUCTION

1.1 *Extent of Infestation*

The DBW is responsible for controlling water hyacinth, a floating aquatic weed that can potentially grow in 50,000 surface acres of the Sacramento/San Joaquin Delta and its tributaries. Determining the annual extent of infestation has been difficult because both individual plants and large mats move with river current and diurnal tidal movement. Historically pre and post season infestation have been measured through visual estimates conducted by each WHCP application crew.

Each crew visually surveys all the sites in their application region. Herbicide applications are then prioritized such that nursery areas and areas that are critical to public, agricultural and industrial use are treated first. Logistics such as tide and travel times and daily weather conditions such as wind speed are also factored into daily site selections.

1.2 *Setting*

The WHCP includes portions of eleven counties that encompass much of the Delta and its upland tributaries. The eleven counties include Alameda, Contra Costa, Fresno, Madera, Merced, Sacramento, San Joaquin, Solano, Stanislaus, Tuolumne, and Yolo. The general boundaries for the treatment area in the Delta and its tributaries are as follows:

- West up to and including Sherman Island, at the confluence of the Sacramento and San Joaquin Rivers;
- West up to the Sacramento Northern Railroad to include water bodies north of the southern confluence of the Sacramento River and Sacramento River Deep Water Ship Channel;
- North to the northern confluence of the Sacramento River and Sacramento River Deep Water Ship Channel, plus waters within Lake Natoma;
- South along the San Joaquin River to Mendota, just east of Fresno;
- East along the San Joaquin River to Friant Dam on Millerton Lake;
- East along the Tuolumne River to LaGrange Reservoir below Don Pedro Reservoir; and
- East along the Merced River to Merced Falls, below Lake McClure.

Within the 2011 WHCP project area, there were 369 possible treatment sites that average between one and two miles in length. See Figure 1-1, Appendix C, for a map of the WHCP project area and sites sampled in 2011.

2 SB 1344

2.1 Section 64 of the Harbors and Navigation Code

Reads as follows:

“(a) The Legislature hereby finds and declares that the growth of water hyacinth and *Egeria densa* in the Sacramento-San Joaquin Delta, its tributaries, and the Suisun Marsh has occurred at an unprecedented level and the resulting accumulations of water hyacinth and *Egeria densa* obstruct navigation, impair other recreational uses of waterways, have the potential for damaging manmade facilities, and may threaten the health and stability of fisheries and other ecosystems within the delta and marsh. Accordingly, it is necessary that the state, in cooperation with agencies of the United States, undertake an aggressive program for the effective control of water hyacinth and *Egeria densa* in the delta, its tributaries, and the marsh.

“(b) The department is designated as the lead agency of the state for the purpose of cooperating with agencies of the United States and other public agencies in controlling water hyacinth and *Egeria densa* in the delta, its tributaries, and the marsh.”

3 COMPLIANCE

3.1 Summary of Regulatory Permits

The following constitutes a summary of the permits required to implement the WHCP. Each permit has regulations that are designed to ensure avoidance or minimization of significant impacts to beneficial uses of waters of the U.S or federally threatened and endangered species protected by the Endangered Species Act.

3.1.1 Reporting Requirements

The NPDES Statewide General Permit for Aquatic Pesticide Use requires DBW to submit an annual report March 1 following the WHCP application season. Reporting per NPDES guidelines must include the following- an executive summary discussing permit compliance or violation of permit terms and conditions to beneficial waters of the U.S., the effectiveness of the WHCP Operation Management Plan (OMP), the discharge of pollutants associated with aquatic pesticide applications, a summary of monitoring data, including changes to water quality, and violations of compliance with water quality objectives as outlined in the Central Valley Basin Plan issued by the CVRWQCB, identification of Best Management Practices (BMP's) and their effectiveness in meeting permit requirements, a discussion of modifications or management corrections for any violations that occurred, maps showing application area, acreage and sampling station stations, types and amounts of aquatic pesticides used at each application event, information on surface area, volume and rate of application, and sampling results for all required monitoring.

Both the WHCP USFWS BO/Take Permit and the WHCP NOAA Fisheries BO/Take Permit require annual reports to be submitted January 31, following the application season. These reports must summarize compliance with the terms and conditions listed including species and habitat protection, water quality monitoring, and any additional monitoring and studies that may have been conducted as part of regulatory requirements from other participating state or federal agencies. Additional reporting requirements are on a case-by-case basis in the event that a *take* should occur with any of the species discussed in these permits. *Take* reports begin with immediate notification to the USFWS or NOAA biologist (based on jurisdiction) in charge of administering this permit and require documentation of information, such as where *take* occurred, number of species, water quality conditions, chain of custody, and prescriptive action for preventing future occurrences.

3.1.2 Statewide General NPDES Permit [Permit No. CAG990005]

Below is a summary of the provisions of the Statewide General NPDES Permit. A complete copy of the permit is available upon request.

RECEIVING WATERS

There is a clear distinction in the NPDES about application area, treatment area, and receiving waters. In the NPDES, an application area is defined as the area in which aquatic pesticides are directly applied. The treatment area is the area that is treated by the aquatic pesticide to control weeds. It is the responsibility of the Control Agency to define the treatment area. The receiving waters are defined in two manners: 1) waters directly down flow of the treatment area and 2) waters within the treatment area when herbicide residue levels fall below minimum effective concentrations. As the WHCP sprays on floating plants and does not inject to treat submerged plants, the application and treatment areas are effectively the same geographic place.

Herbicides applied to aquatic plants are not considered a pollutant until residues reach receiving waters. This is because an herbicide designed to treat aquatic plants and approved by the EPA cannot also be a pollutant under the Clean Water Act when it is doing what it was designed and approved to do under federal pesticide use regulations.

NUMERIC LIMITS

The following is a summary of the numeric limits required under the NPDES permit. Figures 1-2 and 1-3, Appendix C, geographically show where these basin limits occur in the WHCP project area.

Dissolved Oxygen:

Within the legal boundaries of the Delta, the dissolved oxygen concentration shall not be reduced below:

- 7.0 mg/l in the Sacramento River (below the I Street Bridge) and in all Delta waters west of the Antioch Bridge;
- 6.0 mg/l in the San Joaquin River (between Turner Cut and Stockton, 1 September through 30 November); and
- 5.0 mg/l in all other Delta waters.

For surface water bodies outside the legal boundaries of the Delta, the monthly median of the mean daily dissolved oxygen (DO) concentration shall not fall below 85 percent of saturation in the main water mass, and the 95-percentile concentration shall not fall below 75 percent of saturation. The dissolved oxygen concentrations shall not be reduced below the following minimum levels at any time:

- Waters designated WARM 5.0 mg/l
- Waters designated COLD 7.0 mg/l
- Waters designated SPWN 7.0 mg/l

In the water bodies listed below, dissolved oxygen concentrations shall not be reduced below the amount indicated during the stated time period.

SPECIFIC DISSOLVED OXYGEN WATER QUALITY OBJECTIVES

<u>Amount</u>	<u>Time</u>	<u>Place</u>
9.0 mg/l *	1 June to 31 August	Sacramento River from Keswick Dam to Hamilton City (13)
8.0 mg/l	1 September to 31 May	Feather River from Fish Barrier Dam at Oroville to Honcut Creek (40)
8.0 mg/l	all year	Merced River from Cressy to New Exchequer Dam (78)
8.0 mg/l	15 October to 15 June	Tuolumne River from Waterford to La Grange (86)

* When natural conditions lower dissolved oxygen below this level, the concentration shall be maintained at or above 95 percent of saturation.

3.1.3 WHCP USFWS BO/Section 7 Take Permit [Permit No. 1-1-04-0149]

Below is a summary of the terms and conditions required under this Biological Opinion. A complete copy of the BO is available upon request.

DELTA SMELT

Page 46, WHCP USFWS Sect 7 Permit (1-1-03-F-0114), items a-b and 6 outline specific mitigation measures to minimize impact to *Hypomesus transpacificus* (Delta smelt) and associated habitats.

Avoidance

There is no longer any start or end date restrictions for the use of the herbicides 2,4-D, glyphosate and the adjuvant Agridex® in Delta smelt habitat.

Toxicity evaluation

In the 2001 WHCP USFWS permit, DBW was directed to determine the level of impact that WHCP herbicides might have on the Delta smelt. These impacts were to be determined for critical life stages only. Originally, the USFWS Permit required egg and larvae 96-hr. definitive toxicity tests and “live-car” exposure studies. It was later determined by the USFWS that only 96-hr. definitive studies on larvae were necessary. It was also determined that 96-hr. acute toxicity tests using application-exposed field water from treatment sites was acceptable in lieu of live car studies. Both studies for Delta smelt were completed and submitted to the USFWS in March 2004. After evaluation of these reports in the spring of 2004, the USFWS determined that acute exposure from 2,4-D, glyphosate and Agridex® does not cause significant impacts and issued new terms and conditions for unrestricted use of these two herbicides and one adjuvant.

VALLEY ELDERBERRY LONGHORN BEETLE

Page 47, WHCP USFWS Sect 7 Permit (1-1-03-F-0114), items 8-10 outline specific mitigation measures to minimize impact to *Desmocerus californicus dimorphus*, Valley elderberry long horn beetle, (VELB) and associated Elderberry shrub (*Sambucus sp.*) habitat.

Avoidance

DBW was directed to avoid impact to VELB by surveying for *Sambucus ssp.* (elderberry tree), and treating at low tide if any elderberry trees are within 100' of water's edge. In areas where treatment cannot occur away from habitat, a maximum of one-half of the area may be treated at one time. Wind speed and direction are also factors as to whether or not a treatment could occur in these areas.

Environmental Training

The permit requires that personnel involved with the WHCP will receive USFWS approved worker environmental awareness training. Under the training program, personnel will be informed about the presence of VELB and habitat associated with the species including 1) the life history of VELB, 2) the importance of elderberry shrubs as habitat 3) that unlawful *take* is a violation of the Endangered Species Act (ESA), and 4) all terms and conditions of the 2004 USFWS WHCP BO for protection, avoidance and minimization of impacts to protected species under ESA.

GIANT GARTER SNAKE

Page 47, WHCP USFWS Sect 7 Permit (1-1-03-F-0114), items 5-7 outline specific mitigation measures to minimize impact to *Thamnophis gigas* (giant garter snake).

Avoidance

The only restrictions to giant garter snakes in the 2004 USFWS WHCP BO apply to any land based operations, which occur on Delta banks other than existing roads or boat ramps. Currently all operations occur on existing roadways or boat ramps. However, mitigation measures beyond the requirements of the 2004 USFWS permit have been implemented to avoid impacts to giant garter snakes and their habitat. All of the WHCP project area has had a giant garter snake habitat evaluation. This evaluation has been incorporated into the GIS technology used by application crews. The application crews have also been provided with a set of maps so that they can minimize impact where giant garter snakes are most likely to be found.

Toxicity Evaluation

The 2001 WHCP USFWS permit required tests to evaluate acute toxicity of a representative species of garter snakes. DBW conducted oral and dermal exposure tests using the program herbicides and adjuvant on *Thamnophis elegans* (mountain garter snake) and *Thamnophis sirtalis* (common garter snake) in the spring of 2003. A final report of this study was submitted to the USFWS in the spring of 2004. The study found there were no observable effects to these two species when oral and dermal exposure was at maximum label concentrations. A final report of this study was submitted to the USFWS in the spring of 2004. Results of this study were incorporated into the USFWS 2004 EDCP BO/*Take* Permit. A copy of this report is available upon request.

Environmental Training

The permit requires that personnel involved with the WHCP will receive USFWS approved worker environmental awareness training. Under the training program, personnel will be informed about the presence of giant garter snake (*Thamnophis gigas*) and habitat associated with the species including: 1) the life history of the giant garter snake, 2) the importance of irrigation canals, marshes/wetlands, and seasonally flooded areas to the giant garter snake, 3) that unlawful *take* is a violation of the Endangered Species Act (ESA), and 4) all terms and conditions of the USFWS WHCP BO for protection, avoidance and minimization of impacts to protected species under ESA.

3.1.4 WHCP NOAA Fisheries BO/Sec. 7 Permit [151422SWR2005SA00681:JSS]

Below is a summary of the terms and conditions required under this Biological Opinion. A complete copy of the BO is available upon request.

SACRAMENTO RIVER WINTER-RUN CHINOOK SALMON, CENTRAL VALLEY SPRING-RUN CHINOOK SALMON AND CENTRAL VALLEY STEELHEAD TROUT

The Biological Opinion outlines specific mitigation measures to minimize impact to *Oncorhynchus tshawytscha* (Sacramento River winter-run Chinook salmon & Central Valley spring-run Chinook salmon) and *Oncorhynchus mykiss* (Central Valley steelhead trout).

Avoidance

NOAA Fisheries' BO notes that, dependent upon type of year and in-stream flows; juvenile steelhead may be present in the Delta through May and spring-run Chinook salmon through June. DBW was permitted to apply beginning April 1 in stations that are not considered salmon habitat. The permit lists the following as April 1 start date stations: the San Joaquin River upstream of the confluence with the Merced River (Hills Ferry), associated sloughs and canals in Merced and Fresno Counties and the following Central Delta eastside stations: Fourteen Mile Slough east of Shima Tract, Pixley Slough, Rio Blanco Tract, White and Disappointment Slough east of Honker Cut, Sycamore Slough, Hog Slough, Beaver Slough, Lost Slough, Snodgrass Slough above the Delta Cross Channel, and the Stone/Beach Lakes Area. April 15 start dates applied to portions of the South Delta within the portions of the Middle and Old River behind the South Delta Temporary Barriers. The remainder of the action area may be treated after June 1, provided that IEP Real-Time Monitoring shows the pulse has migrated through the system, increase in water temperatures prohibit species survival, and NOAA Fisheries issued written verification.

Toxicity Evaluation

The permit does not require species-specific or EPA standard 3-species toxicity evaluations.

Environmental Education

The permit no longer contains education mitigation. However, it does require that DBW staff and assigned agents follow all Federal and State laws applicable to the use of herbicides including mitigation outlined in the current EDCP BO/*Take* permit. Thus, DBW continues to require applicators to be informed about the presence of salmon, steelhead, and habitat associated with the species including: 1) the life history, 2) the importance of migratory routes; and 3) the terms and conditions of the biological opinion.

Fish Passage Protocol

There are specific guidelines for ensuring fish are not impacted by WHCP applications. The following practices are incorporated into the WHCP Protocols and Procedures Manual to ensure fish passage: applicators may only treat 3 acres or less per site, maintain buffer zones, treat at specific dissolved oxygen levels, and never block escape routes. Each WHCP crew received a copy of the protocol and refresher training on the Fish Passage Protocol before the 2009 application season began.

4 PERSONNEL, MATERIALS AND METHODS

4.1 Personnel

4.1.1 Application Crews

During 2011, the DBW had six full-time crews, each consisting of a specialist and a technician, which carried out herbicide application activities. Similarly, under contract with DBW, Merced and Fresno Counties each have one crew that conduct treatment activities for the 2011 WHCP. Each crew contains a minimum of one member possessing a Qualified Applicators Certificate, category "F" (aquatics), administered by the California Department of Pesticide Regulation.

APPLICATION PERSONNEL EDUCATION AND TRAINING

Qualified Applicator Certificate

Field crew's are encouraged to attend seminars and continued education classes to keep their licenses current. Category F licenses have to be renewed every two years with the continued education requirements fulfilled.

Environmental Awareness Training

As per WHCP USFWS Sect 7 Permit (1-1-03-F-0114) Condition 5 and 10 and WHCP NOAA Fisheries Sect. 7 Permit (151422SWR2005SA00681:JSS) Section II (C) (3), environmental awareness training was conducted on March 21st of 2011. This training included the following items:

- Species identification and impact avoidance guidelines on all threatened and endangered species associated with the WHCP
- Identification and protection of elderberry trees (*Sambucus ssp.*) and protocol for monitoring species fitness during an application season
- Identification and protection of the giant garter snake (*Thamnophis couchi gigas*), including life history; importance of irrigation canals, marshes, wetlands, and seasonally flooded areas as habitat; and the terms and conditions of the biological opinion
- Identification and protection of Delta smelt (*Hypomesus transpacificus*), Chinook salmon (*Oncorhynchus tshawytscha*), steelhead (*Oncorhynchus mykiss*), and associated protected habitats, closure dates, and other agency requirements
- Protocol for "take," including reviewing the "Incidental Take Statement," collection and handling of dead species, completion of chains of custody, and notification of either the USFWS or NOAA Fisheries

Equipment Training

Refresher training on the use/calibration of the DO meters, use of the Xplore iX104C® GPS system, and ArcPad application took place on March 21st of 2011.

4.1.2 Monitoring Personnel

Monitoring activities are overseen by an environmental scientist and conducted by qualified personnel, which may include an environmental scientist and scientific aids. All water sampling events are carried out in

accordance with the WHCP Quality Assurance Project Plan (QAPP) and the WHCP environmental monitoring protocol as approved by the Central Valley Regional Water Board, NOAA Fisheries and USFWS.

Environmental scientists are responsible for understanding and adhering to the permit and biological opinion terms and conditions. They are also responsible for training other monitoring crewmembers concerning monitoring protocols, water sampling techniques, and the calibration and use of field equipment necessary to collect accurate data. Paul Ryan, Environmental Scientist, conducted monitoring training for all monitoring personnel, during 2011, on environmental monitoring and field equipment protocols.

4.2 Materials

4.2.1 Herbicide Application

HERBICIDES AND ADJUVANT

The herbicides used in 2011 by the WHCP include the following.

Herbicides

- 2,4-Dichlorophenoxyacetic acid, dimethylamine salt (2,4-D) (Weedar® 64). EPA Registration Number 71368-1.
- Glyphosate (N-(phosphonmethyl) glycine, in the form of isopropylamine salt) (Rodeo® Herbicide; Aquamaster®). EPA Registration Number 524-343-ZF

Adjuvant

- Agridex® (active ingredients: paraffin base petroleum oil and polyoxyethylate polyol fatty acid esters). California State Registration 5905-50017-AA.

APPLICATION EQUIPMENT

The application of herbicides in 2011 is conducted with hand held sprayers operated from 16 to 21 foot air or outboard aluminum boats. The boats are equipped for direct metering of herbicides, adjuvant and water into the pump system of the spraying unit.

Each crew uses a Hach® HQ-10 Dissolved Oxygen Meter and an Xplore iX104C® GPS system to record pre-spray and post-spray temperature, dissolved oxygen, start/end UTM coordinates, amount of herbicide used, acreage treated, and date/time of treatment.

4.2.2 Environmental Monitoring

MONITORING EQUIPMENT

A 19-21 foot air or outboard aluminum boat is used for monitoring activities. New boats were purchased for sampling and have never been used for herbicide applications.

Water samples are collected using the Masterflex E/S (Cole-Parmer), Model number 07571-05 self contained Environmental Sampler.

Water quality parameters are measured with a Hydrolab® Model MS5 mini datasonde. Water quality parameters measured by the Hydrolab® are geographically referenced with a Trimble® GPS unit and captured electronically using Hydroplus® software specifically modified for the WHCP. All data are backed up on hardcopy and used for data validation purposes. A digital camera, the Canon® 560A, is used to provide visual records of sampling locations and other notable factors that may affect water quality or species of concern. Sites may be flagged for quick identification in the future.

EQUIPMENT CALIBRATION AND MAINTENANCE

To avoid contamination, boats used for monitoring are not used for spray treatments and are periodically washed. A blank sample (de-ionized water collected using the sampling device) is collected at every sampling event to detect potential contamination. To ensure that water quality data is reliable, Hydrolabs® are calibrated on a regular basis based on the manufacturer's requirements.

4.2.3 Contract Laboratory Standard Operating Procedures

The analytical methods used by the contract laboratories are published in the U.S. EPA Test Methods for Evaluating Solid Waste Physical/Chemical SW 846 or U.S. EPA Method for Chemical Analysis of Water and Waste. The primary method used for the WHCP is the Method 8270/625 (or equivalent) by GC/MS.

For the 2,4-D GC/MS analysis, a linear calibration with options of using an average response factor or a linear regression is specified. An initial five-point calibration curve is completed, where the low-level standard concentration is less than or equal to the analyte quantization limits. Glyphosate and Agridex undergo liquid chromatographic analysis with the same 5 point calibration curve. The 2,4-D results are also compared to percent recovery of the surrogate chemical 3,4-D to ensure accuracy of results. There are no comparable surrogates for glyphosate and Agridex at this time

4.3 Methods

4.3.1 Herbicide Application

WHCP OPERATION MANAGEMENT PLAN

The WHCP has instituted an Operations Management Plan (WHCP OMP). This WHCP OMP details general requirements, a pre-application planning protocol, application/monitoring coordination protocol, the application protocol and Best Management Practices (BMP) for herbicide handling, spray equipment maintenance and calibration, spill contingency plan, Delta smelt avoidance, Chinook salmon avoidance, giant garter snake habitat evaluation, dissolved oxygen/temperature measurement, fish passage protocol, daily log completion, and GPS data download and use.

SITE SELECTION

Following the terms and conditions specified in the NPDES permit and biological opinions the sites available for treatment on April 1, included sites 214-239, 203, 205, 207, 401-427, and 900-929. On June 1, sites open for treatment include 500-501 and 706-718 depending on the Interagency Ecological Program (IEP) data showing the absence of special status fish species. On July 1, all treatment sites were open for herbicide treatment. Figures 1-4 and 1-5, Appendix C, are maps showing the sites and their corresponding starts dates. Sites selected for treatment were based on impacts to navigation, threats to agricultural pumping facilities, and high levels of infestation. During the 2011 WHCP site selection criteria also included information and concerns received from area residents and business owners.

EQUIPMENT MAINTENANCE

Spray equipment was calibrated on a weekly basis, after changing injection pumps, and when there were apparent problems with the equipment. Injection systems were cleaned daily and hoses were cleaned as needed. Pump oil was changed every 50 hours. Boat maintenance was conducted on a regular basis; boat maintenance records are available upon request.

4.3.2 Monitoring

WATER HYACINTH CONTROL PROGRAM NPDES ANNUAL MONITORING PROTOCOL

All WHCP water quality monitoring follows the WHCP NPDES Annual Monitoring Protocol as outlined in the WHCP Aquatic Pesticide Application Plan, which was approved in 2006 by the Central Valley Regional Water Quality Control Board. Quality control and quality analysis measures are outlined in the WHCP Quality Assurance Project Plan (QAPP). Monitoring activities include recording WHCP impacts on beneficial waters of the United States, federally listed endangered species, and associated endangered species habitats. DBW is required to document residues in receiving waters and monitor water quality parameters such as dissolved oxygen, temperature, conductivity, pH, and turbidity at representative locations.

SITE SELECTION

Monitoring sites have been selected based on requirements listed under the NPDES permit and biological opinions issued by the USFWS and NOAA Fisheries, which are outlined below.

- *NPDES Permit Monitoring Site Selection Criteria*

The SWRCB Statewide General NPDES Permit requires that dischargers monitor a certain proportion of sites based on the number of sites treated. Sites treated under the Water Hyacinth Control Program (WHCP) shall be classified by DBW as falling into one of two site types:

- Tidal
- Riverine

For each aquatic pesticide used, DBW will monitor 10 percent of the sites it treats with that aquatic pesticide (per water body type).

Table C, page 18, lists the 2011 WHCP monitoring sites. (*USFWS Biological Opinion Monitoring Site Selection Criteria*)

The USFWS mitigation requires that representative monitoring occur in two sites per species (per season) with favorable habitat for that species *Thamnophis gigas*), Delta smelt (*Hypomesus transpacificus*), valley elderberry longhorn beetle (VELB) (*Desmocerus californicus dimorphus*).

The locations of the sites monitored in 2011 are mapped in Figure 1-1, Appendix C.

Table D, page 18, shows how the selected sites meet the selection requirements for the habitat quality for each of the listed species. Giant garter snake habitat has been rated as low, medium or high, while VELB and smelt habitat is classified as being absent or present based on the known distribution of smelt and the known locations of valley elderberry trees in the project area.

5 MONITORING RESULTS AND DISCUSSION

5.1 Endangered Species

There was no incidental take in the 2009 season.

5.2 Herbicide Application Data

Each crew completes a daily log to record herbicide treatment activities. The 2011 WHCP daily log information along can be found in Appendix A.

Herbicide applications may be made only when DO levels are either above the Basin Plan limit adopted by the Central Valley Regional Water Quality Control Board or below 3.0 mg/L. Basin plan DO limits for the entire WHCP project area are shown in Figures 1-2 and 1-3, Appendix C

Summary of 2011 Use

Figures 1-2 and 1-3 document when WHCP sites were available for treatment in 2011. The first WHCP herbicide application of 2011 occurred on September 1st and the final application was concluded on November 30th.

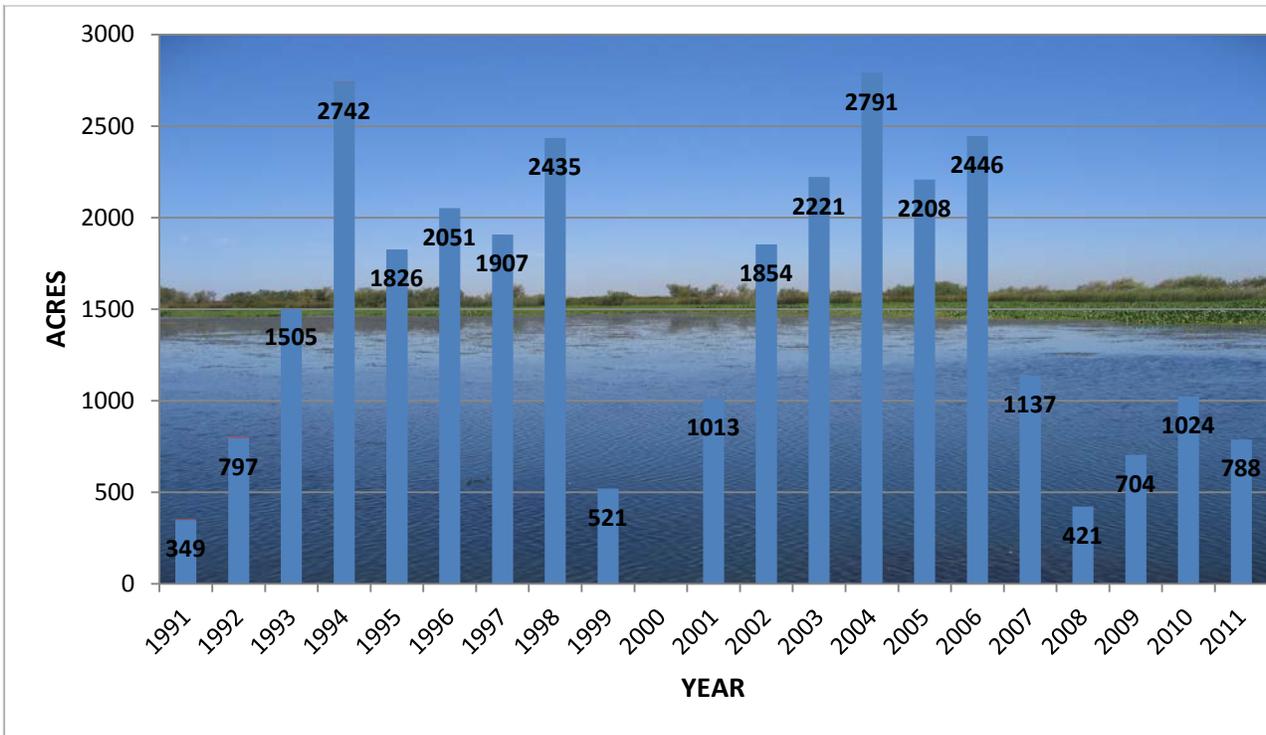
In 2011, the WHCP used 449 gallons of 2, 4-D, 253 gallons of glyphosate, and 286 gallons of Agridex to effectively treat a total of 788 acres of water hyacinth in the Delta and its tributaries. Table A shows a summary of the herbicides used and acres treated in 2011.

Table- A: 2011 Summary of Herbicide Use and Acreage Treated by Month

Month	2,4-D		Glyphosate		Agridex
	Gallons	Acres	Gallons	Acres	Gallons
JUNE	0	0	0	0	0
JULY	0	0	0	0	0
AUGUST	0	0	0	0	0
SEPTEMBER	74.8	74.8	166.7	224.9	103.4
OCTOBER	152.8	152.8	37.8	50.3	86.2
NOVEMBER	221.2	221.2	48.3	64.3	96.5
Total	448.8	448.8	252.8	339.5	286.1

Graph B shows the number of acres treated from 1991 to 2011. There was no water hyacinth treatment in 2000 as the program was the subject of legal and regulatory changes, which prevented treatment during that year. The number of acres treated in a given year can reflect the magnitude of infestation; however other factors can affect the amount of treatment that occurs (regulatory limits, local conditions, weather, and staff levels). These kinds of variables make it difficult to show efficacy throughout the years. 2011 was different in that circumstances did not allow any herbicide treatments until September 1. Even with the delay, the program was still successful in treating 788 acres. Without the delay, there was enough plant material treated to exceed the 1024 acres treated in 2010. If allowed a full treatment season in 2012, the acres in 2011 should be exceeded.

Graph B: Acres Treated by Year



5.3 Monitoring Data and Laboratory Results

All WHCP water quality monitoring follows the WHCP NPDES Annual Monitoring Protocol as outlined in the WHCP Aquatic Pesticide Application Plan, which was approved in 2008 by the Central Valley Regional Water Quality Control Board. Quality control and quality analysis measures are outlined in the WHCP Quality Assurance Project Plan (QAPP). Monitoring activities include recording WHCP impacts on beneficial waters of the United States, federally listed endangered species, and associated endangered species habitats. DBW is required to document residues in receiving waters and monitor water quality parameters such as dissolved oxygen, temperature, conductivity, pH and turbidity at representative locations.

The NPDES permit has identified receiving water limitations of herbicide concentrations, dissolved oxygen, turbidity, and pH restrictions. The USFWS and NOAA Fisheries BO's have adopted water quality limitations identified in the NPDES permit, established take limits for threatened and endangered species, and outlined the terms and conditions necessary to minimize the impact of incidental take on threatened and endangered species.

Sampling stations at all representative locations are identified as "A," "B," and "C." Sampling station "A" represents the treatment area where water hyacinth was treated (1A: Treatment Area Pre-Treatment). Sampling station "B" represents receiving water that is downstream from the treatment area (2B: Receiving Water Post-Treatment). Sampling station "C" represents a control site that is sampled before herbicide treatment upstream of the treatment area (1C: Upstream Pre-Treatment). In addition to sampling on the day treatment occurred, follow up sampling was conducted at the same locations (designated as 3C, 3A and 3B) within 7 days after treatment.

The complete set of site maps, data (both field and lab data) collected to measure the parameters identified in the NPDES permit and BO's for the selected monitoring sites have been summarized and placed in Appendix C.

Table- C: 2011 WHCP Monitoring Sites

Site	Water body Type	Chemicals
13	Tidal	2,4D/Agridex
14	Tidal	2,4D/Agridex
15	Tidal	2,4D/Agridex
16	Tidal	2,4D/Agridex
58	Tidal	2,4D/Agridex
59	Tidal	2,4D/Agridex
68	Tidal	2,4D/Agridex
216	Tidal/Dead-end	Glyphosate/Agridex
217	Tidal/Dead End	Glyphosate/Agridex
300	Riverine	Glyphosate/Agridex
301	Riverine	Glyphosate/Agridex

Table- D: 2011 WHCP Monitoring Sites and Habitat Quality

Site	GGG Habitat Quality	Smelt Habitat	VELB Habitat
13	High	Present	Present
14	High	Present	Present
15	High	Present	Present
16	High	Present	Present
58	Low	Present	Present
59	Low	Present	Absent
68	Moderate	Present	Absent
216	Moderate	Present	Absent
217	Moderate	Present	Absent
300	Low-Moderate	Absent	Absent
301	Low-Moderate	Absent	Absent

5.3.1 Dissolved Oxygen

The Basin Plan limits for receiving water dissolved oxygen levels are shown in Figures 1-2 and 1-3, Appendix B.

There were no Basin Plan deviations in the 2011 treatment season.

5.3.2 Turbidity

Basin Plan standards for turbidity are as follows:

“The discharge shall not cause the following in the receiving water:...
... The 30-day average turbidity to increase as follows:

- a. *More than 1 Nephelometric Turbidity Units (NTU) where natural turbidity is between 0 and 5 NTUs.*
- b. *More than 20 percent where natural turbidity is between 5 and 50 NTUs.*
- c. *More than 10 NTUs where natural turbidity is between 50 and 100 NTUs.*
- d. *More than 10 percent where natural turbidity is over 100 NTUs*

Since sites are not monitored for 30 days, the average of the turbidity measurements taken at the “A” and “C” locations on the sampling day in question will constitute the 30-day average against which the receiving water (“B” location) measurements will be compared.

Turbidity was unreliable due to a probe that had been steadily declining without the sampler’s knowledge until it finally became obvious to the sampler that something was not quite right. Though the units measured were in acceptable limits, the probability that the probe had been faulty makes the data inconclusive. Since the breakdown, DBW has, through the manufacturer a method for identifying faulty probes.

5.3.3 PH

The Basin Plan Limit for pH is the following:

*“The discharge shall not cause the following in the receiving water:…
…The ambient pH to fall below 6.5, exceeds 8.5, or change by more than 0.5 units”*

During the 2011 monitoring season, all measured pH levels complied with basin plan limits.

5.3.4 Herbicide Residue Concentrations

Chemical Concentrations

Maximum residue limits are based on the Environmental Protection Agency (EPA) municipal drinking water standards. The herbicide shall not exceed the following concentrations in receiving waters:

<u>Chemical</u>	<u>Concentration</u>
2, 4-D	70 µg/L
Glyphosate	700 µg/L

During 2011, all herbicide (and Agridex) residue concentrations at receiving water locations were all below (or not detected) limits specified in the WHCP NPDES permit.

EQUIPMENT CALIBRATION AND MAINTENANCE

To avoid contamination, boats used for monitoring are not used for spray treatments and are periodically washed. A blank sample (de-ionized water collected using the sampling device) is collected at every sampling event to detect potential contamination. To ensure that water quality data is reliable, Hydrolabs® are calibrated on a regular basis based on the manufacturer’s requirements.

5.3.5 Contract Laboratory Standard Operating Procedures

The analytical methods used by the contract laboratories are published in the U.S. EPA Test Methods for Evaluating Solid Waste Physical/Chemical SW 846 or U.S. EPA Method for Chemical Analysis of Water and Waste. The primary method used for the WHCP is the Method 8270/625 (or equivalent) by GC/MS.

For the 2,4-D GC/MS analysis, a linear calibration with options of using an average response factor or a linear regression is specified. An initial five-point calibration curve is completed, where the low-level standard concentration is less than or equal to the analyte quantization limits. Glyphosate and Agridex undergo liquid chromatographic analysis with the same 5 point calibration curve. The 2,4-D results are also compared to percent recovery of the surrogate chemical 3,4-D to ensure accuracy of results. There are no comparable surrogates for glyphosate and Agridex at this time.

5.4 Special Studies

5.4.1 Valley Elderberry Longhorn Beetle Habitat Monitoring

The Water Hyacinth Control Program U.S. Fish and Wildlife Service (USFWS) Biological Opinion Take Permit Terms and Conditions require monitoring of the Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) elderberry shrub (*Sambucus sp.*) habitat before and after applications to ensure there were no significant impacts from the WHCP. In 2003, the Department of Boating and Waterways (DBW) proposed an alternate three-year quantitative study. A draft was submitted to Mike Nepstad in February of 2003 and the Biological Opinion (BO) was amended on March twenty-fourth of 2003 to accept the Elderberry Shrub Monitoring Protocol (available upon request) and new study. This elderberry-monitoring study will allow the DBW to continue monitoring and assess the effects of the WHCP herbicide applications on elderberry shrubs that are adjacent to waterways being treated. The data for year three of the study was collected during 2006. The data is inconclusive and DBW has made the decision to return to the original protocol approved by USFWS (original BO). This decision is based mainly on the fact that the plants are hard to access in the spring when they are blooming and this makes the current protocol ineffective to measure beetle habitat.

5.4.2 Handpicking Cost-Benefit Analysis

Due to time restrictions and treatment limitations for the chemical application of water hyacinth, the Handpicking Program has been implemented as part of the WHCP's integrated pest management plan. The goals of the Handpicking Program are to aid in the control of water hyacinth by clearing areas that are 1) not accessible to chemical treatment, 2) subject to high infestation, and 3) within emergent vegetation to reduce the impacts of chemical application. Specific protocols have been established to protect water quality and endangered species issues. The department is currently looking at alternatives to current practices, and hopes to implement them into the 2012 off season.

APPENDIX A
2011 WHCP Herbicide Application Daily Logs

September 2011
2, 4-D/AgriDex Use

Date	Site ID	County	Before Temp	After Temp	DO Before	DO After	2, 4-D (Gals.)	AgriDex (Gals.)	Chem. Rate	2,4-D Acres
9/26/11	28	SJ	24.4	25.2	7.6	6.8	2.75	1.00	32	2.75
9/26/11	301	SJ	20.8	20.6	9.8	10.2	2.50	1.00	32	2.50
9/26/11	302	SJ	21	21.5	10.4	10.2	2.50	1.00	32	2.50
9/26/11	68	SJ	21.3	21.7	7.49	8.01	2.50	0.63	32	2.50
9/26/11	59	SJ	23	23.1	6.88	7	1.13	0.25	32	1.13
9/26/11	36	SJ	22.1	22.6	7.5	7.3	2.75	1.25	32	2.75
9/26/11	34	SJ	22.7	22.9	7.2	7.1	2.75	1.25	32	2.75
9/27/11	15	SJ	21.4	21.4	7.5	7.64	1.50	0.50	32	1.50
9/27/11	13	SJ	21.2	22.9	7.43	6.26	1.63	0.50	32	1.63
9/27/11	57	SJ	22.4	22.7	6.5	6.8	1.00	0.50	32	1.00
9/27/11	10	SJ	22.3	23.2	7.9	8.1	2.75	1.25	32	2.75
9/27/11	28	SJ	23.3	23.4	8.2	8.4	1.25	0.75	32	1.25
9/27/11	48	SJ	22.5	22.7	8.2	8.9	2.50	1.00	32	2.50
9/27/11	47	SJ	22.7	23	8.9	8.7	2.50	1.00	32	2.50
9/28/11	129	SAC	21.4	21.9	8.1	8.7	1.50	0.75	32	1.50
9/28/11	128	SAC	22	22.3	8.6	8.5	2.00	1.00	32	2.00
9/28/11	58	SJ	21.3	21.9	6.85	7.13	1.25	0.50	32	1.25
9/28/11	65	SJ	22	22.4	7.7	7.77	1.38	0.50	32	1.38
9/28/11	48	SJ	20.8	21.2	8.4	7.9	2.50	1.00	32	2.50
9/28/11	47	SJ	21.2	22.4	7.9	7	2.50	1.00	32	2.50
9/28/11	49	SJ	22.6	22.9	7.1	7	2.50	1.25	32	2.50
9/28/11	104	SJ	22.6	22.8	7.8	7.5	2.50	1.00	32	2.50
9/28/11	173	CC	24.4	24.6	9.3	9.5	2.50	1.00	32	2.50
9/29/11	301	SJ	20.5	21.2	8.5	8.1	2.50	1.25	32	2.50
9/29/11	300	SJ	21.4	22	9	8.9	2.50	1.25	32	2.50
9/29/11	14	SJ	21.7	21.7	7.25	7.84	1.25	0.50	32	1.25
9/29/11	16	SJ	21.6	24.2	5.72	7.12	1.38	0.50	32	1.38
9/29/11	18	SJ	20.9	21.4	9.83	8.99	2.50	1.00	32	2.50
9/29/11	26	SJ	23.1	23.6	8.5	8.2	2.75	1.25	32	2.75
9/29/11	31	SJ	23.4	23.5	8.1	7.8	2.75	1.25	32	2.75
9/29/11	40	SJ	23.7	22.9	7.7	8	2.75	1.00	32	2.75
9/29/11	62	SJ	23	22.8	8	9.1	2.75	1.00	32	2.75
9/29/11	97	CC	22.3	22.4	8.7	8.5	2.75	2.00	32	2.75
9/29/11	57	SJ	24.6	24.7	7.8	7.3	2.25	1.00	32	2.25
Total (Gal.)							74.75	31.88		74.75

September 2011
Glyphosate/AgriDex Use

Date	Site ID	County	Before Temp	After Temp	DO Before	DO After	Glyphosate (Gals.)	AgriDex (Gals.)	Chem. Rate	Glyphosate Acres
9/1/11	200	SAC	21.4	22.5	8.2	8.3	2	0.75	48	2.67
9/1/11	12	SJ	21.8	22.1	6.8	6.5	0.75	0.25	48	1.00
9/1/11	209	SAC	21.8	23.6	8.8	9.9	2	1.00	48	2.67
9/6/11	206	SAC	20.5	20.8	9.5	8.9	0.5	0.25	48	0.67
9/6/11	204	SAC	20.6	22.1	8.5	9	0.5	0.25	48	0.67
9/6/11	200	SAC	22.1	22.6	8.9	9.4	1.5	0.75	48	2.00
9/6/11	76	SJ	24.5	24.7	8.7	8.2	1.5	0.75	48	2.00
9/6/11	31	SJ	22.6	23.1	6.1	6.9	2	1.00	48	2.67
9/6/11	30	SJ	23.4	23.5	7	7.1	2	1.00	48	2.67
9/6/11	32	SJ	22.9	23	7.7	7.9	2.25	1.00	48	3.00
9/6/11	33	SJ	23.2	23	8.2	8.8	2.25	0.75	48	3.00
9/6/11	38	SJ	23.1	23.1	6.7	7.3	2	0.75	48	2.67
9/7/11	76	SJ	20.2	21.4	6.41	7.3	2	1.00	48	2.67
9/7/11	75	SJ	22	23.1	7.6	7.8	2	2.00	48	2.67
9/7/11	10	SJ	21.6	22.4	7.9	8.3	2	0.75	48	2.67
9/7/11	28	SJ	22.5	23.1	8.2	8.5	2	0.75	48	2.67
9/7/11	29	SJ	23.7	23.7	8.1	8.6	2	0.75	48	2.67
9/7/11	109	CC	21.5	22.9	8.6	8.4	0.5	0.25	48	0.67
9/7/11	200	SJ	20.8	22	7.4	8.5	2	0.75	48	2.67
9/7/11	203	SJ	22.3	22.8	8.7	8.9	2	0.75	48	2.67
9/7/11	205	SJ	23.2	24.1	9.5	9.8	2	0.75	48	2.67
9/7/11	12	SJ	22.2	21.9	7.4	6.9	2	0.75	48	2.67
9/7/11	61	SJ	22.5	22.2	7.2	6.9	0	0.00	48	0.00
9/8/11	12	SJ	21.6	23	7.39	7.49	2	0.75	48	2.67
9/8/11	13	SJ	22.5	23.7	7.39	7.7	1.9	0.50	48	2.53
9/12/11	8	SJ	21.3	21.6	7.5	7.4	2	0.75	48	2.67
9/12/11	10	SJ	21.7	21.9	7.1	7.3	2	0.75	48	2.67
9/12/11	277	SOL	19.6	20.6	7.9	9.1	2	0.75	48	2.67
9/12/11	272	SOL	21.7	22	8.7	8.9	1.5	0.50	48	2.00
9/12/11	267	SOL	21.9	21.9	8.4	9.2	2	0.75	48	2.67
9/13/11	107	CC	22.1	22.5	7.2	7.6	2	0.75	48	2.67
9/13/11	104	CC	22.6	22.7	7.5	7.3	2	0.75	48	2.67
9/13/11	216	SAC	20.4	22.7	7.3	7.4	2	0.75	48	2.67
9/13/11	217	SAC	22.6	24.4	7.5	8.7	2	1.00	48	2.67
9/13/11	219	SAC	24.4	24.6	7.5	8.9	2	0.75	48	2.67
9/13/11	62	SJ	23.8	24	6.1	5.94	2	0.25	48	2.67
9/13/11	13	SJ	22	23.4	7.5	8.21	2	0.75	48	2.67
9/14/11	37	SJ	25.5	25.8	6.25	6.78	1.5	0.50	48	2.00
9/15/11	217	SAC	22.9	25.4	8.8	9.3	2	1.00	48	2.67
9/15/11	219	SAC	24.2	24.3	7.8	7.3	2	0.75	48	2.67
9/15/11	8	SJ	21.1	21.6	7.9	7.7	2	0.75	48	2.67
9/15/11	10	SJ	21.7	21.9	7.6	7.4	2	0.75	48	2.67
9/15/11	214	SAC	20.2	23.5	8.4	7.8	2	0.75	48	2.67
9/15/11	212	SAC	22.1	22.4	8.9	8.6	2	0.75	48	2.67
9/15/11	76	SJ	20.1	20.8	7.4	7.2	1	0.50	48	1.33

9/15/11	75	SJ	21	21.4	7	6.9	2	1.00	48	2.67
9/15/11	40	SJ	21.3	22.3	6.2	6.1	2.25	1.00	48	3.00
9/15/11	32	SJ	23	22.9	7.3	7.7	2.25	1.00	48	3.00
9/19/11	217	SAC	21	24.4	5.9	6.4	2	0.75	48	2.67
9/19/11	216	SAC	21.1	24.2	6.4	6.2	2	0.75	48	2.67
9/19/11	219	SAC	23.4	23.3	8.4	6.4	2	0.75	48	2.67
9/19/11	8	SJ	22.9	23.1	7.7	7.8	2.25	1.00	48	3.00
9/19/11	10	SJ	23	23.4	9.2	8.3	2.25	1.00	48	3.00
9/19/11	316	STAN	21.1	21.4	8.3	8.1	1	0.50	48	1.33
9/19/11	317	STAN	21.4	22	8.1	9.1	1	0.50	48	1.33
9/19/11	318	STAN	22.1	22.4	9.1	9.4	1.5	0.75	48	2.00
9/19/11	56	SJ	24.2	24.6	7.02	7.43	1	2.00	48	1.33
9/19/11	91	SJ	24.2	24.5	7.5	7.48	0.75	2.00	48	1.00
9/19/11	13	SJ	22	22.9	6.72	6.46	2	0.75	48	2.67
9/19/11	11	SJ	23	22.8	7.46	7.34	1.75	0.50	48	2.33
9/20/11	216	SAC	21.4	23.7	7.9	5.4	2	0.75	48	2.67
9/20/11	215	SAC	23.4	25.2	7.5	5.6	2	0.75	48	2.67
9/20/11	217	SAC	25.1	26.3	8.9	8.6	1	0.25	48	1.33
9/20/11	34	SJ	28	28.1	6.9	7.3	2	1.00	48	2.67
9/20/11	30	SJ	23.4	23.5	7.7	8.1	2	1.00	48	2.67
9/20/11	14	SJ	22.9	23.1	9.2	10.1	2	1.00	48	2.67
9/20/11	10	SJ	21.7	21.9	7.5	7.51	0.5	0.13	48	0.67
9/20/11	13	SJ	22.3	22.8	7.23	7.11	2	0.75	48	2.67
9/20/11	15	SJ	23.9	23.7	7.24	8.1	0.5	0.13	48	0.67
9/20/11	125	SAC	21.5	21.8	7.7	7.9	2	1.00	48	2.67
9/20/11	124	SAC	22.1	22.7	8.3	8.7	2	1.00	48	2.67
9/21/11	61	SJ	23.1	24.4	7.22	7.67	2	0.75	48	2.67
9/21/11	58	SJ	24.2	24.6	7	8.76	1.5	0.50	48	2.00
9/21/11	93	CC	22.4	22.7	7.7	7.9	2	1.00	48	2.67
9/21/11	97	CC	24	24.3	6.72	6.69	2	1.00	48	2.67
9/21/11	96	CC	24.3	24.5	6.64	6.12	2	1.00	48	2.67
9/21/11	215	SAC	22.3	24.1	5.8	5.7	2	1.00	48	2.67
9/21/11	217	SAC	24.2	22.6	6.3	7.3	2	0.50	48	2.67
9/22/11	69	SJ	24	23.4	6.78	7.63	2	0.50	48	2.67
9/22/11	104	SJ	22.6	23.1	8.4	8	2	1.00	48	2.67
9/22/11	99	SJ	25.9	25.7	8.1	8.3	2	1.00	48	2.67
9/22/11	216	SAC	19.8	22.5	5.4	7.5	2	0.75	48	2.67
9/22/11	217	SAC	24	25	7.8	7.7	2	0.75	48	2.67
9/22/11	219	SAC	24.5	24.7	7.9	8.3	2	0.50	48	2.67
9/26/11	217	SAC	20.8	22.6	5.9	7.5	2	1.00	48	2.67
9/26/11	214	SAC	23.1	21.9	10.6	8.2	2	1.00	48	2.67
9/23/11	219	SAC	22.8	22.8	7.8	7.9	1.5	0.75	48	2.00
9/27/11	212	SAC	18	18.8	8.8	9.7	2	0.75	48	2.67
9/27/11	214	SAC	19.8	21.6	8.1	8.3	2	0.75	48	2.67
9/27/11	208	SAC	21.8	21.8	9.6	9.8	2	0.75	48	2.67
9/28/11	214	SAC	19	21.8	6.3	6.4	2	0.75	48	2.67
9/28/11	215	SAC	22.2	22.4	8.4	7.1	2	0.75	48	2.67
9/28/11	219	SAC	23.8	22.6	6.3	7.2	2	0.75	48	2.67
Total (GAL.)							166.65	71.50		222.20

October 2011
2, 4-D/Agridex Use

Date	Site ID	County	Before Temp	After Temp	DO Before	DO After	2, 4-D (Gals.)	AgriDex (Gals.)	Chem. Rate	2,4-D Acres
10/3/11	34	SJ	22.1	22.5	7.1	7.7	2.5	1.25	32	2.50
10/3/11	36	SJ	22.5	22.7	7.6	7.5	2.5	1.25	32	2.50
10/3/11	77	SJ	20.1	20.4	8.1	7.9	2.5	1	32	2.50
10/3/11	76	SJ	20.7	20.9	8.3	8.1	2.5	1	32	2.50
10/3/11	75	SJ	21.1	21.4	8.2	8.9	2.5	1	32	2.50
10/3/11	32	SJ	23.1	22.2	7.2	6	2.75	1	32	2.75
10/3/11	62	SJ	23	23	6.2	6.1	2.75	1	32	2.75
10/3/11	97	CC	21.1	21.4	7.5	7.3	2.25	1	32	2.25
10/3/11	57	SJ	20.6	20.4	7.6	7.8	2.25	1	32	2.25
10/3/11	126	SAC	20.7	20.9	7.9	8.1	2	1	32	2.00
10/3/11	125	SAC	21.1	21.6	8.2	8.5	1	0.5	32	1.00
10/3/11	124	SAC	21.7	21.9	8.3	8.7	1	0.5	32	1.00
10/4/11	8	SJ	20.5	20.8	8	8.1	2	1	32	2.00
10/4/11	10	SJ	20.9	21.1	8.3	8.1	2.75	1.25	32	2.75
10/4/11	92	CC	19.5	19.3	7.8	7.6	1.5	0.5	32	1.50
10/4/11	57	SJ	19.6	19.2	8.3	8.5	2.25	1	32	2.25
10/4/11	18	SJ	21.9	21.8	8.2	9.1	2.75	1	32	2.75
10/4/11	17	SJ	20.9	21	8.7	8.1	2.75	1	32	2.75
10/4/11	16	SJ	20.3	20.6	6.7	8.2	2.75	1	32	2.75
10/10/11	10	SJ	17.9	18.2	8.1	8.2	2.5	1	32	2.50
10/10/11	301	SJ	17	17.8	5.5	5.8	3	1.5	32	3.00
10/10/11	57	SJ	19	19.1	8.7	8.8	2.75	1.5	32	2.75
10/10/11	34	SJ	20.9	21	8.3	9	2.75	1	32	2.75
10/10/11	120	CC	18	19.3	7.9	7.7	1	0.5	32	1.00
10/10/11	128	SAC	19.7	19.9	8.3	8.2	1.5	0.75	32	1.50
10/11/11	62	Sj	19.4	20.1	8.5	9.1	2.75	1	32	2.75
10/11/11	58	SJ	19.1	19.2	6.7	7.7	2.75	1	32	2.75
10/11/11	93	CC	20.3	21.4	7.2	8.1	3	1.5	32	3.00
10/11/11	97	CC	19.3	19.3	7.8	7.6	2.25	1	32	2.25
10/11/11	98	SJ	20.4	20.7	8.8	8.9	2.75	1.5	32	2.75
10/11/11	57	SJ	21.2	21.3	7.3	7.5	2.25	1	32	2.25
10/11/11	107	CC	18.1	19.8	8.1	8.8	2.75	1.25	32	2.75
10/11/11	108	CC	19.8	19.9	8.4	8.6	2.5	1	32	2.50
10/12/11	100	SJ	18.8	18.9	8.4	8.1	2.5	1	32	2.50
10/12/11	52	SJ	19.5	19.9	7.6	8.1	2.75	1.25	32	2.75
10/12/11	300	SJ	16.5	16.8	9.08	9.3	2.5	1.25	32	2.50
10/12/11	301	SJ	17	17.2	1.1	1.5	2.5	1.25	32	2.50
10/12/11	117	CC	19.4	19.6	7.9	7.7	2	1	32	2.00
10/12/11	114	CC	19.7	8.3	8.1	8.3	2	1	32	2.00
10/13/11	10	SJ	19.5	19.6	8	8.1	2.5	1	32	2.50
10/13/11	36	SJ	19.3	19.5	7.9	7.6	2.5	1	32	2.50
10/13/11	107	CC	18.5	18.7	8.3	8.1	2.5	1.25	32	2.50
10/13/11	109	CC	18.6	18.9	8.5	8.4	2	1	32	2.00
10/13/11	112	CC	19.1	19.3	8.1	8.4	0.5	0.25	32	0.50
10/13/11	98	SJ	19	19.5	8.9	9.2	2.75	1.5	32	2.75

Date	Site ID	County	Before Temp	After Temp	DO Before	DO After	2, 4-D (Gals.)	AgriDex (Gals.)	Chem. Rate	2,4-D Acres
10/13/11	104	CC	19.7	19.5	8.5	8.4	2	1	32	2.00
10/13/11	100	SJ	20.6	20	8.8	8.3	2.75	1.5	32	2.75
10/13/11	38	SJ	19.1	19.3	7.2	7.4	2.75	1	32	2.75
10/13/11	76	SJ	17.1	17.6	8.2	8.1	3	1.5	32	3.00
10/13/11	32	SJ	18.8	19.7	7.6	7.6	2.75	0.15	32	2.75
10/13/11	31	SJ	20.3	21.5	8.6	10.1	2.75	2	32	2.75
10/13/11	29	SJ	21.4	20.9	10.8	9.3	2	1.5	32	2.00
10/18/11	402	MER	20	21.1	7.4	7.1	3	1.5	32	3.00
10/19/11	400	MER	19.7	21.2	7.01	7.7	1	0.5	32	1.00
10/19/11	404	MER	20.2	20.8	7.1	8	2.5	1.25	32	2.50
10/20/11	401	MER	19.3	21.4	9.8	8.9	1.5	0.75	32	1.50
10/24/11	404	MER	19.2	20.1	7.9	6.26	1.75	0.875	32	1.75
10/24/11	408	MER	21.2	22	5.2	5.7	1.5	0.75	32	1.50
10/24/11	409	MER	19.2	20.1	5.7	5.6	1	0.5	32	1.00
10/25/11	408	MER	20.7	21.9	5.3	5.7	1.5	0.75	32	1.50
10/25/11	405	MER	18	19	6.32	5.94	1.75	0.875	32	1.75
10/26/11	408	MER	20	21.2	5.6	5.8	2.5	1.5	32	2.50
10/27/11	405	MER	15.6	16.7	7.21	7.05	2	0.8	32	2.00
10/27/11	407	MER	20.2	20.9	6	5.7	2.5	1.5	32	2.50
10/27/11	408	MER	15.6	16.9	6.2	6.8	1	0.5	32	1.00
10/31/11	404	MER	15.8	17.5	8.08	8.09	1.25	0.5	32	1.25
10/31/11	405	MER	14.8	15.4	8.18	9	2.75	1.5	32	2.75
Total (Gal.)							150.25	69.2		150.25

October 2011
Glyphosate/AgriDex Use

Date	Site ID	County	Before Temp	After Temp	DO Before	DO After	Glyphosate (Gals.)	AgriDex (Gals.)	Chem. Rate	Glyphosate Acres
10/3/11	37	SJ	20.3	20.4	6.5	6.6	2	0.75	48	2.67
10/3/11	38	SJ	20.6	20.4	7.4	7.5	2	1	48	2.67
10/3/11	39	SJ	20	19.7	7.8	8.5	2	1	48	2.67
10/4/11	37	SJ	19.7	20.1	6.8	7	2	0.75	48	2.67
10/4/11	38	SJ	19.5	20.2	7.6	7.6	2	0.75	48	2.67
10/4/11	39	SJ	19.2	20	8.4	8.6	2	0.75	48	2.67
10/5/11	267	SOL	19.7	18.9	9.6	9.8	2	0.75	48	2.67
10/5/11	262	SOL	19.8	19.9	9.8	9.8	2	0.75	48	2.67
10/11/11	216	SAC	18.8	21.3	6.5	8.4	1.75	0.75	48	2.33
10/11/11	217	SAC	20.3	21.6	5.3	9.9	1.75	0.75	48	2.33
10/11/11	219	SAC	21.6	21.6	7.3	7.1	2	1	48	2.67
10/12/11	214	SAC	17.8	18.1	6.8	7	2	1	48	2.67
10/12/11	215	SAC	18	18.3	8.3	8.6	2	1	48	2.67
10/12/11	219	SAC	20.2	21.4	7.9	8.2	2	1	48	2.67
10/25/11	413	MER	18	21.3	8.2	2.2	2.25	1	48	3.00
10/26/11	413	MER	15.8	17.1	8.7	1.5	2.25	0.75	48	3.00
10/27/11	413	MER	14.9	19.8	8.9	5.7	2.25	0.75	48	3.00
10/31/11	413	MER	15	17.8	8.1	5.4	1.75	0.75	48	2.33
10/31/11	412	MER	18	17.9	5.6	6.4	1.75	0.75	48	2.33
Totals (Gal.)							37.75	16		50.33

November 2011
2, 4-D/Agridex Use

Date	Site ID	County	Before Temp	After Temp	DO Before	DO After	2, 4-D (Gals.)	AgriDex (Gals.)	Chem. Rate	2,4-D Acres
11/7/11	107	CC	12.8	13	10.7	10.5	2.5	1.25	32	2.5
11/7/11	58	SJ	14.3	14.6	9.01	9.13	2.75	0.625	32	2.75
11/7/11	57	SJ	14.9	14.4	9.4	9.2	2.75	1.25	32	2.75
11/7/11	93	CC	14.9	15.4	9.1	10.2	2.75	1.5	32	2.75
11/7/11	8	SJ	14.3	14.7	8.3	8.1	2.5	1	32	2.5
11/7/11	10	SJ	14.7	14.9	8.2	8	2.5	1	32	2.5
11/8/11	112	CC	12.7	12.7	11.2	11.7	2.5	1.25	32	2.5
11/8/11	97	CC	12.9	13.1	10.3	10.5	2.5	1	32	2.5
11/8/11	92	CC	14.7	14.5	9.9	9.7	2.75	1.25	32	2.75
11/8/11	10	SJ	11.5	13.5	8.1	8.5	2.5	1	32	2.5
11/8/11	8	SJ	14.1	14.3	8.6	8.5	1.5	0.5	32	1.5
11/8/11	62	SJ	13.4	13.9	8.76	8.67	0.25	0.125	32	0.25
11/9/11	18	SJ	13.6	13.7	9.1	8.7	2.5	0.75	32	2.5
11/9/11	17	SJ	13.5	13.8	7.2	8.1	2.5	0.75	32	2.5
11/9/11	16	SJ	14	14.1	9.8	8.2	2.5	1	32	2.5
11/9/11	36	SJ	11.5	11.9	8.1	8.2	2.5	1	32	2.5
11/9/11	34	SJ	12.2	13.4	7.9	7.6	2.5	1	32	2.5
11/9/11	62	SJ	13.6	14.2	8.3	9.2	1.75	0.5	32	1.75
11/9/11	58	SJ	14.2	14.4	9.6	9.3	2.75	1.5	32	2.75
11/10/11	32	SJ	12.2	13.1	9.9	9.1	2.5	1	32	2.5
11/10/11	34	SJ	13.1	13.5	9	8.5	2.5	1	32	2.5
11/10/11	17	SJ	14	14.1	8.2	8.7	2.5	0.75	32	2.5
11/10/11	16	SJ	14.1	14.1	9	7.7	2.5	1	32	2.5
11/10/11	59	SJ	13.5	13.6	8.9	9.1	2.75	1.5	32	2.75
11/10/11	58	SJ	13.9	14.2	9.2	9.4	2.75	1.5	32	2.75
11/10/11	62	SJ	13.5	14.8	7.9	7.2	2.75	2	32	2.75
11/14/11	32	SJ	12.2	13.1	9.8	8.3	2.75	1	32	2.75
11/14/11	29	SJ	13.7	13.9	10.4	9.6	2.5	1	32	2.5
11/14/11	31	SJ	13.7	13.8	13.2	10.8	1.25	0.5	32	1.25
11/14/11	107	CC	12.6	12.8	10.6	10.9	2.5	1.25	32	2.5
11/14/11	61	SJ	13.4	13.3	9.1	9.3	2.75	0.5	32	2.75
11/15/11	112	CC	12.9	13.1	8.3	8.7	2.5	1.25	32	2.5
11/15/11	109	CC	13.1	13.4	8.4	9	2.5	1.25	32	2.5
11/15/11	61	SJ	13.5	14.7	9.3	9.4	2.5	1	32	2.5
11/15/11	62	SJ	13.8	14.5	9.5	9.8	1	0.5	32	1
11/15/11	52	SJ	13	13.4	8.7	8.5	2.5	1	32	2.5
11/15/11	49	SJ	14.2	14.4	9.1	9.2	2.5	1	32	2.5
11/16/11	32	SJ	11	13.2	10.1	9.9	2.75	1	32	2.75
11/16/11	29	SJ	14.4	14.6	10.3	9.7	2.75	1	32	2.75
11/16/11	28	SJ	14.6	14.5	10.2	9.8	0.5	0.25	32	0.5
11/16/11	38	SJ	12.3	12.6	8.5	8.1	2.75	1.25	32	2.75
11/16/11	42	SJ	14.2	14.5	8.8	8.3	2.75	1.25	32	2.75
11/16/11	93	CC	13.2	13.5	10.1	9.7	2.75	1.5	32	2.75
11/16/11	55	SJ	13.6	13.7	8.7	8.4	2.25	1	32	2.25
11/16/11	44	SJ	13.3	13.6	8.5	8.7	2.5	0.75	32	2.5

Date	Site ID	County	Before Temp	After Temp	DO Before	DO After	2, 4-D (Gals.)	AgriDex (Gals.)	Chem. Rate	2,4-D Acres
11/16/11	18	SJ	13.7	13.9	8.6	8.9	2.5	0.75	32	2.5
11/16/11	17	SJ	14.2	14.5	8.8	8.4	2.5	0.75	32	2.5
11/16/11	107	CC	12.2	12.7	10.7	10.3	2.5	1.25	32	2.5
11/16/11	109	CC	13	13.1	10.1	10.4	2.5	1.25	32	2.5
11/17/11	19	SAC	12.4	13.1	10.4	9.7	2.75	1.25	32	2.75
11/17/11	32	SJ	13.9	14.3	9.9	9.7	2.75	1	32	2.75
11/17/11	92	CC	13	13.1	9.8	9.7	2.5	1	32	2.5
11/17/11	26	SJ	13.5	13.7	8.1	8.3	2.75	1	32	2.75
11/17/11	28	SJ	13.8	13.9	8.2	8.5	2.75	1	32	2.75
11/17/11	75	SJ	13.5	13.9	8.1	8.4	2.5	1	32	2.5
11/17/11	107	CC	12.1	12.3	10.1	9.8	2.5	1.25	32	2.5
11/17/11	109	CC	12.6	12.9	10.3	10.7	2.5	1.25	32	2.5
11/21/01	107	CC	13.3	13.6	9.7	9.9	2.5	1.25	32	2.5
11/21/11	76	SJ	12.2	12.4	9.2	9.4	2.5	1.25	32	2.5
11/21/11	75	SJ	12.4	12.8	9.3	9.8	2.5	1.25	32	2.5
11/21/11	8	SJ	13.1	13.6	8.1	8.5	2.75	1	32	2.75
11/21/11	18	SJ	13.6	13.4	9.1	6.8	2.75	1	32	2.75
11/21/11	17	SJ	13.6	13.5	8.8	8.7	2.75	1	32	2.75
11/21/11	19	SAC	11.7	13.2	9.8	10.1	2.75	1	32	2.75
11/21/11	20	SAC	13.4	14.1	9.6	10.3	2.75	1	32	2.75
11/22/11	57	SJ	11.5	11.9	10.5	10.2	2.75	1	32	2.75
11/22/11	32	SJ	11.7	13.5	10.3	10.1	2.75	1	32	2.75
11/22/11	31	SJ	13.8	14.2	9.1	9.5	2.75	1	32	2.75
11/22/11	18	SJ	13.3	13.4	7.7	9.1	2.5	1	32	2.5
11/22/11	40	SJ	12.9	13.1	8.2	8.1	2.5	1	32	2.5
11/22/11	10	SJ	13.3	13.6	8	8.5	2.75	1	32	2.75
11/22/11	26	SJ	13.7	14.1	8.4	8.7	2.75	1	32	2.75
11/23/11	26	SJ	12.6	13.1	8	8.3	2.75	1	32	2.75
11/23/11	10	SJ	13.2	13.6	8.5	8.7	2.75	1	32	2.75
11/23/11	18	SJ	12.9	13	8.7	8.8	2.75	1	32	2.75
11/23/11	17	SJ	13	13.3	6.7	7.7	2.75	1	32	2.75
11/23/11	32	SJ	11.5	12.3	10.2	9.7	2.75	1	32	2.75
11/23/11	29	SJ	12.6	13.2	9.9	9.8	2.75	1	32	2.75
11/23/11	28	SJ	13.2	13.6	9.8	9.7	1.5	0.5	32	1.5
11/23/11	92	CC	11.8	11	9.5	9.3	2.75	1	32	2.75
11/23/11	57	SJ	11.6	11.5	10.4	10.1	2.75	1	32	2.75
11/28/11	32	SJ	11.1	11.5	9.3	9.1	1.5	0.5	32	1.5
11/29/11	17	SJ	13	12.8	9	7.7	2.75	1	32	2.75
11/29/11	32	SJ	11	11.2	9.1	9.8	2.75	1	32	2.75
11/29/11	34	SJ	11.5	11.8	9.5	10.2	2.75	1	32	2.75
11/29/11	47	SJ					2.5	1.25	32	2.5
11/29/11	46	SJ					2.5	1.25	32	2.5
11/30/11	109	CC	11	11.6	10.4	11.6	2.2		32	2.2
Total (Gal.)							218.7	88.25		218.7

November 2011
Glyphosate/AgriDex Use

Date	Site ID	County	Before Temp	After Temp	DO Before	DO After	Glyphosate (Gals.)	AgriDex (Gals.)	Chem. Rate	Glyphosate Acres
11/2/11	412	MER	14.6	15.1	8.7	8.9	1.50	0.50	48	2.00
11/3/11	412	MER	15.1	16	8	8.1	1.50	0.50	48	2.00
11/3/11	412	MER	16.8	16.6	8.2	8	1.50	0.50	48	2.00
11/7/11	62	SJ	13.5	13.7	5.5	5.1	2.00	0.75	48	2.67
11/7/11	42	SJ	14.8	14.8	8.7	8.9	1.00	0.25	48	1.33
11/8/11	12	SJ	13.9	13.3	8.47	7.77	1.75	0.75	48	2.33
11/8/11	62	SJ	14.3	14.9	6.9	7.9	2.00	0.75	48	2.67
11/8/11	38	SJ	15.7	15.8	7.8	8.2	0.50	0.25	48	0.67
11/8/11	34	SJ	16.9	16.9	8.5	8.5	0.50	0.25	48	0.67
11/9/11	412	MER					2.25	0.75	48	3.00
11/10/11	413	MER	13.4	13.9	9.8	8.2	2.25	1.25	48	3.00
11/10/11	18	SJ	13.9	13.9	9.8	6.8	2.00	0.75	48	2.67
11/14/11	412	MER	13.8	14.3	9.3	8.5	2.25	1.25	48	3.00
11/15/11	40	SJ	13.1	13.5	8.1	8.3	2.00	0.75	48	2.67
11/15/11	41	SJ	13.5	13.8	8.2	8.6	2.00	0.75	48	2.67
11/15/11	410	MER	14.3	14.6	9.2	8.7	2.25	1.50	48	3.00
11/16/11	214	SAC	14.1	14.9	11.5	10	2.00	0.75	48	2.67
11/16/11	216	SAC	14.9	14.9	9.5	9.9	1.75	0.50	48	2.33
11/17/11	216	SAC	11.7	14.9	5.1	11.1	2.00	0.75	48	2.67
11/21/11	12	SJ	12.8	13.4	9.7	10.2	2.00	0.75	48	2.67
11/21/11	60	SJ	13.9	13.1	9.6	9.8	2.00	0.75	48	2.67
11/22/11	79	ALA	11.5	12.5	9.9	9.6	2.00	0.75	48	2.67
11/28/11	26	SJ	12.3	12.7	8.1	8.5	2.00	0.75	48	2.67
11/28/11	75	SJ	12.1	12.4	9.8	10.1	1.50	0.75	48	2.00
11/29/11	18	SAC	12.8	12.9	8.2	8.9	2.00	0.75	48	2.67
11/30/11	79	ALA	11.3	11.5	9.6	9.8	1.75	0.25	48	2.33
11/30/11	93	CC	11.1	11.5	9.1	8.8	2.00	0.50	48	2.67
Total (GAL.)							48.25	96.50		64.33

APPENDIX B

Site Maps and Monitoring and Laboratory Data

Site 13: Sampling Results

2,4- D Residue

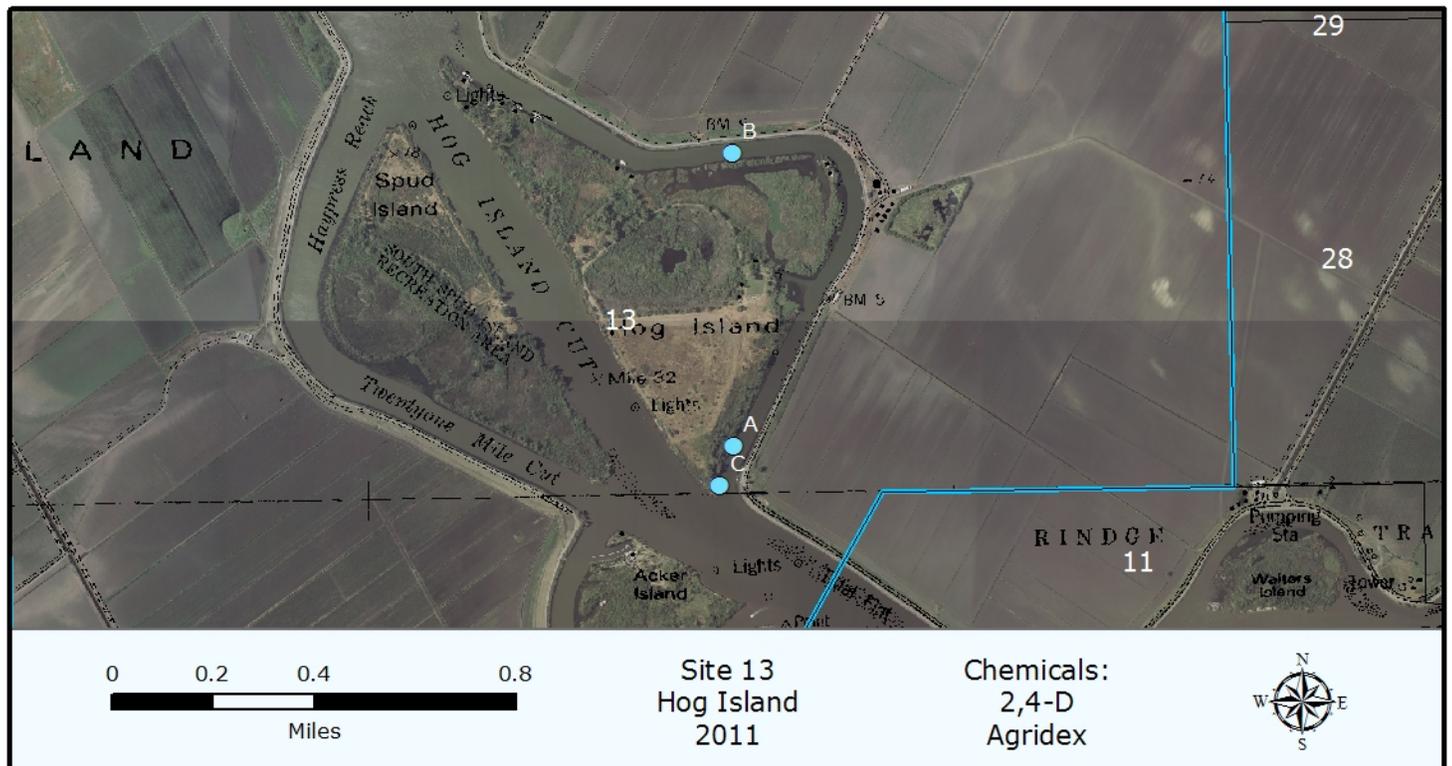
Sample Location	Lab Sample ID	DBW ID	Date Sample Taken	Date Sample Received	Date Sample Extracted	Date Sample Analyzed	2,4-D (ppb)
1A	2011-1831	H013-092711-3	9/27/2011	9/27/2011	9/30/2011	10/10/2011	ND
1C	2011-1830	H013-092711-2	9/27/2011	9/27/2011	9/30/2011	10/10/2011	ND
2B	2011-1833	H013-092711-5	9/27/2011	9/27/2011	9/30/2011	10/10/2011	ND
3A	2011-2030	H013-100311-3	10/3/2011	10/3/2011	10/4/2011	11/22/2011	0.2
3B	2011-2032	H013-100311-5	10/3/2011	10/3/2011	10/4/2011	11/22/2011	0.2
3C	2011-2029	H013-100311-2	10/3/2011	10/3/2011	10/4/2011	11/22/2011	0.2

Agridex Residue

Sample Location	Lab Sample ID	DBW ID	Date Sample Taken	Date Sample Received	Date Sample Extracted	Date Sample Analyzed	Agridex (ppb)
1A	2011-1831	H013-092711-3	9/27/2011	9/27/2011	9/28/2011	10/4/2011	ND
1C	2011-1830	H013-092711-2	9/27/2011	9/27/2011	9/28/2011	10/4/2011	ND
2B	2011-1833	H013-092711-5	9/27/2011	9/27/2011	9/28/2011	10/4/2011	ND
3A	2011-2030	H013-100311-3	10/3/2011	10/3/2011	10/4/2011	10/10/2011	ND
3B	2011-2032	H013-100311-5	10/3/2011	10/3/2011	10/4/2011	10/10/2011	ND
3C	2011-2029	H013-100311-2	10/3/2011	10/3/2011	10/4/2011	10/10/2011	ND

Water Quality

Sample Location	Sample ID	Date	UTM Easting	UTM Northing	Time	Water Temp (°C)	Conductivity (mS/cm)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
1A	H013-092711-3	09/27/11	636428	4207104	10:03	21.16	0.349	0.17	7.25	7.41	13.2
1C	H013-092711-2	09/27/11	636387	4206974	09:03	21.05	0.348	0.17	7.22	7.32	13.4
2B	H013-092711-5	09/27/11	636408	4208024	12:27	21.91	0.354	0.17	7.18	7.29	8.4
3A	H013-100311-3	10/03/11	636395	4206972	09:47	20.11	0.315	0.15	6.84	7.23	8.0
3B	H013-100311-5	10/03/11	636367	4208006	10:11	20.11	0.311	0.15	7.09	7.30	8.6
3C	H013-100311-2	10/03/11	636385	4206974	09:42	19.83	0.317	0.15	7.05	7.33	5.8



Site 14: Sampling Results

2,4- D Residue

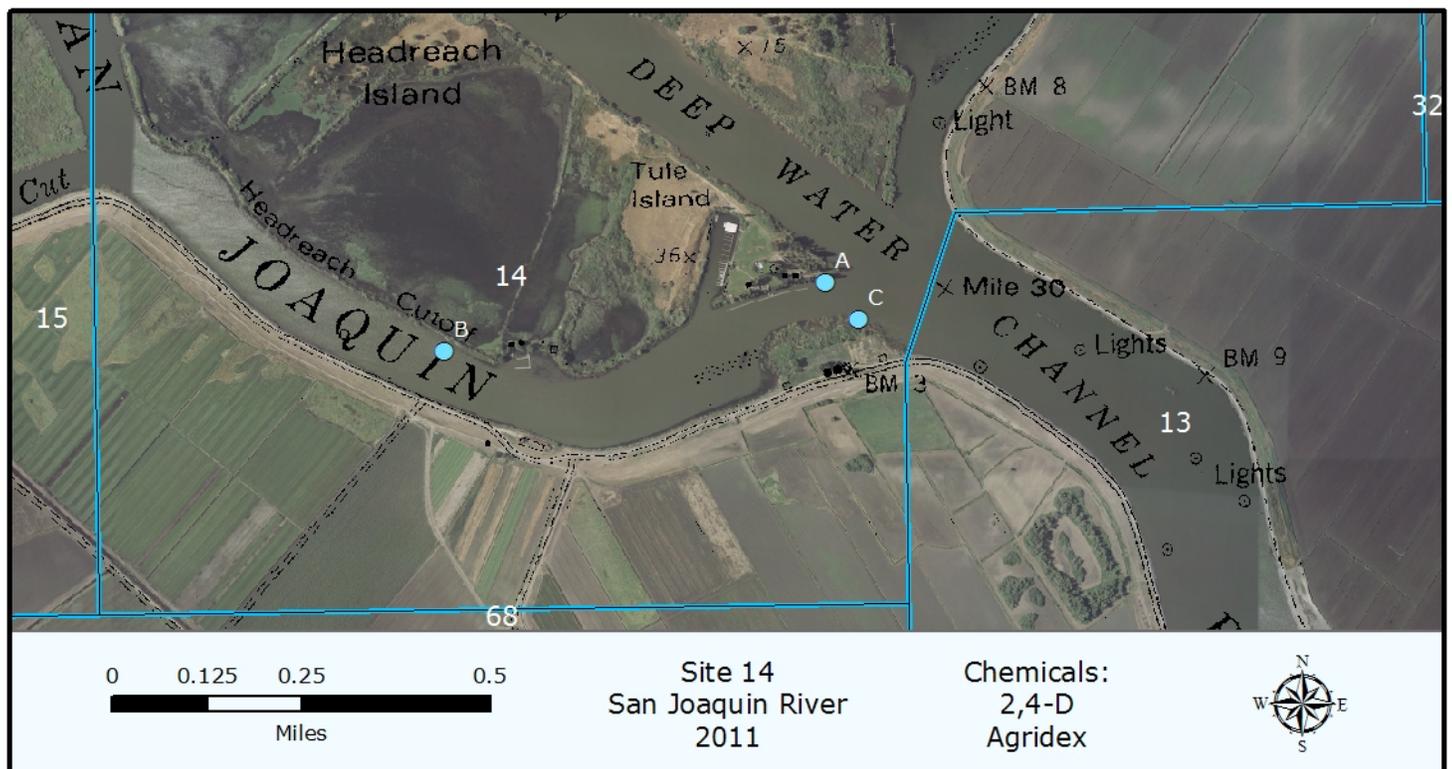
Sample Location	Lab Sample ID	DBW ID	Date Sample Taken	Date Sample Received	Date Sample Extracted	Date Sample Analyzed	2,4-D (ppb)
1A	2011-1928	H014-092911-3	9/29/2011	9/29/2011	10/4/2011	11/9/2011	ND
1C	2011-1927	H014-092911-2	9/29/2011	9/29/2011	10/4/2011	11/9/2011	0.2
2B	2011-1930	H014-092911-5	9/29/2011	9/29/2011	10/4/2011	11/9/2011	0.1
3A	2011-2058	H014-100411-3	10/4/2011	10/4/2011	10/21/2011	11/30/2011	0.2
3B	2011-2060	H014-100411-5	10/4/2011	10/4/2011	10/21/2011	11/30/2011	0.2
3C	2011-2057	H014-100411-2	10/4/2011	10/4/2011	10/21/2011	11/30/2011	0.2

Agridex Residue

Sample Location	Lab Sample ID	DBW ID	Date Sample Taken	Date Sample Received	Date Sample Extracted	Date Sample Analyzed	Agridex (ppb)
1A	2011-1928	H014-092911-3	9/29/2011	9/29/2011	10/3/2011	11/2/2011	ND
1C	2011-1927	H014-092911-2	9/29/2011	9/29/2011	10/3/2011	11/2/2011	ND
2B	2011-1930	H014-092911-5	9/29/2011	9/29/2011	10/3/2011	11/2/2011	ND
3A	2011-2058	H014-100411-3	10/4/2011	10/4/2011	10/5/2011	10/10/2011	ND
3B	2011-2060	H014-100411-5	10/4/2011	10/4/2011	10/5/2011	10/10/2011	ND
3C	2011-2057	H014-100411-2	10/4/2011	10/4/2011	10/5/2011	10/10/2011	ND

Water Quality

Sample Location	Sample ID	Date	UTM Easting	UTM Northing	Time	Water Temp (°C)	Conductivity (mS/cm)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
1A	H014-092911-3	09/29/11	633903	4209932	07:25	21.75	0.257	0.12	6.90	7.25	6.8
1C	H014-092911-2	09/29/11	633974	4209850	07:20	21.62	0.273	0.13	6.42	7.25	6.7
2B	H014-092911-5	09/29/11	633088	4209789	10:34	22.18	0.268	0.13	8.46	7.36	4.2
3A	H014-100411-3	10/04/11	633887	4209931	10:06	19.78	0.298	0.14	7.19	7.25	6.6
3B	H014-100411-5	10/04/11	633073	4209796	10:21	19.99	0.250	0.12	7.23	7.41	11.5
3C	H014-100411-2	10/04/11	633972	4209851	10:01	19.78	0.300	0.15	7.45	7.38	3.9



Site 15: Sampling Results

2, 4-D Residue

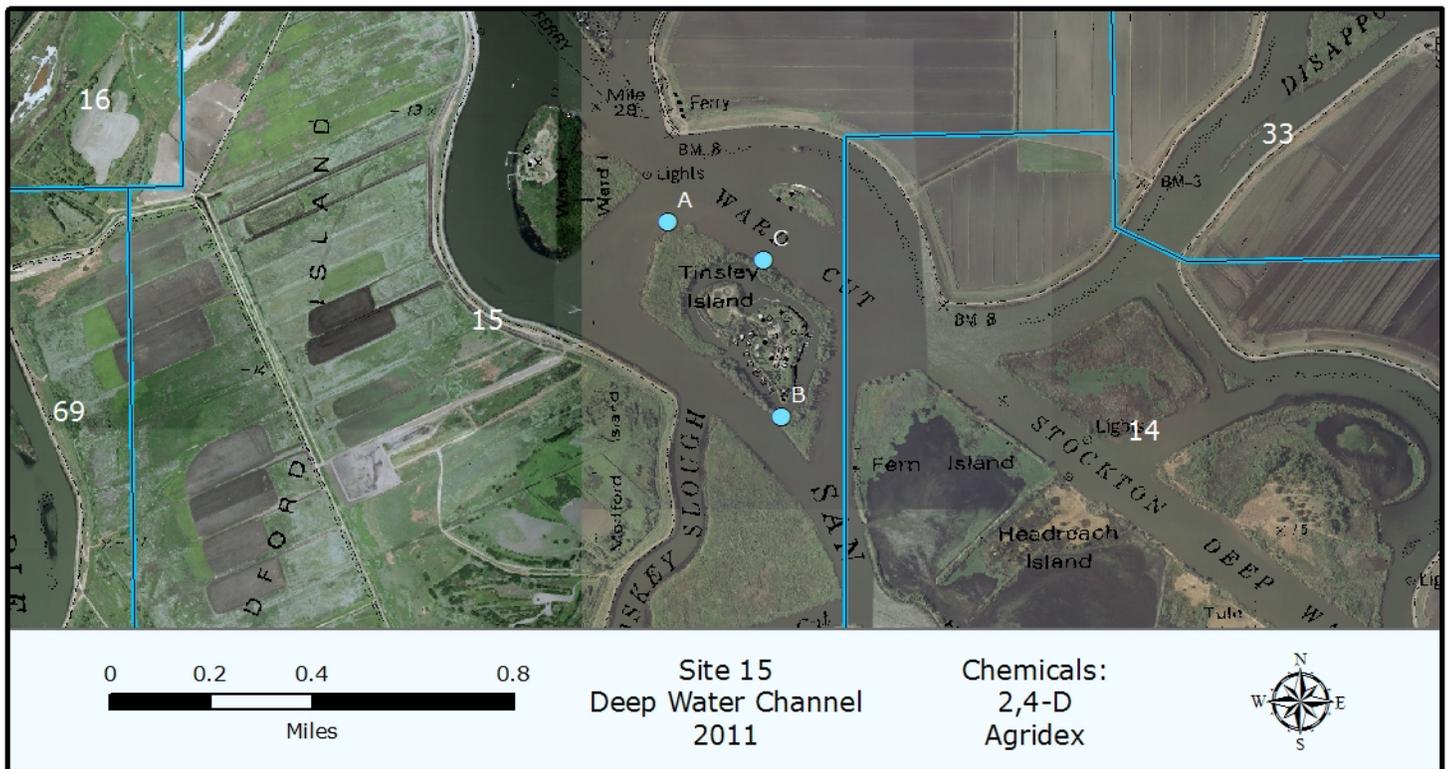
Sample Location	Lab Sample ID	DBW ID	Date Sample Taken	Date Sample Received	Date Sample Extracted	Date Sample Analyzed	2,4-D (ppb)
1A	2011-1826	H015-092711-3	9/27/2011	9/27/2011	9/29/2011	10/6/2011	0.1
1C	2011-1825	H015-092711-2	9/27/2011	9/27/2011	9/29/2011	10/6/2011	0.1
2B	2011-1828	H015-092711-5	9/27/2011	9/27/2011	9/29/2011	10/6/2011	0.1
3A	2011-2035	H015-100311-3	10/3/2011	10/3/2011	10/4/2011	11/22/2011	0.2
3B	2011-2037	H015-100311-5	10/3/2011	10/3/2011	10/4/2011	11/22/2011	0.2
3C	2011-2034	H015-100311-2	10/3/2011	10/3/2011	10/4/2011	11/22/2011	0.2

Agridex Residue

Sample Location	Lab Sample ID	DBW ID	Date Sample Taken	Date Sample Received	Date Sample Extracted	Date Sample Analyzed	Agridex (ppb)
1A	2011-1826	H015-092711-3	9/27/2011	9/27/2011	9/28/2011	10/4/2011	ND
1C	2011-1825	H015-092711-2	9/27/2011	9/27/2011	9/28/2011	10/4/2011	ND
2B	2011-1828	H015-092711-5	9/27/2011	9/27/2011	9/28/2011	10/4/2011	ND
3A	2011-2035	H015-100311-3	10/3/2011	10/3/2011	10/4/2011	10/10/2011	ND
3B	2011-2037	H015-100311-5	10/3/2011	10/3/2011	10/4/2011	10/10/2011	ND
3C	2011-2034	H015-100311-2	10/3/2011	10/3/2011	10/4/2011	10/10/2011	ND

Water Quality

Sample Location	Sample ID	Date	UTM Easting	UTM Northing	Time	Water Temp (°C)	Conductivity (mS/cm)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
1A	H015-092711-3	09/27/11	631776	4211416	08:46	21.25	0.205	0.09	7.22	7.39	3.6
1C	H015-092711-2	09/27/11	632081	4211294	07:49	21.24	.1985	0.09	7.52	7.63	3.7
2B	H015-092711-5	09/27/11	632140	4210796	10:26	21.68	0.202	0.09	7.74	7.37	3.0
3A	H015-100311-3	10/03/11	631775	4211415	10:57	20.59	0.217	0.10	7.82	7.48	3.3
3B	H015-100311-5	10/03/11	632134	4210790	11:07	20.65	0.222	0.10	7.73	7.41	4.0
3C	H015-100311-2	10/03/11	631999	4211332	10:52	20.60	0.209	0.10	7.91	7.66	5.0



Site 16: Sampling Results

2, 4 – D Residue

Sample Location	Lab Sample ID	DBW ID	Date Sample Taken	Date Sample Received	Date Sample Extracted	Date Sample Analyzed	2,4-D (ppb)
1A	2011-1923	H016-092911-3	9/29/2011	9/29/2011	10/4/2011	11/9/2011	0.1
1C	2011-1922	H016-092911-2	9/29/2011	9/29/2011	10/4/2011	11/9/2011	0.1
2B	2011-1925	H016-092911-5	9/29/2011	9/29/2011	10/4/2011	11/9/2011	ND
3A	2011-2053	H016-100411-3	10/4/2011	10/4/2011	10/21/2011	11/30/2011	0.1
3B	2011-2055	H016-100411-5	10/4/2011	10/4/2011	10/21/2011	11/30/2011	0.2
3C	2011-2052	H016-100411-2	10/4/2011	10/4/2011	10/21/2011	11/30/2011	0.1

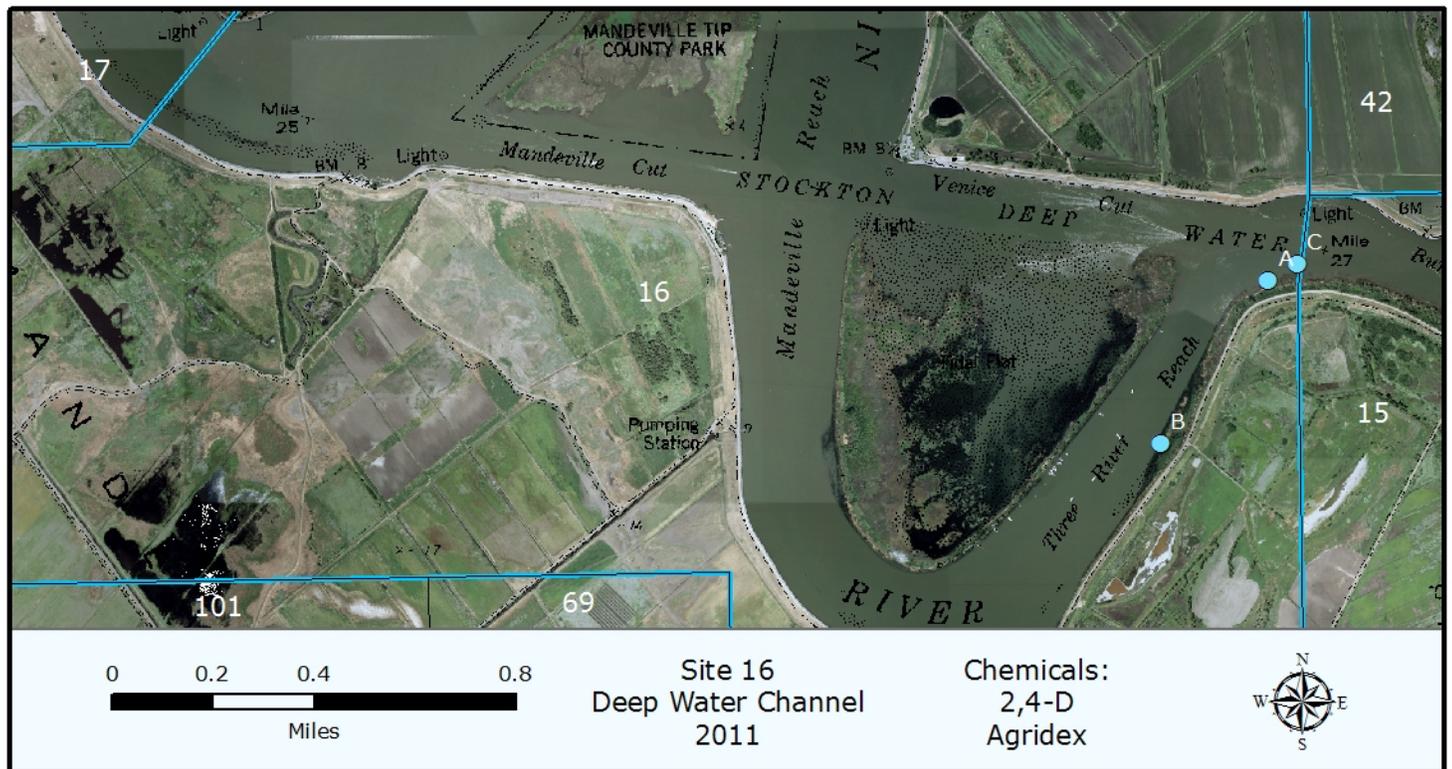
Agridex Residue

Sample Location	Lab Sample ID	DBW ID	Date Sample Taken	Date Sample Received	Date Sample Extracted	Date Sample Analyzed	Agridex (ppb)
1A	2011-1923	H016-092911-3	9/29/2011	9/29/2011	10/3/2011	11/2/2011	ND
1C	2011-1922	H016-092911-2	9/29/2011	9/29/2011	10/3/2011	11/2/2011	ND
2B	2011-1925	H016-092911-5	9/29/2011	9/29/2011	10/3/2011	11/2/2011	ND
3A	2011-2053	H016-100411-3	10/4/2011	10/4/2011	10/5/2011	10/10/2011	ND
3B	2011-2055	H016-100411-5	10/4/2011	10/4/2011	10/5/2011	10/10/2011	ND
3C	2011-2052	H016-100411-2	10/4/2011	10/4/2011	10/5/2011	10/10/2011	ND

Water Quality

Sample Location	Sample ID	Date	UTM Easting	UTM Northing	Time	Water Temp (°C)	Conductivity (mS/cm)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
1A	H016-092911-3	09/29/11	630116	4212719	09:42	21.65	.1823	0.08	7.37	7.30	4.4
1C	H016-092911-2	09/29/11	630223	4212735	09:39	21.61	.1810	0.08	8.78	6.85	3.3
2B	H016-092911-5	09/29/11	629770	4212197	12:00	22.1	.179	.08	2.06	7.2	23.6
3A	H016-100411-3	10/04/11	630105	4212719	09:35	20.04	0.207	0.10	7.35	7.40	608*
3B	H016-100411-5	10/04/11	629768	4212209	09:46	19.81	.1701	0.08	7.03	7.25	3.3
3C	H016-100411-2	10/04/11	630220	4212738	09:30	20.02	0.206	0.09	7.28	7.51	551*

*High Concentration of Silt



Site 58: Sampling Results

2, 4-D Residue

Sample Location	Lab Sample ID	DBW ID	Date Sample Taken	Date Sample Received	Date Sample Extracted	Date Sample Analyzed	2,4-D (ppb)
1A	2011-1857	H058-092811-3	9/28/2011	9/28/2011	9/30/2011	10/10/2011	0.1
1C	2011-1856	H058-092811-2	9/28/2011	9/28/2011	9/30/2011	10/10/2011	0.2
2B	2011-1859	H058-092811-5	9/28/2011	9/28/2011	9/30/2011	10/10/2011	0.1
3A	2011-2048	H058-100411-3	10/4/2011	10/4/2011	10/21/2011	11/30/2011	0.2
3B	2011-2050	H058-100411-5	10/4/2011	10/4/2011	10/21/2011	11/30/2011	0.2
3C	2011-2047	H058-100411-2	10/4/2011	10/4/2011	10/21/2011	11/30/2011	0.3

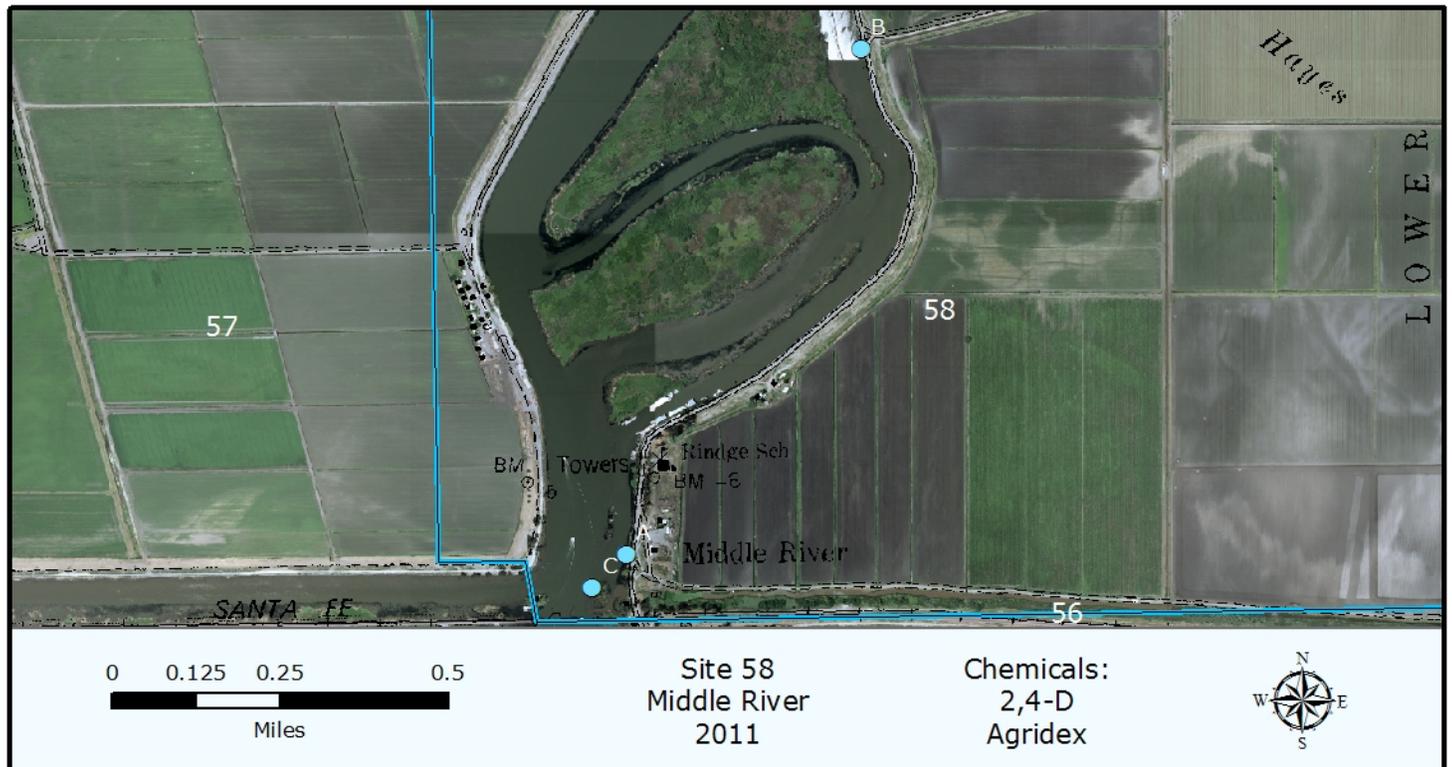
Agridex Residue

Sample Location	Lab Sample ID	DBW ID	Date Sample Taken	Date Sample Received	Date Sample Extracted	Date Sample Analyzed	Agridex (ppb)
1A	2011-1857	H058-092811-3	9/28/2011	9/28/2011	9/30/2011	11/1/2011	ND
1C	2011-1856	H058-092811-2	9/28/2011	9/28/2011	9/30/2011	11/1/2011	ND
2B	2011-1859	H058-092811-5	9/28/2011	9/28/2011	9/30/2011	11/1/2011	ND
3A	2011-2048	H058-100411-3	10/4/2011	10/4/2011	10/5/2011	10/10/2011	ND
3B	2011-2050	H058-100411-5	10/4/2011	10/4/2011	10/5/2011	10/10/2011	ND
3C	2011-2047	H058-100411-2	10/4/2011	10/4/2011	10/5/2011	10/10/2011	ND

Water Quality

Sample Location	Sample ID	Date	UTM Easting	UTM Northing	Time	Water Temp (°C)	Conductivity (mS/cm)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
1A	H058-092811-3	09/28/11	629019	4200314	08:13	21.80	0.284	0.14	6.71	7.27	4.7
1C	H058-092811-2	09/28/11	628936	4200238	08:03	21.84	0.297	0.14	6.96	7.33	3.3
2B	H058-092811-5	09/28/11	629580	4201527	09:56	22.02	0.296	0.14	7.06	7.25	4.4
3A	H058-100411-3	10/04/11	629016	4200320	08:59	20.20	0.244	0.12	5.87	7.21	300*
3B	H058-100411-5	10/04/11	629576	4201533	09:10	20.38	0.248	0.12	7.15	7.40	3.6
3C	H058-100411-2	10/04/11	628932	4200232	08:54	20.35	0.243	0.12	7.03	7.26	3.1

*Silt



Site 59: Sampling Results

2,4-D Residue

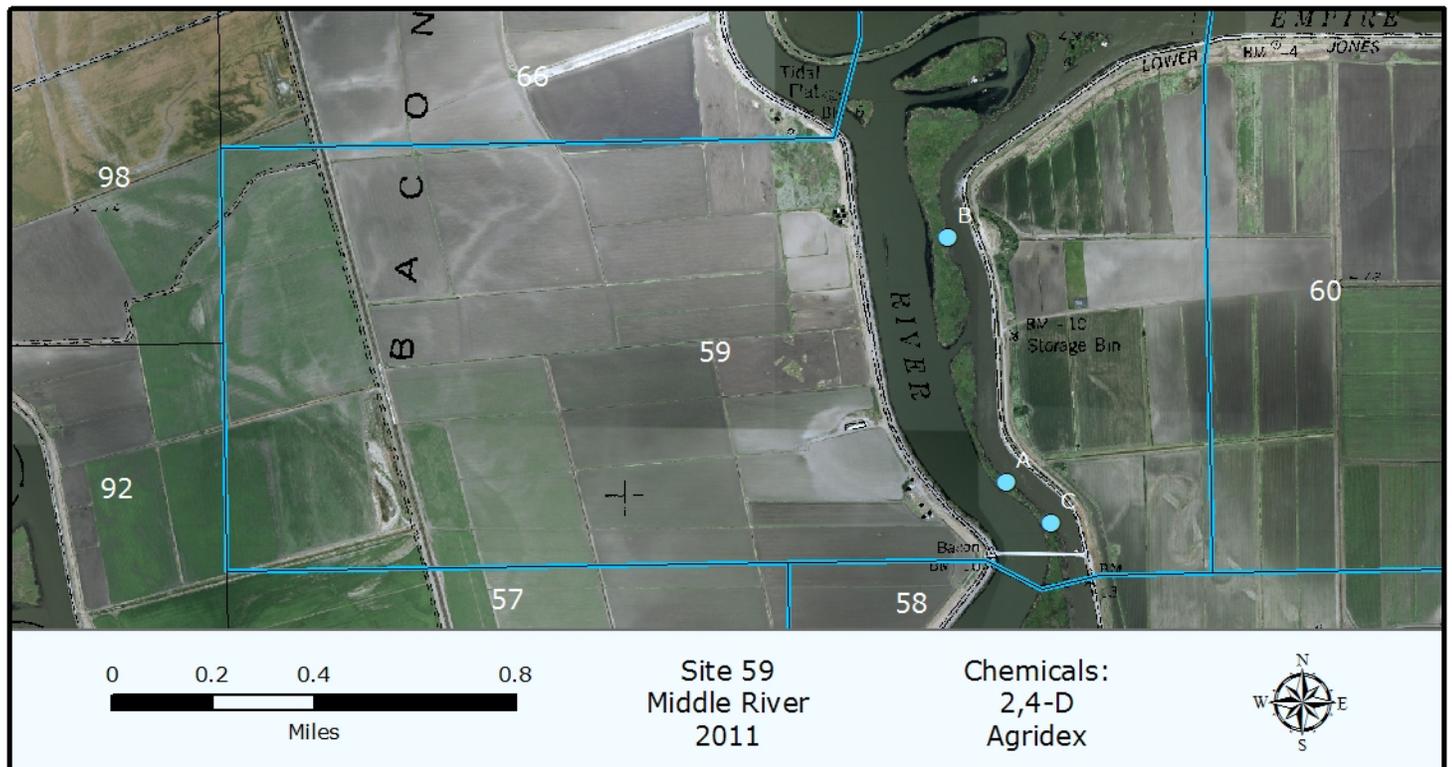
Sample Location	Lab Sample ID	DBW ID	Date Sample Taken	Date Sample Received	Date Sample Extracted	Date Sample Analyzed	2,4-D (ppb)
1A	2011-1821	H059-092611-3	9/27/2011	9/27/2011	9/29/2011	10/6/2011	0.1
1C	2011-1820	H059-092611-2	9/27/2011	9/27/2011	9/29/2011	10/6/2011	0.1
2B	2011-1823	H059-092611-5	9/27/2011	9/27/2011	9/29/2011	10/6/2011	0.1
3A	2011-1993	H059-093011-3	9/30/2011	9/30/2011	10/4/2011	11/9/2011	ND
3B	2011-1995	H059-093011-5	9/30/2011	9/30/2011	10/4/2011	11/9/2011	0.1
3C	2011-1992	H059-093011-2	9/30/2011	9/30/2011	10/4/2011	11/9/2011	0.1

Agridex Residue

Sample Location	Lab Sample ID	DBW ID	Date Sample Taken	Date Sample Received	Date Sample Extracted	Date Sample Analyzed	Agridex (ppb)
1A	2011-1821	H059-092611-3	9/27/2011	9/27/2011	9/28/2011	10/3/2011	ND
1C	2011-1820	H059-092611-2	9/27/2011	9/27/2011	9/28/2011	10/3/2011	ND
2B	2011-1823	H059-092611-5	9/27/2011	9/27/2011	9/28/2011	10/3/2011	ND
3A	2011-1993	H059-093011-3	9/30/2011	9/30/2011	10/4/2011	11/17/2011	ND
3B	2011-1995	H059-093011-5	9/30/2011	9/30/2011	10/4/2011	11/17/2011	ND
3C	2011-1992	H059-093011-2	9/30/2011	9/30/2011	10/4/2011	11/17/2011	ND

Water Quality

Sample Location	Sample ID	Date	UTM Easting	UTM Northing	Time	Water Temp (°C)	Conductivity (mS/cm)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
1A	H059-092611-3	09/26/11	629239	4202230	09:53:45	21.73	0.274	0.13	6.95	7.50	5.6
1C	H059-092611-2	09/26/11	629379	4202098	08:58:55	21.75	0.237	0.11	6.56	7.40	9.2
2B	H059-092611-5	09/26/11	629051	4203012	12:29:21	21.95	0.278	0.13	6.92	7.37	5.6
3A	H059-093011-3	09/30/11	629242	4202230	08:55:11	21.72	0.279	0.13	7.05	7.24	4.8
3B	H059-093011-5	09/30/11	629048	4203017	09:12:08	21.65	0.283	0.14	6.98	7.21	4.3
3C	H059-093011-2	09/30/11	629382	4202098	08:50:33	21.94	0.221	0.10	7.19	7.40	8.6



Site 68: Sampling Results

2,4-D Residue

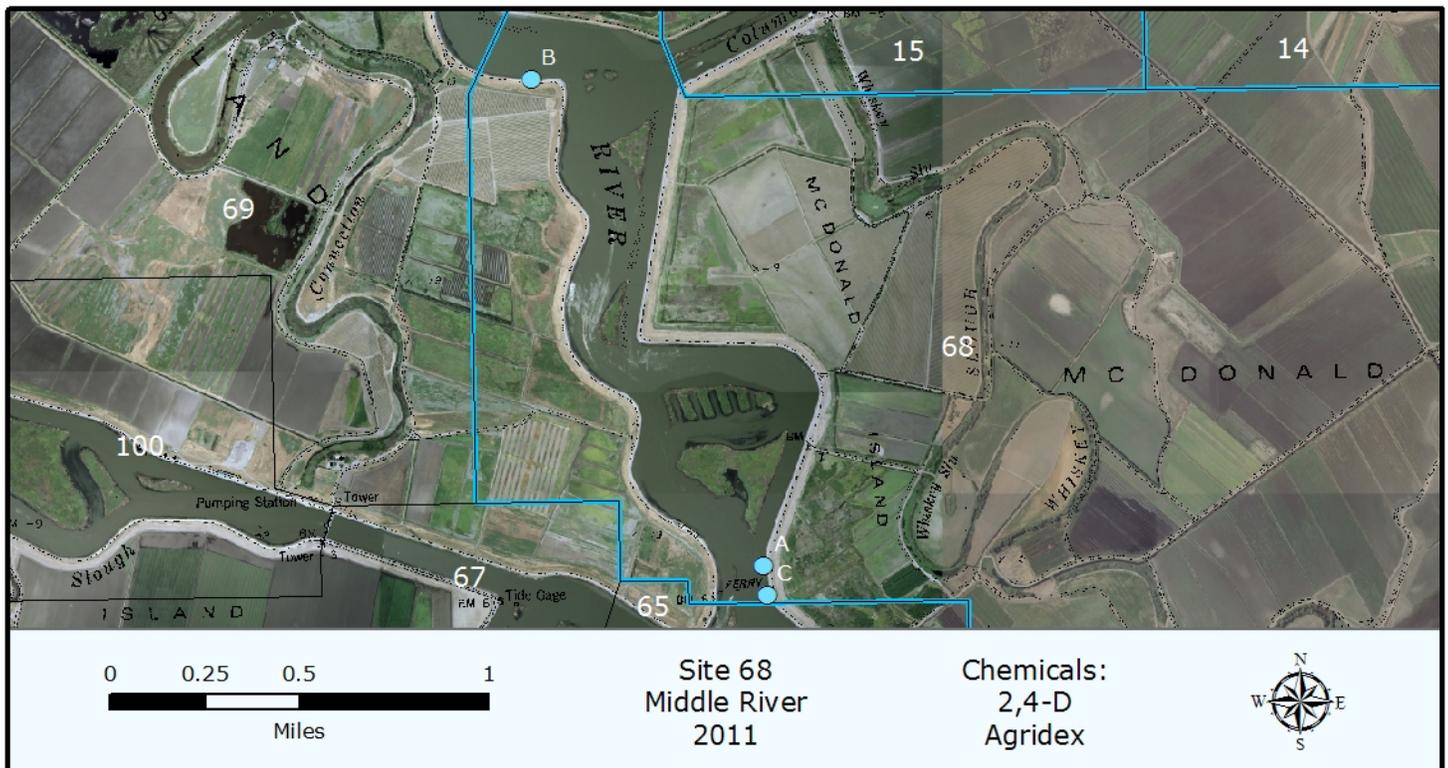
Sample Location	Lab Sample ID	DBW ID	Date Sample Taken	Date Sample Received	Date Sample Extracted	Date Sample Analyzed	2,4-D (ppb)
1A	2011-1816	H068-092611-3	9/27/2011	9/27/2011	9/29/2011	10/6/2011	0.1
1C	2011-1815	H068-092611-2	9/27/2011	9/27/2011	9/29/2011	10/6/2011	0.1
2B	2011-1818	H068-092611-5	9/27/2011	9/27/2011	9/29/2011	10/6/2011	0.1
3A	2011-1998	H068-093011-3	10/3/2011	10/3/2011	10/4/2011	11/22/2011	0.1
3B	2011-2000	H068-093011-5	10/3/2011	10/3/2011	10/4/2011	11/22/2011	0.1
3C	2011-1997	H068-093011-2	10/3/2011	10/3/2011	10/4/2011	11/22/2011	0.1

Agridex Residue

Sample Location	Lab Sample ID	DBW ID	Date Sample Taken	Date Sample Received	Date Sample Extracted	Date Sample Analyzed	Agridex (ppb)
1A	2011-1816	H068-092611-3	9/27/2011	9/27/2011	9/28/2011	9/30/2011	ND
1C	2011-1815	H068-092611-2	9/27/2011	9/27/2011	9/28/2011	9/30/2011	ND
2B	2011-1818	H068-092611-5	9/27/2011	9/27/2011	9/28/2011	9/30/2011	ND
3A	2011-1998	H068-093011-3	9/30/2011	9/30/2011	10/4/2011	11/17/2011	ND
3B	2011-2000	H068-093011-5	9/30/2011	9/30/2011	10/4/2011	11/17/2011	ND
3C	2011-1997	H068-093011-2	9/30/2011	9/30/2011	10/4/2011	11/17/2011	ND

Water Quality

Sample Location	Sample ID	Date	UTM Easting	UTM Northing	Time	Water Temp (°C)	Conductivity (mS/cm)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
1A	H068-092611-3	09/26/11	630739	4207194	08:50	21.7	.20	.09	7.4	7.4	4.8
1C	H068-092611-2	09/26/11	630751	4207083	07:37	21.61	.1946	0.09	7.45	7.58	3.9
2B	H068-092611-5	09/26/11	629750	4209265	11:36	21.89	.1895	0.09	7.86	7.67	7.5
3A	H068-093011-3	09/30/11	630740	4207194	09:29	21.43	.1800	0.08	7.70	7.30	4.2
3B	H068-093011-5	09/30/11	629790	4209264	09:44	21.22	.1673	0.07	7.97	7.41	4.2
3C	H068-093011-2	09/30/11	630758	4207071	09:25	21.45	.1793	0.08	7.78	7.29	5.1



Site 216: Sampling Results

Glyphosate Residue

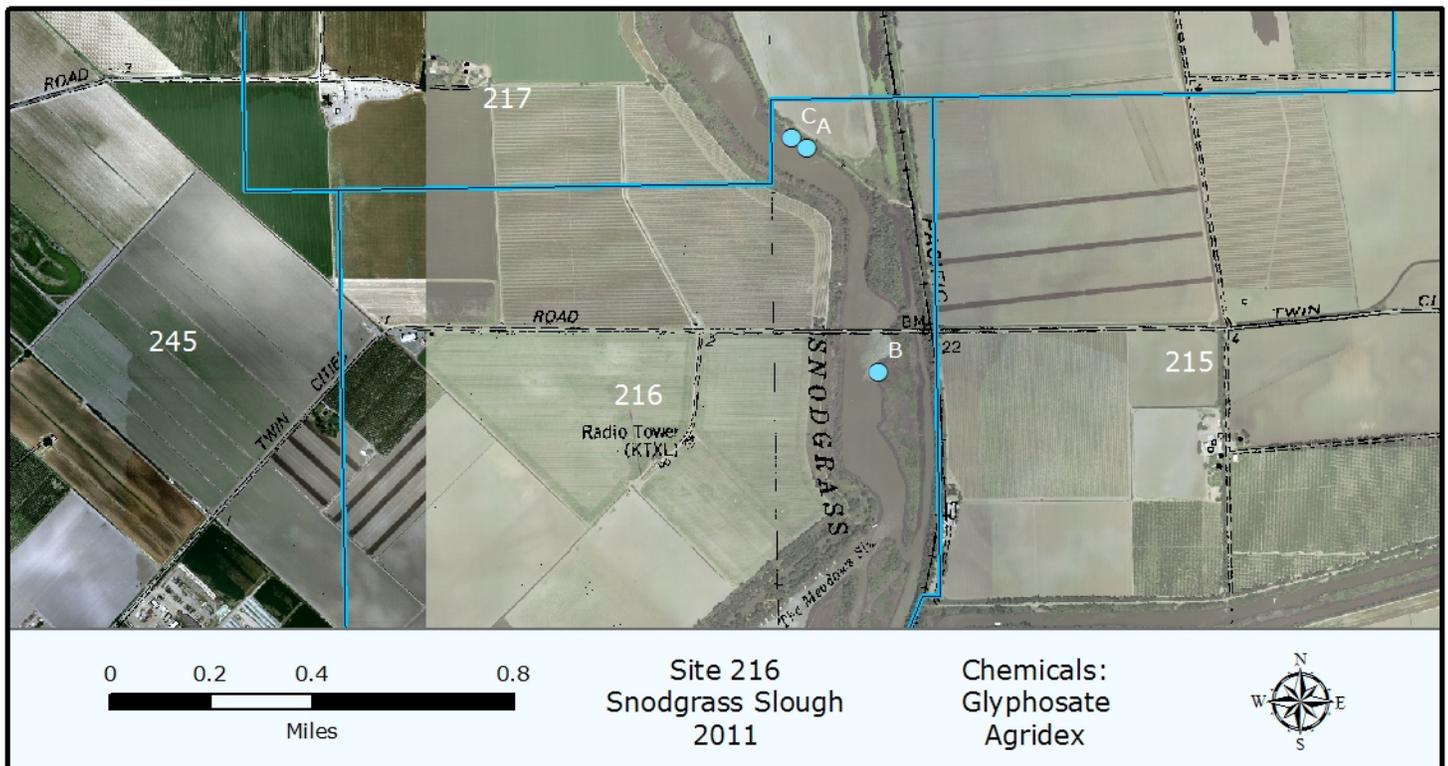
Sample Location	Lab Sample ID	DBW ID	Date Sample Taken	Date Sample Received	Date Sample Extracted	Date Sample Analyzed	Glyphosate (ppb)
1A	2011-2210	H216-101111-3	10/11/2011	10/11/2011	10/17/2011	10/17/2011	ND
1C	2011-2209	H216-101111-2	10/11/2011	10/11/2011	10/17/2011	10/17/2011	ND
2B	2011-2212	H216-101111-5	10/11/2011	10/11/2011	10/17/2011	10/17/2011	ND
3A	2011-2378	H216-101811-3	10/18/2011	10/18/2011	10/24/2011	10/24/2011	ND
3B	2011-2380	H216-101811-5	10/18/2011	10/18/2011	10/24/2011	10/24/2011	ND
3C	2011-2377	H216-101811-2	10/18/2011	10/18/2011	10/24/2011	10/24/2011	ND

Agridex Residue

Sample Location	Lab Sample ID	DBW ID	Date Sample Taken	Date Sample Received	Date Sample Extracted	Date Sample Analyzed	Agridex (ppb)
1A	2011-2210	H216-101111-3	10/11/2011	10/11/2011	10/18/2011	11/14/2011	ND
1C	2011-2209	H216-101111-2	10/11/2011	10/11/2011	10/18/2011	11/14/2011	ND
2B	2011-2212	H216-101111-5	10/11/2011	10/11/2011	10/18/2011	11/14/2011	ND
3A	2011-2378	H216-101811-3	10/18/2011	10/18/2011	10/24/2011	10/24/2011	ND
3B	2011-2380	H216-101811-5	10/18/2011	10/18/2011	10/24/2011	10/24/2011	ND
3C	2011-2377	H216-101811-2	10/18/2011	10/18/2011	10/24/2011	10/24/2011	ND

Water Quality

Sample Location	Sample ID	Date	UTM Easting	UTM Northing	Time	Water Temp (°C)	Conductivity (mS/cm)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
1A	H216-101111-3	10/11/2011	631214	4238179	10:10	18.40	.128	.05	4.4	7.1	0
1C	H216-101111-2	10/11/2011	631164	4238209	09:05	18.19	.127	.05	4.1	7.7	0
2B	H216-101111-5	10/11/2011	631441	4237461	11:40	19.29	.110	.04	9.8	7.4	0
3A	H216-101811-3	10/18/2011	631216	4238172	09:15	19.2	0	0	6.8	0	0
3B	H216-101811-5	10/18/2011	631445	6237492	09:55	19.1	0	0	8.4	0	0
3C	H216-101811-2	10/18/2011	631161	4238209	09:10	19.3	0	0	7.0	0	0



Site 217: Sampling Results

Glyphosate Residue

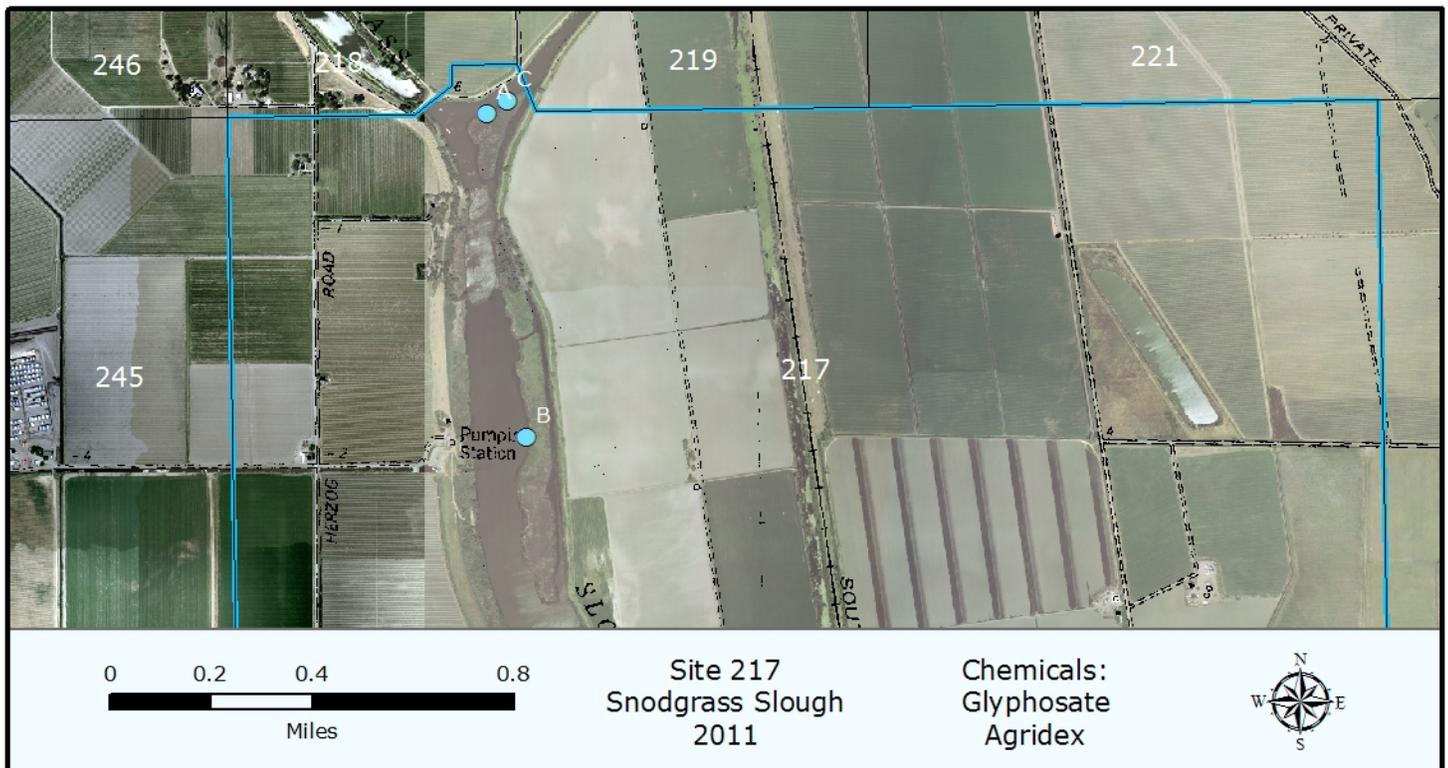
Sample Location	Lab Sample ID	DBW ID	Date Sample Taken	Date Sample Received	Date Sample Extracted	Date Sample Analyzed	Glyphosate (ppb)
1A	2011-2215	H217-101111-3	10/11/2011	10/11/2011	10/17/2011	10/17/2011	ND
1C	2011-2214	H217-101111-2	10/11/2011	10/11/2011	10/17/2011	10/17/2011	ND
2B	2011-2217	H217-101111-5	10/11/2011	10/11/2011	10/17/2011	10/17/2011	ND
3A	2011-2383	H217-101811-3	10/18/2011	10/18/2011	10/24/2011	10/24/2011	ND
3B	2011-2385	H217-101811-5	10/18/2011	10/18/2011	10/24/2011	10/24/2011	ND
3C	2011-2382	H217-101811-2	10/18/2011	10/18/2011	10/24/2011	10/24/2011	ND

Agridex Residue

Sample Location	Lab Sample ID	DBW ID	Date Sample Taken	Date Sample Received	Date Sample Extracted	Date Sample Analyzed	Agridex (ppb)
1A	2011-2215	H217-101111-3	10/11/2011	10/11/2011	10/18/2011	11/14/2011	ND
1C	2011-2214	H217-101111-2	10/11/2011	10/11/2011	10/18/2011	11/14/2011	ND
2B	2011-2217	H217-101111-5	10/11/2011	10/11/2011	10/18/2011	11/14/2011	ND
3A	2011-2383	H217-101811-3	10/18/2011	10/18/2011	10/24/2011	10/24/2011	ND
3B	2011-2385	H217-101811-5	10/18/2011	10/18/2011	10/24/2011	10/24/2011	ND
3C	2011-2382	H217-101811-2	10/18/2011	10/18/2011	10/24/2011	10/24/2011	ND

Water Quality

Sample Location	Sample ID	Date	UTM Easting	UTM Northing	Time	Water Temp (°C)	Conductivity (mS/cm)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
1A	H217-101111-3	10/11/11	630202	4241132	11:45	19.79	.153	.07	6.1	7.2	0
1C	H217-101111-2	10/11/11	630267	4241182	10:35	19.45	.151	.07	6.9	7.5	0
2B	H217-101111-5	10/11/11	630322	4240103	12:55	20.1	.153	.07	7.7	7.4	0
3A	H217-101811-3	10/18/11	630197	4241135	09:50	19.3	0	0	4.28	0	0
3B	H217-101811-5	10/18/11	630326	4240150	10:05	19.8	0	0	6.18	0	0
3C	H217-101811-2	10/18/11	630230	4241153	09:45	19.2	0	0	4.19	0	0



Site 300: Sampling Results

Glyphosate Residue

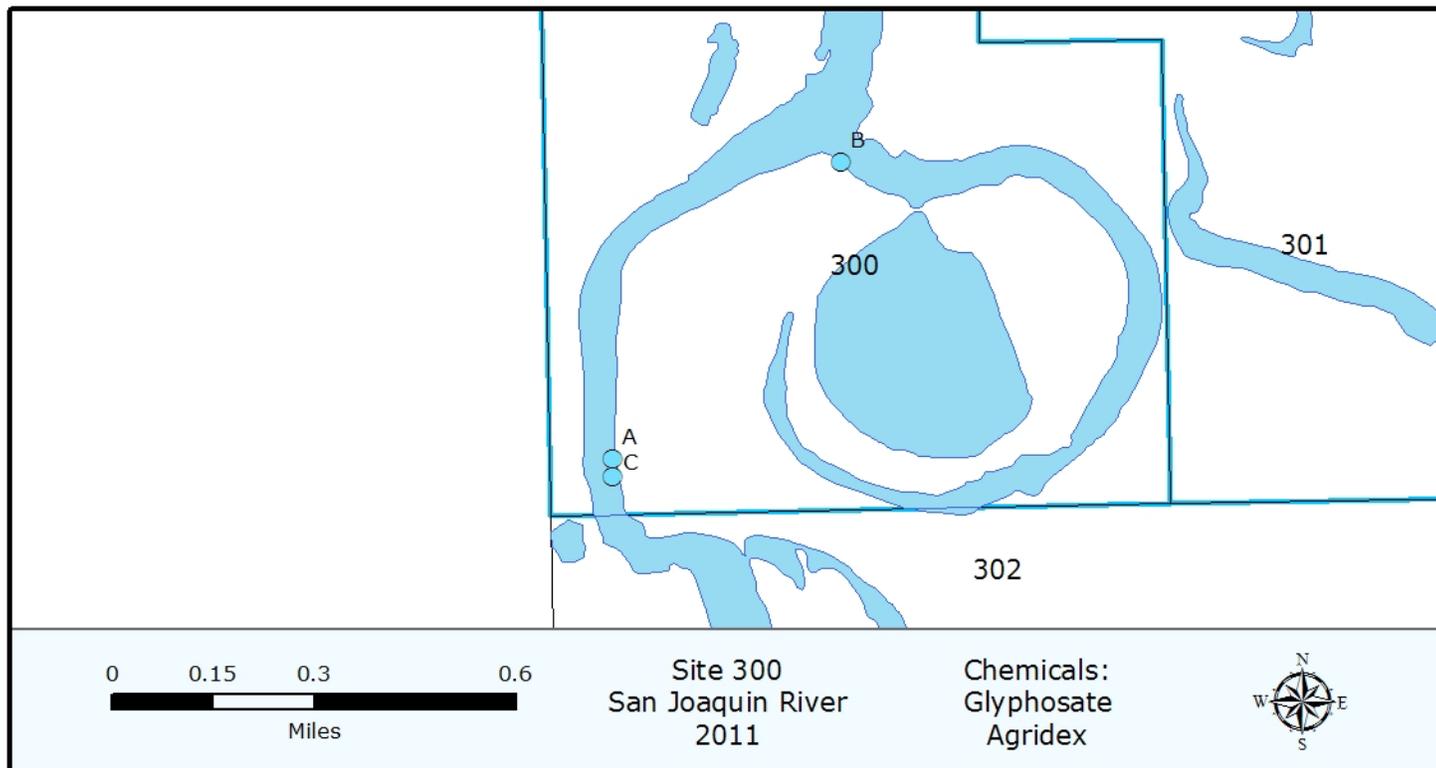
Sample Location	Lab Sample ID	DBW ID	Date Sample Taken	Date Sample Received	Date Sample Extracted	Date Sample Analyzed	Glyphosate (ppb)
1A	2011-2290	H300-101211-3	10/12/2011	10/13/2011	10/20/2011	10/20/2011	ND
1C	2011-2289	H300-101211-2	10/12/2011	10/13/2011	10/20/2011	10/20/2011	ND
2B	2011-2292	H300-101211-5	10/12/2011	10/13/2011	10/20/2011	10/20/2011	ND
3A	2011-2368	H300-101711-3	10/17/2011	10/18/2011	10/21/2011	10/21/2011	ND
3B	2011-2370	H300-101711-5	10/17/2011	10/18/2011	10/21/2011	10/21/2011	ND
3C	2011-2367	H300-101711-2	10/17/2011	10/18/2011	10/21/2011	10/21/2011	ND

Agridex Residue

Sample Location	Lab Sample ID	DBW ID	Date Sample Taken	Date Sample Received	Date Sample Extracted	Date Sample Analyzed	Agridex (ppb)
1A	2011-2290	H300-101211-3	10/12/2011	10/13/2011	10/18/2011	11/14/2011	ND
1C	2011-2289	H300-101211-2	10/12/2011	10/13/2011	10/18/2011	11/14/2011	ND
2B	2011-2292	H300-101211-5	10/12/2011	10/13/2011	10/18/2011	11/14/2011	ND
3A	2011-2368	H300-101711-3	10/17/2011	10/18/2011	10/24/2011	11/18/2011	ND
3B	2011-2370	H300-101711-5	10/17/2011	10/18/2011	10/24/2011	11/18/2011	ND
3C	2011-2367	H300-101711-2	10/17/2011	10/18/2011	10/24/2011	11/18/2011	ND

Water Quality

Sample Location	Sample ID	Date	UTM Easting	UTM Northing	Time	Water Temp (°C)	Conductivity (mS/cm)	Salinity (ppt)	DO (mg/L)	pH
1A	H300-101211-3	10/12/11	648982	4180735	09:35	16.4	0	0	9.0	0
1C	H300-101211-2	10/12/11	648981	4180691	08:45	16.5	0	0	9.1	0
2B	H300-101211-5	10/12/11	649523	4181445	10:20	17.3	0	0	8.5	0
3A	H300-101711-3	10/17/11	648981	4180735	09:40	17.0	0	0	8.9	0
3B	H300-101711-5	10/17/11	649526	4181448	09:50	19.3	0	0	8.0	0
3C	H300-101711-2	10/17/11	648984	4180690	09:30	17.5	0	0	8.8	0



Site 301: Sampling Results

Glyphosate Residue

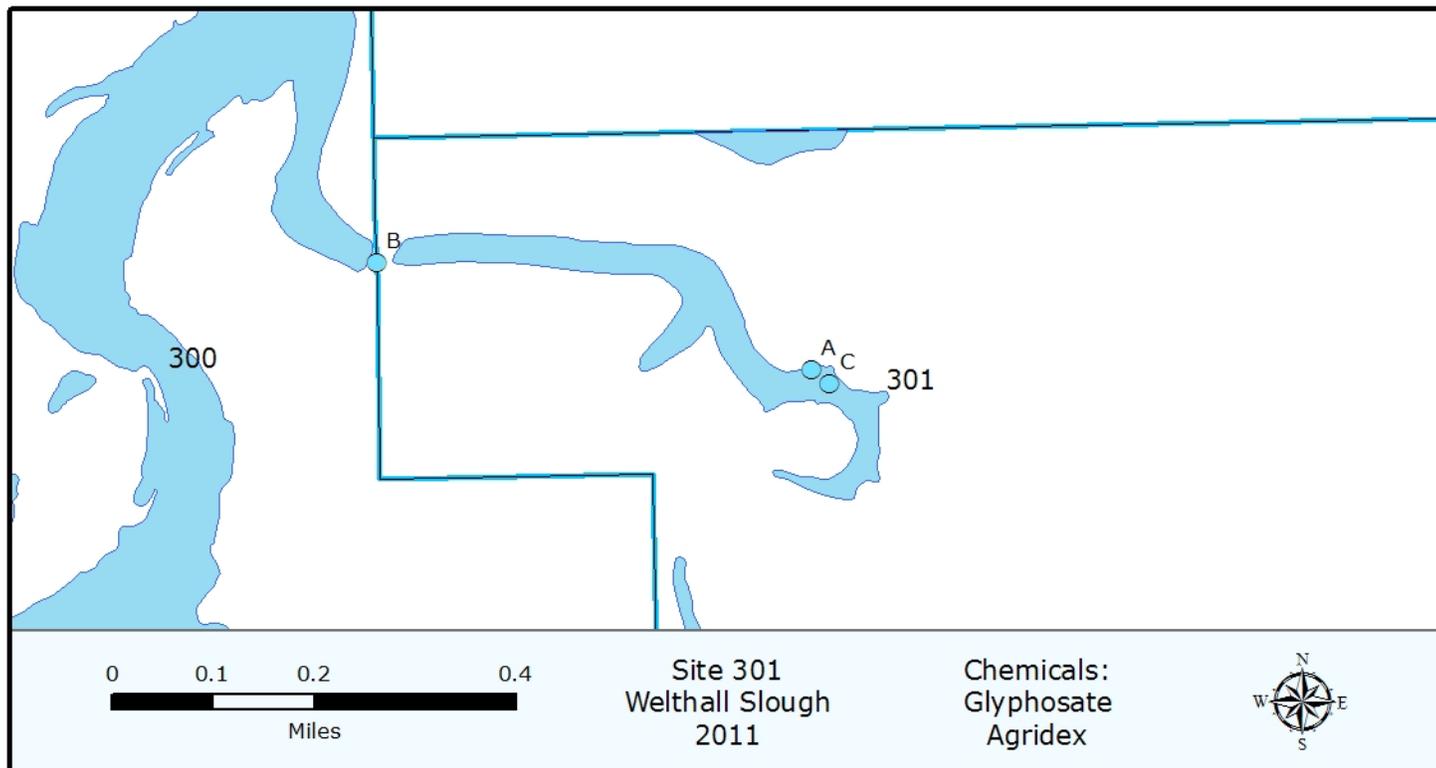
Sample Location	Lab Sample ID	DBW ID	Date Sample Taken	Date Sample Received	Date Sample Extracted	Date Sample Analyzed	Glyphosate (ppb)
1A	2011-2295	H301-101211-3	10/12/2011	10/13/2011	10/20/2011	10/20/2011	ND
1C	2011-2294	H301-101211-2	10/12/2011	10/13/2011	10/20/2011	10/20/2011	ND
2B	2011-2297	H301-101211-5	10/12/2011	10/13/2011	10/20/2011	10/20/2011	ND
3A	2011-2373	H301-101711-3	10/17/2011	10/18/2011	10/21/2011	10/21/2011	ND
3B	2011-2375	H301-101711-5	10/17/2011	10/18/2011	10/21/2011	10/21/2011	ND
3C	2011-2372	H301-101711-2	10/17/2011	10/18/2011	10/21/2011	10/21/2011	ND

Agridex Residue

Sample Location	Lab Sample ID	DBW ID	Date Sample Taken	Date Sample Received	Date Sample Extracted	Date Sample Analyzed	Agridex (ppb)
1A	2011-2295	H301-101211-3	10/12/2011	10/13/2011	10/18/2011	11/14/2011	ND
1C	2011-2294	H301-101211-2	10/12/2011	10/13/2011	10/18/2011	11/14/2011	ND
2B	2011-2297	H301-101211-5	10/12/2011	10/13/2011	10/18/2011	11/14/2011	ND
3A	2011-2373	H301-101711-3	10/17/2011	10/18/2011	10/24/2011	11/18/2011	ND
3B	2011-2375	H301-101711-5	10/17/2011	10/18/2011	10/24/2011	11/18/2011	ND
3C	2011-2372	H301-101711-2	10/17/2011	10/18/2011	10/24/2011	11/18/2011	ND

Water Quality

Sample Location	Sample ID	Date	UTM Easting	UTM Northing	Time	Water Temp (°C)	Conductivity (mS/cm)	Salinity (ppt)	DO (mg/L)	pH
1A	H301-101211-3	10/12/11	650542	4181904	12:20:00	18.9	0	0	4.9	0
1C	H301-101211-2	10/12/11	650571	4181883	10:54:00	18.3	0	0	2.9	0
2B	H301-101211-5	10/12/11	649833	4182078	10:15:00	17.02	0	0	1.07	0
3A	H301-101711-3	10/17/11	650542	4181904	10:35:00	19.1	0	0	4.31	0
3B	H301-101711-5	10/17/11	649833	4182078	10:05:00	18.9	0	0	2.71	0
3C	H301-101711-2	10/17/11	650571	4181883	10:20:00	19.9	0	0	3.13	0



Appendix C

Protocol and Program Maps

Figure1-1.

Water Hyacinth Control Program Project Area and Sampling Sites for 2011

Figure 1-2.

Water Hyacinth Control Program Dissolved Oxygen Limits: Northern Sites

Figure 1-3.

Water Hyacinth Control Program Dissolved Oxygen Limits: Southern Sites

**Figure 1-4.
Program Start Dates: Northern Sites**

Figure 1-4.

Program Start Dates: Southern Sites

