Restorative Lake Sciences
18406 West Spring Lake Road
Spring Lake, MI 49456
616.843.5636

RE: AuSable Lake Aquatic Vegetation Management Surveys
Attn: AuSable Lake Property Owners Association (ALPOA)
CONFIDENTIAL

April 29, 2024

1.0   Cover Letter/Introduction and Definition of Problems:

A significant component of effective lake management includes performance of regular whole-lake GPS (geo-referenced) point-intercept surveys to determine the precise locations of all invasives and quantify their extent (in acres) and also inventory the native aquatic plant species in the lake. RLS is aware of programmatic constraints that challenge lake groups and strives to prioritize resources so that the optimal benefits can be achieved with the time and funds available. **A key to RLS's success is to clearly lay out all options based on sound science and experience and relate the relative risks and benefits of each action through timely communication. This assists the AuSable Lake community with the development of attainable objectives and goals which are key to a successful aquatic vegetation management program**. The goal is to save money in the long-term while meeting the mission of the maintenance and improvement of a quality lake environment through successful efforts.

Lake scientists at RLS have a combined experience of over 175 years in inland lake research, management, and restoration and in assisting communities with the establishment and maintenance of special assessment districts and conservancies. In addition, the expert scientists and engineers at RLS are actively involved in academic research on aquatic plant ecology and lake-specific studies on various management solutions. **Our scientists include disciplines such as limnologists (lake scientists), aquatic ecologists, fisheries biologists, hydrologists, geologists, wetland and watershed scientists, and licensed professional engineers.**

RLS is unique in that we specialize solely in lake restoration and management services and maintain complete objectivity through remaining in a supervisory role to all vendors and contractors. RLS is present to plan improvement goals and objectives with the lake boards and associations as well as overseeing all management activities, which means being present during active implementation of various lake improvement methods if retained as a long-term lake manager. We guarantee our services with an annual evaluation prior to renewing all annual contracts to build mutual trust between us and the boards and associations we serve.

RLS has grown tremendously over the years as we have worked on a variety of water resource projects throughout Michigan, as well as Missouri, Florida, Indiana, Illinois, Ohio, Pennsylvania, Vermont, and California.

2.0   Corporate Background:

RLS consists of lake restoration and management experts and was formed in 2012 to better assist lake communities with complex lake issues and also to provide the most personalized services to each lake community as all of our resources are dedicated to those services. RLS is based in Spring Lake, Michigan near Grand Haven with additional offices in Cadillac, Michigan, and Big Rapids, Michigan. **RLS offers the following range of lake services:**

a. Water quality monitoring and data analysis
b. Aquatic vegetation surveys and biovolume/polygon mapping/GPS/GIS systems
c. Aquatic vegetation management plans
d. Bathymetric contour and bottom hardness mapping
e. Algal monitoring, identification, quantification, reduction plans, enumeration, and imaging
f. Fishery surveys, habitat surveys, data analysis, and stocking recommendations
g. Benthic macroinvertebrate surveys and identification relative to water quality
h. Muck evaluation studies and reduction programs
i. Lake aeration technologies and efficacy evaluations (over 12 years of evaluation experience)
j. Watershed mapping, critical source analysis, and nutrient reduction plans
k. Lake improvement feasibility studies and management plans
l. Dredging feasibility studies and recommendations
m. Zooplankton sampling and identification and microscopic imaging
n. Mass balance/nutrient loading studies and reduction plans
o. Erosion control and storm water management plans
p. Community engagement programs through our Lake Engage® program

RLS consists of a gifted team of specialized lake experts in aquatic vegetation identification and management, muck reduction, nutrient reduction, lake aeration, storm water management, erosion control, watershed management, lake fisheries, and water quality. More details on specific staff qualifications are discussed below in Section 3.0:

3.0   Professional Staff:

The expertise, education, and training of RLS professional staff are as follows:

Dr. Jennifer L. Jermalowicz-Jones: Jennifer has a BS in Biology/Limnology from Michigan Technological University (MTU), an MS in Aquatic Ecology from Grand Valley State University (GVSU), and a PhD in Water Resource Studies from Michigan State University (MSU). Jennifer has been conducting lake research, management, and restoration since 1990 and has authored hundreds of papers and technical reports on lake issues. She is the owner and Water Resources Director at RLS. Jennifer is on the Board of Directors with the non-profit, Michigan Lake and Stream Associations (MLSA) as the Science Advisory Chair and also presents numerous research papers to the annual North American Lake Management Society conference and MLSA annual conference and regularly publishes in journals and the Michigan Riparian. Jennifer also has her professional certification in watershed management and community engagement from MSU. **In addition, Jennifer received her Certified Lake Professional (CLP) from the North American Lake Management Society.**

Dr. Dan Hayes: Dr. Hayes is currently a full-tenured professor of fisheries at MSU and also works with RLS on various lake fishery projects. Dr. Hayes has a BS in biology from University of New Hampshire, and MS and PhD degrees in Fisheries from MSU. **He has published numerous peer-reviewed papers on lake fishery projects and currently teaches three courses at MSU. Dr. Hayes is also highly skilled at statistical analyses of data.** He has a strong international reputation for fishery expertise.

Michael Solomon, MS: Michael worked with the U.S. Forest Service for over 35 years and was responsible for conducting water quality monitoring on hundreds of lakes. Mike is currently on the Board of Directors for the Michigan Chapter of the North American Lake Management Society and is also part-time Wexford County Drain Commissioner. Mike manages several projects at RLS and has expertise in planning and meeting procedures. **He is also a certified soil erosion control officer and storm water control manager.** Mike has his BS and MS from MSU in Biological Sciences.

James E. Tiffany, P.E.: James is a licensed professional engineer that works with RLS to **review and approve lake improvement feasibility studies or studies that require environmental or civil engineering.** Jim has decades of experience in civil engineering and has expertise in constructing environmental solutions to reduce nutrient and sediment loads to inland lakes.

Benjamin Schermerhorn, BS: Benjamin a **has a strong background in lake fisheries and fish ecology.** Ben graduated from NMU in Fisheries Biology and has managed numerous lakes throughout Michigan over the past several years. Benjamin currently serves as a northern district lakes manager for RLS.

Lorenne Gilbert, BS: Lorenne has a BS degree from GVSU in Aquatic Ecology and **specializes in lake restoration and macroinvertebrate identification and quantification.** Lorenne currently serves as a southern district lakes manager for RLS.

Kevin Sylvester, MS: Kevin has BS and MS degrees in Biology from GVSU. Kevin also coaches the Science Olympiad and is excellent at **riparian outreach**. Kevin teaches middle school science and conducts multiple water quality sampling events for RLS. Kevin is also highly skilled with specialized GPS systems and a licensed boat captain.

Grant L. Jones, BS: Grant has a double BS in Biology and Marine Science from East Stroudsburg University in Pennsylvania. Grant has **expertise in fisheries research and GIS mapping and information technology.** Grant is the senior field operations manager at RLS and spends over 450 hours per season on our four research vessels. Grant is also in the U.S. Guard Auxiliary and serves as a boat crew.

4.0   Experience and References:

RLS has provided references in the last section of this proposal, but the following project descriptions are a sample of unique projects currently managed by RLS:

Sherman Lake, Kalamazoo County, Michigan:

Sherman Lake retained the expertise of RLS in 2008 to develop a comprehensive lake management plan after repeated herbicide treatments resulted in excessive milfoil re-growth along with blue-green algal blooms and elevated nutrient levels in the 200-acre lake. RLS recommended a highly integrated plan that included reduction of the existing invasive milfoil and Curly-leaf Pondweed, implementation of a whole-lake laminar flow aeration system with added bio augmentation, nutrient reduction through biofilters at the drains, immediate watershed improvements to reduce solids and nutrients to the lake, a community-wide education program, and intensive water quality monitoring and evaluation. The Sherman Lake project has been a great restoration success, and the residents take pride in a predominantly natural and systemic approach.

Contact: Roger Schweitzer, President, Sherman Lake Recreation Association

269-720-3863

Lake Mitchell, Wexford County, Michigan:

RLS was retained by the Lake Mitchell Improvement Board in 2008 to develop a highly integrated lake management program that reduced invasive submersed milfoil as well as emergent invasives such as Purple Loosestrife and Phragmites.

RLS was able to reduce the total acreage of invasive milfoil in Lake Mitchell, a 2, 580-acre lake, from 550 acres to less than 60 acres in 2021 through use of our intensified GPS surveying techniques and technologies. In addition, RLS stocked over 40,000 loosestrife beetles in several areas of the lake to naturally reduce the Purple Loosestrife which has since been well-controlled. RLS recommended mechanical harvesting of dense matted algae in the Torenta Canal which has led to much improved navigability. RLS also collected multiple water quality measurements from the lake deep basins and tributaries and is currently using that data, among other information to develop a useful immediate watershed management plan to reduce nutrients and soils to the lake from critical source areas.

Contact: Dave Foley, Lake Mitchell Improvement Board

231-775-8819 or 231-920-3564

Houghton Lake, Roscommon County, Michigan:

RLS was retained by the Houghton Lake Improvement Board in 2016 to develop a comprehensive lake and immediate watershed plan to reduce nutrients to the lake, while reducing all invasives within the lake and the probability of invasives around the lake through pursuing a boat washing program and community education program. RLS recommended a highly integrated approach since the lake is quite diverse given its 20,044-acre size. The lake has over 28 canals, two large bays, and is bordered at the north and west by a large wetland called "the flats". RLS recommended implementation of aeration in canals negatively impacted by low dissolved oxygen, high abundance of algae, and low water clarity. In addition, RLS recommended the installation of biofilters in tributaries that are contributing an over-abundance of nutrients to the lake. In the past, only 990 GPS sampling points were evaluated to assess the aquatic vegetation in the lake. RLS has instituted an annual survey of over 18,000 GPS locations which had led to a dramatic reduction of both invasive watermilfoil and Starry Stonewort.

Contact: Norm Fullmer, Houghton Lake Improvement Board

989-538-0038

5.0   Proposed Scope of Work:

We propose the following deliverables at the associated costs as components of comprehensive whole-lake aquatic vegetation surveys for AuSable Lake in 2024: (NOTE: These costs are not to exceed amounts that include the costs of labor, travel, laboratory, etc.)

1.   Quantification of aquatic vegetation biovolume based on the lake scan will be conducted in the summer along with a lake-wide GPS point-intercept survey of all aquatic plant species and relative abundance. Based on the size and mean depth of the lakes, approximately 500-1,000 GPS sampling points are expected. Specific locations of invasive species and/or nuisance species will also be mapped with individual polygon maps which quantify acreages of the different invasive aquatic plant species. Such maps are instrumental in assisting the herbicide applicator or other contractor (such as DASH operators) with geo-referenced locations of invasive plants for treatments or mitigation. Also provided will be data tables that list each native and invasive aquatic plant species found, its growth form, and its relative abundance and frequency. Additionally, aquatic vegetation biovolume scan data and maps will also be provided. Recommended mitigation strategies for any invasives found will also be provided. The cost of this item is: $3,500 for the survey/scans of the lake.

2.   Formal analysis of all data collected during the survey and evaluation. A brief scientific and professional report will be provided that contains short-term and long-term management recommendations resulting from scientifically-sound data. Two copies (bound and colored) and a PDF file will be provided to the association. The cost of this item is: $1,500, which will include all survey data.

3.   For any additional items outside of this proposed scope of work, an addendum to this agreement would be created and the associated costs assigned to new deliverables. Note: This can include discussions on requesting RLS to solicit bids from contractors using technical specifications created from the evaluation data, vendors, dependent upon the recommendations from RLS which will be a result of the needed evaluation described above, water quality sampling, or other requested methods of lake evaluation.

6.0   Insurance: RLS maintains the highest level of coverage which includes:

a.   Worker's compensation coverage which is a statutory employer's liability at $100,000
b.   Comprehensive general liability without a pollution exclusion amendment (per person/per occurrence)
c.   Bodily and personal injury: $1,000,000
d.   Property damage: $1,000,000/$2,000,000 aggregate
e.   Fire damage: $50,000
f.   Excess liability: $1,000,000/$1,000,000 aggregate

g.   The policy will provide coverage against loss under a broad form general liability endorsement. Additional named insured will include: the Association, RLS, our agents, consultants, and employees.

h.   Comprehensive automobile liability (per person/per occurrence):
1.   Bodily and personal injury of $1,000,000/$1,000,000
2.   Property damage of $1,000,000/$1,000,000 aggregate

RLS appreciates the opportunity to submit this informative scope of work for professional lake consulting services to the AuSable Lake Property Owners Association and desires to work closely with the lake community to determine the presence and locations of all invasive aquatic vegetation so that proper mitigation can result in significantly improved health and balance of AuSable Lake both in the short term and long-term through the use of scientifically-sound and economically favorable management methods.

If the association desires to contact RLS for questions related to this scope of work or lake health in general, please contact us at the address listed on the first page cover letter or the contact information below.

Sincerely,

RESTORATIVE LAKE SCIENCES

Dr. Jennifer L. Jermalowicz-Jones, CLP
Water Resources Director
Certified Watershed Manager
18406 West Spring Lake Road
Spring Lake, MI 49456
616.843.5636
www.restorativelakesciences.com
Email: jenniferj@restorativelakesciences.com

The AuSable Lake Association agrees to retain RLS for Item #1 and #2 under Section 5.0 at a cost of $5,000. Payment is due upon completion of the lake survey, maps, and reporting of all data and recommendations.

Accepted By:_____

Date:_____