Minocqua / Kawaguesaga Lakes
AIS Control Grant Application

Minocqua / Kawaguesaga Lakes

August 1, 2013

Prepared for:

Minocqua/Kawaguesaga Lakes Protection Association, Inc.

By:

Cedar Corporation
604 Wilson Avenue
Menomonie, WI 54751

RESOLUTION # 1

1RESOLUTION OF THE
THE MINOCQUA-KAWAGUESAGA LAKES PROTECTION ASSOCIATION
ONEIDA COUNTY

WHEREAS, the 1Minocqua-Kawaguesaga Lakes are an important resource used by the public for recreation and enjoyment of natural beauty; and

WHEREAS, public use and enjoyment of Minocqua-Kawaguesaga Lakes are best served by protection of Minocqua-Kawaguesaga Lakes from infestation of aquatic invasive species; and

WHEREAS, we recognize the need to provide information or education about aquatic invasive species; and

WHEREAS, we are qualified to carry out the responsibilities of an aquatic invasive species control project.

NOW, THEREFORE, BE IT RESOLVED THAT the Minocqua-Kawaguesaga Lakes Protection Association requests grant funding and assistance available from the Wisconsin Department of Natural Resources under the "Aquatic Invasive Species Control Grant Program" and hereby authorizes the Sally Murwin to act on behalf Minocqua-Kawaguesaga Lakes Protection Association to:

- submit an application to the State of Wisconsin for financial aid for aquatic invasive species control purposes;
- sign documents;
- take necessary action to undertake, direct, and complete an approved aquatic invasive species control grant; and
- submit reimbursement claims along with necessary supporting documentation within six months of project completion date.

BE IT FURTHER RESOLVED THAT the Minocqua-Kawaguesaga Lakes Protection Association will meet the obligations of the aquatic invasive species control project including timely publication of the results and meet the financial obligations of an aquatic invasive species grant, including the prompt payment of our 25% commitment to aquatic invasive species control project costs.

Adopted this day 8th of November, 2012

By a vote of: 12 in favor 0 against 0 abstain

BY: Sally Murwin
Sally Murwin, President
Minocqua-Kawaguesaga Lakes Protection Association

Application

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 may 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 Infestation Control

Legislative District Numbers	
Senate	Assembly
12	34

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: Minocqua Kawaguesaga Lakes Protection Association

Waterbody Name: Lakes Minocqua and Kawaguesaga

Project County/Township/Section/Range: Oneida/T39N/R6E Sec. 11,12, 13, 14, 15, 16, 18, 22

Type of Eligible 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
Sally Murwin	Scott McCurdy
Authorized Representative Title	**Project Contact Title**
President, Minocqua Kawaguesaga Lakes Prot. Assoc.	Environmental Professional
Address	**Address**
PO Box 494	604 Wilson Avenue
City / State / ZIP Code	**City / State / ZIP Code**
Minocqua / WI / 54548	Menomonie / WI / 54751
Daytime Phone (area code)	**Daytime Phone (area code)**
(715) 356-1149	(715) 235-9081
Evening Phone (area code)	**Evening Phone (area code)**
	(715) 556-3131
E-mail Address	**E-Mail Address**
niwrum@charter.net	scott.mccurdy@cedarcorp.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

Section III: Project Information

Project Title	Proposed Ending Date
MKLPA AIS Control 2014-2018	12/31/17

Other Management Units	Letter of Support	Other Management Units	Letter of Support
1. Town of Minocqua	☒	4.	☐
2. Oneida County Land and Conservation Dept	☒	5.	☐
3. Minocqua Area Chamber of Commerce	☒	6.	☐

Section IV: Public Access

Number of Public Vehicle Trailer Parking Spaces Available at Public Access Sites: 188

Number of Public Access Sites Including Boat Launches and Walk-ins: 4

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	16,000.00		
2. Consulting services	247,011.00		
3. Purchased services--printing and mailing			
4. Other purchased services (specify):			
5. Plant material			
6. Supplies (specify)			
7. Depreciation on equipment			
8. Hourly equipment use charges			
9. State Lab of Hygiene (SLOH) Costs			
10. Non-SLOH Lab Costs			
11. Other (specify)		3,600.00	
12. **Subtotals** (sum each column)	263,011.00	3,600.00	
13. **Total Project Cost Estimate** (sum of **column 1 plus** sum of **column 2**)	266,611.00		
14. **State Share Requested (up to 75% of total costs may be requested)**	199,958.25		

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:

Section VI: Attachments (check all that are included)

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

- [x] 1. Authorizing resolution
- [x] 2. Letters of support
- [x] 3. Map of project location and boundaries
- [x] 4. Lake map or river segment with public access sites identified (per Section IV of this application and page 20 of the guidelines)
- [x] 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
- [x] 7. Project scope/description:
  - [x] a. Description of project area
  - [x] b. Description of problem to be addressed by project
  - [x] c. Discussion of project goals and objectives
  - [x] d. Description of methods and activities
  - [x] e. Description of project products or deliverables
  - [x] f. Description of data to be collected, if applicable
  - [x] g. Description of existing and proposed partnerships
  - [x] h. Discussion of role of project in planning and/or management of lake
  - [x] i. Timetable for implementation of key activities
  - [x] j. Plan for sharing project results
  - [x] k. Other information in support of project not 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
- [x] 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 application

E. Established Infestation Control Projects:

- [ ] 1. Management Plan
- [ ] 2. APM Permit application

Section VII: Certification

I certify that information in 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
Sally Murwin	President, Minocqua Kawaguesaga Lakes Prot. Assoc.
Signature of Authorized Representative	**Date Signed**
Sally Murwin	1-21-2013

Letters of Support
Town of Minocqua
Minocqua-Woodruff Area Chamber of Commerce
Oneida County Land and Water Conservation Department

nature's original water park™
MINOCQUA
AREA CHAMBER OF COMMERCE
ARBOR VITAE ~ MINOCQUA ~ WOODRUFF

November 6, 2012

Mr. Kevin Gauthier, Sr.
Water Resources Management Specialist
DNR North Central District
107 Sutliff Avenue
Rhinelander, WI 54501

Dear Mr. Gauthier,

I'm pleased to offer this letter of support for the Minocqua-Kawaguesaga Lakes Protection Association (MKLPA) and their application for an Aquatic Invasive Species Control Grant through the Department of Natural Resources.

It's vital that the waters of Lakes Minocqua and Kawaguesaga remain pristine. Any coordinated effort to maintain that is critical to the long-term viability of north woods tourism, recreation and our fisheries. I applaud the work the grant would allow to continue to control aquatic invasive plants in these waters. Our economy relies on the natural beauty of our clear and clean lakes. It is our responsibility to manage and protect these resources for current and future generations.

In addition to management of the current infestations and preventing future growth, education is also an important component of this program. Clean Boats, Clean Waters has been implemented successfully and is another opportunity to develop public awareness of the proliferation of aquatic invasive species.

I appreciate your consideration. If you have any questions and/or concerns, please don't hesitate to contact me.

Sincerely,

Kim Baltus

Kim Baltus
Executive Director

"The Island City"

TOWN OF MINOCQUA

415 Menominee Street, Suite A
Minocqua, Wisconsin 54548
Phone: 715.356.5296
Fax: 715.356.1132
www.townofminocqua.org

October 17, 2012

Mr. Kevin Gauthier, Sr.
Lakes Specialist, Wisconsin DNR
107 Sutliff Avenue
Rhinelander, Wisconsin 54501

Dear Mr. Gauthier:

I submit this letter on behalf of the Town of Minocqua to indicate our support for the application by Minocqua-Kawaguesaga Lakes Protection Association (MKLPA) for an Aquatic Invasive Species Control Grant through the Wisconsin Department of Natural Resources.

We strongly believe in protecting the valuable lake resources we have in our area. Lake Minocqua and Lake Kawaguesaga are two of the more pristine lakes in Oneida County and MKLPA has wisely been proactive with its efforts to control aquatic invasive plants by applying the long-term management options outlined in their Aquatic Plant Management Plan.

We feel the best long-term method of controlling aquatic invasive plants (e.g.: Eurasian watermilfoil) is to manage current infestations and educate the public through programs such as "Clean Boats, Clean Waters", which be implemented again next summer.

Grant funds from the Wisconsin DNR will give MKLPA the continued ability to control aquatic invasive plants; in turn, native aquatic plant species in Lake Minocqua and Lake Kawaguesaga have a chance to repopulate previously infested areas.

Thank you for your consideration in this matter. If you have any questions or require additional information, please contact me any time.

Sincerely,

Mark Hartzheim, Chairman
Town of Minocqua

UW Extension
Cooperative Extension

University of Wisconsin-Extension
Land & Water Conservation Department

Oneida County
LAND & WATER CONSERVATION DEPT.

Oneida County Office
3375 Airport Road #10 • Rhinelander WI • 54501
715-365-2750 • 715-365-2760 (fax)

November 1, 2012
Mr. Kevin Gauthier
Water Resources Management Specialist
DNR North Central District
107 Sutliff Avenue
Rhinelander, WI 54501

Dear Kevin,

As the Oneida County Aquatic Invasive Species (AIS) Coordinator, it gives me great pleasure to write a letter of support for the Minocqua/Kawaguesaga Lakes Protection Association (MKLPA) and their proposed AIS Control Project. I fully support their goals and long-term vision for both Lake Minocqua and Lake Kawaguesaga and feel their application for a WDNR AIS Control Grant is a worthwhile and extremely important proposal.

Since I took the position of Oneida County AIS Coordinator, MKLPA has worked closely with our AIS program in a number of different ways. For example, MKLPA boat inspectors have been trained by the Oneida County AIS Team, and have donated their creativity and resourcefulness in creating a 'Protect our Waterways' design to be used on recycled shopping bags. Members of the Association have been proactive, engaged, and open to a wide variety of methods to prevent and/or manage AIS. I fully support their use of divers and bio-control as alternative methods to managing Eurasian water-milfoil. MKLPA has also been a steady partner in the Fourth of July Landing Blitz Campaign, Clean Boats Clean Waters program, and in early-detection monitoring of AIS.

Without continued WDNR support, the Oneida County Land & Water Conservation Department will most certainly lose one of its strongest partners in the field of AIS educational outreach and management. I am certain that the efforts of MKLPA increase AIS awareness, protect all of Oneida County's lakes and rivers from AIS, and create a stronger and more connected community.

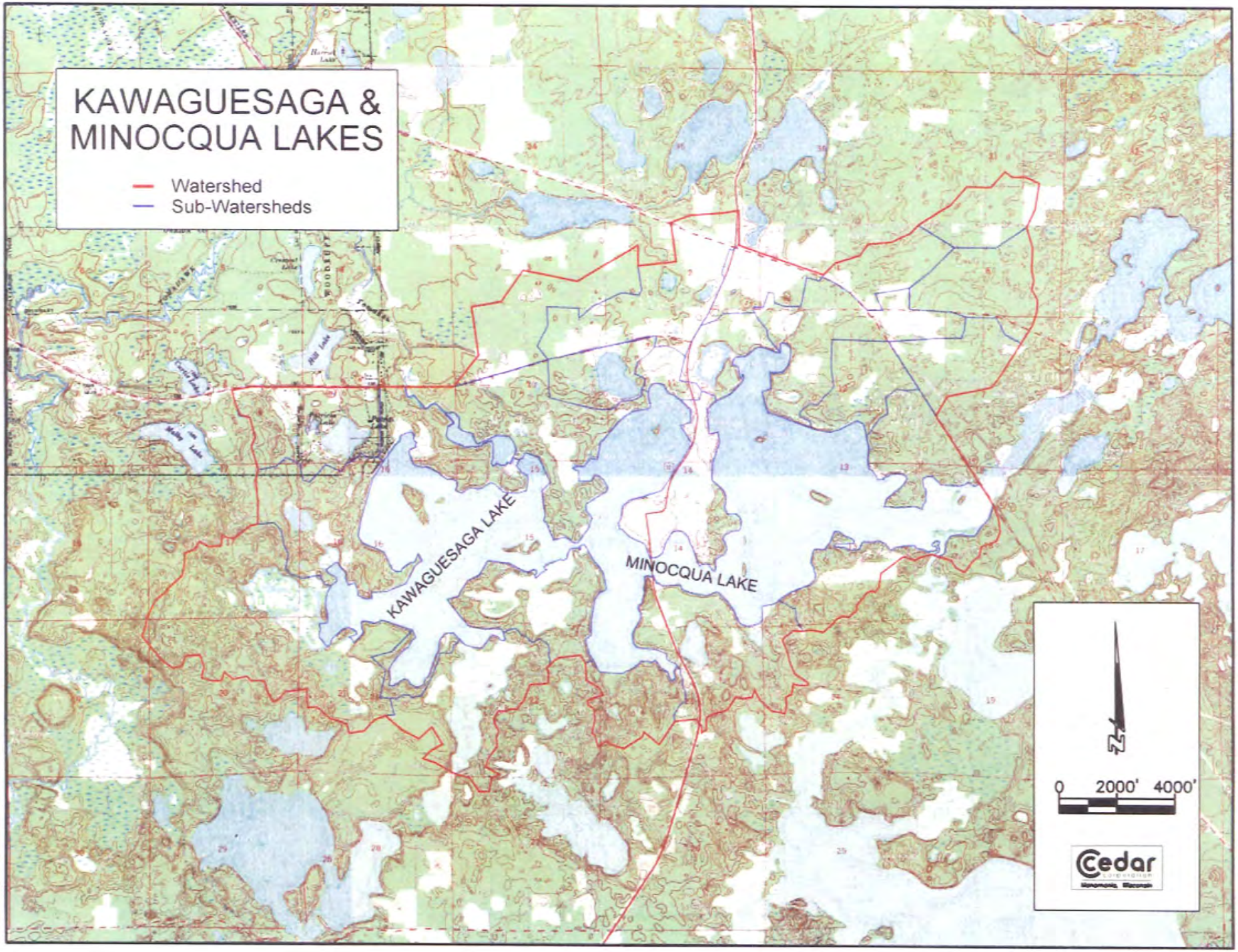
I am excited about and look forward to working with MKLPA on a number of proposed projects for 2013 (one of which may include the monitoring and management of a Flowering Rush population). I highly recommend them for a WDNR AIS Control grant. Without strong partners such as MKLPA, Oneida County will have a much more difficult time combating and winning the war against AIS!

Sincerely,

MSadauskas

Michele Sadauskas
Oneida County AIS Coordinator
3375 Airport Road #10
Rhinelander, WI 54501
Phone: 715-365-2750
Email: msadauskas@co.oneida.wi.us

Maps of Project Location
And Boundaries


KAWAGUESAGA &
MINOCQUA LAKES
Watershed
Sub-Watersheds
KAWAGUESAGA LAKE
MINOCQUA LAKE
0 2000' 4000'
Cedar

Itemized Breakdown of Expenses
Cost Estimate

Minocqua-Kawaguesaga AIS Control Grant
2014-2018

Task	Annual Cost	Year 1	Year 2	Year 3	Year 4	Year 5
Meetings						
Clean Boats / Clean Waters (Paid Staff)	$2,700	$2,700	$2,700	$2,700	$2,700	$2,700
Education and Training Volunteers (Ecological Integrity Service)	$1,050	$1,050	$1,050	$1,050	$1,050	$1,050
Pre-Treatment Surveys with Data Entry (Ecological Integrity Service)	$2,200	$2,200	$2,200	$2,200	$2,200	$2,200
Post-Treatment Surveys with Data Entry (Ecological Integrity Service)	$2,900	$2,900	$2,900	$2,900	$2,900	$2,900
Statistical Analysis of Treatment (Ecological Integrity Service)	$480	$480	$480	$480	$480	$480
Data Acquisition from Volunteers/Mapping (Ecological Integrity Service)	$360	$360	$360	$360	$360	$360
Chemical Treatment (Schmidt's Aquatic Plant Control)	$29,750	$29,750	$31,238	$32,799	$34,439	$36,161
Manual Removal of EWM with Paid Divers	$8,000	$8,000	$8,000	$8,000	$8,000	$8,000
Point Intercept Survey	$14,121	$14,121				
Evaluate and Update the APMP	$6,600	$6,600				
In-Kind Match	$900	$900	$900	$900	$900	$900
Control Grant Total Project Costs:	$69,061	$69,061	$49,828	$51,389	$53,029	$54,751
Grant Eligible Share:	$68,161	$68,161	$48,928	$50,489	$52,129	$53,851
Local Share:	$17,040	$17,040	$12,232	$12,622	$13,032	$13,463

Years	Total	Eligible	Local Share	In-Kind	DNR Share
1st Year	$69,061	$68,161	$16,140	$900.00	$51,120.75
2 Years	$118,889	$117,089	$27,472	$900.00	$87,816.38
3 Years	$170,278	$167,578	$39,194	$900.00	$125,683.41
4 Years	$223,307	$219,707	$51,327	$900.00	$164,780.41
5 Years	$278,059	$273,559	$69,059	$900.00	$200,000.00

List of Board Members

Minocqua/Kawaguesaga Lakes Protections Association
2012 Board of Directors

Sally Murwin, President
8229 Brinkland Circle
Minocqua, WI 54548
715.356.1149 h
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Rusty Sawallish
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Jerry Roseland (Diane) Vice President
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Kevin McFerrin (Mary)
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Randy Africano (Diane)
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Other Information

Newsletters

Project Scope / Description

PROJECT SCOPE/DESCRIPTION:

A. Description of Project Area

The project area focuses on Minocqua Lake and Kawaguesaga Lake in Oneida County, WI. These lakes are located in the Upper Tomahawk River Watershed of the Headwaters Basin.

The Headwaters Basin

The Headwaters Basin encompasses parts of the counties of Forest, Florence, Lincoln, Langlade, Oneida, and Vilas in northern Wisconsin. The basin has a total surface area of 5,438 square miles with a total of five sub basins (Green Bay, Lake Superior, Upper Chippewa, Wolf River, and Upper Wisconsin) and 42 watersheds (DNR, 2002).

The Upper Tomahawk River Watershed (UW38)

The Upper Tomahawk River Watershed is split between Oneida and Vilas counties.

Minocqua Lake

Minocqua Lake in Oneida County, Township 39 North, Range 6 East, Sections 11, 12, 13, 14, 15, 18, and 22 is 1,360 acres with a maximum depth of 60 feet and 15.7 miles of shoreline. This is a soft water drainage lake with light brown water of moderate transparency. Drainage lakes have both an inlet and outlet. Minocqua Lake has two inlets and one outlet. The Minocqua and Tomahawk thoroughfares are inlets and Kawaguesaga Lake is the outlet (DNR, 2004).

Kawaguesaga Lake

Kawaguesaga Lake, a drainage lake in Oneida County, Township 39 North, Range 6 East, Sections 15, 16 is 670 acres with a maximum depth of 44 feet and 9 miles of shoreline. Minocqua Lake is the inlet and the Tomahawk River is the outlet. An adjustable weir at the outlet controls the lake level.

Table 1 - Unique Characteristics of Minocqua Lake and Kawaguesaga Lake

Characteristic	Minocqua Lake	Kawaguesaga Lake
County	Oneida	Oneida
Lake Type	Drainage	Drainage
Surface Area	1,360 acres	670 acres
Depth (max; ft)	60	44
Depth (mean; ft)	23	18
Public Access	Boat Ramp	Boat Ramp
TSI	mesotrophic	mesotrophic

Specific Characteristics of the MINOCQUA - KAWAGUESAGA LAKES to be addressed:

Pristine Beauty and Abundant Recreational Opportunities

The Town of Minocqua and the Town of Woodruff in Oneida County are one of the fortunate areas of Wisconsin to have beautiful lakes such as Minocqua and Kawaguesaga Lakes, as well as extensive forest (lands both publicly and privately owned) offering numerous outdoor recreational opportunities, and highly desirable, picturesque settings.[B3]

Increased commercial, industrial, residential, and recreational demands on both land and water resources have reduced wildlife habitat, water quality, and ecosystem integrity. Differing views over the use of land and water resources can be mitigated through planning. A balance between competing land and water use issues must be attained to maintain the ecology and allow development.[F1a, F2]

Minocqua is also home to the trailhead of the Bear Skin State Trail, an 18-mile, recreational corridor suitable for walking, biking, and snowmobile riding. The eastern portion of Minocqua Lake abuts the Northern Highland American Legion State Forest that offers a wide variety of recreation opportunities including camping, hiking, biking, snowmobiling, canoeing, bird watching, fishing, and hunting.

Both Lakes have a combined 188 available parking spaces and 4 public access/boat launch points, exceeding the maximum access requirements. Recent surveys have indicated some 200 boats per day are present on wetlands on Minocqua (an average of 7 acres per boat).

Growing Population

The Minocqua and Kawaguesaga Lakes area is drawing an increasing number of seasonal and permanent businesses and residents, which impact the natural resources and pristine environment so highly prized by both permanent and seasonal businesses and residents.[F3] The natural resources are facing significant pressure due to increasing demands by the growing population. Unplanned or poorly planned development patterns in the last century, coinciding with population growth, are significantly affecting the area's water, land, and available raw materials and resources. In its natural state, the Minocqua and Kawaguesaga Lakes were protected by diverse vegetation along the shores. As development occurred and increased numbers of lake users search out recreational opportunities; the fish, wildlife, water quality, and vegetation begin to change. Many homeowners and visitors seek out lakes and rivers as places to enjoy natural beauty in a quiet setting, yet the sheer number of users, riparian landowners, and business owners create use conflicts and put pressure on these limited resources.

Lake water quality studies have identified an increase (tripling) of phosphorous concentrations primarily since 1950. Lake sediment core samples have identified an increased sedimentation rate in the lake since the early 1900's. Previous work has substantiated these concerns but has not provided a technical framework to develop implementation actions to protect the watershed or lake water quality.

Planning Needs

This desirable location has brought a growing population and increased residential and commercial development to the Town of Minocqua and Town of Woodruff area. It is important to preserve the natural beauty and resources of the area. A plan for future land use and water quality improvement implementation project best management practices to accommodate the growing population that is sensitive to the water resources and ecology of the area is needed. The Towns need to address intergovernmental policy issues and develop plans to take advantage of the positive economic opportunities associated with current and future growth and development. Lake watershed water quality management planning and protection is necessary to preserve, improve, mitigate, and/or maintain water quality.

The current level of water quality is the basis for the area growth and popularity. Future generations will benefit from actions taken to maintain the current level of water quality for the Minocqua and Kawaguesaga Lakes. The proposed project is specific to the Towns of Minocqua and Woodruff in Oneida County.

The presence, rapid growth, and spreading of aquatic invasive plants in the past few years has added another dimension of concerns for the local residents and business owners. Ongoing, long term maintenance will be necessary to address this issue.

Funding Assistance

Controlling Aquatic Invasive Species is vital to protect and maintain the integrity of this surface water resource. In order to fund future proposed projects, it is imperative for the Minocqua-Kawaguesaga Lakes Protection Association to consider various sources of funding such as: fundraisers, Lake Association annual dues, community contributions, local municipality and county funding, WDNR Grant Programs, private trusts, and any other funding opportunities.

Discussion of Previous Planning Projects

The Minocqua-Kawaguesaga Lakes Protection Association, Inc. (MKLPA) has completed a comprehensive LWMP (Lake/Watershed Management Plan) and companion APMP (Aquatic Plant Management Plan). These included evaluations of local ordinances to control non-point source storm water runoff water quality, sub-watershed delineation, water quantity and water quality analytical modeling, best management practice recommendations, opinion of probable costs, implementation schedule, funding and financing options. In addition comprehensive aquatic plant studies and significant investment in AIS control have been completed both through grants and community investment.

Minocqua and Kawaguesaga Lakes are also impacted by influent flow from several lakes in the region (Lake Tomahawk, Mid Lake, Madeline Lake, to name a few) as well as groundwater flow. This next phase of the LWMP project it to evaluate these influences with a comprehensive water and nutrient budget analysis to be completed by the USGS.

Survey Information

In 2002, a lake boat use survey was conducted to determine the extensiveness of the boat traffic in Minocqua and Kawaguesaga Lakes. To summarize the survey, it showed that these lakes get used extensively. As a result, the spread of invasive species is a high risk associated with these lakes. This risk is both with the introduction of new species as well with the spread to other lakes from these lakes since they have EWM.

Sociological surveys were sent out to the residents that live on and around Minocqua-Kawaguesaga Lakes in September of 2006. A total of 834 surveys were sent out and 344 were returned for a response rate of 41% which is generally considered a high rate of response for a public opinion survey. There were a number of areas on the survey that provided space for additional comments.

The survey provided some insight into the background demographic information for Lake residents. Below are the results of those questions:

- The Association learned that 37% are year-round residents.
- Most of the respondents to the survey live on Minocqua Lake.
- Over half of the people responding to the survey have been living on the Lake or visiting for over 20 years.
- About half of the respondents felt the water quality was worse in 2006 than it was 5, 10, and 20 years ago.
- 49% of shoreline landscape barriers to reduce runoff, while 66% said they have undeveloped, natural shorelines.
- 82% believed that the problems in the Lake are caused by aquatic plants from other lakes.
- About 65% are aware of past chemical treatments of Eurasian water milfoil by the Lake Protection Association.
- Only 24.5% of respondents were in favor of a 35 foot vegetative buffer along the shoreline.
- Approximately 85% support using fertilizer that does not contribute to an increase algal growth (phosphorus-free).
- About 67% of respondents would support the use of chemicals to control aquatic invasive plant species such as EWM.
- Over 65% believe that the amount of aquatic plants have increased over the last 15 years.
- Over 75% of respondents believe that controlling aquatic invasive species should be a top priority for the Lake Protection Association.

Phase I - Lake Watershed Management Planning

A summary of the tasks completed in Phase I of the Minocqua-Kawaguesaga LWMP include (for detailed report see Minocqua-Kawaguesaga Lakes Watershed Management Plan; November 2005):

1. Background data collection and field reconnaissance
2. An evaluation of local ordinances to control non-point source storm water runoff water quality
3. Watershed and sub-watershed delineation
4. Delineation of current and future land use areas within the watershed
5. Existing soil conditions, wetlands and surface waters were identified and mapped
6. Water quantity and water quality analytical computer modeling
7. Best management practice (BMP) recommendations
8. Develop a tentative BMP implementation schedule, and suggested funding and financing options

Minocqua and Kawaguesaga Lakes are also impacted by influent flow from several lakes in the region (Lake Tomahawk, Mid Lake, Madeline Lake, to name a few) as well as groundwater flow. Phase II of the LWMP project will evaluate these influences with a comprehensive water and nutrient budget analysis which will be completed by the USGS.

Phase II - Lake Watershed Management Planning

The goals of Phase II of the completed and approved Lake/Watershed Management Planning protection project include:

1. A comprehensive water and nutrient budget analysis completed by USGS which included two years of data collection (2006-2008)

    a. Lake water-quality monitoring including:
        - water temperature, specific conductance, pH, and dissolved oxygen.
        - water clarity will also be measured using a secchi disk and sampled for the analysis of phosphorus and chlorophyll-*a* concentrations.

    b. Stream flow and precipitation monitoring at the Minocqua and Tomahawk Thoroughfare entrances, as well as the outflow to the Tomahawk River.

    c. Installation of 15 piezometers along the shoreline to monitor groundwater elevation and phosphorus concentrations.

    d. Lake stage monitoring completed to determine changes in lake volumes and retention times.

    e. Analytical simulation of changes in phosphorous loading of the lakes.

    f. USGS analyzed the data, compiled a report, and published the study results.

2. A Community Survey was developed in cooperation with the Lake Association, Cedar Corporation, and the DNR. This survey was distributed, tabulated, and

analyzed for the MKLPA and used as a reference for future watershed projects.

3. These results were used to finalize the Lake Watershed Management Plan and develop an Action Plan which was approved by WDNR in early 2012.

Phase III - Implementation of the Lake Watershed Management Plan

Implementation efforts began well before final WDNR approval of the LWMP. The WDOT reconstruction of USH 51 north of the island into the Town of Woodruff to STH 70 found MKLPA members actively working with Town, WDOT, and WDNR representatives ensuring water quality improvements would be constructed to reduce the introduction of storm water contaminants into Lake Minocqua.

Ongoing I & E (information and education) projects in the community have become mainstays in public education and awareness of water quality and lake stewardship.

Phase IV - The aquatic plant community in Minocqua-Kawaguesaga Lakes

With the infestation of Eurasian water milfoil (EWM) and the presence of curly leaf pondweed in both lakes, it was vitally important that the MKLPA develop an Aquatic Plant Management Plan. Previously collected data in Phase I, Phase II, and Citizen Lake Monitoring data was used when developing the APMP. By conducting two macrophyte surveys during the summer of 2007, the MKLPA established a baseline study of the aquatic plant species and densities. This baseline will be used to evaluate future efforts to control invasive species and the growth of native plant species. The APMP contains long term management techniques and options for EWM and CLP. Controlling these aquatic invasive plants at an early stage is imperative to the local communities which could be drastically affected aesthetically and economically.

Aquatic Plant Management Plan

In 2006, the MKLPA applied for and received two DNR Lake Planning Grants. These last two grants provided funding to develop an aquatic plant management plan, a principal requirement to develop treatment programs for invasive species on the lake. The plan, completed in 2008 and approved in 2010, consisted of identifying, locating, and assessing the number of various plant species in both Minocqua and Kawaguesaga Lakes. Recommendations were then made on how to best manage the aquatic plant species. The Aquatic Plant Management Plan was prepared in a collaborative effort from Harmony Environmental (now Ecological Integrity Service), DNR, and the MKLPA.

The Aquatic Plant Management Plan: Kawaguesaga Lake and Minocqua Lake provides a baseline of information, recommendations to control aquatic invasive species, and management opportunities. The purpose of this grant is to continue the implementation of the recommendations of the APMP and subsequent annual reports (Appendix A) to control AIS.[H2]

Previous Aquatic Invasive Species Efforts

The MKLPA applied for and received both AIS Rapid Response and Recreational Boating Facilities Grants which has provided funding to treat EWM. This is the second AIS Control Grant for the MKLPA.[11]

Discussion of Lake Restoration Progress

Measuring the progress of a Lake Restoration project should use direct measurements of success and consider phosphorous and sediment loading reductions, reduced AIS infestations, improvements in the health and diversity of the flora and fauna, as well as improvements in riparian habitat and local desires to improve the health of the lake and its watershed. These things are not necessarily easy to measure in the short term, so we look to those factors that can and should result to water quality improvements.

Measuring success can also be measured by:

1. Maintaining an active and evolving association of persons involved in water quality and habitat improvement activities.
2. Securing the support of the local units of government for water quality improvement.
3. Observing the implementation of stormwater best management practices to improve stormwater water quality before it enters the lake or tributaries that feed the lake.
4. Conducting surveys of the habitat and the quality of the flora and fauna on a regular basis to measure against the baselines established in the Management Planning process.

Strong Voice in the Community

The MKLPA is strong voice in the community and has been since it started. Successful in developing lake management planning and protection projects, obtaining federal as well as state funding in the process; MKLPA has prodded and pushed these past 10 years to get approved Lake Watershed and Aquatic Plant Management Plans as well as Clean Boats, Clean Harbors funding and Aquatic Invasive Species Control funding. Their effort in the community has been positively received and is one reason this grant is being written for a second 5 year AIS control program. The Board continues to evolve under strong leadership with various committees operating under equally strong leadership. Their connections in the community bring in contributions and additional members on a frequent basis as well as continue to present a strong lake restoration advocacy.

Involvement in Town Government

The MKLPA presence is felt within the Town governments particularly Minocqua, where they have reached out and involved the Town Board and Public Works in their efforts. Public meetings have been held where technical presentations on the quality of existing stormwater and the negative effects on lake water quality have been presented and what future goals could and should be. These goals include recommendations for control of stormwater quality run off, discussions on phosphorous and nitrogen nutrient loading to the lake, activities involving riparian developments, etc.

Meetings with town representatives have resulted in the inspection of the 19 year old

stormwater management structure that exists east of the Bearskin Trail Bridge. Working with their consultant, current and former DOT and Town personnel, and the original designer and engineer to obtain construction documentation; a plan was devised to consider what steps may be necessary to maintain and if needed repair this structure. MKLPA sampled and analyzed the influent and effluent waters entering/discharging this structure to determine if this structure is working or not and is working with the Town to develop a program for system maintenance.

MKLPA was involved the planning for the redevelopment of the Highway 51 project to insure improved quality stormwater discharge waters along this busy thoroughfare; meeting with planners and decision makers early on to inspect and review proposed storm water management devices. As a result recommendations were incorporated to gain water quality improvements for stormwater discharges from the new Highway 51 corridor passing through the island and north to the junction of STH 70. These reductions in sediment contribution will go a long way in meeting the goals for sediment reduction that were recommended in the LWMP as over 140 stormwater catch basins are being replaced with larger devices with internal sediment traps.

MKLPA has been involved in discussions and making recommendations for future improvements in storm water management by suggesting improvements in street sweeping efforts and possible equipment changes. Also in the works is a plan to assist the Town in the retrofitting of those existing stormwater discharge structures noted in the LWMP study having the greatest potential discharge of sediments and nutrients into the lake.

Public Education

MKLPA has and continues to host public forums discussing lake water quality issues, aquatic invasive species fund drives, membership drives, presenting in local parades, newspapers and printing and distributing a Lake Association newsletter; hosting an Internet web site where on lake water quality reports, the lake watershed and aquatic management plans; presentations on how to recognize AIS and control are posted for any of interest to view or study. One of the keys to the success of the MKLPA in its efforts to restore lake water quality is the strong volunteerism experienced for project completion whether a strong back or a keen mind is needed.

Private Funding

MKLPA uses private donations to fund the shortfalls for clean boats, clean waters employees, AIS control dive teams for manual eradication projects, engineering reviews as needed; etc. The MKLPA is a model for other lake associations.

Aquatic Invasive Species

The fight against Eurasian Water Milfoil is the battle at hand and the efforts of the MKLPA to reduce the spread of AIS are seen daily by the local community through divers addressing new growth by manual eradication; to the limnology specialists regularly surveying flora and planning AIS control programs; to the AIS control specialists who systematically prepares and sows the control solutions over the emerging EWM in the early spring.

Regular Surveys

Key to maintaining the goals of the Association is the regular visits to the lake by aquatic plant specialists to monitor both invasive and native species. These visits occur twice yearly and are usually general in nature but comprehensive surveys are conducted every 5 years to provide the data that will a key measure of success of lake restoration success.

Measuring lake restoration in Minocqua is readily achieved as evidenced through the participation of the MKLPA and among its members the intense desire to achieve success. Some of the long term goals of the efforts of the MKLPA today are a stable and/or decreasing phosphorous concentration, development of a philosophy in the general populace of the importance of the local environment and their role in improving water quality, and the reduction/eradication of AIS. The current efforts of the MKLPA are a sure sign that these are not unrealistic goals.

B. Description of Problem to be addressed by Project

The Minocqua-Kawaguesaga Lakes Protection Association, Inc. recognizes the significant hydrological and water quality changes caused by new and existing development in the watershed draining into the Minocqua and Kawaguesaga Lakes. Based on recreational/tourism demands, increasing development (commercial and residential), and a growing population around the Minocqua and Kawaguesaga Lakes, the MKLPA has developed a comprehensive Lake/Watershed Management Plan (LWMP) to protect and preserve the natural beauty and resources of the area.

The recognition and current extent of the Eurasian Water Milfoil in Minocqua and Kawaguesaga Lakes has been the rallying point for a community effort to control the spread of aquatic invasive species. This aspect of lake water quality protection parallels the current activities of the MKLPA which includes numerous projects to promote the goals of the LWMP. With this application, the Association is seeking financial support from the Wisconsin Department of Natural Resources, in addition to using committed funding from the Town of Minocqua and private benefactors to continue a multi-faceted Eurasian water milfoil infestation control project.

The MKLPA has been very proactive in trying to improve and protect these lakes. The major issues they are working to address with this grant program are the expanse and continued infestation of Eurasian water milfoil (EWM) in both Minocqua and Kawaguesaga Lakes and a need to educate Lake residents and users on keeping new invasive species out of the Lake. Limiting the spread of EWM as well as informing lakes users of where the existing stands are located and how to identify new stands, are key components of this project. Although EWM has been spreading, it is still found in less than 25% of the water body surface area.[D1a]

Not only does the MKLPA feel a responsibility to protect both Minocqua and Kawaguesaga Lakes, but the un-infested downstream surface waters as well. Controlling

Figure 1a - EWM identified in July, 2012 survey Lake Minocqua - North

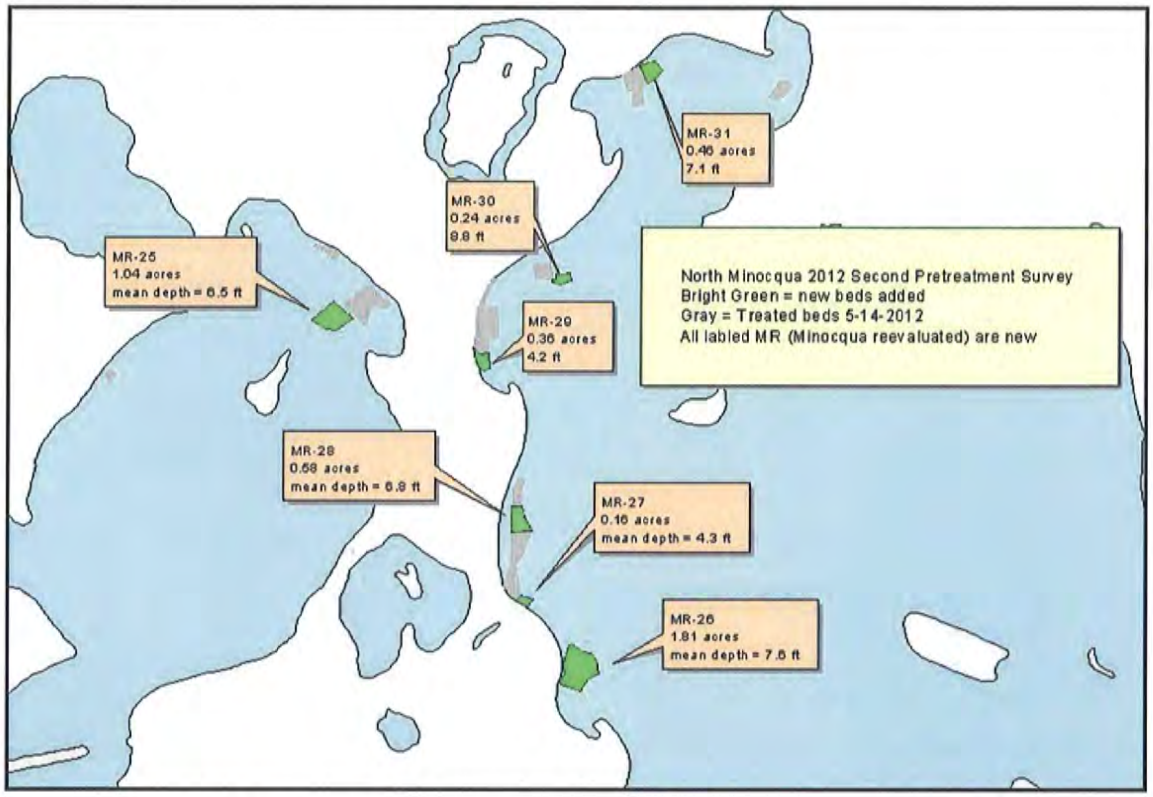
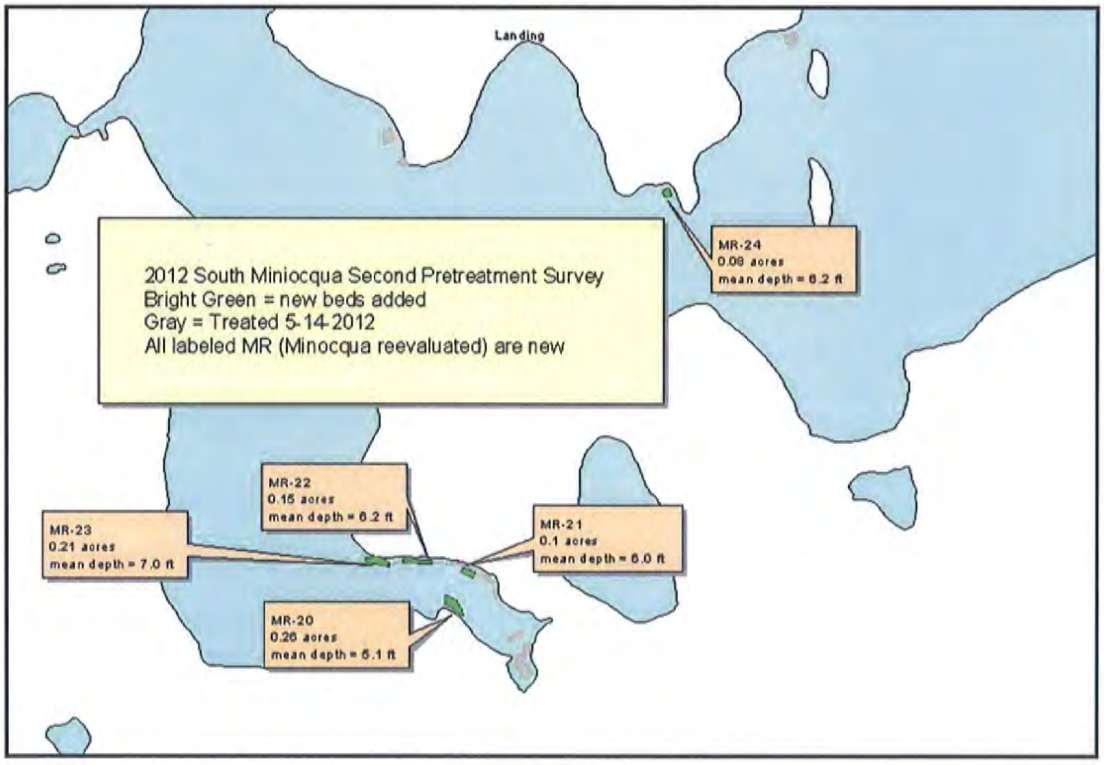


Figure 1b - EWM identified in July, 2012 survey Lake Minocqua - South



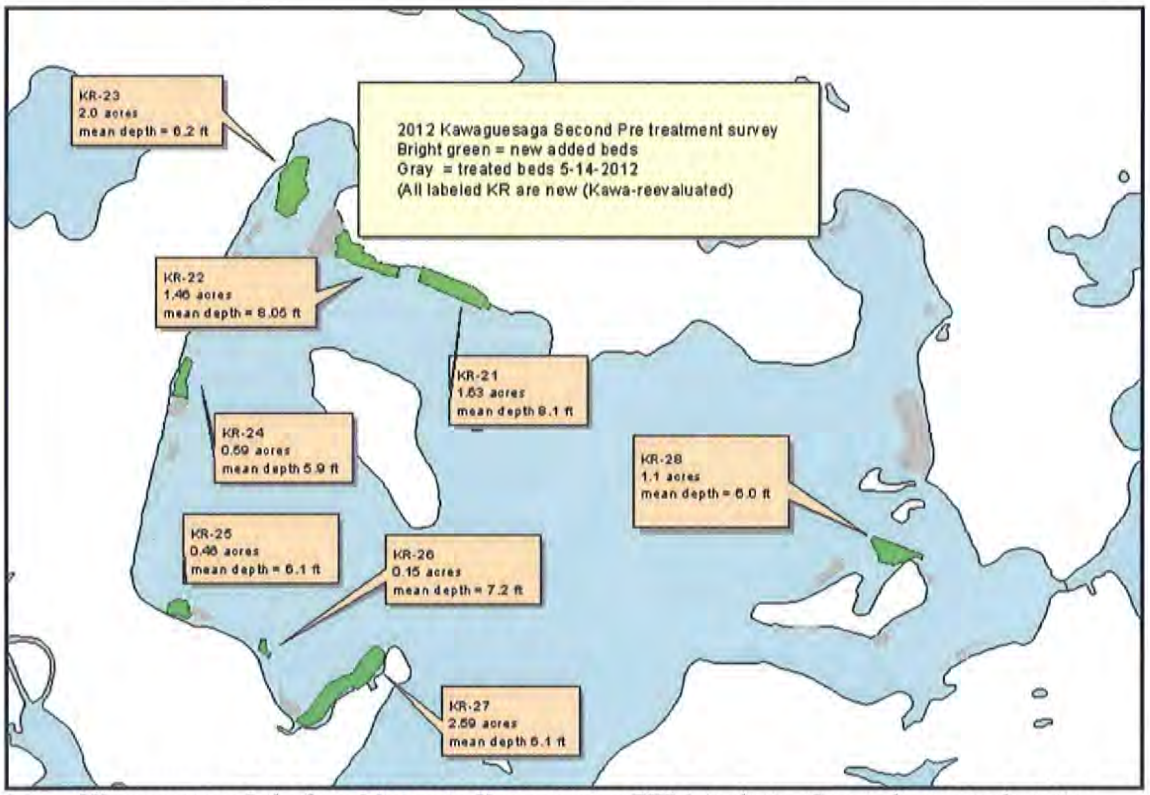
Maps from Minocqua-Kawaguesaga EWM Analysis 2012. Grey indicates early spring, and bright green later spring treatment areas.

EWM in these lakes will minimize the potential for EWM to spread downstream into the Tomahawk River.[B2]

During the follow up to spring 2012 AIS control efforts, an AIS survey was conducted on both Minocqua and Kawaguesaga Lakes in the summer of 2012 by Ecologic Integrity Service, during which an assessment of known EWM was completed. Extensive coverage of EWM was observed and mapped during the July survey. Trained volunteers have also identified new plots of EWM that will be addressed during the control phase of this grant.

EWM is an invasive aquatic plant that, along with curly leaf pondweed, purple loosestrife, and others are the focus of a statewide program to control invasive species in Wisconsin. Invasive species are defined as a "non-indigenous species whose introduction causes or is likely to cause economic or environmental harm or harm to human health (23.22(c))."

Figure 2 - EWM identified in July, 2012 AIS treatment Lake Kawaguesaga



Map of Kawaguesaga Lake from Minocqua-Kawaguesaga EWM Analysis. Grey indicates early spring, and bright green later spring treatment areas.

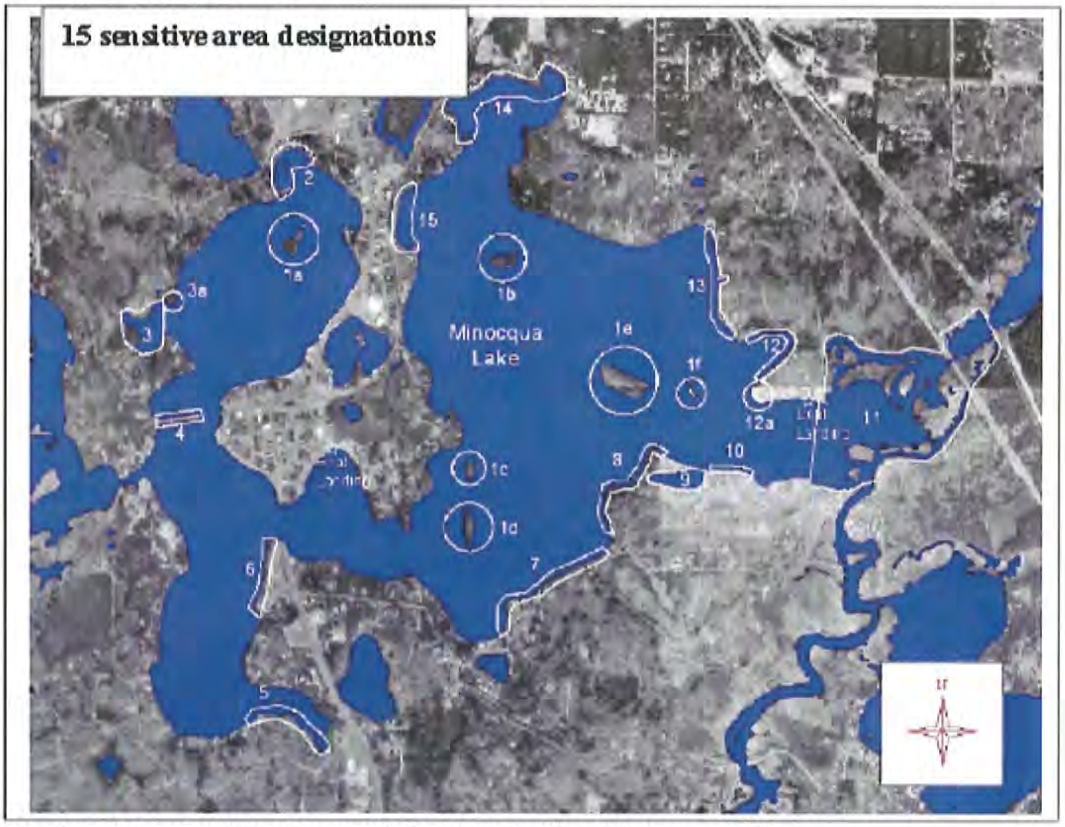
Curly leaf pondweed was also observed during the surveys and monitoring existing beds of CLP is part of this project.

One way to combat a future intrusion of new invasive species and limit the spread of Eurasian water milfoil in Minocqua-Kawaguesaga Lakes is to educate the users through signage, presentations/meetings, handouts, letters, and a Clean Boats, Clean Waters program. Another method so named the Pioneer Bed Rapid Response recognizes local

efforts to identify and address the discovery of new beds of Eurasian water milfoil. This effort is a grass roots volunteer effort that scouts the lake on occasion and reports the location of new beds of Eurasian Water Milfoil. Once verified by the Association's Aquatic Plant Specialist, divers will be called in to remove this new growth by manual removal. This method is being proposed as a more efficient way to address late season recognition of new stands of EWM as opposed to waiting through the fall, winter and early spring to include those stands in a chemical treatment program.

In 2003 a sensitive area survey was conducted by the Wisconsin Department of Natural Resources on Minocqua Lake (not Kawaguesaga).[C3] "Sensitive areas" are areas that contain aquatic/wetland plant species, terrestrial vegetation, gravel/rubble lake substrate, or areas that contain downed woody cover. These areas can provide water quality benefits, reduce shoreline erosion, and provide habitat for seasonal and/or life stage requirements for fish, invertebrates, and wildlife. An area that has been designated 'sensitive' is one that: alerts interested parties in order to protect it; contains habitat that is critical to a healthy lake ecosystem; or, features an endangered plant or animal. As a result, management personnel will carefully scrutinize any management activities within a sensitive area. In this survey 15 sites were identified as sensitive, important habitat for Lake Minocqua. If the EWM is not controlled it could eventually disturb and impair the sensitive areas. These sensitive areas are important to the local ecology and it is vitally important to the MKLPA to protect them.

Figure 3 - Sensitive Areas



Map from Minocqua-Kawaguesaga Lakes Aquatic Plant Management Plan

A total of 63 native species in and immediately adjacent to Lake Minocqua and 57 native species in and immediately adjacent to Kawaguesaga Lake were identified. This gives

Lake Minocqua a Floristic Quality Index (FQI) of 52.03 and Lake Kawaguesaga an FQI of 50.20. Both are more than double the median FQI of 24.3 for the Northern Lakes and Forest Region (Nichols 1999). This high number is a result of not only the sensitive plants that live here, but the spectacular diversity of plants.[C3]

C. Discussion of the Project Goals and Objectives

The Minocqua-Kawaguesaga Lakes Protection Association completed a comprehensive LWMP. Implementation projects include stormwater discharge improvements along USH 51 (to be incorporated in the ongoing reconstruction effort of this highway); stormwater discharge improvements for existing discharges on the "island" (schedule yet to be determined) among others based on conclusions from the USGS and LWMP conclusions. The Phase IV project included the macrophyte surveys (early and late summer) in 2007 and development of the Aquatic Plant Management Plan which addresses long term management options for aquatic plants in Minocqua and Kawaguesaga Lakes.

Minocqua and Kawaguesaga Lakes are also impacted by influent flow from several lakes in the region (Lake Tomahawk, Mid Lake, Madeline Lake, to name a few) as well as groundwater flow. In Phase II of the LWMP project, the USGS evaluated these influences developing comprehensive water and nutrient budget analysis which will be completed by the USGS.

The goal for gauging AIS treatment success is for a reduction in coverage by 90% and a mean density of <1 in each treatment plot over a five-year period. Annually the beds will be surveyed twice with a pre- and post-treatment survey for the chemically treated EWM areas. Success will be measured by visual means as well as by taking rake samples from each area. The goal of the chemically treated areas will be to have a rake fullness density rating of less then one in hopes that the native plants will eventually be able to reestablish in the areas where the EWM is currently present.

The Minocqua-Kawaguesaga Lakes have been significantly impacted by the introduction of Eurasian water milfoil. The vitality and livelihood of the community and the Lakes ecosystem are at risk and management or control of the existing aquatic invasive species is necessary to limit the spread of future invasive species in this lake system.

The water quality of Minocqua and Kawaguesaga Lakes is good. In order to maintain the high water quality of these lakes, a number of activities will need to be implemented. A management plan for preserving water quality, including strategies has been developed and implementation of these strategies is beginning. Following through with the AIS Control Grant will help implement some of the strategies defined in the Lake Management Plan and the Aquatic Plant Management Plan.

The overall goal of this project is to address the recommendations provided in the Aquatic Plan Management Plan. This project employs multiple strategies to achieve control objectives. Utilizing a variety of treatment measures for EWM and compare the success of those control methods will provide an understanding of which control measures were successful.

Depending on the results of the post-treatment survey, re-emergent infestations will

continue to be treated in the same manner they were treated the previous year (chemical will be treated with chemical, hand pulled will be hand pulled) for a period of three to five years.

Description of Methods and Activities

In August 2012, established beds of EWM were identified for treatment and polygon boundaries were mapped using GPS coordinates. These plots are identified for the AIS control permits that will be applied for in 2013 and beyond. Further evaluation of these plots and other potential plots will occur in subsequent years. Appendix B shows maps of all the proposed treatment areas.

The stands of EWM being proposed for treatment are isolated, dense areas of Eurasian water milfoil. The boundaries of established beds have varied since discovery, some have died off, yet others have sprung up in nearby and other areas of the lakes. A survey of each area will be completed to verify that it meets the criteria for treatment at the time of treatment. These boundaries were originally determined in July 2007 and subsequently surveyed as part of the ongoing control project. All boundaries were determined with GPS and the coordinates were recorded; subsequently the stands of Eurasian water milfoil were mapped as GIS shape files.

The MKLPA will follow through with the treatment and management for a minimum of three years and a maximum of five years for the purposes of this project. Every identified site may not warrant repeat treatment in each season, but they will be monitored annually to determine if the containment strategy has been effective to reduce or contain new Eurasian water milfoil sites.

DETAILED SCOPE OF ACTIVITIES

Task 1 – Kickoff Meeting

Description and Task Approach

It is important that the information and recommendations made based on the project be shared with the Minocqua-Kawaguesaga Lakes Protection Association.

The annual "kick off meeting" with the MKLPA sets the course for future work. Project concerns and objectives will be reviewed and detailed. This meeting will allow the public to ask questions about the treatment process and give them an opportunity to learn about their role in the prevention of future invasive species and the spread of Eurasian water milfoil. This presentation will coincide with the Association's Annual spring meeting in June.

Task 2 – Clean Boats, Clean Waters (2 paid positions)[A1]

Description and Task Approach

Although the Minocqua-Kawaguesaga Lakes already have Eurasian water

milfoil, it is important to prevent further spread of EWM as well as other possible invasive species. One way to help prevent future invasive species from entering the Minocqua-Kawaguesaga Lakes is to educate and inspect watercraft entering the Lake. Clean Boats, Clean Waters is an established program that other lake groups throughout the State have adopted to monitor and provide educational materials to the public.

The Town of Minocqua will be hiring two people to work 30 hours per week between the middle of May through Labor Day. The MKLPA will reimburse the Town for one of those positions. In 2012, MKLPA reimbursed the Town a cost of $5,467.69 for these employees. The two workers will attend the UW-Extension, Clean Boats, Clean Waters workshop where they will receive instructions, resource kits, and handbooks to guide them on how to organize a volunteer watercraft inspection program, approach boaters, perform trailer/boat checks, record pertinent data, and report suspect specimens. This information from the workshop will provide the Minocqua-Kawaguesaga Lakes Protection Association with the tools to develop their own yearly inspection program. The workers will be present for a minimum of 200 hours between May 1 and Labor Day of each year.

Task 3 – Educating and Training Volunteers (Ecological Integrity Service)

Description and Task Approach

Every spring during this grant project, the MKLPA will sponsor training sessions conducted by Steve Schieffer, a consultant from Ecological Integrity Service, for the identification and monitoring of EWM and other invasive species. A volunteer monitoring team will be established and they will conduct periodic monitoring of the lakes for aquatic invasive species. This will entail determining areas not presently identified as having EWM and changes in coverage and density of present EWM colonies as well as identifying and monitoring any newly established occurrences of other invasive species. Training will include species identification, data collection, and mapping. The MKLPA will work to get new volunteers each year as well as utilize those that have already been trained.

Training the volunteers on the identification of invasive species will help provide a foundation for educating them on the importance of keeping aquatic invasive species out of the both Minocqua and Kawaguesaga Lakes.

Task 4 – Monitor Eurasian Water Milfoil and other Invasive Species (Volunteers and Ecological Integrity)[A2]

Description and Task Approach

Presently, Minocqua Lake and Kawaguesaga Lake, as well as the Minocqua Thoroughfare, have other aquatic invasive species. In the 2007

plant survey, curly leaf pondweed, flowering rush, and purple loosestrife were sampled and/or observed in addition to the Eurasian water milfoil. EWM is the major concern at this point. However, the presence of these other species is also a cause for concern. Monitoring these species is paramount to determine if they are spreading. If this spreading should occur, management may become necessary.

Ecological Integrity will survey and map the current locations and size of existing curly leaf pondweed infestations to establish a historical baseline. These beds will be monitored and resurveyed the following year (2nd year) and the fourth year to verify whether or not the curly leaf pondweed is spreading or just maintaining.

Volunteers will be observing the Lakes for new beds of Eurasian water milfoil, monitoring the existing beds, and using GPS to map the locations of new Eurasian water milfoil occurrences. This task will be an important evaluation process conducted by local volunteers each summer with oversight provided by Ecological Integrity. Volunteers will be trained to monitor existing Eurasian water milfoil beds and identify new ones. They will also be trained to identify and map locations of other aquatic invasive species such as curly leaf pondweed, purple loosestrife, and flowering rush. Data will be submitted to the consultant and verified.

Data collected by the volunteers will be confirmed during the post-season survey.

During these monitoring sessions, the post treatment monitor is have identified new EWM growth areas in past years. As part of this project, AIS monitoring persons will have a kit available to them for use in identifying new or "pioneer beds" of aquatic invasive species, such as Eurasian water milfoil. Incorporated into the monitoring is a Pioneer Bed Rapid Response program. It is proposed to equip the team with a monitoring kit consisting of:

Pioneer Bed Rapid Response Kit:

- Water tight tub
- Aqua Scope Viewer
- Double Tines Rake with Rope
- Plastic Baggie
- Sharpie Marker(s)
- Laminated Plates of:
    - Eurasian Water Milfoil
    - Curly Leaf Pondweed
    - Purple Loosestrife
    - Flowering Rush
    - Japanese Knotweed
    - Giant Reed
    - Zebra Mussels

    - Lake Maps with Focus Areas
- Procedures upon discovery:
    - Phone Numbers
    - Personnel Resource List
- GPS (handheld) - optional

The estimated cost for a PBRR Kit is $400.00 including a GPS unit. The GPS will provide coordinates of the new beds. Recent allowances by the department for boat borne GPS units to provide coordinates significantly reduces the cost impact for these kits, as many boaters have GPS units, thus the most expensive item in the kits (est'd at $200.00) is perhaps not needed.

An essential kit item is a "who to call" list to provide team leaders immediate knowledge for both verification and planning. Once verified, divers can be deployed to remove the new AIS growth, if this is an appropriate project for them to accomplish.

It is estimated that the volunteer time will be 72 hours per year throughout the course of the project to monitor EWM and other invasive species. This time will be used as in-kind match for the MKLPA.

Task 5 – Pre-treatment Survey (Ecological Integrity Service)[E1]

Description and Task Approach

In order to assess the chemical treatment on natives, there will be a survey of the identified sites of all plant species before and after treatment which will follow the preset WDNR protocols for AIS which is found in Appendix G of the "Aquatic Plant Management in Wisconsin" guide; also noted in Appendix F in the Minocqua-Kawaguesaga Lakes Aquatic Plant Management Plan from 2008.[E2] The polygons identified in the Minocqua-Kawaguesaga Lakes Aquatic Plant Management Plan and Appendix B represent the treatable beds of Eurasian water milfoil. A presence/absence and rake fullness assessment of all plants at a sub sample of points within and near the polygons will be conducted.

The number of sample points will be determined by the reference table below:

Acres of Polygon	# of Sampling Points
0.50	1
1.00	4
2.00	8
3.00	12

Table from the pre/post treatment survey protocol from the Wisconsin DNR

Each polygon will be monitored at a number of points suggested in the pre- and post-treatment survey protocol from the Wisconsin DNR. The

number of points to sample is based on the acreage of each bed.

At each point, the density and coverage of Eurasian water milfoil will be measured. The boundaries of the Eurasian water milfoil beds will be reviewed. In addition, any other species sampled will be identified and recorded based on density. All of this data will be entered into a spreadsheet format. The pre- and post-treatment data can then be compared in future years through a statistical analysis.

Pre treatment survey will be conducted when the water temperatures are 50-54°F and/or several days before treatment.

The pre-treatment surveys will be used to determine the following: [A3]

- The extent of the Eurasian water milfoil both in distribution and density and to refine the proposed treatment areas.
- The need for an herbicide treatment or whether another method of control is more appropriate at this time.
- Cost of treatment both in product and labor.
- Proper acreage for permit conditions and public notice.
- Adjustments in application rates based on proximity to native plants.

Task 6 – Chemical Treatment of Eurasian Water Milfoil (Schmidt's Aquatic Plant Control)[E3]

Description and Task Approach

The Minocqua-Kawaguesaga Lakes Protection Association is taking a multifaceted approach to controlling Eurasian water milfoil. The different control methods will be used throughout this process includes:

- Chemical treatment using 2, 4-D at 2.0 ppm
- Using divers and volunteers to hand pull small plots

Stands of EWM that are less than 4 acres in total and fulfill the density definition will be chemically treated. These stand locations are identified in Appendix B and in the Minocqua-Kawaguesaga Lakes Aquatic Plant Management Plan. This treatment will then be evaluated for effectiveness. The treatment(s) will be early season (based on water temperature) and depending on the recommendations from the pre- and post-surveys.

Currently there is 21 – 22 acres of Eurasian water milfoil in Minocqua and Kawaguesaga lakes. Some 33.5 acres were treated in 2012. This deviation from the initial survey results is believed to have been due to the early spring experienced in 2012. Recommended treatment areas are identified in the Aquatic Plant Management Plan: Kawaguesaga Lake and Minocqua Lake in Appendix B of this grant application and will target the densest areas which total 21 acres during the first year of the grant. Using the average of the anticipated treatment in 2013 and the actual of 2012, an

average of 25 acres per year will be treated with 2,4-D to achieve a 3 ppm concentration of effective herbicide in the treated area. The estimated cost to accomplish this is $31,350.00 in the first year plus inflation in the following years.

Warning buoys will be placed at treatment sites. Treatments will be made in May or when the lake water temperature is appropriate for spraying. 2,4-D containing herbicides (Navigate 2,4-D, Sculpin G, or Liquid 2,4-D) will be used at locations appropriate for the herbicide and the growth to be controlled. In 2012 Navigate was the principal herbicide used. The location of the treatment areas will be predetermined by GPS. Buoys will be collected after posting time expires.

All necessary permits required by the DNR to treat Eurasian water milfoil will be completed and approved prior to treatment.

Effectiveness of the treatment will also be compared to the other areas and other control methods used throughout this grant project.

Task 7 – Manual Removal of Eurasian Water Milfoil (Paid Divers)[C1, E3]

Description and Task Approach

Manual removal involving hand pulling, cutting, or raking plants will remove plants from small areas. It is likely that plant removal will need to be repeated during the growing season. Hand removal of herbaceous plant species will be done after flowering but before seed head production (July/August). Potential locations of sites for manual removal are shown in Appendix B (taken from the Minocqua-Kawaguesaga Lakes 2012 Treatment Analysis).

Divers will be hired to manually pull small sporadic stands of Eurasian water milfoil. Divers unfamiliar with manual pulling of the Eurasian water milfoil will be trained in the procedures. The success of the hand pulling treatment method will be assessed each year to determine if it will be necessary to complete the manual removal process in the subsequent years.

In 2012 MKLPA paid $12,026.11 to 9 divers who each worked an average of just over 91 hours manually removing EWM. This effort has been an effective treatment for 'pioneer beds' and is expected to continue to be used on an ongoing basis. Effectiveness of the treatment will be compared to the other areas and other control methods used throughout this grant project.

Task 8 – Update Point Intercept Survey (Ecological Integrity Service) and APMP

The Lake Minocqua Lake Kawaguesaga APMP indicates that the Point Intercept Survey of Plant Species should be evaluated every five years.

The evaluation will include a reoccupation of the sampling grid as recorded in 2007. This work will be started in 2014 and submitted to WDNR for review. The survey will be completed per the WDNR and APMP protocols and observe the early season curly leaf pondweed as well as later season Eurasian water milfoil development.

The APMP will also updated as it is fast approaching its fifth year anniversary. The existing plan will be evaluated and updated with the new Point Intercept Survey. Plan updates will include: recent aquatic plant surveys, the success or lack thereof of species control, an evaluation of existing management schemes and consideration of new or alternate approaches for the maintenance and improvement of the native species in this habitat.

Task 9 – Post-treatment Survey (Ecological Integrity)[EI]

Description and Task Approach

Each year of the project the post-treatment survey will be conducted later that summer after treatment and also follow the preset WDNR protocols for AIS which is found in Appendix G of the "Aquatic Plant Management in Wisconsin" guide; also noted in Appendix F in the Minocqua-Kawaguesaga Lakes Aquatic Plant Management Plan from 2008. The survey will be completed in the same manner the pre-treatment survey was completed on the same GPS determined sites. This will be used to identify effectiveness on target plants, determine if there was any harm or benefits to native plants, and identify next year's potential treatment areas for target plants.

If there are chemical treatments in subsequent years, summer surveys for the effects of the treatment on natives and the long-term effects on target species will be compared.

If no treatment takes place in any of the seasons throughout this project, early and late season surveys will be conducted to help determine control recommendations for the following season.

Task 10 – Continue with Self Help Monitoring (Volunteers and MKLPA)

Description and Task Approach

Minocqua Lake volunteers are the backbone of the expanded self-help monitoring. This has also been done in Kawaguesaga, but for fewer years. Continued monitoring is very important to evaluate any changes that may occur in water quality. Total phosphorus, Secchi depth and chlorophyll-*a* readings should continue to be tested at least during the growing season. A qualified water quality specialist should conduct review of this data.

Predicted nutrient loading for these lakes indicates an increase in nutrients largely due to urban influences. The future water quality of Minocqua and

Kawaguesaga Lakes will most likely be determined in large part by urban runoff. For this reason, the Town of Minocqua should continue work with the Minocqua-Kawaguesaga Lakes Protection Association and the Wisconsin DNR to help implement practices to reduce urban runoff.

MKLPA personnel are heavily involved in lake protection activities logging multiple hours in various program meetings, local activities, in consultation with experienced persons in their group or consultants as they continue to learn and recommend new approaches and projects for lake protection.

Task 11 – Informational Meetings (Ecological Integrity)

Description and Task Approach

At the end of each season throughout the duration of the project, a results and recommendations update will be given at the Association's Annual meeting held in June. This meeting will provide an update of the season's Eurasian water milfoil treatment, the pre- and post-surveys, comparison of the different treatment methods, and discuss the following year plan for treatment of Eurasian water milfoil.

Depending on the length of the project, Ecological Integrity will attend three to five annual Association meetings as well as additional pertinent meetings of the MKLPA to present information from the pre- and post-survey data and answer questions from the Association.

Task 12 – Lake Ecology Education (Volunteers)

Description and Task Approach

Control and management projects typically include an educational component. It is the goal of the Minocqua-Kawaguesaga Lakes Protection Association to make educational materials available from the DNR, UWEX and others more accessible to the public. The MKLPA will provide informational brochures at all the public access and boat landings that are currently signed.

To address the lake ecology education of lakeshore owners and lake users, the Minocqua-Kawaguesaga Lakes Protection Association plant committee is committed to providing education for the lake residents and users. Each year the Association publishes three newsletters. Each of these newsletters will be a great opportunity to provide lake ecology information. Furthermore, the local newspaper, the Lakeland Times has been historically committed to lake issues. The Association will continue to facilitate the publication of information about lake ecosystems ranging from water quality preservation and the importance of aquatic plants as well as other pertinent topics.

Lake information packets will be distributed to all new lakeshore home owners at the time of purchase. These packets will include information on

and management of such issues as aquatic invasive species, shoreline restoration, septic systems, phosphorus reduction, etc.

The Minocqua-Kawaguesaga Lakes Protection Association will facilitate lake ecology education through various avenues. These will include newsletters, newspaper articles, and public meetings. Partnerships with local schools and organizations will be explored for public education purposes.

Tasks 2 through 11 will be repeated for a minimum of 3 years and may extend out to 5 years depending on the effectiveness of the treatment. The pre- and post-treatment monitoring will help determine the effectiveness of the treatment and provide necessary information to make recommendations for future management activities.

D. Description of Products or Deliverables

All data collected will be entered in spreadsheet format. The spreadsheet will contain information regarding Lat/Long of each sample point, density and coverage of Eurasian water milfoil, and density of the plants sampled at each point. A summary/analysis of all data will be conducted annually. The spreadsheet will be in Microsoft Excel and the summary in Microsoft Word. All data/information will be presented on a CD. All data and summaries will be provided to the MKLPA by October 1. The annual summaries will also include the recommendations for treatment/areas for the following year.

A map will also be prepared comparing the different treatment areas as well as the different control methods. This process will be useful in differentiating which methods were most effective.

A summary report for the shoreline survey will be completed. It will also include a spreadsheet with analysis and recommendations along with linked photos of the entire shoreline. This information will be compiled onto a CD and sent to the MKLPA and the DNR.

E. Description of Data to be Collected

A summary/analysis of all data will be conducted including information regarding Lat/Long of each sample point, density and coverage of Eurasian water milfoil sampled at each point. This analysis will be an important aspect in determining future Eurasian water milfoil management efforts.

Watercraft Inspection Reports (Form 3200-120) will also be filled out and submitted to the DNR by the two Clean Boats, Clean Waters employees.

AIS data collected by volunteers will be submitted to the consultant and verified.

Data will also be collected from the shoreline inventory survey and sent to the MKLPA and the DNR.

F. Description of Existing and Proposed Partnerships

This project will involve the cooperation and support of the Minocqua-Kawaguesaga Lakes Protection Association, Oneida County, local volunteers and businesses, Clean Boats, Clean Waters Program, Ecological Integrity Service, Schmidt's Aquatic Plant Control, Cedar Corporation, and various other local organizations. This project represents the proactive, enthusiastic attitudes that exist within the Minocqua-Kawaguesaga Area community and the willingness of other governmental agencies to support the control of Eurasian water milfoil.

As part of this project it is important that the following groups work together to complete this project and fulfill the requirements of the grant:

- Summer Staff will be attending a Clean Boats, Clean Waters training program in April or May to be trained on how to inspect boats and trailers, collect data, talk to lake users, and hand out brochures on invasive species.
- The MKLPA will distribute lake information packets to all new lakeshore home owners at the time of purchase. These packets will include information on aquatic invasive species, shoreline restoration, septic systems, phosphorus reduction, etc.
- Ecological Integrity Service will present the results of the pre- and post-surveys to the Association and the treatment recommendations for the following season.
- Ecological Integrity Service will collect data from the pre- and post-surveys and provide that information to MKLPA and to Schmidt's Aquatic Plant Control.
- The Town of Minocqua has budgeted $25,000 for 2014 to assist with this DNR grant project and are planning to commit additional funding in subsequent years for the purpose of controlling EWM. Contributions from the Town towards this project are in excess of 10% of the total project costs.[H1, J1a]
- Oneida County has an AIS Coordinator on staff and is working to develop an education program for Aquatic Invasive Species and distribute materials. The MKLPA will work with them to coordinate educational efforts.[G2, J1a]

G. Discussion of Role of Project in Planning and/or Management of Minocqua and Kawaguesaga Lakes

Both Minocqua and Kawaguesaga Lakes already have an infestation of Eurasian water milfoil. It is important that they continue the current proactive approach to try and contain this invasive species. A strong component in both their Lake Watershed Management Plan and their Aquatic Plant Management Plan is to treat and contain the infestation of Eurasian water milfoil. This grant will allow the MKLPA to take further steps towards reducing the negative impact that Eurasian water milfoil has had on both Lakes as well as begin a program to prevent future infestations of invasive species in the Lake and restore the ecology with native species.

This project also includes significant involvement from the MKLPA. Volunteers will be used to educate the lake users regarding aquatic invasive species. Education methods will include making signage, handing out informational brochures, and boat/trailer inspection.

H. Timetable for Implementing Key Activities

The proposed project will take place from notice of award of Aquatic Invasive Species (AIS) Control Grant through December 2018.

The following represents an estimated project schedule for the AIS Control Grant activities for project.

Aquatic Invasive Species Control Program

August 1, 2013	Submit an Aquatic Invasive Species (AIS) Control Grant Application for the MKLPA to control Eurasian water milfoil from 2014 through 2018.
December 2013	Notice of Award of AIS Control Grant.
April 2014	MKLPA employees will attend a workshop and be trained how to approach the public and inspect and identify aquatic species on boats and trailers entering the boat landing.
April/May 2014	AIS Pre-treatment survey.
May 2014	Training volunteers to identify EWM and other invasive species.
May 2014	Chemical treatment of identified EWM plots using 2, 4-D.
May/Oct 2014	MKLPA employees will inspect trailers and boats through the Clean Boats, Clean Waters Program for a minimum of 200 hours.
May 2014	Kickoff and informational meeting at the Association's spring meeting.
May – October 2014	Continue self-help monitoring program.
Summer 2014	Volunteers to monitor the existing plots of EWM and observe the Lakes for new invasive species.
Summer 2014	Manually pull sporadic plots of Eurasian water milfoil.
Summer 2014	Survey and map existing curly leaf pondweed beds.
Summer 2014	Lake ecology educational materials made available to Lake users.
July/August 2014	Conduct a post-treatment survey will be conducted later in the summer.
October 1, 2014	Season 6 summary/analysis of all data will be completed and available.
October 2014	Results and recommendations update at the Association's fall meeting.

The proposed project timeline is based on the first year of the project. The proposed project will last a minimum of three years, but no more than five.

I. Plan for Sharing Project Results

A summary/analysis of all data will be conducted at the end of each season of treatment. A copy of the data compiled and submitted to the Minocqua-Kawaguesaga Lakes Protection Association and the Wisconsin Department of Natural Resources.

In addition, the following will also provide project information to the general public:

- News release indicating the scope of the project and goals of the planning grant.
- An initial kick off meeting will be held where information will be presented at the Minocqua-Kawaguesaga Lakes Protection Association spring meeting.
- Results meetings will be held at the end of each season of the project to share information about the data collected and the recommendations for the following year.
- At time of completion of project, results will be made available to the public through news release describing the project and subsequent results.

J. Other Information

Appendix C – Scoring Reference, matches the ranking questions to the superscript references throughout the grant.

References

Aquatic Plant Management Plan: Kawaguesaga Lake and Minocqua Lake, Harmony Environmental, 2008.

Aquatic Plant Management in Wisconsin, UW-Extension and Wisconsin Department of Natural Resources, 2008.

Eurasian Water Milfoil *Myriophyllum spicatum* Treatment Analysis, Minocqua Lake and Kawaguesaga Lake, Oneida County, WI, 2012

Attachments

Appendix A – Recommendations from APMP and 2012 AIS Control Post-Treatment Survey
Appendix B – Maps of Treatment Locations
Appendix C – Scoring Reference
Appendix D – Invoices for 2012 Pre- and Post-Treatment Surveys
Appendix E – Schmidt's Aquatic Plant Control Proposal