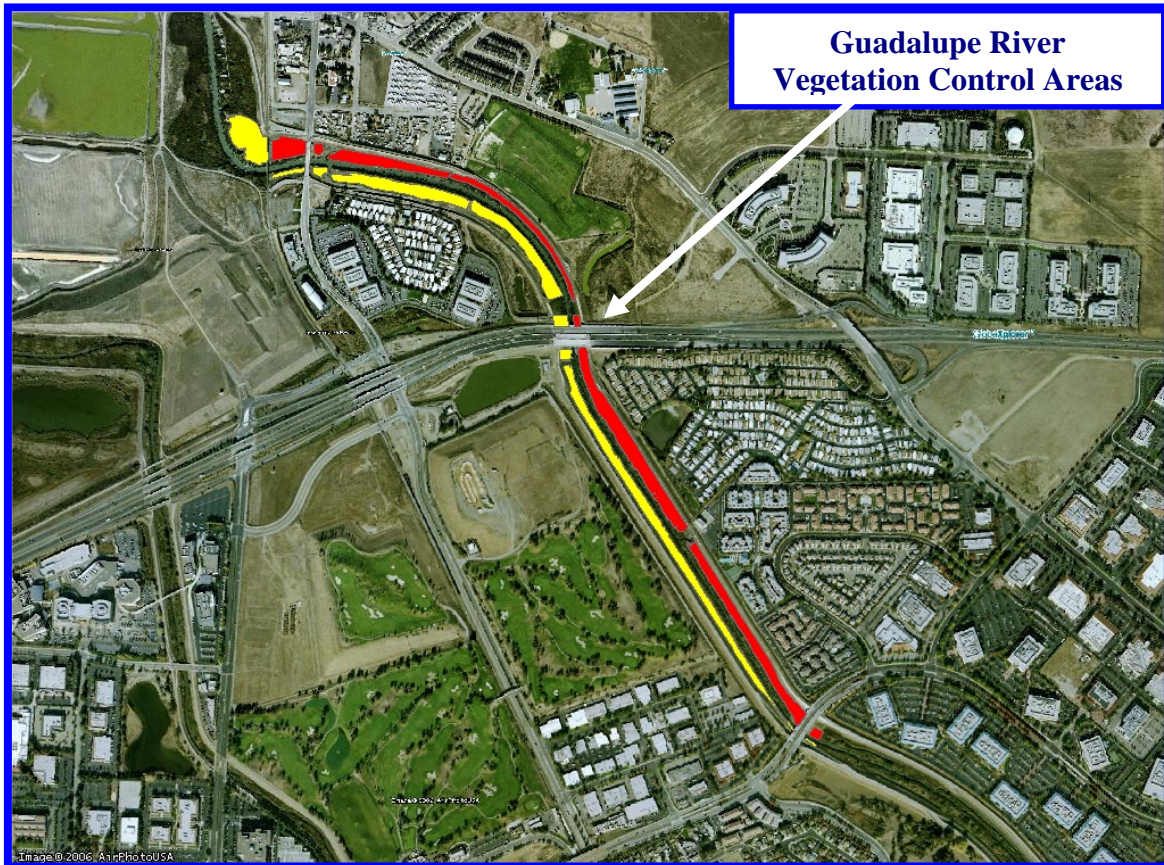


CLEAN LAKES, INC.

**2006 Guadalupe River Vegetation Control Project
Santa Clara Valley Water District**

Project Report



Prepared By

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Vegetation Management Unit
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January 2007

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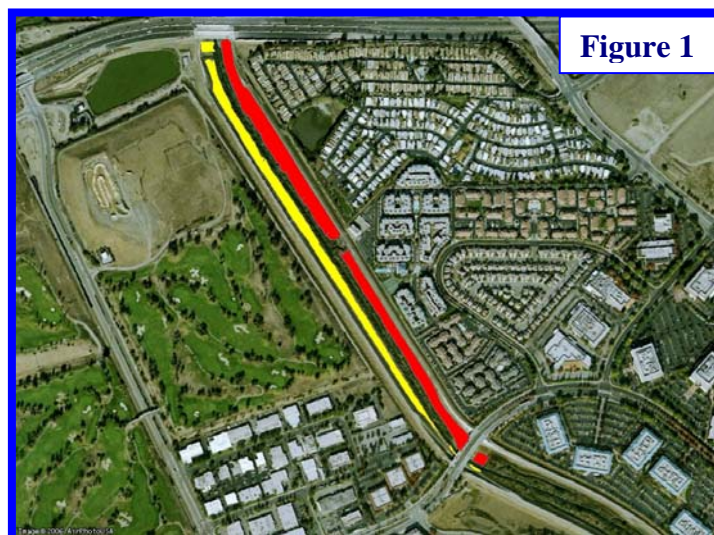
BACKGROUND INFORMATION: The Santa Clara Valley Water District (SCVWD) has been implementing vegetation management on the Guadalupe River Flood Control Project for several years through mechanical and hand removal. Following the 2005 Lower Guadalupe River Vegetation Management effort that incorporated mechanical and hand removal only, the SCVWD staff researched existing permits associated with maintenance of the project area in order to understand the restrictions and allowances set forth in the permits.

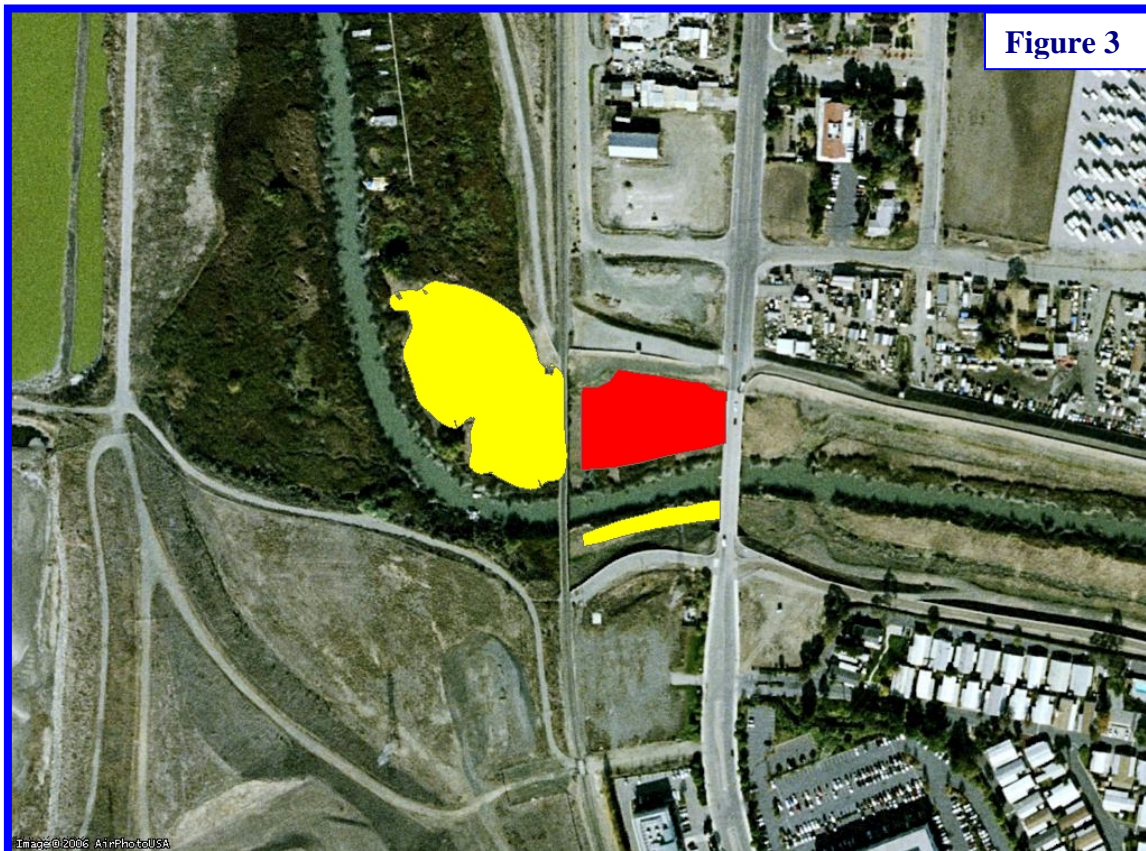
The Permit conditions clearly defined the specific work that the district is required to do within the project reaches and the parameters for doing the work (San Francisco Regional Water Quality Control Board Order R2-2002-089 and the National Marine Fisheries Service Permit 151422-SWR-01-SR-891ES). In addition, the Permit conditions provide the regulatory direction to perform anticipated vegetation management that include the use of United States Environmental Protection Agency (US-EPA) and State of California, Department of Pesticide Regulation (DPR) approved aquatic herbicide formulations for use in aquatic environments with the exception of the 19.7 foot buffer zone within the low flow channel, that was left uncontrolled.

The 2006 control effort began on August 15th, 2006 following a review of the above referenced documents, and continued through October 27th, 2006. Control occurred within three separate Reaches of the Lower Guadalupe River (Table 1) and as outlined in Figures 1 through 3 below. Reach I incorporated the area from the Tasman Drive Bridge to Highway 237 per Figure (1). Reach II incorporated the area from Highway 237 to the Gold Street Bridge per Figure (2), and Reach III incorporated the area from the Gold Street Bridge to the west side of the Union Pacific Railroad tracks per Figure 3. The three Reaches were within the Lower Guadalupe River and included two principle control elements, herbicide treatment followed by vegetation mulching. The Vegetation Control effort was limited to that necessary to meet flood control and water supply requirements while maintaining a 19.7 foot buffer zone within the low flow channel.

Table 1

Site	Reach I	Reach II	Reach III	Total
2005 Acreage	3.3	7.6	3.8	14.7
2006 Acreage	13.7	9.8	3.8	27.3





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Aquatic Herbicide Applications: Aquatic vegetation present within the project area was treated with the Aquatic Herbicide Aquamaster at 6 pints per acre. Aquatic herbicide applications were performed via the use of a MarshMog® (Figure 4) equipped with an automated herbicide application system that utilizes a Controller Area Network (CAN) system that is comprised of independent, intelligent modules connected by a single high speed cable, know as a bus, over which all data in the system travels. In the system, there are three modules, the Power Speed Module, the Switch Sense Module, and the Product Control Module that each contain their own microprocessors and share a standard communication sequence that conforms to ISO 11898 standards. The modules are connected via an on board computer system to a Trimble sub meter GPS receiver beacon and a Swath XL Lightbar for system positioning and guidance. The system meters the herbicides uniformly in the treatment areas to ensure even coverage. Following treatment, the treatment lines are downloaded into Arc View 9.2 for reporting purposes.



Vegetation Mulching Equipment: Vegetation mulching began on September 18th, 2006, approximately five (5) weeks following aquatic herbicide treatments to allow the maximum efficacy of the herbicide. A low ground pressure New Holland Skid Steer with environmental tracks equipped with a 70+ horse power, 84 inch hydraulic grinder attachment was used to mulch vegetation in dry areas where it would operate, and the MarshMog® equipped with a Cummings diesel power pack and a 70+ horsepower 84 inch grinder attachment was used to mulch vegetation in wet areas where the New Holland could not operate. Figure 5 below contains pictures of the equipment used to mulch the vegetation.

SCVWD Guadalupe River Flood Control Project



New Holland with Grinder

Figure 5



Marshmog™ with Grinder

PROJECT APPROACH: A step by step description of the project approach including methods and equipment used for the herbicide applications and mechanical removal operations for each Reach is broken down as follows:

2005 Reach I through III

(SCVWD): In 2005, cattails and bulrush in portions of Reaches I through III from the Tasman Bridge to the west side of the Union Pacific Railroad Bridge were controlled via the use of a Skid Steer with a grinder attachment and hand cutting with weed eaters. A portion of the cut material was removed and loaded into debris containers for disposal. No aquatic herbicide treatments were performed in 2005.



2005 Reaches I, II & III Control Areas

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2006 Reach I (SCVWD): From Tasman Bridge to Highway 237: The cattails and bulrush were treated using Aquamaster Aquatic herbicide per label directions at four to six pints an acre (Table 2). The drift control agent StaPut, and a marker dye were used per the Aquatic Pesticide Application Plan. Initial herbicide treatments began on August 15th 2006 and were completed on August 17th, 2006.

Approximately four weeks following the herbicide application (September 18th, 2006), the New Holland equipped with a grinding attachment was mobilized and used to mulch the cattails and bulrush within the dry channel areas where it could operate.. The MarshMog® was used to mulch the vegetation in the wetter areas where the New Holland could not operate. The Cattails and Bulrush were ground down to a fine mulch so that no vegetation needed to be removed from the site. Touchup work in areas around the bridges and in areas where the equipment could not operate was performed via the use of weed eaters.



2006 Reach II (SCVWD): From Hwy 237 to the Gold Street Bridge: The cattails and bulrush were treated using Aquamaster Aquatic herbicide per label directions at four to six pints an acre (Table 2). The drift control agent StaPut, and a marker dye were used per the Aquatic Pesticide Application Plan. Initial herbicide treatments began on August 18th 2006 and were completed on August 22nd 2006. Approximately six weeks following the herbicide application (October 2nd 2006), the New Holland

equipped with a grinding attachment was mobilized and used to mulch the cattails and bulrush within the dry channel areas where it could operate. The MarshMog® was used to mulch the vegetation in the wetter areas where the New Holland could not operate. The Cattails and Bulrush were ground down to a fine mulch so that no vegetation needed to be removed from the site. Touchup work in areas around the bridges and in areas where the equipment could not operate was performed via the use of weed eaters.



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2006 Reach III (SCVWD): From the Gold Street Bridge to the west side of the Union Pacific Railroad Bridge: The cattails and bulrush were treated using Aquamaster Aquatic herbicide per label directions at four to six pints an acre (Table 2). The drift control agent StaPut, and a marker dye were used per the Aquatic Pesticide Application Plan. Initial herbicide treatments began on August 23rd 2006 and were completed on August 24th 2006. Approximately eight weeks following the herbicide application (October 23rd 2006) the MarshMog® equipped with a grinding attachment was mobilized and used to mulch the cattails and bulrush within the channel. The Cattails and Bulrush were ground down to a fine mulch so that no vegetation needed to be removed from the site. Touchup work in areas around the bridges and in areas where the equipment could not operate was performed via the use of weed eaters.

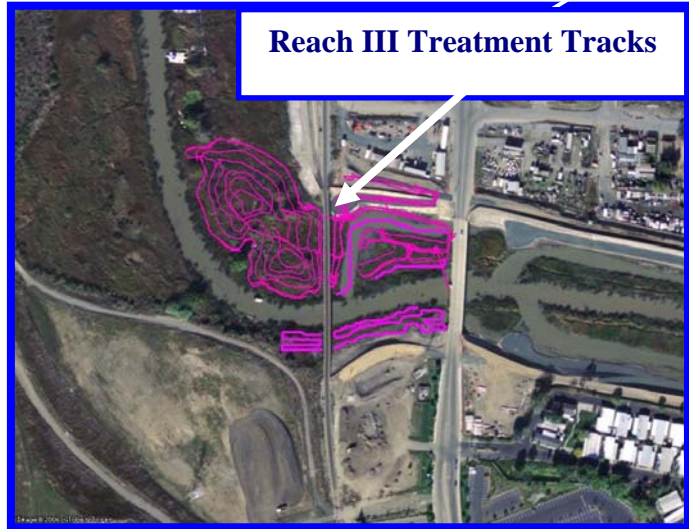


Table 2: 2006 ACREAGE AND HERBICIDE USE:

Reach	Acres	Gallons of Aquamaster
Reach I	13.7	10.2 gallons
Reach II	9.8	7.4 gallons
Reach III	3.8	2.9 gallons
	Total = 27.3 acres	Total = 20.5 gallons

NPDES GENERAL PERMIT COMPLIANCE REQUIREMENTS: San Francisco Regional Water Quality Control Board (SFRWQCB) Order R2-2002-089 and National Marine Fisheries Service Permit 151422-SWR-01-SR-891ES were issued for the Lower Guadalupe River Project. Pre and Post Treatment Monitoring was conducted per the Permit requirements.

Written Recommendations for the Aquatic Herbicide Treatments were provided by Thomas J. McNabb, Clean Lakes, Inc.'s (CLI) State of California Licensed Pest Control Adviser.

ASSOCIATED PROGRAM COSTS: The associated 2005 and 2006 program costs including labor and materials were as follows:

2005 & 2006 Reach I-III Total Program Costs

Year	Herbicide Applications	Vegetation Clearing & Disposal	Total Costs
2005	\$00.00	\$105,843.58	\$105,843.58
2006	\$22,240.00	\$71,931.31	\$94,171.31
Difference	+\$22,240.00	-\$33,912.27	-\$11,672.27

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COST ANALYSIS: During the 2005 project period, approximately 54 percent of the aquatic vegetation within the control area was cut via mechanical equipment and hand crews with weed eaters for a total project cost of \$105,843.58. During the 2006 project period, approximately 98% of the aquatic vegetation within the control areas was treated with the aquatic herbicide AquaMaster, followed by mechanical grinding of approximately 98% of the dead vegetation for a total project cost of \$94,171.31. The 2006 project costs were \$11,672.27 lower than the 2005 project costs, while 46 percent more vegetation within the control area was ground, and aquatic herbicide treatments performed that will support long term control of vegetation within the project site. The use of the MarshMog® for both aquatic herbicide applications and for grinding vegetation present in the wet areas supported a decrease in per acre costs of -\$3,750.74 in 2006 while increasing the efficiencies of Aquatic Vegetation Control Project within the Lower Guadalupe River Flood Control Project per the Table below:

2005 & 2006 Reach I-III Per Acre Project Costs

Year	Acres Mulched	Acres Treated	Cost per Acre Mulching	Cost per acre Herbicide Applications	Total Cost per acre
2005	14.7	0	\$7,200.24	0	\$7,200.24
2006	27.3	27.3	\$2,634.84	\$814.65	\$3,449.50

PROJECT REPORTING: CLI staff provided daily reports as well as District Channel Maintenance BMP checklists throughout the project.

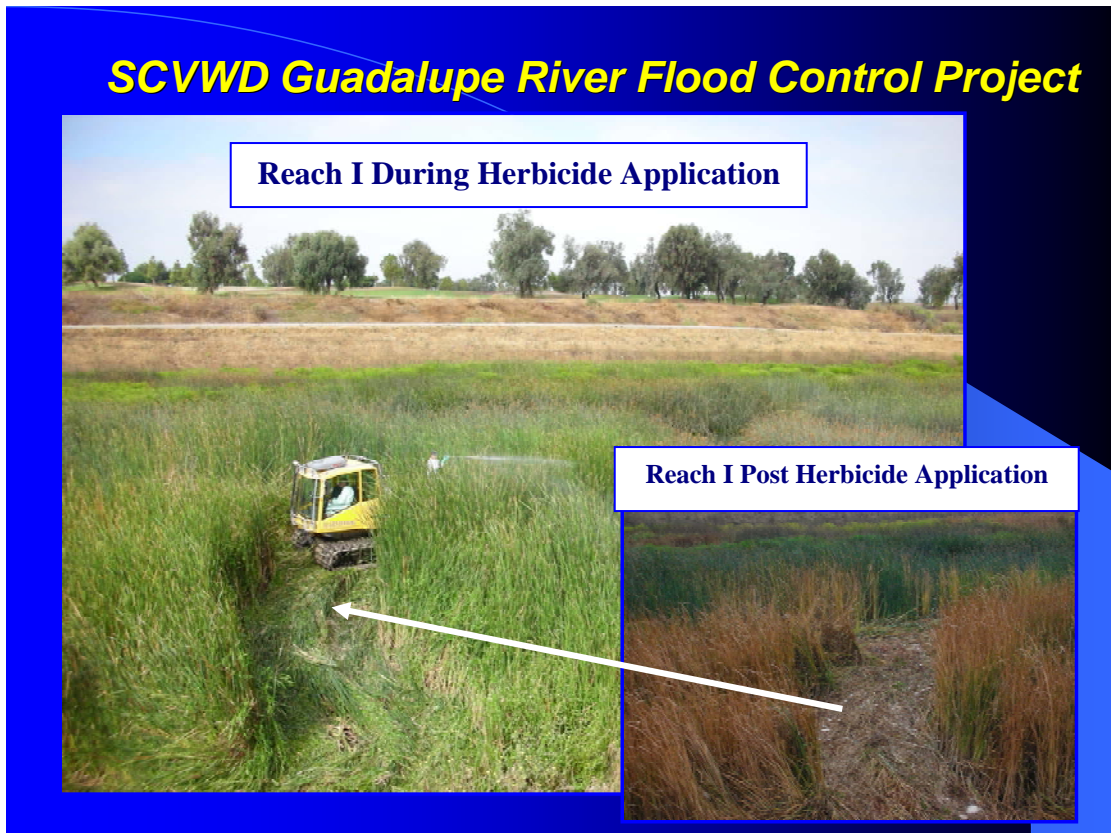
PROJECT HEALTH AND SAFETY PLAN: CLI developed a Site Specific Health and Safety Plan for the project that addressed all aspects of the project and indicated ways in which project personnel implemented safeguards for their protection. The Health and Safety Plan was prepared in a manner consistent with all applicable local, state and federal laws.

PROJECT RELATED VARIABLES:

- Staging Areas: The equipment was stored at the local Alviso Towing Yard immediately adjacent to the project site. The levee roads were also used to stage trailers, trucks, water tanks and other support equipment.
- Working with the Tides: All herbicide applications were carried out when the tide was low to minimize the potential impact of the herbicide as well as give the vegetation time to uptake in the active ingredient. The vegetation grinding near the channel was also carried out during the low tides.

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2006 PROJECT PHOTO'S:



SCVWD Guadalupe River Flood Control Project



Reach I: Vegetation Grinding



SCVWD Guadalupe River Flood Control Project

August 14, 2006



Reach I Before

October 9, 2006



Reach I After

SCVWD Guadalupe River Flood Control Project

October 12, 2006



Reach II Post Treatment

October 31, 2006



Reach II Post Mulching

SCVWD Guadalupe River Flood Control Project

Reach III Post Treatment



October 12, 2006

Reach III Post Mulching



October 31, 2006

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PROJECT REPRESENTATIVES: Michael Sanchez was the Districts Representative for the project (msanchez@valleywater.org, cell phone number 408-690-0976), Thomas J. McNabb was the project representative for Clean Lakes, Inc. (tmcnabb@cleanlake.com, cell phone number 925-766-8862), and Tyler Fowler was CLI's onsite Project Manager (tfowler@cleanlake.com, cell phone number 925-766-5256).

STATEMENT OF QUALIFICATIONS: Clean Lakes, Inc. (CLI) and its staff have been providing Aquatic Ecosystem Restoration and Maintenance services to governmental and private sector clients worldwide since the mid 1970's, and have been actively involved in the control of exotic and invasive plant species in California since the early 1980's.

The scope of services typically provided by CLI includes the development of aquatic vegetation management programs, environmental monitoring of aquatic plant communities, implementation of invasive species control programs (mechanical, biological, and through the use of USEPA approved aquatic herbicides and algaecides), marsh restoration services, bathymetric mapping, and aquatic plant control services.

Clean Lakes, Inc. holds a Pest Control Business License through the Department of Pesticide Regulation (DPR), License No. 03055 to perform pesticide treatments and applications.

END OF 2006 PROJECT REPORT