WISCONSIN DEPARTMENT OF NATURAL RESOURCES
AQUATIC INVASIVE SPECIES GRANT PROGRAM

Application Materials

Green Lake AIS Monitoring & Control Strategy Development

Phase I: 2013-2015

Prepared for the

Green Lake Sanitary District

August 1, 2013

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Lake Management Planning
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INTRODUCTION

Green Lake, Green Lake County, Wisconsin has a surface area of almost 7,500 acres and a maximum depth of 236 feet. In addition, there are 3 main estuaries (Silver Creek, 215 acres; CTH K Marsh, 270 acres; Beyers Cover, 28 acres) and one outlet basin (City Millpond, 48 acres) of Green Lake (Map 1).

The Green Lake ecosystem contains several aquatic invasive species, including Eurasian water milfoil (EWM), curly-leaf pondweed (CLP), common carp, and zebra mussels. Particularly within the Silver Creek Estuary and the CTH K Marsh, common carp have greatly reduced the aquatic plant communities of these valuable ecosystems. Many carp management activities have taken place over the past three decades with minimal success. However, the implementation of a new carp management strategy in 2007 on the Silver Creek Estuary has proven more successful. The seasonally operated "bubble barrier" appears to be an effective deterrent for carp that want to move into the Silver Creek Estuary from Green Lake. The CTH K Marsh estuary is currently involved in a similar carp management project, but has not yet reached management objectives. For that reason, the CTH F Marsh is not included within the scope of the proposed project.

The once depauperate plant community of the Silver Creek Estuary is now thriving with aquatic vegetation. This rapid re-colonization of vegetation included Eurasian water milfoil and curly-leaf pondweed. The original design of the propose project was to initiate aquatic invasive species (AIS) management towards EWM and CLP within the Silver Creek Estuary to build off the successes of the carp management program and restore the native aquatic vegetation of this area. This project has been expanded to meet the goals and the needs of the Green Lake Sanitary District (GLSD) in controlling AIS in Green Lake's Silver Creek Estuary, City Millpond, and Beyers Cove. The proposed project would also evaluate the health of the aquatic plant community of Green Lake.

The proposed project would partially fund treatments in the City Millpond and Beyers Cove during 2014 and 2015. The levels of AIS observed within the Silver Creek Estuary during 2013 likely do not warrant herbicide treatment in 2014. For budgeting purposes, cost coverage for targeting this basin in 2015 is included. The proposed project would likely be the first of at least two phases aimed at funding these efforts to enhance the ecology of Green Lake by controlling AIS.

PROJECT GOALS

Bring AIS occurrences within the Silver Creek Estuary, Beyers Cove, and City Millpond to levels than minimally effect the aquatic ecosystem of these areas.

Because the primary goal is to better the lake's ecological state, control actions must implemented to maximize impact on the target species while minimizing impacts on non-target, native species. To accomplish this, both target and non-target species must be monitored closely and treatment strategies need to be tuned to minimize the amount of herbicides being used

EWM: At this time, the EWM population of these basins is relatively high (Maps 2-7). A single successful control action would include at least a 50% reduction in frequency of occurrence of EWM through replicated point-intercept surveys. After this two-year project, EWM populations should be brought below 20% littoral frequency of occurrence and have minimal acreage of AIS exceeding a dominant density rating.

CLP: Traditionally, CLP control consists of numerous annual herbicide treatments conducted in May of each year. This will kill each year's plants before they are able to produce reproductive turions (asexual seed-like structures). If the control strategy is effectively killing CLP before it produces turions, a reduction in CLP sprouting from those turions should be apparent after a few years of control. After multiple years of treatment, the turion base in the sediment becomes exhausted and the CLP population decreases significantly. Normally a control strategy such as this includes 3-5 years of treatments of the same area. It must be noted that only looking at this data within the confines of a single pre- and post treatment timeframe is problematic as it is suspected that the populations of CLP within some of these areas will be maintained for years from a large turion base that has built up over time. Long-term success goals for CLP control will require additionally phased projects.

Whole-Lake versus Spot Treatments

Factors such as water depth, water flow, treatment area size, and plant density work to dilute herbicide concentration within aquatic systems. Understanding concentration-exposure times are important considerations for aquatic herbicides. Successful control of the target plant is achieved when it is exposed to a lethal concentration of the herbicide for a specific duration of time. Much information has been gathered in recent years, largely as a result of a joint research project between the WDNR and US Army Corps of Engineers (USACE). Based on their preliminary findings, lake managers have adopted two main treatment strategies; 1) whole-lake treatments, and 2) spot treatments.

Whole-lake treatments are those where the herbicide is applied to specific sites, but when the herbicide reaches equilibrium within the entire volume of water (of the lake, lake basin, or within the epilimnion of the lake or lake basin); it is at a concentration that is sufficient to cause mortality to the target plant within that entire lake or basin. The application rate of whole-lake treatments is dictated by the volume of water in which the herbicide will reach equilibrium with. Because exposure time is so much greater, target herbicide levels for whole-lake treatments are significantly less than for spot treatments. Whole-lake treatments are typically conducted when the target plant is spread throughout much of the lake or lake basin.

Spot treatments are a type of control strategy where the herbicide is applied to a specific area (treatment site) such that when it dilutes from that area, its concentrations are insufficient to cause significant effects outside of that area. Spot treatments typically rely on a short exposure time (often hours) to cause mortality and therefore are applied at a much higher herbicide concentration than whole-lake treatments. A newly adopted term, micro-treatments are small spot treatments (working definition is less than 5 acres) and because of their small size, the herbicide dilutes from these sites so fast that they are very difficult to predict whether they will be effective, and most of the time they are not. Larger and broader treatment areas tend to be able to hold effective concentrations for a longer time, as well as those treatment areas confined to a bay or other physical feature where water exchange rates are lower

Based upon information provided by WDNR and sanitary district staff and through the survey completed by Onterra staff on Silver Creek Estuary during the early spring of 2013, it is assumed that whole-basin strategies would likely be appropriate for Silver Creek Estuary, City Millpond, and Beyers Cove.

PROJECT SCOPE AND TIMELINE

Table 1 provides an approximate timeline for completion of the tasks. The schedule needs to be flexible to accommodate for weather, scheduling conflicts, etc., but it provides a general indication of the dates for completing the proposed components.

Table 1. Approximate Project Schedule

Task	2013				2014				2015				
	W	Sp	Su	F	W	Sp	Su	F	W	Sp	Su	F	W
Pretreatment Confirmation & Refinement Survey (Basins)													
AIS-targeted Herbicide Treatment (Basins)													
Early Season AIS Survey (Basins)													
Point-intercept Survey (Basins)													
Community Mapping Survey (Basins)													
EWM Peak-biomass Survey (Basins)													
Annual Treatment Reporting & Strategy Development													
Annual GLSD Presentation													
Green Lake Point-intercept Survey													
Green Lake Community Mapping Survey													
Green Lake Aquatic Vegetation Report													

Early-Season AIS Survey

During these June surveys, the entire littoral zone of the target areas would be searched for CLP and EWM. All incidences of these species would be mapped with a submeter GPS data collector using either points or polygons, depending on the size of the finding. Large colonies over 40 feet in diameter would be mapped using polygons (areas), while small colonies, clumps of plants, and single plants would be mapped using points. Colonies marked with polygons would also be designated using a 5-tiered density scale from *Highly Scattered* to *Surface Matting*. It is advantageous to complete this survey in the early summer because water clarity is typically better, the EWM is standing taller than most native species, and the CLP is at its peak-biomass – all leading to a greater chance of locating these AIS within the lake. All areas found to contain EWM would be reassessed during the peak-biomass survey described below.

This survey would be completed on Silver Creek Estuary, City Millpond, and Beyers Cove during 2013-2015. The 2013 surveys would be instrumental in the construction of the treatment cost estimates used in the August 2013 grant application. Preliminary results of these surveys are included on the attached ESAIS Survey Results Maps.

Point-Intercept Survey

The point-intercept survey is completed during the summer and is aimed at assessing the native *and* exotic plant communities. The survey is performed by visiting predetermined sites (points) on the lake and collecting specific information at each site, including the types and abundances of each plant species present, the depth, and substrate type. The point spacing (resolution) is determined by the WDNR and based upon the size of the waterbody and the degree of irregularity its shoreline. The WDNR has supplied specific resolutions for each of the three basins and for Green Lake which are shown on the table within Map 1. Collecting aquatic plant information in this manner allows for reliable comparisons between waterbodies and between survey dates for the same system. Further, depth data collected during this survey can be used to create accurate volume calculations.

This survey's strength is in assessing the submergent community of the lake. Often, due to difficulties in accessing shallow areas or sites with dense plant populations, the emergent and floating-leaf plant communities are underrepresented within the point-intercept survey results.

To assess the impact of the whole-lake treatments on the target and non-target plant communities, point-intercept surveys would be completed each June on Silver Creek Estuary, City Millpond, and Beyers Cove during 2013-2015. A point-intercept survey would be completed on Green Lake during 2014 to document native and non-native species populations.

Emergent & Floating-Leaf Community Mapping

Floating-leaf and emergent aquatic vegetation communities within the system would be mapped using sub-meter GPS technology and would be based on dominant species (e.g., soft-stem bulrush, common arrowhead, yellow water-lily, etc.). In other words, the primary mapping unit would be the community type, but a secondary classification based on dominant species would be included on the vegetation maps. The final map would show the location of each vegetation type in the basins and lake in relation to their bathymetry.

As described above, the point intercept survey often underrepresents the floating-leaf and emergent plant communities. Completion of this survey assures that these important plant types are fully assessed. Emergent and floating-leaf community mapping would be completed on Silver Creek Estuary, City Millpond, and Beyers Cove during the late summer 2013 and on Green Lake during the late summer of 2014.

During the first year of the project, a complete set of pressed plant specimens will be provided to the UW-Steven's Point Herbarium for vouchering. In subsequent years' surveys, the proposed project would only press and gain confirmation on new plant records as well as those plants with difficult field identification.

EWM Peak-Biomass Survey

As the name implies, the EWM peak-biomass survey is completed when the plant is at its peak growth, allowing for a true assessment of the amount of this exotic within the waterbody. This survey would include a complete meander survey of the waterbody's littoral zone by professional ecologists. As with the Early-Season AIS Survey, all incidences of EWM would be mapped with a submeter GPS data collector using either points or polygons, depending on the size of the finding.

These survey results are important in the creation of the following year's treatment strategy and in monitoring the impact of the previous spring's treatment on EWM. EWM Peak-Biomass Surveys would be completed on Silver Creek Estuary, City Millpond, and Beyers Cove during the late summers of 2013-2015.

Spring Pretreatment Confirmation & Refinement Survey

A qualitative assessment would be completed prior to the early-season herbicide applications targeting CLP and EWM to verify treatment area extents and to inspect the condition of the target species. Proposed treatment areas would be verified through the use of a combination of surface surveys, rake tows, and submersible video monitoring.

Upon completion of the inspections, Onterra would provide a brief email letter report to the sanitary district and WDNR describing the results of the assessment and any recommended changes to that year's treatment strategy. If changes are suggested, Onterra would provide the updated treatment areas to the applicator once the updated strategy is approved by the WDNR and sanitary district.

Chemical Applications

It would be the responsibility of the GLSD to contract with a commercial aquatic pesticide applicator, certified with the Wisconsin Department of Agriculture and Consumer Protection and licensed by the WDNR to perform the *early season* treatments of EWM and CLP. The treatments would occur each year before June 1 and/or water temperatures reach 65°F, preferable closer to 55°F. Onterra would create the treatment areas in the form of polygons within their Geographic Information System (GIS) and then transmit them to the applicator in native shapefile format or similar format recognized by the applicator's GPS technology. If applicable, the applicators treatment paths would be included in the annual and final reports.

Dosage rates discussed in this application are only recommendations created primarily for budgeting needs and will be revised during the fall/winter of 2013-2014. A set of conditional permit maps will be submitted to the WDNR over the winter months that will reflect the ESAIS and EWM Peak biomass results, as well as a finalized dosing strategy. Additionally, a revised set of maps would be sent to the WDNR, the GLSD, and the herbicide applicator based on the results of the pretreatment surveys.

STAKEHOLDER PARTICIPATION

Volunteer Herbicide Concentration Monitoring

Herbicide concentrations samples would be collected surrounding the herbicide treatment following protocols developed by the United States Army Corps of Engineers (USACE). In coordination with the USACE, trained members of the GLSD would collect water samples at various locations and time-periods following the treatment. Properly preserved samples would be sent to the USACE for laboratory analysis.

Clean Boats Clean Waters Program

The intent of the boat inspections would not only be to prevent additional invasive species from entering the lake through its public access points, but also to prevent the infestation of other waterways with invasive species that originated in Mid Lake. The goal would be to cover the landings on the system during the busiest times in order to maximize contact with lake users, spreading the word about the negative impacts of AIS on the lakes, and educating people about how they are the primary vector of its spread. In 2012, 1,169 hours of watercraft inspections were completed on 6 Green Lake boat landings. These efforts were coordinated through the Green Lake Association.

Complimentary Management Efforts

AIS Coordinator

In 2012, the Green Lake Association (GLA) was working with the Green Lake County Land Conservation Department (GLCLCD) to hire and AIS coordinator for Green Lake. The WDNR recommended that GLCLCD partner with Marquette County Land Conservation Department and the Golden Sands Resource Conservation and Development to make a multi-county position. Earlier this year, Chris Hamerla was hired to carry out these activities. Through this program, the AIS Coordinator has already hosted a Hand Harvesting Workshop this summer as well as trained volunteers on Clean Boats Clean Waters watercraft inspection techniques.

Green Lake Conservancy Program

The Green Lake Conservancy program accepts tax-deductible contributions to fund conservation practices, purchase lands, and facilitate conservation easements; all with the intention of improving Green Lake's water quality by focusing on the quality of its watershed. Most of the conservancy properties are owned by the GLSD and the majority of the local funds used to purchase the properties were supplied by the GLSD. In addition, the majority of the conservancy properties were purchased through the assistance of grants that were written and submitted by the GLSD (Charlie Marks). Since 1997, the Green Lake Conservancy and its partners have conducted 14 separate land acquisitions consisting of nearly 600 acres of watershed and 1,700 feet of shorelands (Figure 1).

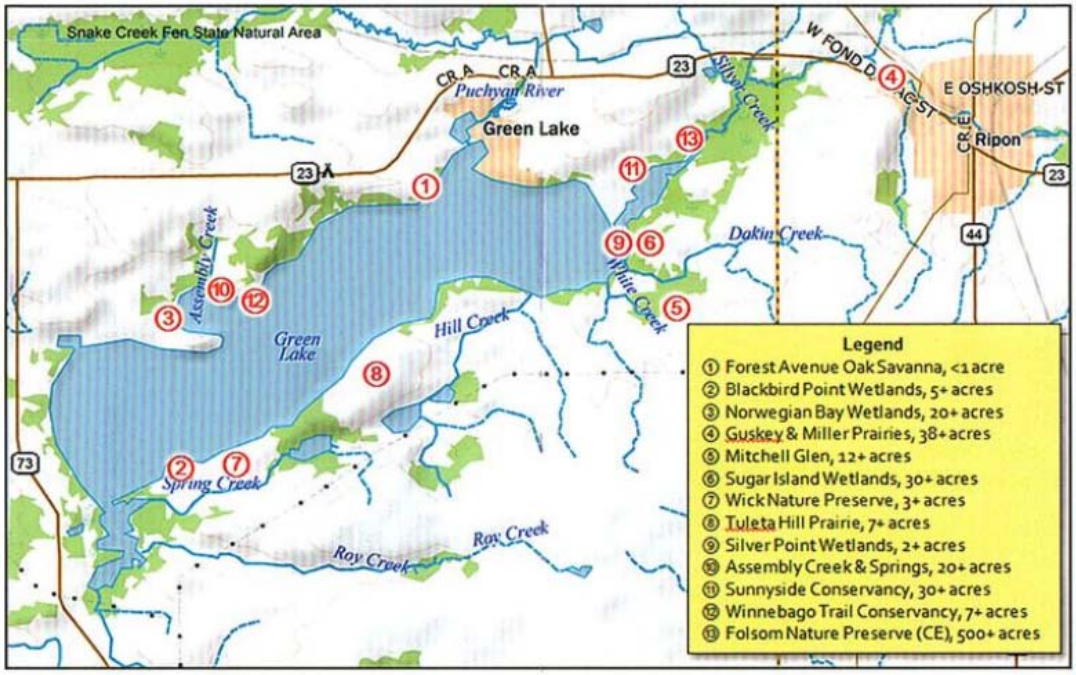


Figure 1. Preserved and Protected Properties through the Green Lake Conservancy Program.

Revitalization of Shoreland Vegetation Project

The Revitalization of Shoreland Vegetation Program (RSVP) was started in Green Lake in the lake 1990s through a joint effort between the GLSD and the GLA. Both organizations have contributed thousands of dollars to this effort over the past 15 years. This program is now coordinated exclusively by the GLSD and has restored over 80 projects on and around Big Green Lake. This includes tens of thousands of feet on Big Green as well as our tributaries. This program provides training and certification to local contractors who perform this service under RSVP. The GLSD also makes grant dollars available to local property owners who meet the requirements of the program.

Green Team Events & Partners in Education Program

The GLSD is a founder and major sponsor of the GLA's Green Team events and outings. Started in 2008, this partnership between the GLSD, GLA, Green Lake Conservancy, and the Green Lake School District allows volunteer educators to introduce the public to natural facets of the Green Lake Ecosystem. These interactive field trips allow Green Lake stakeholders to go beyond passive education to learn about ways to respect, protect, and enhance the Green Lake ecosystem. An example of an upcoming Green Team Outings is to visit a Prairie Demonstration Site at a local residence.

While the Green Team Outings are family-orientated events, the GLSD also facilitates Partners In Education, a program in which the GLSD works directly with local schools (grade schools, high schools and colleges) to meet these objectives. Example topics of this program include purple loosestrife biological control rearing and water quality monitoring. The GLSD also provides funding to Partners In Education to carry out the activities/projects.

PROJECT DELIVERABLES

Annual Letter Report

During the winter following each growing season, a letter report would be provided to the sanitary district that would include an assessment of the prior spring's treatment and guidance for the following year's control program. All maps depicting the Early-Season AIS and Peak-Biomass Survey results and recommended treatment areas would be included within the report. Those remedial actions may include further monitoring, manual harvesting (hand removal), herbicide treatments, or a combination of all three. All reports would be presented in electronic format via email.

Green Lake Aquatic Vegetation Report

A separate report from the Annual Letter Report would be created based upon the point-intercept and community mapping surveys completed on Green Lake during 2014. This document would analyze the current condition of Green Lake's aquatic vegetation, as well as make comparisons with previous studies to understand whether the lake's plant population has changed over time. A single hard copy of this report would be provided to the district. The report would be made available electronically via email or other suitable avenue.

Annual GLSD Presentation

Following the completion of the annual letter report, an Onterra staff member would make a presentation of the report's results and recommendations to the Sanitary District Board.

Stakeholder Participation Components

Unless specifically indicated otherwise, the GLSD would be responsible for providing the necessary deliverables to the WDNR for those components listed within the Stakeholder Participation Section (Volunteer Efforts Subcategory on cost breakdown table). The deliverables for these activities may include entering the appropriate information within the WDNR's Surface Water Integrated Monitoring System (SWIMS) or providing a brief narrative of the activities to the WDNR.

PROJECT COST ESTIMATE

The cost breakdown table below summarizes the project costs from the three separate cost breakdown tables. Please note that within the associated cost breakdown tables, "T" preceding a year indicates that the task is associated with that year's treatment.

Green Lake AIS Monitoring & Control Strategy Development 2013-2015		
	Cash Costs	**Donated Value**
CONSULTING SERVICES SUBTOTAL	***$59,130.00***	***$0.00***
HERBICIDE APPLICATION & RELATED FEES SUBTOTAL	***$159,590.00***	***$0.00***
VOLUNTEER EFFORTS SUBTOTAL	***$700.00***	***$5,040.00***
Project Subtotals	***$219,420.00***	***$5,040.00***
Total Project	**$224,460.00**	
State Share Requested (65%)	**$145,899.00**	

Consulting Services Cost Breakdown Table

	Cash Costs	**Donated Value**
CONSULTING SERVICES		
2013 AIS Monitoring & Reporting		
Silver Creek Estuary		
2013 Early-Season AIS Survey - June 2013	$1,070.00	
2013 Summer Peak-biomass Surveys - Summer 2013	$1,070.00	
2013 Basin-wide Point-intercept Survey - June 2013	$840.00	
2013 Emergent & Floating-Leaf Community Mapping - Summer 2013	$1,080.00	
Specimen Collection & Vouchering	$395.00	
City Millpond		
2013 Early-Season AIS Survey - June 2013	$1,860.00	
2013 Summer Peak-biomass Surveys - Summer 2013	$1,860.00	
2013 Basin-wide Point-intercept Survey - June 2013	$1,240.00	
2013 Emergent & Floating-Leaf Community Mapping - Summer 2013	$550.00	
Specimen Collection & Vouchering	$395.00	
Beyers Cove		
2013 Early-Season AIS Survey - June 2013	$1,070.00	
2013 Summer Peak-biomass Surveys - Summer 2013	$1,070.00	
2013 Basin-wide Point-intercept Survey - June 2013	$580.00	
2013 Emergent & Floating-Leaf Community Mapping - Summer 2013	$550.00	
Specimen Collection & Vouchering	$395.00	
2013 Report and 2014 Strategy Development	$915.00	
2013 District Meeting Presentation	$635.00	
2013 Project Administration & Communications	$1,026.00	
2013 Travel Costs (Mileage @ $0.58/mi., Lodging, & Incidentals)	$923.75	
2013 Voucher Material Costs	$100.00	
2013 AIS Monitoring & Reporting Subtotal	*$17,624.75*	*$0.00*

Table continued on following page

Continued from previous page

2014 AIS Monitoring & Reporting		
Silver Creek Estuary		
T2014 Spring Pretreatment Surveys - Spring 2014	*N/A*	
2014 Early-Season AIS Survey - June 2014	$1,860.00	
2014 Summer Peak-biomass Surveys - June 2014	$1,860.00	
2014 Basin-wide Point-intercept Survey - Summer 2014	$1,240.00	
City Millpond		
T2014 Spring Pretreatment Surveys - Spring 2014	$755.00	
2014 Early-Season AIS Survey - June 2014	$1,070.00	
2014 Summer Peak-biomass Surveys - Summer 2014	$1,070.00	
2014 Basin-wide Point-intercept Survey - June 2014	$840.00	
Beyers Cove		
T2014 Spring Pretreatment Surveys - Spring 2014	$755.00	
2014 Early-Season AIS Survey - June 2014	$1,070.00	
2014 Summer Peak-biomass Surveys - Summer 2014	$1,070.00	
2014 Basin-wide Point-intercept Survey - June 2014	$580.00	
Green Lake		
2014 Whole-lake Point-intercept Survey - Summer 2014	$3,790.00	
2014 Emergent & Floating-Leaf Community Mapping - Summer 2014	$1,740.00	
Green Lake Aquatic Vegetation Report - Winter 2014/2015	$1,200.00	
Specimen Collection & Vouchering	$530.00	
2014 Report and 2015 Strategy Development	$1,395.00	
2014 District Meeting Presentation	$635.00	
2014 Project Administration & Communications	$1,026.00	
2014 Travel Costs (Mileage @ $0.58/mi., Lodging, & Incidentals)	$2,104.06	
2014 AIS Monitoring & Reporting Subtotal	*$24,590.06*	*$0.00*
2015 AIS Monitoring & Reporting		
Silver Creek Estuary		
T2015 Spring Pretreatment Surveys - Spring 2015	$975.00	
2015 Early-Season AIS Survey - June 2015	$1,860.00	
2015 Summer Peak-biomass Surveys - June 2015	$1,860.00	
2015 Basin-wide Point-intercept Survey - Summer 2015	$1,240.00	
City Millpond		
T2015 Spring Pretreatment Surveys - Spring 2015	$710.00	
2015 Early-Season AIS Survey - June 2015	$1,070.00	
2015 Summer Peak-biomass Surveys - Summer 2015	$1,070.00	
2015 Basin-wide Point-intercept Survey - June 2015	$840.00	
Beyers Cove		
T2015 Spring Pretreatment Surveys - Spring 2015	$710.00	
2015 Early-Season AIS Survey - June 2015	$1,070.00	
2015 Summer Peak-biomass Surveys - Summer 2015	$1,070.00	
2015 Basin-wide Point-intercept Survey - June 2015	$580.00	
2015 Report and 2016 Strategy Development	$1,395.00	
2015 District Meeting Presentation	$635.00	
2015 Project Administration & Communications	$513.00	
2015 Travel Costs (Mileage @ $0.58/mi., Lodging, & Incidentals)	$1,317.19	
2015 AIS Monitoring & Reporting Subtotal	*$16,915.19*	*$0.00*
CONSULTING SERVICES SUBTOTAL	***$59,130.00***	***$0.00***

Herbicide Application & Related Fees Cost Breakdown Table

	Cash Costs	Donated Value
HERBICIDE APPLICATION & RELATED FEES		
2014 Treatment Costs		
Silver Creek Estuary		
No Treat in 2014	*N/A*	
WDNR Permit Fees	*N/A*	
City Millpond		
47.7 acres (0.625 ppm ae 2,4-D/ 1.875 ppm ai endothall) - Spring 2014	$22,250.00	
WDNR Permit Fees	$1,212.50	
Beyers Cove		
27.4 acres (0.625 ppm ae 2,4-D/ 1.875 ppm ai endothall) - Spring 2014	$15,595.00	
WDNR Permit Fees	$705.00	
2014 Treatment Costs Subtotal	*$39,762.50*	
2015 Treatment Costs		
Silver Creek Estuary		
215.9 acres (0.5 ppm ae 2,4-D/ 1.5 ppm ai endothall) - Spring 2015	$76,900.00	
WDNR Permit Fees	$1,270.00	
City Millpond		
47.7 acres (0.625 ppm ae 2,4-D/ 1.875 ppm ai endothall) - Spring 2015	$23,365.00	
WDNR Permit Fees	$1,212.50	
Beyers Cove		
27.4 acres (0.625 ppm ae 2,4-D/ 1.875 ppm ai endothall) - Spring 2015	$16,375.00	
WDNR Permit Fees	$705.00	
2014 Treatment Costs Subtotal	*$119,827.50*	
HERBICIDE APPLICATION & RELATED FEES SUBTOTAL	***$159,590.00***	***$0.00***

Volunteer Efforts Cost Breakdown Table

	Cash Costs	Donated Value
VOLUNTEER EFFORTS		
Clean Boats/Clean Waters	*Within separate grants*	
Herbicide Concentration Monitoring		
12 Sample Events x 4hr/Event x GLSD Employee Cost [$45/hr] x 2 yrs		$4,320.00
Sample Shipping Costs x 2 yrs	$200.00	
Treatment Posting in Newspaper (4hrs x GLSD Employee Cost [$45/hr] x 2 yrs)		$360.00
Treatment Posting in Newspaper (submission costs x 2yrs)	$100.00	
Treatment Notification letters (4hrs x GLSD Employee Cost [$45/hr] x 2 yrs)		$360.00
Treatment Notification letters (printing & postage costs x 2yrs)	$400.00	
VOLUNTEER EFFORTS SUBTOTAL	***$700.00***	***$5,040.00***

State of Wisconsin
Department of Natural Resources

Aquatic Invasive Species (AIS) Control Grant Application

Form 8700-307 (12/11)

Notice: Use of this form is required by the DNR for any application filed pursuant to ch. NR 198, Wis. Adm. Code. Personal information collected on this form, including such data as your name, address, phone number, etc., will be used for management and enforcement of DNR programs, and is not intended to be used for any other purpose. Information will be made accessible to requesters under Wisconsin's Open Records laws (s. 19.32-19.39, Wis. Stats.) and requirements.

Section I: Application Type

Check one:

☐ Education, Prevention & Planning ☐ Early Detection & Response ☒ Established Population Control

Legislative District Numbers	
Senate	Assembly
14	41

To determine your legislative district, go to
http://165.189.139.210/WAML//
Type in complete address, next screen shows information

Section II: Applicant Information

Applicant: Green Lake Sanitary District

Waterbody Name: Green Lake (Silver Creek Estuary, Beyers Cove, City Millpond)

Project County/Township/Section/Range: Green Lake County/T16N/R13E/S21

Type of Eligible Lake or River Applicants

☐ County ☐ Tribe ☐ Other Gov't Unit ☐ Federal
☐ City ☒ Sanitary Dist. ☐ Nonprofit Org. ☐ State
☐ Village ☐ Dist. ☐ College, School, etc. ☐ Other _____
☐ Town ☐ Assoc.

Authorized Representative Named by Resolution	Project Contact Name
Charlie Marks	Tim Hoyman
Authorized Representative Title: Sanitary District Administrator	Project Contact Title: Aquatic Ecologist; Onterra, LLC
Address: P.O. Box 417	Address: 815 Prosper Road
City: Green Lake; State: WI; ZIP Code: 54941	City: De Pere; State: WI; ZIP Code: 54115
Daytime Phone (area code): 920.295.4488; Evening Phone (area code): 920.295.4488	Daytime Phone (area code): 920.338.8860; Evening Phone (area code):
E-Mail Address:	E-Mail Address: thoyman@onterra-eco.com

Mail Check to: (if different from applicant)

Name and Title	Address
Organization	City; State; ZIP Code

For DNR Use Only

Application Type	Date Received	Date Reviewed (AIS/LC/RC)	AIS/Lake/River Coordinator Approval/Date
Waterbody ID #	Adequate Public Access ☐ Yes ☐ No	Environmental Grants Specialist Approval / Date	
Eligible Project ☐ Yes ☐ No	Eligible Applicant ☐ Yes ☐ No	Project Priority Rank	Research / Demo Project ☐ Yes ☐ No
Prior Grant Award(s) ☐ Yes ☐ No	Fiscal Year(s)	Amount Received to Date $	Project Awarded ☐ Yes ☐ No

Aquatic Invasive Species (AIS) Control Grant Application

Section III: Project Information

Project Title	Proposed Ending Date
Green Lake AIS Monitoring & Control Strategy Development – Phase I: 2013-2015	December 31, 2016

Other Management Units	Letter of Support	Other Management Units	Letter of Support
1.	☐	4.	☐
2.	☐	5.	☐
3.	☐	6.	☐

Section IV: Public Access

Number of Public Vehicle Trailer Parking Spaces Available at Public Access Sites: 110

Number of Public Access Sites Including Boat Launches and Walk-ins: 7 public ramps

Section V: Cost Estimate and Grant Request

Section V must be completed or application will be returned. Details in support of Section V are welcome.	**Project Costs** Column 1 Cash Costs	Column 2 Donated Value	*DNR Use Only*
1. Salaries, wages and employee benefits (donated GLSD time)		$5,040.00	
2. Consulting services (Onterra)	$59,130.00		
3. Purchased services: (Herbicide Application Costs)	$154,485.00		
4. Other purchased services (specify) : (WDNR Permit Fees)	$5,105.00		
5. Plant material			
6. Supplies (specify): (Printing, Postage, & Misc Fees – by GLSD)	$700.00		
7. Depreciation on equipment			
8. Hourly equipment use charges			
9. State Lab of Hygiene (SLOH) Costs			
10. Non-SLOH Lab Costs			
11. Other (specify): (Volunteer In-kind Labor)			
12. **Subtotals** (Sum each column)	*$219,420.00*	*$5,040.00*	
13. **Total Project Cost Estimate** (sum of **column 1** plus sum of **column 2)**	**$224,460.00**		
14. **State Share Requested (up to 75% of total costs may be requested)**	**$145,899.00**		

Subject to the following maximum grant amounts:

- Education, Prevention and Planning Projects—up to $150,000
- Early Detection and Response Projects—up to $20,000
- Established Infestation Control Projects—up to $200,000

Use of Federal funding as match: (check box below if applicable)

☐ We are using or planning to apply for Federal funds to be used as match.
If known, indicate source of funding:

Aquatic Invasive Species (AIS) Control Grant Application

Section VI: Attachments (check all that are included)

A. For all applicants: *(Refer to instructions for applicability.)*

- ☒ 1. Authorizing resolution
- ☒ 2. Letters of support
- ☒ 3. Map of project location and boundaries
- ☒ 4. Lake map with public access sites identified (per Section VI of this application and page 20 of the guidelines)
- ☒ 5. Itemized breakdown of expenses
- ☐ 6. For projects that entail sending samples to the State Laboratory of Hygiene (SLOH) only: a completed SLOH Projected Cost Form
- ☒ 7. Project scope/description:
  - ☒ a. Description of project area
  - ☒ b. Description of problem to be addressed by project
  - ☒ c. Discussion of project goal and objectives
  - ☒ d. Description of methods and activities
  - ☒ e. Description of project products or deliverables
  - ☒ f. Description of data to be collected, if applicable
  - ☒ g. Description of existing and proposed partnerships
  - ☒ h. Discussion of role of project in planning and/or management of lake
  - ☒ i. Timetable for implementation of key activities
  - ☒ j. Plan for sharing project results
  - ☒ k. Other information in support of project no described above

B. For applicants that are Lake Management Organizations (LMOs), River Management Organizations (RMOs) or Qualified Non-profit Organizations:

- ☐ 1. For first time applicant LMOs/RMOs only: A completed Form 8700-226 (Lake Association Organizational Application) or 8700-287 (River Management Organization Application)
- ☐ 2. For first time applicant Qualified Nonprofit Organizations only: Copy of IRS 501(c)(3) determination letter and copies of your Articles of Incorporation and Bylaws
- ☐ 3. List of national and/or statewide organizations with which you are affiliated
- ☐ 4. List of board members' names, including municipality and county of residence. Designate officers
- ☐ 5. Documentation of current financial status
- ☐ 6. Brochures, newsletters, annual reports or other information about your organization

C. Education, Prevention and Planning Projects: *(No additional attachments required.)*

D. Early Detection and Response Projects:

- ☐ 1. APM Permit

E. Established Infestation Control Projects:

- ☒ 1. Management Plan
- ☐ 2. APM Permit

Section VII: Certification

I certify that information on this application and all its attachments are true and correct and in conformity with applicable Wis. Statutes

Print/Type Name of Authorized Representative	Title of Authorized Representative
Charlie Marks	Sanitary District Administrator
Signature of Authorized Representative	**Date Signed**

GREEN LAKE SANITARY DISTRICT
Green Lake County, Wisconsin

Department of Natural Resources
Grant Project Resolution 2013-05

AIS Control Grant Resolution

WHEREAS Big Green Lake in Green Lake County is an important resource used by the public for recreation and enjoyment ; and

WHEREAS we recognize that a well-planned and holistic lake and aquatic invasive species management project will better the lake now and for future users; and

WHEREAS the control and prevention of aquatic invasive species are important to the health and well-being of the lake; and

WHEREAS we are qualified to carry out the responsibilities of this planning project

IT IS, THEREFORE, RESOLVED THAT:

The Green Lake Sanitary District requests the funds and assistance available from the Wisconsin Department of Natural Resources and

HEREBY AUTHORIZES Charlie Marks to act on behalf of the Green Lake Sanitary District to: Submit an application to the State of Wisconsin for financial aid for monitoring, planning and education purposes; sign documents; and take all necessary action steps to undertake, direct and complete an approved grant.

BE IT FURTHER RESOLVED THAT the Green Lake Sanitary District will meet the obligations of this project including the timely publication of project results as well as to meet all the financial obligations as required by this grant including the prompt payment of our applicable 35% commitment to project costs.

We understand the importance of a continuing management program for Big Green Lake and we intend to proceed on that course.

Passed and adopted this 16th day of July, 2013, at a duly convened meeting of the Board of Commissioners of the Green Lake Sanitary District, at Princeton, Wisconsin.

Roll Call on Resolution 2013-05

Ayes 3 Nays 0

GREEN LAKE SANITARY DISTRICT

Jerry Specht, President

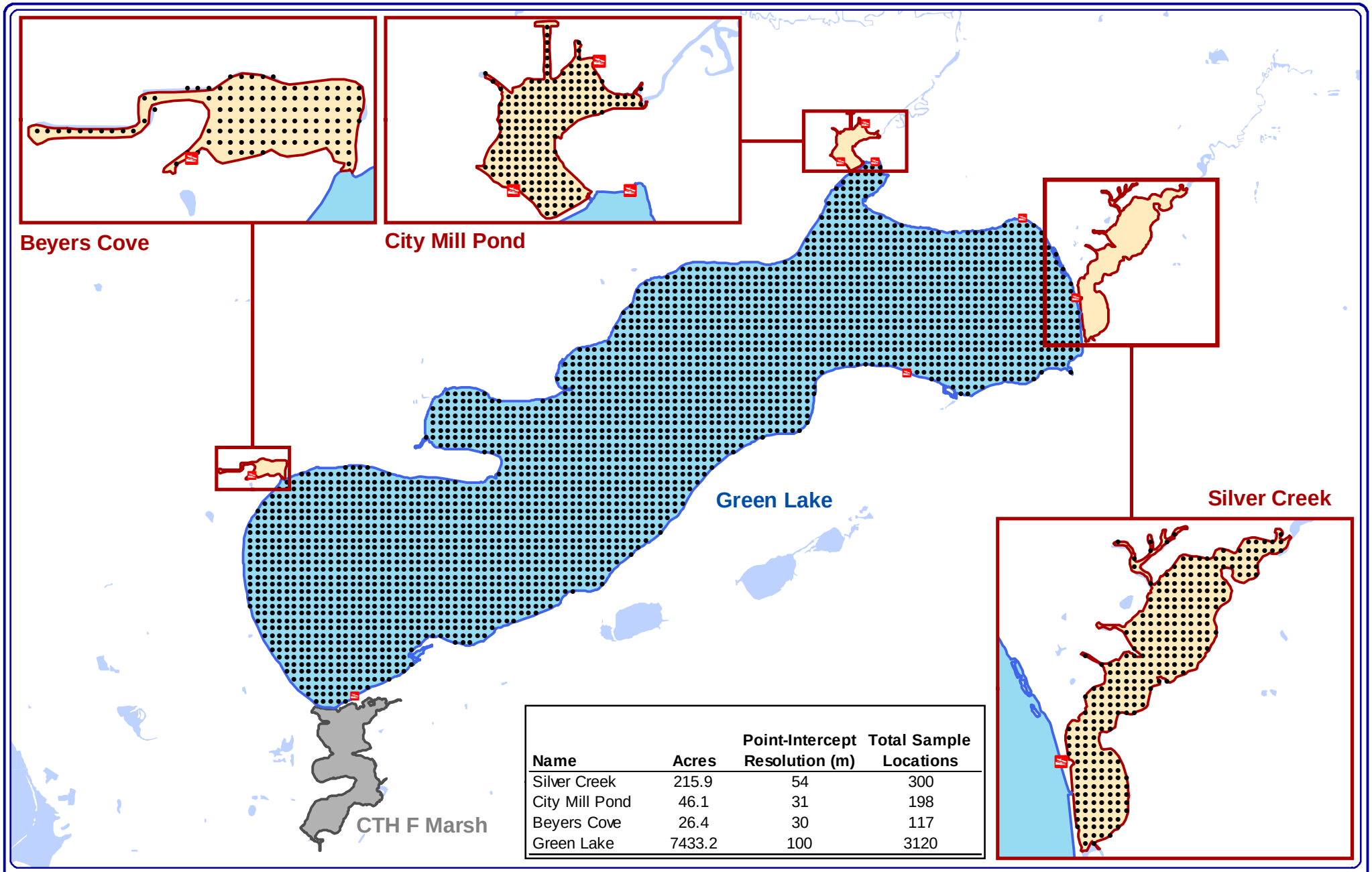
Nancy Hill, Commissioner

Sara Mueller, Commissioner

CERTIFICATION

The undersigned Nancy Hill certifies that this Order was duly adopted by the Green Lake Sanitary District Board of Commissioners on July 16, 2013, by a vote of 3 Ayes and 0 Noes.

Nancy Hill, Secretary



Name	Acres	Point-Intercept Resolution (m)	Total Sample Locations
Silver Creek	215.9	54	300
City Mill Pond	46.1	31	198
Beyers Cove	26.4	30	117
Green Lake	7433.2	100	3120

N
W E
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0.5
Miles

Onterra LLC
Lake Management Planning
815 Propser Road
De Pere, WI 54115
920.338.8860
www.onterra-eco.com

Sources:
Roads and Hydro: WDNR

Map Date: June 12, 2013

Extent of large map shown in red.

Legend

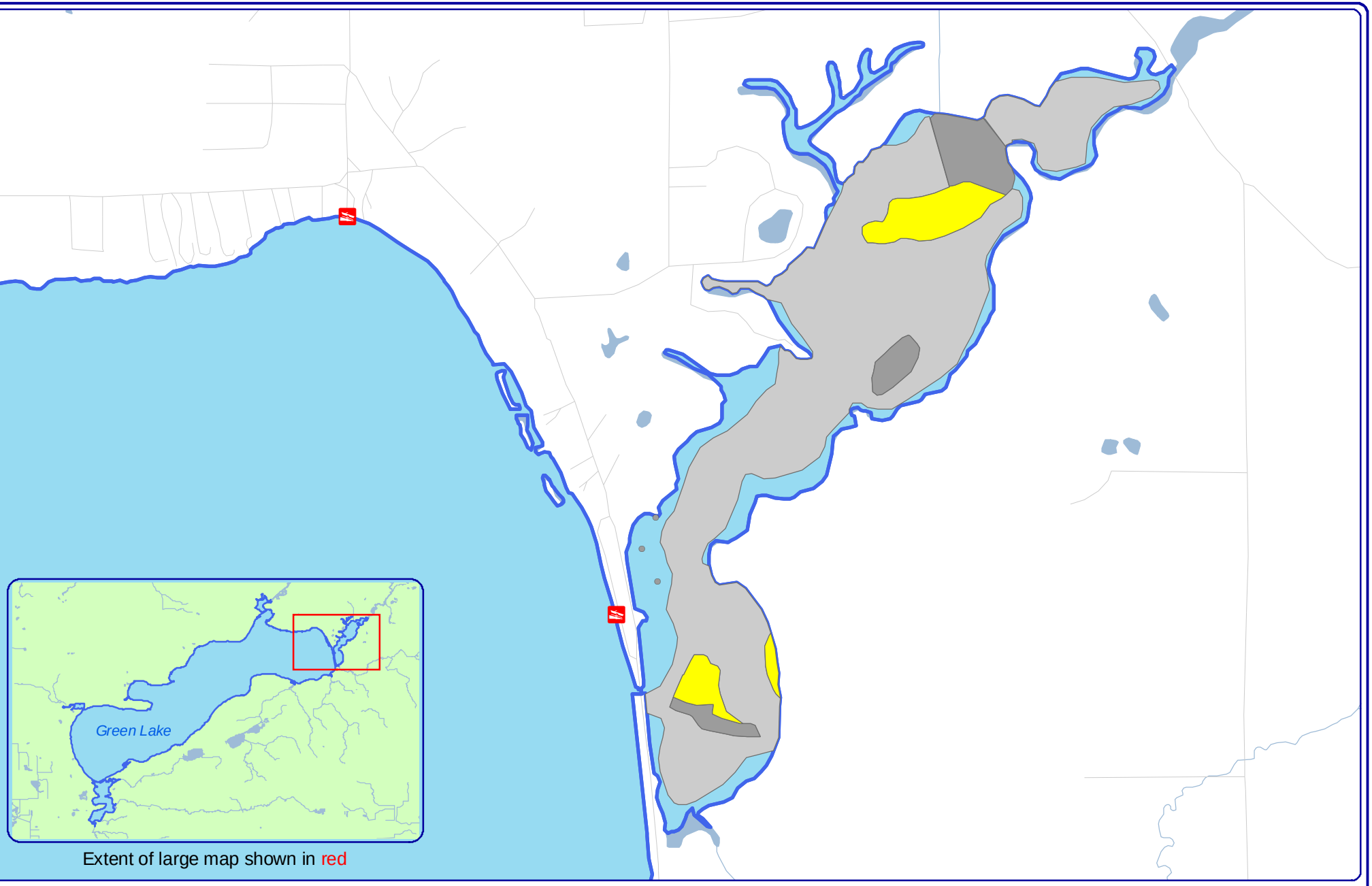
- Green Lake
- Project Estuaries/Basins
- Point-Intercept Location

Map 1

Green Lake

Green Lake County, Wisconsin

Project Location & Lake Boundaries



N
W E
S

1,200
Feet

Onterra LLC
Lake Management Planning
815 Prosper Road
De Pere, WI 54115
920.338.8860
www.onterra-eco.com

Sources:
Roads and Hydro: WDNR
Aquatic Plants: Onterra, 2013
Map Date: July 9, 2013
Filename: SilverCreek_EWM_June13.mxd


Project Location in Wisconsin

Legend

Hybrid Water Milfoil (June 2013)

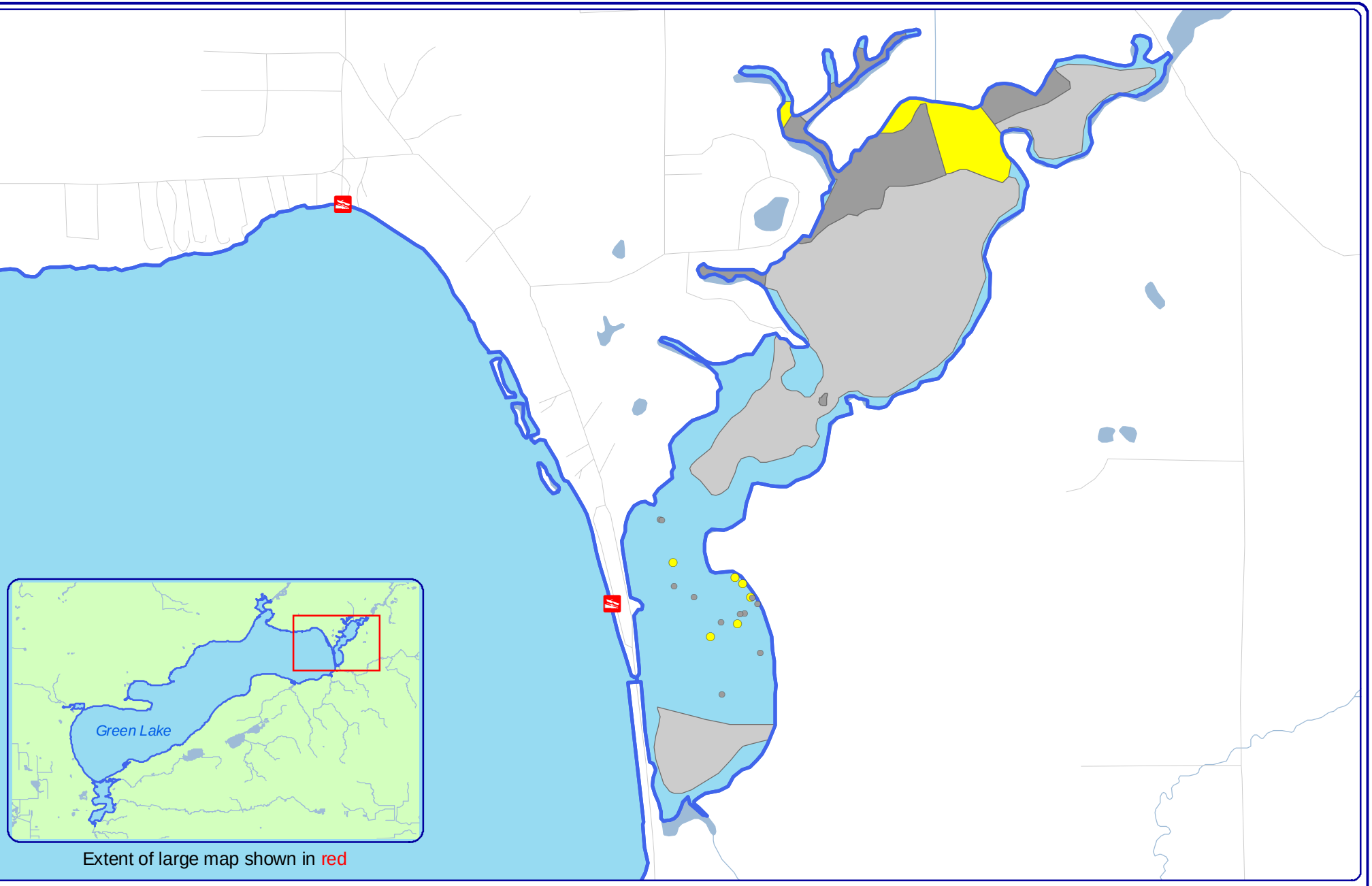
- Highly Scattered
- Scattered
- Dominant
- Highly Dominant
- Surface Matting
- Single or Few Plants
- Clumps of Plants
- Small Plant Colony
- Public Access

Map 2

Silver Creek - Green Lake

Green Lake County, Wisconsin

June 2013 ESAIS
Survey Results: HWM



N
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S

1,200
Feet

Onterra LLC
Lake Management Planning
815 Prosper Road
De Pere, WI 54115
920.338.8860
www.onterra-eco.com

Sources:
Roads and Hydro: WDNR
Aquatic Plants: Onterra, 2013
Map Date: July 9, 2013
Filename: SilverCreek_CLP_June13.mxd


Project Location in Wisconsin

Legend

Curly-leaf Pondweed (June 2013)

- Highly Scattered
- Scattered
- Dominant
- Highly Dominant
- Surface Matting
- Single or Few Plants
- Clumps of Plants
- Small Plant Colony
- Public Access

Map 3

Silver Creek - Green Lake

Green Lake County, Wisconsin

June 2013 ESAIS Survey Results: CLP

Extent of large map shown in red

N
W E
S

440

Feet

Onterra LLC
Lake Management Planning
815 Prosper Road
De Pere, WI 54115
920.338.8860
www.onterra-eco.com

Sources:
Roads and Hydro: WDNR
Aquatic Plants: Onterra, 2013
Map Date: July 9, 2013
Filename: CityMillpond_EWM_June13.mxd

Project Location in Wisconsin

Legend

Hybrid Water Milfoil (June 2013)

- Highly Scattered
- Scattered
- Dominant
- Highly Dominant
- Surface Matting
- Single or Few Plants
- Clumps of Plants
- Small Plant Colony
- Public Access

Map 4

City Millpond - Green Lake

Green Lake County, Wisconsin

June 2013 ESAIS
Survey Results: HWM

Extent of large map shown in red

460

Feet

Onterra LLC
Lake Management Planning
815 Prosper Road
De Pere, WI 54115
920.338.8860
www.onterra-eco.com

Sources:
Roads and Hydro: WDNR
Aquatic Plants: Onterra, 2013
Map Date: July 9, 2013
Filename: CityMillpond_CLP_June13.mxd

Project Location in Wisconsin

Legend

Curly-leaf Pondweed (June 2013)

- Highly Scattered
- Scattered
- Dominant
- Highly Dominant
- Surface Matting
- Single or Few Plants
- Clumps of Plants
- Small Plant Colony
- Public Access

Map 5

City Millpond - Green Lake

Green Lake County, Wisconsin

June 2013 ESAIS
Survey Results: CLP

Extent of large map shown in red

N
W E
S

340
Feet

Onterra LLC
Lake Management Planning
815 Prosper Road
De Pere, WI 54115
920.338.8860
www.onterra-eco.com

Sources:
Roads and Hydro: WDNR
Aquatic Plants: Onterra, 2013
Map Date: July 9, 2013
Filename: BeyersCove_EWM_June13.mxd

Project Location in Wisconsin

Legend

Hybrid Water Milfoil (June 2013)

- Highly Scattered
- Scattered
- Dominant
- Highly Dominant
- Surface Matting
- Single or Few Plants
- Clumps of Plants
- Small Plant Colony
- Public Access

Map 6

Beyers Cove - Green Lake

Green Lake County, Wisconsin

June 2013 ESAIS Survey Results: HWM

Extent of large map shown in red

N
W E
S

325
Feet

Onterra LLC
Lake Management Planning
815 Prosper Road
De Pere, WI 54115
920.338.8860
www.onterra-eco.com

Sources:
Roads and Hydro: WDNR
Aquatic Plants: Onterra, 2013
Map Date: July 9, 2013
Filename: BeyersCove_CLP_June13.mxd

Project Location in Wisconsin

Legend

Curly-leaf Pondweed (June 2013)

- Highly Scattered
- Scattered
- Dominant
- Highly Dominant
- Surface Matting
- Single or Few Plants
- Clumps of Plants
- Small Plant Colony
- Public Access

Map 7

Beyers Cove - Green Lake

Green Lake County, Wisconsin

June 2013 ESAIS Survey Results: CLP

Aquatic Invasive Species Control Grants **Established Population Control Ranking Questions** **37** Maximum Points	**Ranking Points**	**Projected Aug13 Score**	
A. The degree to which the project includes a prevention and control strategy. **(6 points possible)**			
1) The water being controlled has, or the project includes, a Clean Boats, Clean Waters watercraft inspection program per the requirements of s. NR 198.22 (1)(d) or an approved Alternative Equivalent (see guidance).	2 points	2	Conducted 1,169 hrs of watercraft inspection in 2012 on Green Lake
2) The project will conduct other complimentary source containment activities that go above and beyond minimum level of inspection and signage (e.g. boat washing or cleaning stations, augmented enforcement).	2 points	2	Hired AIS Coordinator (Hamerla) in cooperation with Green Lake County/Marquette County/Golden Sands RC&D to go above and beyond traditional CBCW & AIS Signage
3) The water being controlled has, or the project will train, volunteers to identify AIS and conduct water body surveillance monitoring for early detection using accepted WDNR or citizen-based monitoring (CLMN/Project RED, etc) protocols where data is being entered into SWIMS.	2 points	2	AIS Coordinator has conducted AIS identification, hand-removal methods, and CBCW training sessions in 2013
B. The degree to which the project will prevent the spread of aquatic invasive species. (7 points possible)			
1a) The control activity will take place on a Statewide AIS Source Water listed on the following table.	5 points	*5*	On AIS Source Water list
OR			
1b) The control activity will take place on a major AIS source water with high public use (lakes greater than 500 acres and all boat-able rivers that meet or exceed the minimum boating access criteria in NR 1.91(4) or wetlands greater than 500 acres in public ownership) or the project includes a Statewide AIS Source Water where less than 50% of the activities are directed.	4 points	*got 1a*	
OR			
1c) The control activity takes place on a significant AIS source water with high public use (lakes between 500 and 100 acres and all rivers that meet or exceed the minimum boating access criteria in NR 1.91(4); wade-able streams with public access or wetlands between 500 and 100 acres in public ownership.	3 points	*got 1a*	
OR			
1d) The control activity takes place on an a minor AIS source water (lakes less than 100 acres that meet or exceed the minimum boating access criteria in NR 1.91(4); any river or stream with public access or wetlands less than 100 acres in public ownership).	2 points	*got 1a*	
2) The project will control a NR40 prohibited species e.g Hydrilla, yellow floating heart, spiny water flea, red swamp crayfish, etc.	2 points	0	HWM and CLP are "restricted," not "prohibited"
C. The degree to which the project protects or improves the aquatic ecosystem's diversity, ecological stability or recreational uses. (3 points possible)			
1) Project plan implementation includes stocking or planting to reintroduce native community species or implements other actions or changes in management strategies that will provide added protection to native species beyond herbicide treatments alone.	2 points	2	Project Plan implements carp barrier between Green Lake and Silver Creek Estuary. This was put in place to restore the vegetation of the estuary.
2) Project area has a high degree of native biodiversity or is critical habitat, as expressed by: ● an above eco-region average aquatic or wetland plant FQI ● the presence of a listed aquatic species (NHI endangered, threatened or watch) ● is an ERW or ORW water ● has a Sensitive Area or Critical Habitat designation ● is within or adjacent to a State Natural Area, State Park, other publicly owned unique natural ea or such an area owned/managed by a nonprofit conservation organization (e.g., Nature Conservancy).	1 point	1	● Floristic Quality of Green Lake exceeds ecoregion median (FQI = 30.4) ● 600 acres of watershed and 1,700 feet of shorelands have been aquired through the Green Lake Conservancy Program
D. The stage of the infestation in the water body. (4 points possible)			
1) Project addresses a pioneer population (as defined by s.198.12 (8)), or was a past early response project.	2 points	0	Neither
2) The target species is low in density and still at a controllable level as determined by being found in 25%, or less, of the colonizable area of the project water body (e.g. only the littoral zone of a lake can be colonized by EWM).	1 point	1	Project focus is primarily for Silver Creek Estuary, which is below these thresholds. Preliminary June 2013 Data: Silver Creek: EWM=22%, CLP=20% Beyers Cove: EWM=74%, CLP=34% City Millpond: EWM=52%, CLP=25%
3) It is well documented (P/I surveys or GIS mapping, verified) that the target species is a rapidly expanding population (doubling annual increase in areal coverage or FOO). Population is still under 25% threshold above.	1 point	1	Rapid expansion of EWM/CLP in Silver Creek Estuary after carp removal program started. Still below 25% threshold
E. The degree to which the project will be likely to result in successful long-term control. (4 points possible)			
1) As also included in the approved management plan, the project employs multiple strategies (for the same species) to achieve and maintain control objectives. [e.g. hand pulling in combination with chemical treatment and biocontrol, draw downs, etc.]	2 points	2	The implentation of a carp barriers on Silver Creek and County K Marsh (Separate project) are 1 step to obtain native vegetation objectives. The 2nd step is to use herbicide control techniques to ensure that these areas aren't overrun by the pioneering AIS.
2) The sponsor has had a pre-application grant scoping consultation with the Department and the application is consistent with the results of those discussions.	1 point	1	Numerous correspondences
3) There is a low risk of reestablishment and spread after control activity occurs. All of the following apply: the project site is not impounded; is not tributary to or connected to any other AIS populated water and; the entire AIS population is being targeted for control.	1 point	0	Is impounded

Aquatic Invasive Species Control Grants **Established Population Control Ranking Questions** **37** Maximum Points	**Ranking Points**	**Projected Aug13 Score**	
F. The availability of public access to, and public use of, the water body. (2 points possible)			
1) Any lake of 100 surface acres or greater and any boat-able river that has more than the minimum public boating access as defined in s. NR 1.91(4) or any wetland greater than 50 acres in public ownership.	1 point	1	Has minimum public access
2) The water provides significant alternative public access and use opportunities that include two of the following at separate locations: public swimming beach; park or other public land with accessible frontage; public fishing pier or wildlife observation area; two or more private resorts, youth camps or sportsmen clubs; or where more than 50% of the lake or river shore in the project area is in public ownership.	1 point	1	Numerous public/parklands, resorts, etc
G. The degree to which the proposed project includes or is complemented by other management efforts including watershed pollution prevention and control, native vegetation protection and restoration and other actions that help control aquatic invasive species or resist future colonization. (2 points possible)			
Applicant demonstrates that they have implemented, or been a significant participant in, or the project proposes, a shoreland restoration, habitat protection, sediment and nutrient control, water level management or other substantial lake stewardship activity (not including education or planning) that protects the lake ecosystem. (Score 1 point per action, provide documentation).			
Activity 1	1 point	1	Green Lake Conservancy Program that purchases land to keep in natural
Activity 2	1 point	1	Revitalization of Shoreland Vegetation Project
		extra	Green Team Outings
		extra	Partners in Education Program
2) The sponsor is a Green Tier Community Charter Member. (City of Middleton, Bayfield, Fitchburg, Appleton, Weston, Monona, Eau Claire, La Crosse, & the Village of Bayside)	1 point	0	
H. Community support and commitment, including past efforts to control aquatic invasive species. (5 points possible)			
1) This is demonstrated by requesting less than the maximum state share cost rate (cash costs) for the total project costs. No more than 25% of the project match can be in-kind or donated labor. The sponsor is requesting:			
65% State Share	1 points	1	
OR			
50% State Share	2 points	-	
2) The project has financial support from additional management units, interest groups or organizations committing > 10% of the **hard cash local match**.	1 point	0	Does not apply
3) The sponsor conducted AIS control, consistent with their Department-approved plan, in the previous season ***without*** financial assistance from the State. They may have begun implementation without a grant or received grants in past but not the past season.	1 point	1	Conducted limited treatment in 2013 on Silver Creek Estuary without grant funds to test efficay of liquid 2,4-D.
I. Whether the sponsor has previously received a grant for a similar project for the same water body. (2 points)			
1) There has not been an AIS Established Population Control grant for the same species in the same waterbody in the last five years.	2 points	2	No Prior AIS-EPC Grant
J. The degree to which the project will advance the knowledge and understanding of the prevention and control of aquatic invasive species. (1 point possible)			
1) Project has an evaluation component that will be conducted by an objective outside entity to assess project outcomes or is a participant in a Department-sponsored research and demonstration project on the AIS research priority list.	1 point	1	Herbicide concentration monitoring will be conducted in association with T2014 & T2015 if invited.
		28	

	Overview Category	**Points**
The degree to which the project includes a prevention and control strategy.	A	6 / 6
The degree to which the project will prevent the spread of aquatic invasive species.	B	5 / 7
The degree to which the project protects or improves the aquatic ecosystem's diversity, ecological stability or recreational uses.	C	3 / 3
The stage of the infestation in the water body.	D	2 / 4
The degree to which the project will be likely to result in successful long-term control.	E	3 / 4
The availability of public access to, and public use of, the water body.	F	2 / 2
The degree to which the proposed project includes or is complemented by other management efforts including watershed pollution prevention and control, native vegetation protection and restoration and other actions that help control aquatic invasive species or resist future colonization.	G	2 / 3
Community support and commitment, including past efforts to control aquatic invasive species.	H	2 / 5
Whether the sponsor has previously received a grant for a similar project for the same water body.	I	2 / 2
The degree to which the project will advance the knowledge and understanding of the prevention and control of aquatic invasive species.	J	1 / 1
		28 / 37