

The logo for AquaTechnex features the company name in a bold, sans-serif font. The word "Aqua" is in blue and "Technex" is in black. A thick, curved orange line arches over the text from the left side.

AquaTechnex

*"Advancing the Science
of Lake Management"*

The background of the page is a scenic landscape photograph. It shows a calm lake in the foreground with a patch of bright green grass on the left bank. The water reflects the surrounding environment, including a dense forest of evergreen trees and a large, snow-capped mountain peak in the distance under a clear blue sky.

***Big Lake
Lake Management District
Brazilian Elodea
Control Program***

Summer 2004

Introduction

Big Lake is a 520 acre water body located in Skagit County Washington. This lake is relatively shallow and has been impacted by the introduction of two invasive aquatic weed species. In the mid 1990's the citizens living around the lake organized a committee to investigate control options. This committee teamed with Skagit County Department of Public Works and took the first step of developing an Integrated Aquatic Vegetation Management Plan (IAVMP). This plan identified two invasive weeds as causing the bulk of the problems in Big Lake.

Brazilian Elodea was the primary problem plant found in the lake. This weed has been widely distributed in the aquarium trade. In those days, it was routinely found in Washington pet and aquarium store for sale. It is thought that some owners of aquariums let their fish go in lakes and the weed is introduced in that fashion. It can also be spread from lake to lake on boat trailers once established. This weed infested the majority of the littoral zone in Big Lake out to the 13 foot contour. There were 177 acres of the lake heavily impacted by this noxious weed.

Eurasian Milfoil was also present in Big Lake at what would be considered pioneering levels. There were a number of patches of this plant that were from 100 square feet in size up to a quarter acre. Eurasian Milfoil at that time was also present upstream from Big Lake in Lake McMurray. As this weed spreads primarily by fragmentation, it is possible that this plant had moved from McMurray downstream to Big Lake.

Both of these plants pose a serious threat to the aquatic environment. They replace native plant communities and can displace the organisms that have evolved to associate with those species. They can also depress water quality parameters critical to fish, they often cause elevated water temperatures and depressed oxygen levels within the plant beds. They also impact beneficial uses of the lake by the residents and visitors. As the areas around the public access were heavily infested with these weeds, Big Lake also served as a source to infest other lakes in the region by transport on boat trailers.

The citizens living around the lake have voted twice to authorize the establishment of a Lake Management District to fund the ongoing operations on the lake necessary to protect beneficial uses. The current program authorized a Sonar treatment in 2003 to target the Brazilian Elodea present in the lake and

ongoing Reward Herbicide treatments to keep this noxious weed in check. In addition, the District funded an update to the Integrated Aquatic Vegetation Management Plan (IAVMP) that provides a framework for the control efforts at the lake and is required for permitting.

This report will summarize the operations on the lake during the summer of 2004

2004 Activities

The contract for this year called for Aquatechnex to perform a Reward Aquatic Herbicide treatment to target and suppress Brazilian Elodea in the system. Our team performed the following tasks to support that mission.

The first activity on the lake in 2004 was to perform a survey to determine the treatment area. Our biologists used a boat survey to make this determination. The team surveyed the shoreline of the lake with the assistance of a DGPS receiver/data logger, a throw rake and aerial image maps of the project area. The location and extent of the Brazilian Elodea was noted and a map created to use during the treatment mission on the lake.

Our team also attended a pre season public meeting with the members of the lake community. This meeting was held in conjunction with public participation in the IAVMP development that was nearing completion. We presented a background on the work performed in the past few seasons, an update on the regulatory environment for noxious aquatic weed control, the expected operations on the water during 2004 and discussed the herbicides to be used. We answered questions for the members of the public present. We also traveled to one of the attendee's home's to view conditions and discuss their specific concerns.

The first task involved with the treatment of the lake is to obtain coverage under the Washington Department of Agriculture National Pollution Discharge Elimination System (NPDES) permit for noxious aquatic weed control. This permit is required prior to the application of US EPA registered aquatic herbicides to any water body that is classified as "Waters of the United States". Big Lake meets the classification criteria and this permit is required. Aquatechnex biologists filed the Notice of Intent to Obtain Coverage under this permit using the Department of Ecology NPDES online application tool. This was submitted as required, copies were printed and signed and forwarded to the

appropriate office at the Department of Agriculture. This work was performed in June.

Once coverage is obtained, there are a number of conditions in the permit to be followed prior to application.

The first of these is a timing restriction window for herbicide application. Under the conditions of the NPDES permit and the timing windows developed by the Washington Department of Fish and Wildlife for various lakes, Reward is not allowed for application in Big Lake prior to July 15th. This is not an ideal satiation for this particular herbicide and additional discussion is presented in the Recommendation section below. The treatment was scheduled after this date to comply with this permit condition.

Next, our team performed the required public notification to all residential and business properties adjacent to the lake. The permit requires that this notification be delivered 10 days prior to treatment. We printed the notification forms with the date of treatment, herbicide to be used, water use restrictions and our contact information on this form. These were hand delivered by our staff to each property adjacent to the lake within the required time frame.

We did receive a call from one resident on the southwest corner as a result of this notification that was very concerned about getting significant results from this treatment. We traveled to his property, viewed the exact location and insured that he was included in the treatment efforts/focus. (we did received an email after the treatment indicated a very high level of satisfaction with our work this year).

The treatment was performed on July 21, 2004. The team mobilized a number of vessels to the lake to support treatment operations. Prior to application, the permit requires that all shoreline properties be posted with additional signage indicating that the treatment occurred on that day and to remind people of any water use restrictions present. The teams posted the entire shoreline as required prior to the application of herbicide.

Reward aquatic herbicide was selected by the LMD for use in the lake in 2004. This product is a contact herbicide that provides relief from a broad spectrum of aquatic weeds including Brazilian Elodea. Contact herbicides are essentially maintenance products, they provide knockdown of the plants in the water column at the time of treatment but will not translocate and control the root

systems. Reward is considerably more economical however than systemic herbicides such as Sonar.

120 acres of the littoral zone of the lake were treated on July 21st. The applications were made at the maximum label rate of 1.5-20 gallons per surface acre treated. The applications were made using weighted drop hoses to distribute the herbicide vertically in the water column within the treatment area.

The application records for this project contain additional information on this application and are attached.

Recommendations and Discussion

There are a couple of issues presented to the LMD for consideration.

There is one more lawsuit that may have an impact on aquatic plant management operations in Washington State in the near future. In 2001, the US Ninth Circuit Court of Appeals ruled for an environmental group in Oregon and determined that an NPDES permit could be required prior to the application of aquatic herbicides to Waters of the United States. Big Lake was impacted by this suit that year because the Washington Department of Ecology had to develop this permit for use and that took them about one year. This permit was issued by Ecology and has worked very well for applicators, their clients and the state agencies that regulate noxious aquatic weed control. This fall, the Washington Toxics Coalition in Seattle sued the Department over it's issuance of this permit to the Department of Agriculture. The State is actively defending itself at this point. If the court does rule for WTC sometime in the near future, it could impact your ability to operate under this permit.

Aquatechnex management is actively involved in this case. Terry McNabb is a member serving on the Aquatic Pesticide Coalition in Washington DC. This group's mission is to protect our ability to use the tools necessary to target harmful species like Brazilian Elodea. Our attorneys are involved in this and we will know more about the timeline for the summer of 2005 in late December. There are options to get individual permits here and we may recommend going that route for 2005 if things don't look good for the current permit. Our attorney's indicate that the WTC case is weak but the Courts have a mind of their own in many cases.

The second issue is the required timing windows in the NPDES permit. Reward works best when treating Brazilian Elodea when applied earlier in the growing season. As this plant gets past its major growth spurt, the herbicide is not quite as effective. Reward is one of only two herbicides permitted for use in Washington State (the other being Sonar) that is effective on Brazilian Elodea.

When Reward is the herbicide selected for use, the Washington Department of Fish and Wildlife has issued timing windows where applications are allowed. These timing windows are generally arbitrary and do not consider the herbicide used or the potential impact on fish or the specific lake involved. Reward for example is labeled for use in trout and salmon hatcheries as a drug to prevent certain bacterial diseases. In that application, the salmon fry are treated with this herbicide in a static tank at rates 10 times high than that used in our application. The original permit allowed for two methods to protect fish in treated waters where the WDFW may have a concern about the impacts on a fishery. In that permit, the applicator or sponsor is asked to notify the Department regional biologist about the application and herbicide selected. If that official has an issue, it is their responsibility to come back to the applicator and discuss that. The permit also allowed for the use of timing windows if and when WDFW issued them for individual water bodies. WDFW did issue those windows in 2003.

When the original permit was issued, Reward was not one of the herbicides allowed under the permit. When Reward was added to the permit, the language states that the WDFW timing windows must be followed when that herbicide is applied.

As such, there is currently no mechanism to treat prior to July 15th. Aquatechnex management plan to hold meetings with Ecology on this issue during the winter and see if there are opportunities to amend this condition. We will keep you posted on that as well.

For 2005, we have the following recommendations.

1. Aquatechnex has requested that the Washington Department of Ecology develop options should the WTC lawsuit affect our ability to use the current permit. Ecology is required by law to allow for the use of aquatic herbicides to target noxious aquatic weeds. We will keep the District posted on our progress here.

2. A survey should be conducted in the late spring of 2005 to determine treatment areas for 2005 application work. It is probable that the treatment acreage will remain in the 100-120 acre range.
3. The survey should also map the location of the noxious aquatic weed Fragrant Water Lily. This plant is expanding in the lake to the point that it is severely impacting many of the homeowners. This plant is on the state noxious weed list and should be treated with glyphosate based herbicides.
4. There should be an opportunity for individual members of the district to discuss their issues (if any) with Aquatechnex staff. This worked very well this past year in that we were able to meet with residents at their site and understand their concerns so they could be addressed. We would appreciate our contact information be presented in newsletters that are developed and delivered. We would also like to be considered for public meeting where you may request speakers to address the community.

If there are any questions regarding this report, please contact Terry McNabb at 360-527-1271 or terry@aquatechnex.com.

PESTICIDE APPLICATION RECORD (Version 1)

NOTE: This form must be completed same day as the application and it must be retained for 7 years (Ref. RCW 17.21)

1. Date of Application - Year: Month: Day: Time:
2. Name of Person for whom the pesticide was applied:
 Firm Name (if applicable):
 Street Address: City: State: Zip:
3. Licensed Applicator's Name (if different from #2 above): License No.
 Firm Name (if applicable): Tel. No.
 Street Address: City: State: Zip:
4. Name of person(s) who applied the pesticide (if different from #3 above):
 License No(s), if applicable:
5. Application Crop or Site:
6. Total Area Treated (acre, sq. ft., etc.):
7. Was this application made as a result of a WSDA Permit? No Yes (if yes, give Permit No.) #
8. Pesticide Information (please list all information for each pesticide in the tank mix):

a) Product Name	b) EPA Reg. No.	c) Total Amount of Pesticide Applied in Area Treated	d) Pesticide Applied/Acre (or other measure)	e) Concentration Applied
			/	
			/	
			/	
			/	

9. Address **or exact location** of application. NOTE: if the application is made to one acre or more of agricultural land, the field location must be shown on the map on page two of this form.

10. Wind direction and estimated velocity during the application:
11. Temperature during the application:
12. Apparatus license plate number (if applicable):
13. Air Ground Chemigation
14. Miscellaneous Information:

Location of Application (If the application covers more than one township or range, please indicate the township & range for the top left section of the map only:

Township: N

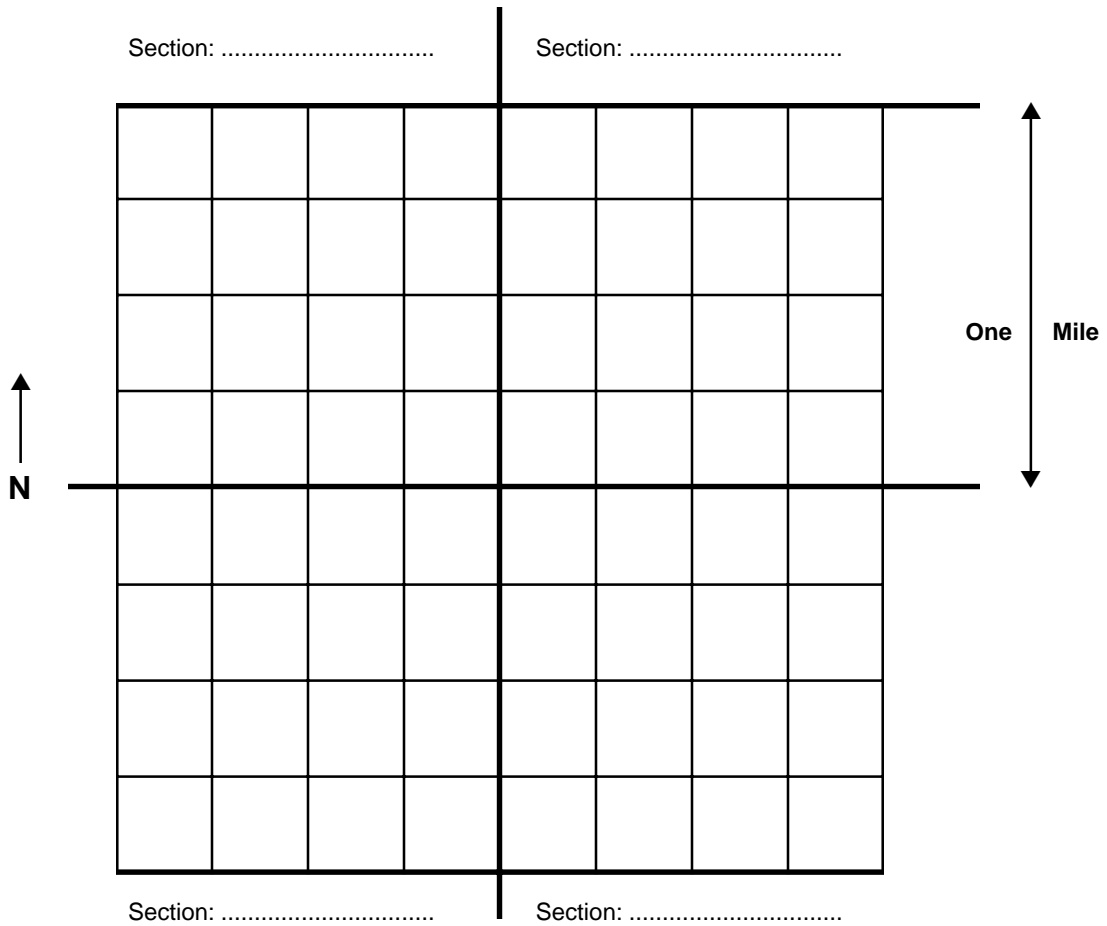
Range: E OR W (please indicate)

Section(s):

County:

PLEASE NOTE:

The map is divided into 4 sections with each section divided into quarter-quarter sections. Please complete it by marking the appropriate section number(s) on the map and indicate as accurately as possible the location of the area treated.



Miscellaneous Information:

INSTRUCTIONS

Pesticide Application Record (Version 1) AGR 4226 (Rev. 4/99)

1. Date may be spelled out or indicated numerically. Time may be indicated as start and stop times.
2. Please include first and last name.
3. If the person's name is the same as No. 2, please write "same" in the space for the licensed applicator's name and include the license number (if applicable) and telephone number.
4. Please include first and last name(s).
5. Indicate type of land or site treated, not location. Examples: wheat, apples, rights-of-way, lawn, trees and shrubs, crawl space, wall voids, etc.
6. May also be stated in terms such as linear feet, cubic feet, etc. (Please specify the term to which the number refers.)
7. If the application was made under permit, but no permit number was issued, please indicate the date the permit was issued.
8.
 - a) Brand name found on the pesticide label.
 - b) This number is found on the pesticide container label. If the material is being applied under a federal experimental use permit and no EPA Reg. No. exists, please list the federal experimental use permit number. If the material is a spray adjuvant (buffer, spreader, sticker, etc.) please write "adjuvant" in this space.
 - c) Indicate the amount of pesticide formulation (product) applied to the total area listed on line 6.
 - d) Other measures may include amount/sq. ft., amount/cu. ft., amount/linear ft., etc.
 - e) This may be listed in various ways, such as: amount of formulation/100 gallons water, percent formulation in the tank mix (i.e. 1%), amount of tank mix/acre (or other measure). Please specify the term to which the number refers.
9. Agricultural land includes such areas as forest lands and range lands. It does not include transportation and utility rights-of-way.
10. Indicate the direction from which the wind is blowing. If the wind varies in direction and velocity during the application, please indicate the range of variance (i.e. S-SW 3-7 mph).
11. Please indicate temperature in degrees Fahrenheit. (It may be indicated as the range encountered during application.)
12. This does not apply to private applicators or public agencies.
13. Please check one.
14. This space is available for any additional information you may wish to include.