

WISCONSIN DEPARTMENT OF NATURAL RESOURCES
LAKE MANAGEMENT PLANNING GRANT PROGRAM

Application Materials

*Mann Lake
Management Planning Project*

Prepared for the

**Friends of
Mann Lake**

February 1, 2014

Onterra, LLC
Lake Management Planning

INTRODUCTION

Mann Lake, Vilas County is a shallow, 261-acre, spring-fed lake with a maximum depth of 18 feet and a mean depth of 5 feet. The lake's single boat land supports approximately 10 vehicle-trailer parking spots, with more, legal parking available on the adjacent roadways.

In 2012, the Friends of Mann Lake, Inc. (FML) was formed primarily over concerns of the fishery. In past years, Mann Lake has experienced fishkills brought on by low oxygen levels under winter ice. While the fishery was the driving force in the creation of the FML, the group is concerned with other aspects of the lake's ecology as well. The group met with Ted Ritter during the fall of 2013 to discuss AIS-related issues on the lake. At this time, the group does not believe the lake contains any invasive aquatic plants and as described below, will be developing a volunteer-based AIS monitoring program on the lake beginning in 2014.

As mentioned above, the FML's primary concern revolves around the lake's fishery, based heavily on the occurrence of winter fishkills, of which the most recent occurred in 2011. That concern among riparians, even before the FML was formed, resulted in the group developing a good working relationship with the local fisheries biologist, most recently, Steve Gilbert. Interestingly, folks around the lake have worked on the lake's fishery for decades by facilitating stocking of walleye and muskellunge as early as 1935.

PROJECT GOALS

The scope of work described outlines a project and study design that approaches the lake from more of an ecosystem perspective than managing its plants, fisheries, or water quality alone. The scope outlines assessments of the lake's plants, watershed, shoreline condition, and water quality. It also describes the integration of available fisheries information, past aquatic plant and water quality assessments, and an intensive stakeholder participation component. The study components would provide the baseline data required to assess the lake ecosystem's condition, while the stakeholder participation portion would shed light on the expectations and needs of the lake users. The combination of these components and communications with WDNR specialists would allow a long-term and implementable plan to be created for Mann Lake.

The work required to develop the plan would rely on partnerships between the WDNR, the FML, and local municipalities as applicable.

Overall, the scope of work detailed in this proposal would provide the FML with the information bulleted below.

- Review of the drainage area definition (watershed) for the lake.
- The potential point-sources of pollution that may be affecting the lake.
- The areas of the lake's watershed that may be supplying excessive amounts of sediment and nutrients.
- A determination of plant community diversity for the lake and how the lake's diversity compares with other lakes in the region and state.

- An identification and location of important plant communities (emergent, submergent, floating-leaf) within the lake and an indication of the dominant species within those communities.
- The identification and location of any rare or threatened plant species within the lake.
- A determination of where exotic plant species (e.g., Eurasian water milfoil, curly-leaf pondweed, purple loosestrife) occur in and around the lake.
- A summary and analysis of specific chemicals found in the lake, how these concentrations compare with other lakes in the region, and what these concentrations indicate concerning the health of the Mann Lake ecosystem.
- A determination of the limiting nutrient controlling plant growth within the lake.
- The trophic state (e.g., oligotrophic, mesotrophic, eutrophic) of the lake.
- Analysis of aquatic plant management and protection alternatives.
- A summary of recent historic fisheries data, biological information relating to specific fish species, and how it applies to the management plan.
- A listing of management options that may be utilized to protect and enhance the important and sensitive areas of the lake.
- The steps that could be taken to help improve the lake, such as work in the watershed (e.g., agricultural best management practices), shoreland restoration opportunities, in-lake native plant introductions, etc.
- The funding sources available to assist in the implementation of the pertinent management and protection options that are outlined in the lake management plan.
- An assessment of the shoreline condition and occurrence of course woody habitat.
- An outline of how Onterra would assist the FML in implementing and funding the management plan.

PROJECT SCOPE

Stakeholder Participation

Stakeholder participation is a very important element in any environmental planning exercise. It is important not only from the perspective of informing participants and stakeholders about the project, but also from the standpoint of enhancing their understanding of natural ecosystems and their value to a healthy environment. If participants do not understand the value of the natural ecosystem, they will not strive to protect or enhance it.

This component of the management planning effort is intended to create an exchange of information between Onterra and the lake stakeholders, including those that own property on the lake and those that enjoy the lake through its public access. The exchange of information would flow bidirectionally between the lake stakeholders and Onterra staff. Onterra would provide information and guidance to help stakeholders understand the ecosystem more fully and to prepare them for the development of realistic goals and objectives concerning the management

of their lake. The stakeholders would provide information pertaining to their use of the lake and their management expectations. In the end, this information would be combined to create a long-term and implementable lake management plan.

This component, as described below, would also help the Onterra develop a better understanding of specific sociological needs within the association. For instance, if communication were lacking between the association board and its general membership a goal would be included within the management plan with specific actions addressing the deficiency. The need for specific or general educational initiatives would also be brought to light during this process so they too could be addressed within the management plan.

Further, during the planning process, current lake-related ordinances (at the county and town level) would be researched and discussed with the FML, county, and town. It is the experience of Onterra planners that lake residents often do not have a good understanding of ordinance specifics for their waterbody; therefore, the current ordinances would be discussed with the FML, as well as possible modifications to those ordinances or totally new ordinances that could be proposed to the town and/or county.

Planning Committee

Communication between Onterra staff and the lake group is essential in creating an effective and realistic management plan. To facilitate this interaction, Onterra would work with the FML create a “Planning Committee” to act as the primary conduit of interaction between the lake group and Onterra.

The Planning Committee fills several roles within the management planning process, including:

- Development and distribution of the written stakeholder survey and tallying of its results.
- Meeting with Onterra staff, likely twice, to learn about the study results and assist in creating the framework of the implementation plan. As discussed below, the Planning Committee meetings are held during the week and can last 2-3 hours long.
- Reviewing and providing comments on the draft of the management plan.

The lake association is responsible for recruiting the committee members. Typically, the committee should include 5-10 members. Having a diverse group of people as the Planning Committee membership is important to transparency in the process and the development of a realistic and representative management plan; therefore the committee should be made up of a cross-section of people from the lake. Limiting the recruitment of couples, more than one or two board members, and people of similar ages and area of the lake will assure the diverse group of people that would fulfill the committee. More information regarding the Planning Meetings can be found below.

Kick-off Meeting

Near the start of the project, a *Kick-off Meeting* would be held to inform stakeholders about the project and its goals. This meeting would also provide an excellent educational opportunity that would grant an introduction to important concepts in lake ecology, such as the value and importance of a diverse aquatic plant community and the benefits of maintaining natural buffer areas around a lake. The Kick-off Meeting would also provide an important forum allowing

stakeholders to express their concerns and provide information about Mann Lake and its watershed to Onterra ecologists.

If convenient for the lake group and Planning Committee membership, a brief meeting between the Planning Committee and Onterra staff would be held either before or after the Kick-off Meeting. The meeting would include an introduction to Onterra's planning process and the members' role in that process. The base stakeholder survey would also be discussed and provided to the committee.

Stakeholder Survey

Comments and opinions would be solicited from Mann Lake stakeholders to gain important information regarding their understanding of the lake and thoughts on how it should be managed. The information would be collected through a written survey/comment form supplied to each member household by mail. This information would be critical to the development of a realistic management plan by supplying an indication of the needs of the stakeholders and their perspective on the management of the lake. It would be the responsibility of the Planning Committee to prepare the survey mailing and collect and summarize the results. Onterra would create the survey content and lead the interpretation of the results. Below is an outline of these activities:

1. Onterra distributes standard survey to planning committee
2. Planning committee develops additional questions and options to be included within the survey
3. Onterra updates survey and submits to WDNR for approval
4. WDNR approved survey is provided to planning committee
5. Planning committee prints survey, stuffs surveys in envelopes, and mails out surveys to distribution list they develop
6. Onterra provides customized Excel spreadsheet to the planning committee
7. Completed surveys are returned to planning committee and they tally results in provided electronic format
8. Excel spreadsheet of entered data is emailed to Onterra for analysis

Planning Meetings

Following the completion of data analysis, up to two meetings between Onterra and the Planning Committee would be conducted to facilitate the following:

- An in-depth knowledge of the conditions and ecological process within Mann Lake among the Planning Committee members.
- An understanding of suitable management alternatives for the lake and their possible outcomes.
- The development of realistic goals for the management of the lake.
- The creation of an *Implementation Plan* containing specific management actions that would guide the FML in meeting their management goals.

The first meeting would include a detailed presentation of the study results followed by the creation of a working-set of goals to base the implementation plan upon. The second meeting

would be used to finalize the goals and formulate specific management actions that would allow the association to meet the management goals. The end-product of these meetings would be the Implementation Plan which would be included in the management plan for the lake. The final task of the Planning Committee would be to review the draft management plan/report and provide comments before it is finalized and presented to the association board of directors, general membership, and WDNR.

Wrap-up Meeting

At the conclusion of the project, Onterra would facilitate a *Wrap-up Meeting* to present the findings and recommendations of the study and corresponding management plan to the FML. The presentation would be in an easy-to-follow format that would explain the study results and the reasons as to why certain alternatives were selected for inclusion within the plan. It would also allow stakeholders to express concerns and ask specific questions about the Mann Lake ecosystem that could not be answered by Onterra ecologists before they were familiarized with the system.

Additional Public Information Forums

In addition to the meetings described above, public awareness of the project would be promoted by a news release to local newspapers by the association, by an informative article provided to the association members through a special mailing, and by providing a progress report approximately halfway through the project. The latter two documents would be provided to the association by Onterra. The initial news release would be used to inform stakeholders outside of the association membership that a management project is being conducted at the lake and that the association and WDNR are sponsoring and spearheading the project.

The special mailing is often used to notify the association members that a lake management project will be occurring on the lake and to inform them of the Kick-off Meeting. In some cases, the article contains an educational topic aimed at increasing the membership's general knowledge of lake stewardship or in some instances, for dispelling a specific myth or misunderstanding among the association members.

The project update would be in the form of a newsletter article or a special mailing and would contain information pertaining to what tasks had been completed as a part of the lake management project. Study results may be included in the update, but they would be limited to those that would not be counter-productive to the planning process.

Special Note on Meeting Schedule

As described above, stakeholder participation is an important aspect of a management planning project. Two types of meetings are outlined in the paragraphs above: those involving the general public (Kick-off and Wrap-up Meetings) and those involving a subcommittee of the association (planning meetings). In an effort to maximize attendance at the meetings involving the general public, Onterra suggests that those meetings be held on a Saturday. Onterra staff members enjoy spending their holiday weekends with their families just as our clients enjoy spending those same weekends with their families at the lake; therefore, Onterra cannot schedule meetings for holiday weekends. Further, not all meetings can be facilitated by Onterra's founder, Tim Hoyman, some

meetings and other project aspects would be handled by Onterra's other well-trained and experienced staff members

Because the planning meetings involve a smaller group of people, we suggest that these meetings be held during a weekday afternoon or evening, preferably Monday – Thursday. Often, these meetings are held on a Thursday afternoon at a residence or other location on or near the lake.

Volunteer-Based AIS Monitoring

During the spring of 2014, Ted Ritter, Vilas County Invasive Species Coordinator, would train Mann Lake residents to identify and monitor common invasive species within the lake. The trained volunteers would monitor the lake several times during the growing season. If suspect species are located, Ted Ritter would be contacted for a positive identification either at the lake or via a sample specimen being brought to his office. If a finding were to occur during 2014, Onterra staff would also be notified so they would be able to map the species during one of their field surveys.

Shoreline Condition and Course Woody Habitat Assessment

Using a GPS data collector with sub-meter accuracy, the immediate shoreline of Mann Lake would be surveyed and classified based upon its potential to negatively impact the system due to shoreline development and other anthropogenic impacts. Examples of these negative impacts include shoreland areas that are maintained in an unnatural manner and impervious surfaces.

The resulting map would delineate the lake's shoreline, from the water's edge to approximately 35-feet shoreward, into one of five categories ranging from "Urbanized" to "Natural/Undeveloped". Ultimately, the information would be used to prioritize areas for restoration and protection that would likely have a benefit to the Mann Lake ecosystem.

During the shoreline condition assessment survey, all incidences of course woody debris extending at least 5 feet into the lake, in water depths exceeding 1 foot, and with trunk diameters exceeding 2 inches would be mapped and described based upon size and complexity. This type of structure is important habitat for fish and other aquatic organisms; therefore, this information would be useful in determining whether the lake management plan should include the enhancement of woody structure in the lake.

Watershed Definition and Phosphorus Load Modeling

The first step in this component would be an accurate delineation of the lake's watershed. GIS software would be used to generate a map of existing land cover types located within the watershed. The acreage of land currently attributed to each cover type would then be input into the Wisconsin Lake Model Suite (WiLMS) and a partitioning of watershed phosphorus loading, based on land cover type would be calculated. The sources of phosphorus loading for the watershed would also be graphically displayed using GIS software. During the watershed definition process, site visits would be conducted and information collected from shoreland landowners to identify potential problem point-sources (e.g., agricultural drain tile inlets) and nonpoint sources of pollution and identify land use trends, as applicable.

Using WiLMS, a response model would be created by altering the land cover types found within the Mann Lake watershed to indicate different scenarios (e.g. agriculture lands converted to forests). This exercise would be useful in prioritizing conservation work conducted in the watershed and would lead to realistic goals for water quality preservation and possible improvement. These goals would be expressed using Wisconsin Trophic State Index values.

This component is useful in accomplishing three goals; 1) to help target specific areas for improvement within the lake's watershed, 2) to bring a better understanding to the lake stakeholders concerning how the lake's watershed plays a key role in its water quality regardless if problems exist or not within its watershed, and 3) to determine the need for more detailed study of the watershed and the lake's nutrient budget. Particular to point 3, if the watershed analysis and in-lake phosphorus levels do not compare reasonably well, this may be an indication that other sources of phosphorus are impacting the lake, such as internal loading, point-sources, and/or private septic systems, and that further study (outside the scope of this project) would be required to fully understand the nutrient dynamics within the lake.

Lake Water Quality

Water quality conditions would be monitored within Mann Lake in order to complete the following:

- Assist in identifying potential water quality problems within Mann Lake, such as elevated nutrient levels, anaerobic conditions, etc.
- Determine the trophic state of the lake using the Carlson Trophic State Index (TSI).
 - Historic data would also be used to calculate TSI values for long-term trend analysis. This analysis would be useful in determining realistic target values for maintaining or improving the lake's water quality through watershed or in-lake management actions.
- Determine the limiting nutrient.
- Supplement and calibrate watershed assessment modeling.

A Citizens Lake Monitoring Network (CLMN) volunteer on Mann Lake currently collects Secchi disk transparency data and we ask that these data continue to be collected during the project. Water quality would be monitored at the deepest point in Mann Lake by Onterra staff. Samples would be collected at subsurface (S) and near bottom (B) depths and would occur once in spring, winter and fall, and three times during the summer. All samples requiring laboratory analysis would be processed through the Wisconsin State Laboratory of Hygiene. The parameters to be measured and sample collection timing are contained in Table 1.

Table 1. Water Quality Sample Parameters and Timing

Parameter	Spring		June		July		August		Fall		Winter	
	S	B	S	B	S	B	S	B	S	B	S	B
Dissolved Phosphorus	●	●			●	●					●	●
Total Phosphorus	●	●	●	●	●	●	●	●	●	●	●	●
Total Kjeldahl Nitrogen	●	●			●	●					●	●
Nitrate-Nitrite Nitrogen	●	●			●	●					●	●
Ammonia Nitrogen	●	●			●	●					●	●
Chlorophyll- <i>a</i>	●		●		●		●		●			
True Color	●				●							
Hardness	●				●							
Total Suspended Solids	●	●			●	●			●	●		
Laboratory Conductivity	●	●			●	●						
Laboratory pH	●	●			●	●						
Total Alkalinity	●	●			●	●						
Calcium	●				●							

Furthermore, during each sampling event, Secchi disk transparency would be recorded and a temperature and dissolved oxygen profile would be completed.

Aquatic Plant Surveys

Aquatic plants are very important because they are the foundation of the lake ecosystem; therefore a complete and accurate assessment of the aquatic plant community is vital in every lake management project. In order to fully assess the aquatic plants, three different types of surveys would be performed: an early season AIS survey, a point-intercept survey, and an aquatic plant community mapping survey. The early season AIS survey is aimed at locating exotics early in the growing season while curly-leaf pondweed is at its peak growth and Eurasian water milfoil is higher in the water column than most native plants. The point-intercept survey is a plot-based inventory intending to characterize the relative frequency of all plants, native and exotic, and is performed at the height of the growing season. The aquatic plant community mapping survey is completed following the comprehensive survey and provides a *snapshot* of the lake’s emergent and floating-leaf communities.

Overall, this task would serve to provide an accurate characterization of the lake’s macrophyte community. It would indicate what species were present and where they were located, and allow for comparisons with past and future surveys. It would also help to determine where and what types of aquatic plant control, protection, and enhancement methods would be appropriate for the lake.

Early Season AIS Survey

Curly-leaf pondweed has a very unusual life cycle compared to our native plants and is at peak biomass within Wisconsin lakes during late spring/early summer. Further, Eurasian water milfoil, which begins growing much earlier than most Wisconsin native plants, is often easily spotted from the surface during early summer as it towers above other lake plants. Therefore, an inventory would be conducted on the lake during the early summer to map curly-leaf pondweed

and Eurasian water milfoil occurrences within the lake. Please note that this would not be a transect- or plot-based survey, but instead, would consist of a meander survey of the lake to locate these species. If curly-leaf pondweed is found, the colonies would be mapped utilizing the submeter-accuracy GPS technology. A map depicting each colony's location and density (through color-gradients) would be created based upon the data collected in June. If Eurasian water milfoil is mapped during this survey, these sites would reassessed and the plants remapped later in the summer when Eurasian water milfoil is most likely at its peak biomass.

Point-intercept Survey

A comprehensive survey of aquatic macrophytes is used to characterize the existing communities within the lake and includes inventories of emergent, submergent, and floating-leaved aquatic plants within the lake. The point-intercept method as described in Recommended Baseline Monitoring of Aquatic Plants in Wisconsin: Sampling Design, Field and Laboratory Procedures, Data Entry, and Analysis, and Applications (WDNR PUB-SS-1068 2010) would be used to complete this study. The survey would be completed with a point spacing of 49 meters, resulting in approximately 431 sample locations (Map 1).

The data would be analyzed by Onterra and used in the management plan. To characterize spatial distribution, *relative frequency of occurrence* would be calculated for each species found within the lake. In addition, the plant communities of the lake would be compared to those of other lakes in the ecoregion and the state using the Floristic Quality Assessment (FQA) procedures described in Nichols (1998). In general, the FQA evaluates the species found in a lake with those found in a natural, undisturbed system; indicating the health of the current plant community in the lake.

Native and Exotic Plant Community Mapping

The aquatic vegetation community types within the lake (e.g., emergent, submergent, and floating-leaved vegetation) would be mapped using the GPS technology described above, and would be based on dominant species (e.g., soft-stem bulrush, common arrowhead, large-leaf pondweed, 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 lake in relation to the lake's bathymetry. It is these communities that respond the quickest to ecological changes in the lake and the survey would provide a baseline understanding of the relative locations of these communities.

Furthermore, additional maps would indicate the areas of the lake inhabited by exotic/invasive species such as pale-yellow iris, giant reed grass, and purple loosestrife if these species are located.

Fisheries Data Integration

Summary of Baseline Data

Available historic fisheries data within the past decade from the Great Lakes Indian Fish and Wildlife Commission (GLIFWC), and the WDNR would be compiled from Mann Lake. This would include information relating to fish stocking, creel surveys, comprehensive fish surveys,

and spear harvest data. A list of the known fish species present in the lake along with general biological information pertaining to important fish species would be provided considering spawning habitat requirements, nursery areas, and food sources.

Integration within Management Plan

Although current fish data would not be collected, the compiled historic data along with the natural history information would be considered as it pertains to the management plan. As applicable, individual management actions within the implementation plan would be analyzed as they pertain to the health of the fish populations (e.g. timing of Eurasian water milfoil control practices, if discovered, to limit interference with spawning activities).

Professional *Dreissena* Mussel Monitoring

The WDNR samples over 100 waterbodies annually in search of larval and adult zebra and quagga mussels (both *Dreissena* sp.). Following discussions with the WDNR during the spring of 2006, Onterra purchased the necessary equipment and was trained by WDNR staff to sample lakes in search of these mussels. During each lake visit, the water column would be sampled at three sites using a 64-micron mesh plankton net in search of larval mussels (veligers). Mussel Monitoring would be completed once in June during the CLP survey and again in July or August during the community mapping survey. Samples would be preserved and packaged according to the methodology outlined in the 2005 WDNR publication, “*Dreissena* Mussel Monitoring Protocol.” Because ethyl alcohol is used in the preservation process, specific rules apply for shipment and arrangements have been made to hand-deliver samples to WDNR staff at the Northeast Region Headquarters in Green Bay where they would be responsible for shipment to the location of analysis. During these and other visits to the lake, Onterra would periodically search docks, piers, and other structures for adult forms of the mussels.

PROJECT DELIVERABLES

The final product for this project would be a single report that would include the methodologies and results of the tasks described above; a discussion concerning those results as they apply to the current health, rehabilitation, and protection of Mann Lake; and the full-color maps described in the Project Scope. Management, protection, enhancement alternatives and recommendations would be presented along with continued public education issues. Furthermore, recommendations for remedial actions and further study options (if needed) would be included expressly for Mann Lake and its drainage basin; including possible funding sources and an indication as to how Onterra could assist the FML in obtaining the funding required for future projects.

Upon finalization of the report and acceptance by the FML and WDNR, 5 hard copies of the management plan would be provided to the FML. In addition, the FML, WDNR, and county would receive two copies of the report, data, and maps on CD-ROM in Adobe’s Portable Document Format (PDF).

TENTATIVE PROJECT SCHEDULE

Table 2 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. The meeting times would be very flexible.

Table 2. Approximate Project Schedule for 2014 – 2015.

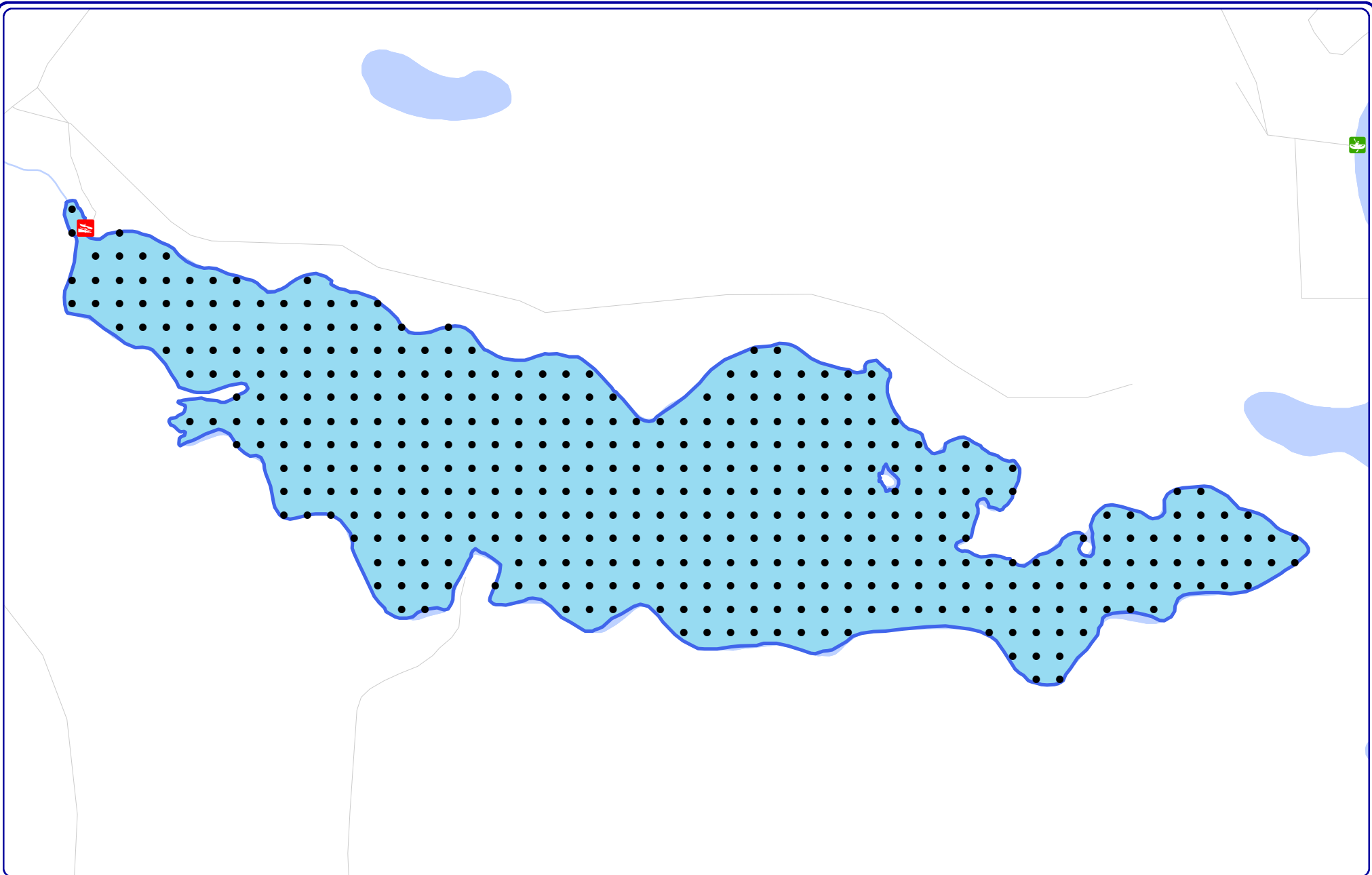
Task	2014												2015											
	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S				
Water Quality Sample																								
Kick-off Meeting																								
Volunteer Monitor Training																								
Early-Season AIS Survey																								
Point-Intercept Plant Survey																								
Aquatic Plant Community Mapping																								
Project Update																								
Shoreland Condition Assessment																								
Data Analysis																								
Planning Comm. Meeting																								
Report – First Draft																								
Report – Final Draft																								
Wrap-up Meeting																								

VOLUNTEER AND IN-KIND OPPORTUNITIES

Task/Item	Quantity	Cost/ Unit	In-kind Match
Planning Comm. – Stakeholder Survey	5 peop. x 6 hours = 30 hrs	\$12.00	\$360.00
Planning Comm. – Plan Development	5 peop. x 6 hours = 30 hrs	\$12.00	\$360.00
AIS Monitoring (Including Training)	10 peop. x 6 hours = 60 hrs	\$12.00	\$720.00
Kick-off Mtg Attendance	30 peop. x 1.5 hours = 45 hrs	\$12.00	\$540.00
Wrap-up Mtg Attendance	30 peop. x 2 hours = 60 hrs	\$12.00	\$720.00
FML Grant Project Administration	2 peop. x 25 hours = 50 hrs	\$12.00	\$600.00
Total Estimated In-kind Match			\$3,300.00

PROJECT COST BREAKDOWN

	Cash Cost	Donated Value
Onterra Fees		
Project Setup & Administration	\$1,055.00	
Stakeholder Participation	\$3,530.00	
Watershed Assessment	\$1,185.00	
Water Quality Assessment	\$3,360.00	
Fishery Data Compilation & Integration	\$845.00	
Shoreline & Course Woody Habitat Assessment	\$820.00	
Early-Season AIS Survey	\$1,100.00	
Point-Intercept Survey	\$2,830.00	
Aquatic Plant Community Mapping	\$1,190.00	
Data Analysis and Report/Plan Creation	\$4,365.00	
Onterra Printing & Shipping	\$300.00	
Travel (Lodging, Incidentals, & Mileage @ 0.58/mi)	\$1,700.00	
Professional Dreissena Mussel Monitoring		\$800.00
<i>Subtotal</i>	\$22,280.00	\$800.00
Other Fees		
State Laboratory of Hygiene Fees	\$1,433.20	
Stakeholder Survey Printing and Mailing Costs	\$900.00	
FML Project-Related Printing Costs	\$300.00	
<i>Subtotal</i>	\$2,633.20	
Volunteer & In-kind Match Opportunities		
Planning Comm. – Stakeholder Survey		\$360.00
Planning Comm. – Plan Development		\$360.00
AIS Monitoring (Including Training)		\$720.00
Kick-off Mtg Attendance		\$540.00
Wrap-up Mtg Attendance		\$720.00
FML Grant Project Administration		\$600.00
<i>Subtotal</i>	\$24,913.20	\$4,100.00
Project Total	\$29,013.20	
Lake Management Planning Grant Specifics		
WDNR Portion (67%)	\$19,438.84	
Local Match (33%)	\$9,574.36	






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

Sources:
 Roads and Hydro: WDNR
 Map Date: October 2, 2013
 Filename: MannVilas_location_proposal.mxd



Project Location in Wisconsin

Legend

-  Mann Lake ~ 261 acres
WDNR Definition
-  Point-Intercept Survey Location
38-meter spacing, 431 total points
-  Public Access

Map 1
 Mann Lake
 Vilas County, Wisconsin
**Project Location
 & Lake Boundary**

RESOLUTIONS
OF DIRECTORS
OF FRIENDS OF MANN LAKE, INC.

The undersigned, constituting all of the Directors of Friends of Mann Lake, Inc. ("the Association"), do hereby adopt the following resolutions:

WHEREAS, the Association wishes to obtain a lake management grant under Section 261.68 of the Wisconsin Statutes, and may also seek other grants or funding from other sources; and

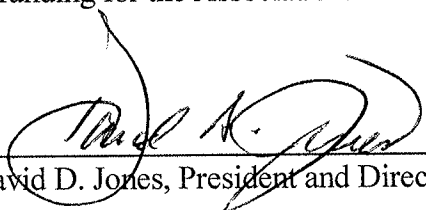
WHEREAS, the Association wishes to authorize David D. Jones, its President, to take all steps reasonably necessary related to said grants and/or funding on behalf of the Association.

NOW, THEREFORE, it is hereby resolved by the Association as follows:

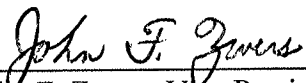
RESOLVED that David D. Jones, President, is authorized on behalf of the Association to sign any and all documents, take necessary action to undertake, direct, and complete any approved project, and take all other steps reasonably necessary on behalf of the Association with respect to any such lake management grants and other grants and/or sources of funding for the Association.

FURTHER RESOLVED that the undersigned Board of Directors have reviewed the financial status of the Association and do hereby certify that the Association has sufficient funds to complete any project approved in conjunction with the issuance of any such lake management grant and other grants and/or sources of funding for the Association.

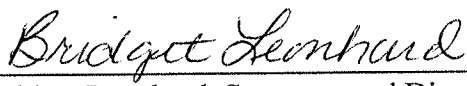
Dated: 9/14/13


David D. Jones, President and Director

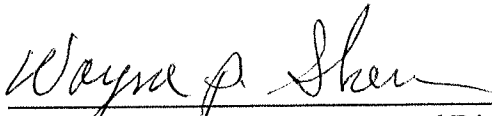
Dated: 9/14/13


John F. Zwiers, Vice President and Director

Dated: 10/5/13


Bridget Leonhard, Secretary and Director

Dated: 9/14/13


Wayne P. Sherman, Treasurer and Director

Notice: Use of this form is required by the DNR for any application filed pursuant to ch. NR 190 or 191, Wis. Adm. Code. Personal information (PI data) 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

Lake Management Planning Grant

Check one:

- Large-scale planning grant
 Small-scale planning grant

Check one:

- Self-help lake trend monitoring package
 Lake education
 Organizational development
 Other study or assessment, or multiple-purpose project

Lake Management Protection Grant

Check one:

- Wetland restoration
 Ordinance development
 Lake Improvement
 Lake classification
 Land or easement acquisition

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 Friends of Mann Lake			Type of Eligible Applicant		
Lake Name Mann Lake		Size in Acres 261	<input type="checkbox"/> County	<input type="checkbox"/> Tribe	<input type="checkbox"/> Other Governmental Unit
Project County/Township/Section/Range Vilas/41N/30/07E			<input type="checkbox"/> City	<input type="checkbox"/> Sanitary District	<input type="checkbox"/> Non Profit Conservation Organization
Authorized Representative Named by Resolution Dave Jones			<input type="checkbox"/> Village	<input type="checkbox"/> Lake District	<input type="checkbox"/> School Districts (Planning)
Authorized Representative Title President			<input type="checkbox"/> Town	<input checked="" type="checkbox"/> Lake Association	
Address 945 Old Glory Way # 105			Project Contact Name Tim Hoyman		
City Sun Prairie			Project Contact Title Aquatic Ecologist, Onterra, LLC		
State WI			Address 815 Prosper St.		
ZIP Code 53590			City De Pere		State WI
Daytime Phone (area code) 608.220.6300		Evening Phone (area code)	Daytime Phone (area code) 920.338.8860		Evening Phone (area code)
E-mail Address djones@davejonesinc.com			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 (LC)	Lake Coordinator Approval / Date
Waterbody ID#	Adequate Public Access <input type="checkbox"/> Yes <input type="checkbox"/> No		Environmental Grants Specialist Approval / Date
Eligible Project <input type="checkbox"/> Yes <input type="checkbox"/> No	Eligible Applicant <input type="checkbox"/> Yes <input type="checkbox"/> No		Project Priority Rank
Prior Grant Award(s) <input type="checkbox"/> Yes <input type="checkbox"/> No	Fiscal Year(s)	Amount Received To Date \$	Project Awarded <input type="checkbox"/> Yes <input type="checkbox"/> No

Lake Management Grant Application

Form 8700-283 (R 11/07)

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Section III: Project Information

Project Title Mann Lake Management Planning Project		Proposed Ending Date June 30, 2016	
Other Management Units Around Lake	Letter of Support	Other Management Units Around Lake	Letter of Support
1. Town of Boulder Junction	<input checked="" type="checkbox"/>	4.	<input type="checkbox"/>
2. Vilas County LWCD (Will be sent separately)	<input checked="" type="checkbox"/>	5.	<input type="checkbox"/>
3.	<input type="checkbox"/>	6.	<input type="checkbox"/>

Section IV: Lake Access

Number of Public Vehicle Trailer Parking Spaces Available at Public Access Sites:	10
Number of Public Access Sites on Lake Including Boat Launches and Walk-ins:	1

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			
2. Consulting services	\$22,280.00	\$800.00	
3. Purchased services – sponsor printing costs	\$300.00		
4. Other purchased services (specify): Survey printing and mailing	\$900.00		
5. Plant material			
6. Supplies (specify)			
7. Depreciation on equipment			
8. Hourly equipment use charges			
9. State Lab of Hygiene (SLOH) Costs	\$1,433.20		
10. Non-SLOH Lab Costs - Paleolimnology			
11. Land or easement acquisition value			
12. Associated acquisition costs			
13. Other (specify) Volunteer Efforts		\$3,300.00	
14. Subtotals (sum each column)	\$24,913.20	\$4,100.00	
15. Total Project Cost Estimate (sum of column 1 plus sum of column 2)	\$29,013.20		
16. State Share Requested (up to 67% of total costs may be requested)	\$19,438.84		

Up to 67% of total costs may be requested, subject to the following maximum grant amounts:

- Large-scale lake planning projects—up to \$25,000
- Small-scale lake planning projects—up to \$3,000
- Lake classification and regulation or ordinance development projects—up to \$50,000
- Lake protection projects (other than lake classification and regulation or ordinance development projects)—up to \$200,000

Section VI: Attachments (check all that are included)

A. For all applicants:

- 1. Authorizing resolution
- 2. Letters of support
- 3. Map of project location and boundaries
- 4. Itemized breakdown of expenses
- 5. For projects that entail sending samples to the State Laboratory of Hygiene (SLOH) only: a completed SLOH Projected Cost Form
- 6. Project scope/description:
 - a. Description of project area
 - b. Description of problem to be addressed by project
 - c. Discussion of project goals 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 not described above

B. For applicants that are Lake Management Organizations (LMOs) or Non-profit Conservation Organizations (NCOs):

- 1. For first time applicant LMOs only: A completed Form 8700-226 (Lake Association Organizational Application)
- 2. For first time applicant NCOs 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. For land or easement acquisition projects: Detailed description of your organization's land management experience
- 7. Brochures, newsletters, annual reports or other information about your organization

C. Wetland Restoration Projects:

- 1. Deed, easement, or land control agreement
- 2. Preliminary engineering plans
- 3. Water regulatory permits

D. Ordinance Development Projects:

- 1. Inventory of applicable existing ordinances
- 2. Description of resources each jurisdiction allocates to enforcement
- 3. Preliminary surveys

E. Lake Improvement Projects:

- 1. Engineering and design plans
- 2. Water regulatory permits
- 3. Map of project location and boundaries

Section VI: Attachments, continued

F. Land or easement acquisition projects:

- 1. DNR Form 1800-1 (Environmental Hazards Assessment Form)
- 2. Legal description of the property
- 3. Project location boundary map
- 4. Property or easement appraisal (if not previously submitted to the Department)
- 5. If escrow closing, the title insurance commitment
- 6. Evidence of compliance with Uniform Relocation Act requirements, if applicable
- 7. Agricultural Impact Statement, if applicable
- 8. Status of acquisition negotiations, including expected time frame for closing
- 9. A land management plan
 - a. Full description of property and conditions
 - b. Description of current and proposed uses of property and adjoining properties
 - c. Management requirements for property
 - d. If roads, piers or grading are proposed, a topographic survey with feature locations, and design cross sections

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 Dave Jones	Title of Authorized Representative President
Signature of Authorized Representative	Date Signed



Post Office Box 616
Boulder Junction, WI 54512-0616
Phone (715) 385-2220
Fax (715) 385-9129

January 7, 2014

Kevin Gauthier
Wisconsin Department of Natural Resources
107 Sutliff Avenue
Rhineland, WI 54501

Dear Mr. Gauthier:

The Town Board of Boulder Junction supports the efforts of the Friends of Mann Lake Association in applying for any and all available assistance to better manage their watershed. Indeed, Boulder Junction supports all of our Lakes Associations and their efforts to preserve and protect our waters for both our residents and tourist guests.

Preserving and protecting this resource is critical to our economy and maintaining the quality of life here in the Northwoods.

Sincerely,

A handwritten signature in cursive script that reads "Charlie Spencer".

Charlie Spencer
Boulder Junction Town Chair

LAKE/RIVER PLANNING GRANTS PROJECTED LAB COSTS

First Year FY 2014

Lake Name: Mann Lake
 Waterbody ID#: 2332000
 County: Vilas
 Applicant Name: Friends of Mann Lake, Inc.
 Will the Lab be doing filtration for dissolved parameters? (Y/N) Y
 Will field tests be recorded on the Lab Slip? Y

Review Period:
 Application Period:

2013

2014

Test ID	Parameter	Samples/Month												Analyses/ Fiscal Year	Price/ Analysis	Annual Cost For Parameter		
		July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun					
NUTRIENTS																		
IC53000	DISSOLVED REACTIVE P (ORTHO)													2		2	\$16.67	\$33.34
IC52010	TOTAL PHOSPHORUS													2		2	\$23.60	\$94.40
IC52011	TOTAL DISS PHOSPHORUS (AS P), (EPA 365.1)															0	\$23.60	\$0.00
IC47001	TOTAL KJELDAHL NITROGEN													2		2	\$32.99	\$65.98
IC46001	NITRATE+NITRITE (AS N), DISS (EPA 353.2)													2		2	\$27.00	\$54.00
IC44000	AMMONIA-N, DISSOLVED													2		2	\$25.89	\$51.78
OTHER WET CHEMISTRY																		
IC30501	AUTOMATED CONDUCTIVITY, PH & ALKALINITY													2		2	\$22.00	\$44.00
IC24003	CHLORIDE															0	\$20.00	\$0.00
IC25110	CHLOROPHYLL A, FLUORESCENCE, FIELD FILTERED															0	\$23.28	\$0.00
IC25120	CHLOROPHYLL A, FLUORESCENCE LAB FILTERED															0	\$24.52	\$0.00
IC29000	COLOR, TRUE, PT-CO													1		1	\$25.00	\$50.00
IC34003	HARDNESS, CALCULATION METHOD (When Metals Done)													1		1	\$5.37	\$5.37
	HARDNESS, CALCULATION METHOD (When Metals not Done)													1		1	\$54.61	\$54.61
IC60001	SULFATE (EPA 375.2)															0	\$26.00	\$0.00
IC65000	SUSPENDED SOLIDS															0	\$18.80	\$0.00
IC64003	TOTAL DISSOLVED SOLIDS, 180 C													2		2	\$17.13	\$34.26
IC64005	TOTAL VOLATILE SOLIDS															0	\$10.03	\$0.00
IC66000	TURBIDITY															0	\$10.00	\$0.00
FLDPARAM	FIELD TESTS (For each labslip with Field Testing Recorded)	0	0	0	0	0	0	0	0	0	0	0	2	0	2	4	\$0.00	\$0.00
TOTAL METALS																		
IC23003	CALCIUM, TOTAL RECOVERABLE, ICP	0	0	0	0	0	0	0	0	0	0	1	0	0		1	\$13.00	\$13.00
IC37003	IRON, TOTAL RECOVERABLE, ICP															0	\$13.00	\$0.00
IC39003	MAGNESIUM, TOTAL RECOVERABLE, ICP															0	\$13.00	\$0.00
IC40003	MANGANESE, TOTAL RECOVERABLE, ICP															0	\$13.00	\$0.00
IC54003	POTASSIUM, TOTAL RECOVERABLE, ICP															0	\$13.00	\$0.00
IC58003	SODIUM, TOTAL RECOVERABLE, ICP															0	\$13.00	\$0.00
IC32200	DIGESTION, TOT. RECOV. ICP	0	0	0	0	0	0	0	0	0	0	1	0	0		1	\$23.24	\$23.24
WATER BACTI																		
WM01550	E COLI ENZYMATIC SUBTRATE QUANTITRAY MPN															0	\$37.00	\$0.00
															Grand Total =		\$523.98	

Number of Inorganic Lab Slips (Machine Determined)
 Number of Bacti Lab Slips (Machine Determined)
 Number of Inorganic Lab Slips (from workplans)

0	0	0	0	0	0	0	0	0	0	0	2	0	2	4	=Total Inorganic Lab Slips for Fiscal Year
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	=Total Bacti Lab Slips for Fiscal Year

LAKE/RIVER PLANNING GRANTS PROJECTED LAB COSTS

Second Year FY 2015

Lake Name: Mann Lake
 Waterbody ID#: #REF!
 County: 2332000 Vilas
 Applicant Name: Friends of Mann Lake, Inc.
 Will the Lab be doing filtration for dissolved parameters? (Y/N)
 Will field tests be recorded on the Lab Slip?

Mann Lake
 2E+06
 Friends of Mann Lake, Inc.
 Y 2014
 Y

Review Period:
 Application Period:
 2015

Parameter	Samples/Month												Analyses/ Fiscal Year	Price/ Analysis	Annual Cost For Parameter	
	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun				
NUTRIENTS																
DISSOLVED REACTIVE P (ORTHO)	2							2						4	\$17.17	\$68.68
TOTAL PHOSPHORUS	2	2		2				2						8	\$24.31	\$194.46
TOTAL DISS PHOSPHORUS (AS P), (EPA 365.1)														0	\$24.31	\$0.00
TOTAL KJELDAHL NITROGEN	2							2						4	\$33.98	\$135.92
NITRATE+NITRITE (AS N), DISS (EPA 353.2)	2							2						4	\$27.81	\$111.24
AMMONIA-N, DISSOLVED	2							2						4	\$26.67	\$106.67
OTHER WET CHEMISTRY																
AUTOMATED CONDUCTIVITY, PH & ALKALINITY	2													2	\$22.66	\$45.32
CHLORIDE														0	\$20.60	\$0.00
CHLOROPHYLL A, FLUORESCENCE, FIELD FILTERED														0	\$23.98	\$0.00
CHLOROPHYLL A, FLUORESCENCE LAB FILTERED														0	\$25.26	\$0.00
COLOR, TRUE, PT-CO	1	1		1										3	\$25.75	\$77.25
HARDNESS, CALCULATION METHOD (When Metals Done)	1													1	\$5.53	\$5.53
HARDNESS, CALCULATION METHOD (When Metals not Done)	1													1	\$56.25	\$56.25
SULFATE (EPA 375.2)														0	\$26.78	\$0.00
SUSPENDED SOLIDS														0	\$19.36	\$0.00
TOTAL DISSOLVED SOLIDS, 180 C	2			2										4	\$17.64	\$70.58
TOTAL VOLATILE SOLIDS														0	\$10.33	\$0.00
TURBIDITY														0	\$10.30	\$0.00
FIELD TESTS (For each lab slip with Field Testing Recorded)	2	2	0	2	0	0	0	2	0	0	0	0	0	8	\$0.00	\$0.00
TOTAL METALS																
CALCIUM, TOTAL RECOVERABLE, ICP	1	0	0	0	0	0	0	0	0	0	0	0	0	1	\$13.39	\$13.39
IRON, TOTAL RECOVERABLE, ICP														0	\$13.39	\$0.00
MAGNESIUM, TOTAL RECOVERABLE, ICP														0	\$13.39	\$0.00
MANGANESE, TOTAL RECOVERABLE, ICP														0	\$13.39	\$0.00
POTASSIUM, TOTAL RECOVERABLE, ICP														0	\$13.39	\$0.00
SODIUM, TOTAL RECOVERABLE, ICP														0	\$13.39	\$0.00
DIGESTION, TOT. RECOV. ICP	1	0	0	0	0	0	0	0	0	0	0	0	0	1	\$23.94	\$23.94
WATER BACTI																
E COLI ENZYMATIC SUBTRATE QUANTITRAY MPN														0	\$38.11	\$0.00
														Grand Total =		\$909.22

Number of Inorganic Lab Slips (Machine Determined) 2 2 0 2 0 0 0 2 0 0 0 0 8 =Total Inorganic Lab Slips for Fiscal Year
 Number of Bacti Lab Slips (Machine Determined) 0 0 0 0 0 0 0 0 0 0 0 0 0 =Total Bacti Lab Slips for Fiscal Year
 Number of Inorganic Lab Slips (from workplans)

LAKE/RIVER PLANNING GRANTS PROJECTED LAB COSTS

Grand Total

Lake Name: Mann Lake
 Waterbody ID#: #REF!
 County: 2332000
 Applicant Name: Friends of Mann Lake, Inc.

Review Period:
 Application Period:

Parameter	Analyses For Grant	Grant Cost For Parameter
NUTRIENTS		
DISSOLVED REACTIVE P (ORTHO)	6	\$102.02
TOTAL PHOSPHORUS	12	\$288.86
TOTAL DISS PHOSPHORUS (AS P), (EPA 365.1)	0	\$0.00
TOTAL KJELDAHL NITROGEN	6	\$201.90
NITRATE+NITRITE (AS N), DISS (EPA 353.2)	6	\$165.24
AMMONIA-N, DISSOLVED	6	\$158.45
OTHER WET CHEMISTRY		
AUTOMATED CONDUCTIVITY, PH & ALKALINITY	4	\$89.32
CHLORIDE	0	\$0.00
CHLOROPHYLL A, FLUORESCENCE, FIELD FILTERED	0	\$0.00
CHLOROPHYLL A, FLUORESCENCE LAB FILTERED	0	\$0.00
COLOR, TRUE, PT-CO	5	\$127.25
HARDNESS, CALCULATION METHOD (When Metals Done)	2	\$10.90
HARDNESS, CALCULATION METHOD (When Metals not Done)	2	\$110.86
SULFATE (EPA 375.2)	0	\$0.00
SUSPENDED SOLIDS	0	\$0.00
TOTAL DISSOLVED SOLIDS, 180 C	6	\$104.84
TOTAL VOLATILE SOLIDS	0	\$0.00
TURBIDITY	0	\$0.00
FIELD TESTS (For each labslip with Field Testing Recorded)	12	\$0.00
TOTAL METALS		
CALCIUM, TOTAL RECOVERABLE, ICP	2	\$26.39
IRON, TOTAL RECOVERABLE, ICP	0	\$0.00
MAGNESIUM, TOTAL RECOVERABLE, ICP	0	\$0.00
MANGANESE, TOTAL RECOVERABLE, ICP	0	\$0.00
POTASSIUM, TOTAL RECOVERABLE, ICP	0	\$0.00
SODIUM, TOTAL RECOVERABLE, ICP	0	\$0.00
DIGESTION, TOT. RECOV. ICP	2	\$47.18
WATER BACTI		
E COLI ENZYMATIC SUBTRATE QUANTITRAY MPN	0	\$0.00
Grand Total =		\$1,433.20