

Eagle Lake Texas Association

1st Quarter 2017

Eagle Lake Texas Association — Texas Township, Kalamazoo County, Michigan

Volume 5, Issue 1

Happy New Year 2017 President's Report — Ted Ryder

Special points of interest:

- Get all the information about our ELTA from the Website: eaglelakekzoo.com
- Get acquainted with our management firm, RLS at their Website: restorativelakesciences.com
- Want to contact an ELTA Officer or any Director, see Page 4 for all information.
- 2017 Dues Reminder Notice. Renew and/or Join today. 250's The Goal

Inside this issue:

1-2
2
3
4
5
6
7
8
9
10-13
14
15-21
22-23

I'm looking forward to 2017 being one of the most memorable years on the lake and hoping all your memories will be remarkably great. It's really happening this year. If all our research, preparation, and hard work pay off — the aeration system to be installed this spring will start to have a very positive impact on lake quality! You could say I'm bubbling with excitement, but I hope you don't.

We already have many volunteers identified who will host an air compressor on their property. A full report can be found in the aeration article, but the next big step is to start electrical work and site prep for the air compressor locations. We need to complete this work soon so that we'll be ready to install aerators when the ice clears.

However, we still need a few more volunteers to host the air compressors that will supply air to the aerators (aka diffusers). The compressor units will be very quiet and unobtrusive (about the size and sound of a lake pump). All installation and operational costs will be covered. If you are contacted to host a compressor it is because your site is in an ideal location to limit the length of the airlines which are very expensive. Please give it thoughtful consideration if you are contacted to volunteer.

This year as always we will have a few open board and committee membership positions that need to be filled. If you have the ability to volunteer a small amount of your time to work on lake related activities, please step forward this year and either self-nominate for a board position or contact a committee member to join their committee. Several association members have spent many years on the board and we'd like to see other folks rotate into the board in order to bring in their own fresh ideas, expertise, and enthusiasm.

Aside from the aeration system it would be nice for all lake residents to take personal steps to improve lake quality. Make sure your boat engines are in good working order and not leaking fluids into the lake. If you burn leaves or yard waste, please burn it at the road instead of near the lake shore. Also, you may be able to reduce the use of fertilizers and if you have a lawn maintenance contractor ask them to keep from dumping or blowing yard waste into the water.

Continued on page 2

Continued from page 1

Finally, we can all be aware and keep an eye out for unwelcome activity on the lake and in our neighborhoods. There were multiple reports over the past year of theft and vandalism that may best be reduced through our own vigilance.

President's Report — Ted Ryder

Board of Directors

Ted Ryder, President

Len Bosma, Vice President

Pat Comerford, Treasurer

Brett Cummings, Secretary

Krista Burkeen, Director

Jim Caporale, Director

Amy Coon, Director

Brian Graening, Director

Frank Loedeman, Director

Report suspicious or illegal activity to the Sheriff immediately and feel free to post items of concern on the Eagle Lake Facebook page or an online neighborhood forum such as Next-door Eagle Lake (go to Nextdoor.com to register). Our 90+ diffusers, airlines, and compressors may also be a ripe target for vandals and curiosity seekers so keep a wary eye to help protect our investment.

Have a great 2017, enjoy the lake, and as always feel free to reach out to any of us with comments, questions, or concerns. Share your good experiences, photos, and constructive comments on our Facebook page or send to a board member for possible inclusion in an upcoming newsletter or on our website. Enjoy the last of the ice (it has been great lately) and see you all out on the lake this spring!!!

Treasurer's Report — Pat Comerford

The financial report covers the 2016 year to date revenue and expenses for our Association's general account and the Eagle Lake SAD account through December 31. On behalf of the Board, I thank you for joining us and supporting us as we go forward. Don't forget to send in your dues payment, if you have not done so yet. If you have questions, my new e-mail address is pcomerford548@gmail.or contact Jim Caporale at James.Caporale@gmail.com

Winter is here! Happy New Year!

Reminder to remit your 2017 dues.

Let's make our Goal This year it is set at 250 Memberships

Send Payment to: ELTA P O Box 283 Oshtemo, MI 49077

Association's General Account			
Beginning Bai 1-1-2016	\$ 13 ,	,340.91	
Revenues			
Directory/Newsletter	\$ 2	,400.00	
2016 Donations	\$ 1,	,030.00	
2016 Dues	\$ 7	945.00	
2017/20 Dues	\$	140.00	
Interest Income	\$	16.19	
Total Revenues	\$ 24,	,872.10	
Expenditures			
Administration	\$ 1	086.92	
Insurance Expense	\$ 3,	,052.56	
Committee Project Expense	\$ 7	,356.31	
Legal Expense	\$.00	
Printing & Publishing	\$ 4	,177.39	
Miscellaneous Expense	\$	800.00	
Total Expenditure	\$ 16 ,	,473.18	
Ending Balance 12-31-2016	\$ 8,	,398.92	

Eagle Lake Special Assessment District				
Beginning Bal 1-1-2016	\$	25,140.82		
Interest	\$	60.16		
Special Assessment	\$	86369.31		
Funds Available	\$	111,570.29		
Expenditures				
Independent Audit	\$	297.00		
Engineering Fees	\$	12,158.32		
Aquatic Plant Control	\$	71,082.22		
Well Operation/Repairs	\$	115.00		
Utilities	\$	14,125.12		
Administrative Expenses	\$	823.00		
Total Expenses	\$	98,600.66		
Ending Balance 12-31-2016	\$	12,969.63		

Finance Committee Report — Pat Comerford

This year we have two SAD budgets to keep you informed about — The Special Assessment District Budgets (SAD #1 & SAD #2), both are larger dollars and already approved by the TT Board, so we are detailing them out for your awareness and information. SAD #1 continues to cover the weed control and pump, and SAD #2 is for the approved Aeration Project. SAD #1 Budget is consistent with previous years, and is expected to be so for the next few years as well. The dollars in SAD #2's Budget reflect the heavy first year cost to acquire and install the Aeration equipment. But to match 1st year expense dollars, the Township Board loaned the SAD \$125,000.00, which permits the project's total cost to be spread out over the 5 year life of the SAD. There is no space to print out the ELTA budget, nonetheless, we can tell you that is similar to last years actual revenue & expenses.

Eagle Lake Special Assessment District	BUDGET Eagle Lake Special Assessment District		BUDGET	
TT Account 830 - SAD #1	FY 2017		TT Account 832 - SAD #2	FY 2017
Revenues		Weed Control &	Revenues	
		Pump Operation	Loan from General Fund	\$ 125,000.00
Interest on Investment	\$ -	S	Interest on Investment	\$ -
Special Assessment	\$ 82,300.00		Special Assessment	\$ 104,028.00
Miscellaneous	\$ -	A #1	Miscellaneous	\$ -
Total Revenues for the FY	\$ 82,300.00	D	Total Revenues for the FY	\$ 229,028.00
Beginning Balance 01/01/17 (Unaudited)	\$ 10,000.00		Beginning Balance 01/01/17 (Unaudited)	\$ -
Total Revenues Available	\$ 92,300.00		Total Revenues Available	\$ 229,028.00
Expenditures			Expenditures	\$ -
Marine Patrol	\$ -		Independent Audit	\$ 250.00
Independent Audit	\$ 500.00		Installation of Equipment	\$ 19,320.00
Engineering Fees	\$ 9,000.00		Bio-Augmentation	\$ 50,450.00
Plant Control & Water Quality Improvement	\$ 40,000.00		Testing	\$ 4,000.00
Well Operations/Repairs	\$ 1,000.00		Legal Fees	\$ 2,500.00
Legal Fees	\$ -		Administrative Fee	\$ 1,025.00
Printing & Publishing	\$ -		Utilities	\$ 14,000.00
Administrative Fee	\$ 900.00	A (' D ' (Maintenance	\$ 2,300.00
Insurance & Bonds	\$ -	Aeration Project	Miscellaneous	\$ 1,000.00
Utilities	\$ 30,000.00	S	Equipment	\$ 131,100.00
Transfer Out	\$ 900.00	A #2	Repay General Fund Principal	\$ -
Contingencies	\$ 10,000.00	A #2	Repay General Fund Interest	\$ -
Total Expenditures	\$ 92,300.00	D	Total Expenditures	\$ 225,945.00
Total Revenues	\$ 92,300.00		Total Revenues	\$ 229,028.00
Total Expenditures	\$ (92,300.00)		Total Expenditures	\$(225,945.00)
Net of Revenues & Expenditures	\$ -		Net of Revenues & Expenditures	\$ 3,083.00

Contact Information for Board of Directors



Special Communication Advisory

EAGLE LAKE TEXAS ASSOCIATION BOARD OF DIRECTORS

SELF-NOMINATION PROCESS

It is that time of year to once again begin thinking about becoming a member of the Board of Directors for ELTA. A total of nine directors are responsible to manage the obligations of all aspects of our Eagle Lake Association. Three of the current Directors — Len Bosma, Jim Caporale, and Pat Comerford — are completing their 3-year term of office this May.

Three Directors will be elected to serve a new three year term. So in the next 8-10 weeks, give this some serious thought and consider if you can commit to serving a 3-year term on the board. The self-nomination process is easy. Here are the steps:

The Board announces the process is open shortly after the 1st of the year.

- The 2017 process is now open.

Interested candidates submit a short biography and a snapshot that can be published in the newsletter prior to the annual meeting. The deadline to submit is on or about the 15th of April.

- This year the closing date is April 10th.

All candidates who self nominate before the deadline are published in the newsletter, which serves as their introduction to the residents who will be attending and voting at the annual meeting.

- This year the annual meeting of the members is Wednesday, May 17th.

The names of all candidates who self nominate before the deadline are included on a pre-printed ballot which is prepared for use at the annual meeting. Interested candidates may still self nominate after the deadline and even up to the time just prior to the election at the annual meeting.

- The drawback is that the candidate misses the opportunity of the newsletter announcement and of being included on the pre-printed ballot.

The process is not cumbersome. You don't need a friend or neighbor to nominate you and another to second your nomination. It's all on you. Just say who you are and that you are ready to step up to become more involved with the mission of our association.

"PROTECT AND IMPROVE THE ENVIRONMENT OF EAGLE LAKE"

Send your brief bio by mail or by email to any board member by April 10th

Membership Roster — 2017

122 ARE IN -250 is the GOAL!

Here is the first posting with the names of those who are now current with this year's dues. Send your check to Pat Comerford or Jim Caporale and add your name to the 2016 roster.

Five residents with multiple properties submitted memberships for each lot. Two residents prepaid membership beyond 2017 (marked with **)

<u>"I CARE ABOUT MY LAKE"</u>

Accardi, Wayne Adrian, Scott & Christy Baker, Daniel & Elizabeth Baker, Lawrence & Marjorie Bauers, Jerry & Brenda Baxter, Robert & Vicki Hunter Bellware, Allen & Dianna Borsos, Robert & Shirley Bosch, Steven & Michelle Bosma, Len & Gwen Bragagnini, Jennifer Brown, Diana Brussee, Thomas Calderon, Jose & Amy Caporale, James & Debra Duncan Cavanaugh, James & Carla Chittle, Craig & Lynn Clary, Douglas & Helen Coon, Grady & Amy Cumming, George & Susan Cummings, Brett & Ashley Dagli, Rajesh & Nita Davidson, Scott & Melissa Devries-Obrien, Cheryl DeYoung, Phillip & Betty Dickerman, Richard & Mary Dorff, Jim & Dani Drenth, Herman & Virginia Ekema, Ronald Elken, Stephen & Melissa Ellis, Stephen & Julianne Farthing, Edna Garling, Tom Gignac, Scott & Nicole Grainger, Robert & Karen, Lot #1 Grainger, Robert & Karen, Lot #2 Greer, John & Vlasta

Griffith, Mark & Joyce

Hall, James & Pamela

Hall, Paul & Tori, Lot #2

Harnishfeger, Brady & Kristi

Hall, Kim & Nancy Hall, Paul & Tori, Lot #1

Halverson, Pat

Hall, James

Harthorn, Jessica & Stephen Hays, Randy & Kathleen Heintzkill, Matt & Becky Heystek, Douglas & Margo Hindman, Nathan & Darin Hitson, Timothy & Melissa Hollenbeck, James Holtgrieve, James & Janet Houtman, David & Kathryn, Lot #1 Houtman, David & Kathryn, Lot #2 Hungerford, Norma Jamindar, Ravi & Nancy Desai Kalani, Sanjay & Preeti Keesee, Timothy & Dianna Kern, Gordon & Beverly Konzen, Dennis & Vickie Langeland, Norm & Bonnie Lapekas, Robert & Alice Lauria, John & Mindy Lussier, David & Ellen Martin, Charles & Caroline McGuire, Sandra, Lot #1 McIntyre, Scott & Sherrie Mellis, Randy & Kim Messamore, Keith & Misty Meyer, John & Beth Moore, Carol** Moore, Patricia Morren, Barbara ** Moss, Karen Moyle, Ralph & Marlene Munting, Thomas & Joann Nagel, Gordon Niewoonder, Mark & Vicky Nobis, Ben & Stephanie, Lot #1 Nobis, Ben & Stephanie, Lot #2 Oakley, Donald & Carol Okeley, Robert & Natalie Ossewaarde, Steven & Susan Otten, Norma & Michael Patel, Ashid & Anja Pease, Kurtis & Judy Bouwense Ragains, Philip & Kathie

Ray, Steve & Mindy

Razenberg, Marian

Ringler, James & Barbaral Rogers, Thomas & Marie Rothi, Clare Rudnick, Chuck & Daiva Ruswinckel, John & Betty Ryder, Ted Schmidt, Steven & Susan Schneider, Chris Shepard, Ronald & Peggy Smith, Alfred & Ruby Sobeck, Steven & Susan Spettel, Thomas & Kathleen, Lot #1 Stoops, Marlene Tarantino, Robert & Leonora Tolentino, Pablito & Soyong Tomac, Stephen Toy, Kenneth & Amy Woznick Tullock, Sherry Turner, Michael & Jo Tylicki, Norbert & Mary Utter, Gregory & Janice Vanliere, Tim & Jeannine Vernon, Mathew & Jennifer Walker, Michael & Tammie Watts, Gregory & Nicole Westbrooks, Stephen & Laura Westrate, Larry & Jan Wolthuis, Jacqueline Wolthuis, Rebecca Wren, Marilyn Yingling, Thomas & Michelle, Lot #1

Yingling, Thomas & Michelle, Lot #2



2017 MEMBERSHIP DUES REMINDER NOTICE

Eagle Lake Texas Association — Texas Township, Kalamazoo County, Michigan

For the past few years, we have fallen just short of our goal to reach a membership level of 250. So the Board has again set the target at that level for 2017. Having reached 243 last year, we know we are ever so close to reaching that goal, so we are encouraging everyone who has not yet joined, to get on board, and to do so as quickly as possible.

Always keep in mind that, in accordance with our By-Laws, membership in the association is restricted to property owners in the Eagle Lake Special Assessment District (SAD #1 & SAD #2), and each membership is directly tied to a land parcel. Each membership is directly tied to one parcel, and there is only one vote per property membership; but owners of multiple parcels are encouraged to get membership rights for each one. A very low annual fee of \$35.00 remains the current membership rate. And with that, two adults in the household can take an active role in the association committees and participate at the annual meeting of members.

Also, keep in mind that ELTA maintains its fiscal records on a calendar year basis, which means your dues are now payable and will satisfy your financial obligation for the year 2017.

So if you don't see your name on the 2017 roster, use the form below and fire off a check to Pat Comerford.

Let's work together to foster an effective Eagle Lake Texas Association.

Eagle Lake Texas Association — Texas Township, Kalamazoo County, Michigan	ELTA 2017 MEMBERSHIP DUES
NAME (S):	
MAILING ADDRESS: _	
CITY, STATE, ZIP:	
PROPERTY ADDRESS: (If different than mailing)	
Primary E-Mail:	
Second E-Mail:	
Telephone:	
	Make Check of \$35.00 payable to Eagle Lake Texas Association
MAIL CHECK TO	ELTA, C/O PAT COMERFORD, P.O. BOX 283, OSHTEMO, MI 49077

Communications Committee Report — Jim Caporale

Committee: Krista Burkeen Ted Ryder Jim Caporale

Kristaburkeen89@gmail.com Tsryder@att.net James.Caporale@gmail.com

Communication Keys for the 1st Quarter:

• Aeration—See the update this issue; you can also follow Aeration Project on our website. You can always e-mail Krista at kristaburkeen89@gmail.com with questions.

- Self-Nomination Process to Become a Director—Now is the time to decide if you have the desire to help lead our lake association. Have any questions, e-mail Ted, Krista, or myself and we'll answer them and guide you through the process,
- Salute to our Corporate Sponsors—Every January we take the opportunity to say "Thank You" to our supporters that help us get the message out to you. When you need the kind of services they provide, give them an opportunity to serve you.

A Special Salute to our Supporters—Our Corporate Sponsors - Thank You

Dr. Graydon Coon, DDS Maple Hill Auto Group
Thanks Dr Grady Coon Thanks Jim Vandenberg

Langeland Family Funeral Mosquito Shield of West Homes Michigan

Thanks Norm Langeland Thanks Charles Barnes

Lake Pacor Mortgage Re/Max Ron Ekema Team
Thanks Jennifer Vernon Thanks Ron Ekema

Lawn Doctor Residential Plumbing,
Thanks Brian Sallmen Heating & Cooling
Thanks Laura Ostrowski

Lake Safety Committee Report—Brian Graening

Welcome to 2017. Wow, it's been a typical West Michigan winter over the last two months. It seems like we skipped fall, had two weeks of winter, blasted with snow, and now it appears it is spring. Well, we all know that is not true as cold temperatures and snow will surely find us in the next few weeks. With the return of colder weather, we will most likely see ice again on the lake. A lot of us have already witnessed an array of ice rinks and many youngsters and adults skating and soaking up the beauty of being outdoors. It is amazing to see all of the skating surfaces being created and maintained on the lake.

One of my three biggest personal fears has always been thin ice, metaphorically and for real. However, I've ventured out on various depths of ice all my life and I'm still here. It is with common sense that we are able to recognize the varying safety concerns on lake and pond ice. The depth of Eagle lake around the shoreline is a little safer, however, the creation and longevity of safe ice varies with shallow lakes. With that, here are a few tips published and found on the Michigan DNR website: (http://www.michigan.gov/dnr/0,4570,7-153-10364 52261 63242-160657--,00.html

Ice Safety Tips

—Things to consider before you go out:

- Always tell someone that you are going out on the ice, when, where and what time you'll be back. It is also good if you partner up as well.
- Try to take a cell phone with you for emergency use.
- Ice cannot be presumed safe just by the current temperature, clarity, color and/or the snow cover.
- Ice does not form with uniform thickness on any body of water. Underwater springs and currents can wear thin spots on the ice.
- Snow covered ice could be less safe due to the insulating factor of the snow.
- The DNR does not recommend the standard "inch-thickness" guide. A minimum of four inches of clear ice is required to support an average person's weight on the ice, but since ice seldom forms at a uniform rate it is important to check ice thickness with a spud and ruler every few steps.
- The DNR does not recommend taking a car or truck out onto the ice at any time. Sometimes, a snowmobile, golf cart or ATV is acceptable, however make sure someone on shore knows you are out and you take necessary steps if you break through. With all hope your life will be saved but it's not easy to reclaim your toy from the bottom of a frozen lake.

—If you fall through the ice:

- Try to remain calm
- Don't remove your winter clothing. Heavy clothes won't drag you down, but instead can trap air to provide warmth and flotation. This is especially true with a snowmobile suit.
- Turn in the water toward the direction you came from that is probably the strongest ice.
- If you have ice picks, dig the points of the picks into the ice and kick your feet to attempt to pull yourself back onto the surface.
- Roll away from the area of weak ice.
- Call 911 and seek medical attention as you seek warm shelter after coming out.

—If you witness someone else falling through the ice: Immediately call 911.

• Tips for helping someone else out of the ice are not available as every situation is different and you may or may not be also putting yourself at risk.

We are so fortunate to live close to so many beautiful lakes and waterways in West Michigan. I sincerely believe that most of us do enjoy the changing seasons as each season affords us so many opportunities to get outside and enjoy nature at its prime. Please use these tips to keep yourself, loved ones and friends safe while soaking up the beauty that surrounds us.

Aeration Committee Report—Krista Burkeen & Amy Coon

What is currently happening?

The township is currently in the process of finalizing the contract with PLM. PLM has submitted the application to the DEQ for the aeration permit. This is expected to be a 60 day process. We are still on track to start installation in the spring.

What we need from you?

We are still in need of a few more volunteers for the compressors. Getting volunteers to house the compressors is vital to the success of this project. If you are willing to house a compressor on your property please contact Krista Burkeen at kristaburkeen89@gmail.com or call her at 269-808-3608.

What does it entail to house a compressor on my property?

An electrician, hired by the lake association, would wire 115 Volt power from your house down to the lake. A meter would be installed on the power source down by the lake to measure electricity usage. The meter would then be read monthly and the association will reimburse you for power usage. (Estimated at \$60.00/month)

Advantages of housing a compressor on your property: If you have always wanted power down by the water you will now have it at no charge to you. You will also be helping make your lake beautiful again!

What does a compressor look like? (a little bigger than a bread box)



Compressor size: 27"L x 24"W x 18.75"H

For more information visit Airmax website **www.airmaxeco.com** and find the LS60 Model

Aeration Committee Report—Krista Burkeen & Amy Coon

Thank you to the following lake residents that have already volunteered to house a compressor on their lots:

Mike and Tammie Walker Greg and Nikki Watts Ted Ryder Len and Gwen Bosma Jim Hollenbeck Jim Caporale/Debra Duncan Cindy Hettinga

We are looking for eight more locations to place the compressors

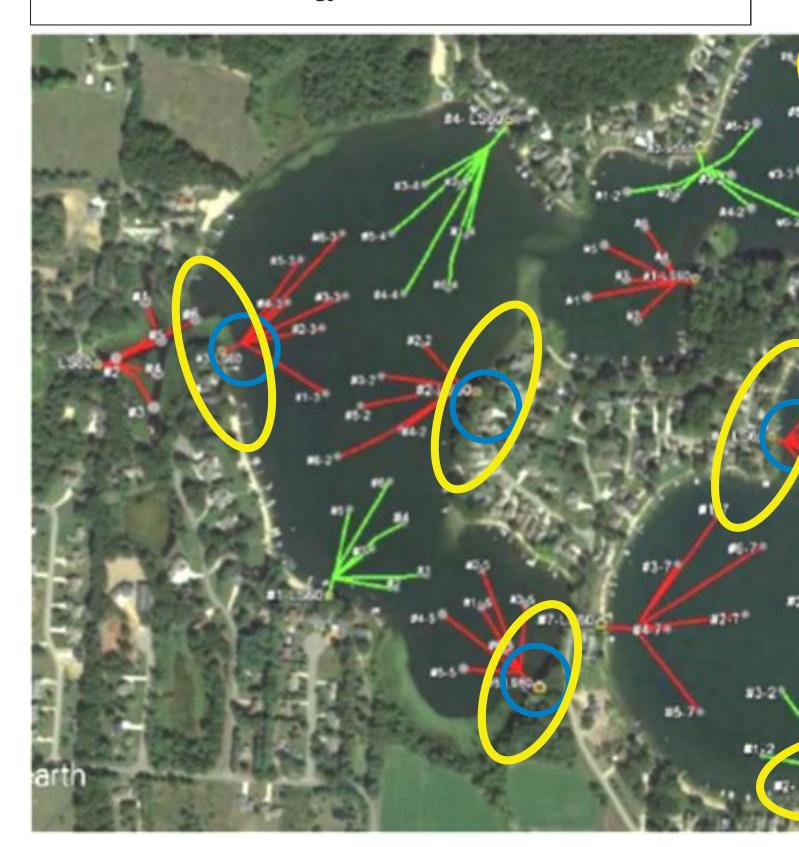
See the Eagle Lake map on the next pages and see if your home is close to one of the needed locations. To help you determine the approximate area of need, we are listing the range of addresses for each location below:

- 1 568-594 Aquaview Dr
- 2 794-848 E. Eagle Lake Dr
- 3 1040-1054 N. Eagle Lake Dr
- 4 1152-1176 N. Eagle Lake Dr
- 5 353-375 Pepper Ave
- 6 563-579 Treasure Island Dr
- 7 901-949 Treasure Island Dr
- 8 7017-7071 Eagle Heights Dr

Compressors circled in blue still need volunteers.

The yellow circle indicates the area in which this compressor could be placed. If your home falls within the yellow circle or close to it and you would like to volunteer to house a compressor, please let us know as soon as possible.

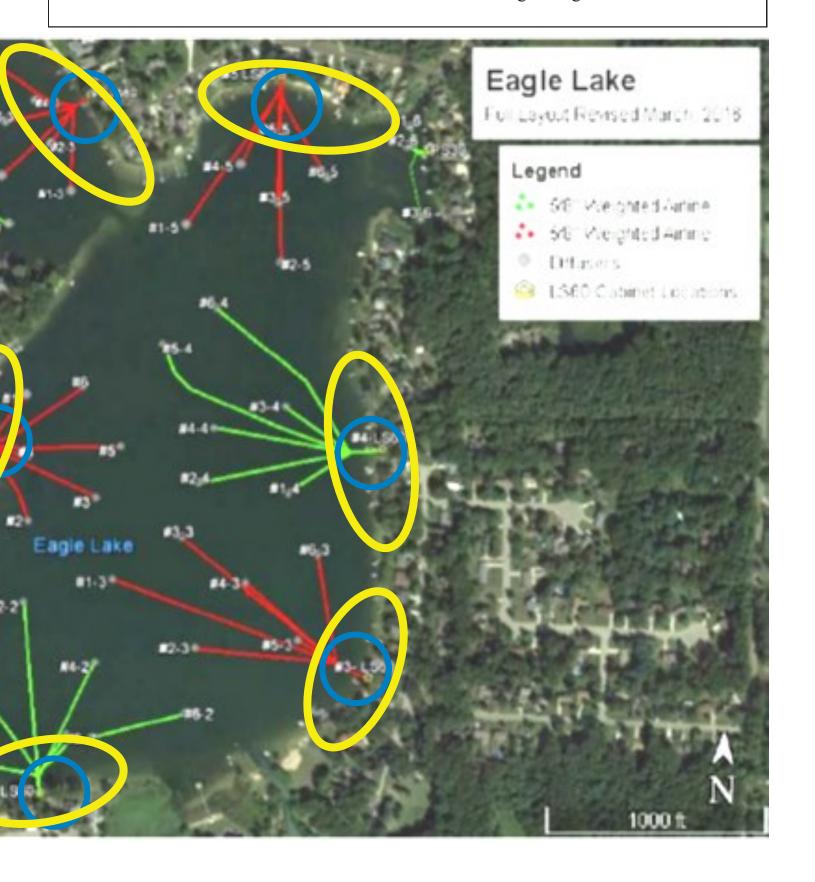
Contact Kristaburkeen89@gmail.com or 269-808-3608



Address Range: (Yellow Circles)

- 1. 568-594 Aquaview Dr
- 3. 1040-1054N. Eagle Lake Dr
- 5. 353-375 Pepper Ave
- 7. 901-949 Treasure Island Dr

- 2. 794-848 E. Eagle Lake Dr
- 4. 1152-1176N. Eagle Lake Dr
- 6. 563-579 Treasure Island Dr
- 8. 7017-7071 Eagle Heights Dr



Lake Quality Advisory Committee Report — Len Bosma

Committee: Len & Gwen Bosma, Phil & Betty DeYoung, Frank & Michelle Loedeman

2017 Restorative Lake Services (RLS) Contract

The ELTA board renewed the RLS contract to provide engineering services for Eagle Lake in 2017. As part of its contract, RLS will continue to provide expertise and recommendations on how to improve water quality, control invasive species, preserve natural habitat, and implement strategies that enhance water resources. In addition, RLS is responsible for selecting and managing all subcontractors that conduct the chemical treatments and/or do plant harvesting services.



Lessons Learned in 2016

The ELTA board and RLS held a joint meeting on 7 November 2016 to examine lessons learned in 2016 and set lake management objectives for 2017. At this meeting, RLS recommended continuing the purchase of bugs to control Purple Loosestrife growing around the shoreline. The board concurred with this recommendation. While it is difficult to measure just how effective the bugs have been, the Purple Loosestrife seems to be abating in several locations and not spreading beyond its current infestation points.

In addition, the board discussed 'when-is-it-the-best-time' to conduct the annual RLS spring survey in light of past long delays experienced for getting MDEQ approval for weed treatment. The spring survey is used to observe and detect potential weed growth before the upcoming boating season. RLS recommended that we remain flexible, because of the uncertainty associated with the spring weather on growing conditions. For example, if it is a late spring and we do the survey early before the weeds have started to grow or are visible, it is difficult to know (1) what sections of the lake need to be treated and (2) what weeds that need to be treated. Conversely, if we have an early spring and we do the survey late, the weeds can quickly clog the lake given how fast they grow. The board decided the best course of action was to carefully monitor weather conditions in determining the optimum time (probably in early May) for the spring survey to stay ahead of the fast growing pond weeds.

Aeration Permit and Installation

PLM completed the required paperwork and filed our permit with MDEQ on 19 Dec 2016 for the aeration installation that was approved by Texas Township. We will closely monitor the approval process. The exact installation timeframe will be based on MDEQ directions to PLM (our aeration equipment installer) closely working in association with RLS.

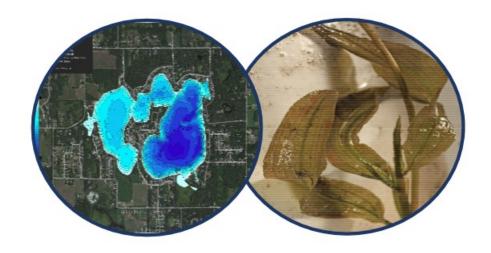
RLS Baseline Inversion Oxygenation Report—Aeration Project

In anticipation of approval of the Aeration project, Restorative Lake Sciences sampled 5 locations on Eagle Lake to satisfy the MDEQ permitting requirements for a lake this size. This baseline water quality data was collected in May, June, and September, 2016. The summary findings are included on the next pages to give residents a detailed look at the current state of the lake. This base line data will be compared to findings in Year 1 & 2 of the project.

LQAC SPECIAL REPORT—RLS BASELINE INVERSION OXYGENATION REPORT



Eagle Lake Baseline Inversion Oxygenation Data 2016 Kalamazoo County, Michigan



Prepared by: Restorative Lake Sciences
Jennifer L. Jermalowicz-Jones, PhD Candidate
Water Resources Director
18406 West Spring Lake Road
Spring Lake, Michigan 49456
www.restorativelakesciences.com

LQAC SPECIAL REPORT—RLS BASELINE INVERSION OXYGENATION REPORT

Eagle Lake Baseline Inversion Oxygenation Data 2016 Kalamazoo County, Michigan

PROJECT INTRODUCTION & SUMMARY

Eagle Lake is located in Section 8,9,16 and 17 of Texas Township (T.3S, R.12W) in Kalamazoo County, Michigan. The lake has a surface area of approximately 230 acres (Michigan Department of Natural Resources, 2004) and is classified as a eutrophic (nutrient-enriched) aquatic ecosystem with three distinct deep basins. The entire lake serves as a littoral (shallow) zone. Eagle Lake contains a volume of approximately 1,120 acre-feet of water and has a mean depth of 4.9 feet and a maximum depth of 12 feet. The maximum depth was confirmed by RLS scientists in 2014 with the use of a bottom-scanning GPS system that created a modernized depth contour bathymetric map. In addition to the depth contour map, a map of soft versus hard bottom was also created. The bottom hardness map shows that the majority of the lake bottom contains soft deposits of organic content and small areas of hard sand and gravel bottom. Eagle Lake receives water from a groundwater well that pumps at a rate of 1,000-1,200 gallons per minute (USGS, 1970) and the lake does not contain an inlet or outlet but contains some springs. Eagle Lake has a lake perimeter of approximately 4.5 miles (Michigan Department of Natural Resources, 1999). The longest point across the lake (fetch) is 0.7 feet and thus the lake may produce sizeable waves during high winds. A laminar flow aeration (LFA) system or inversion oxygenation technology was recommended to improve previously studied impairments of the lake which are discussed below.

1.1 Summary of Eagle Lake Aeration Operations:

Laminar Flow Aeration (LFA) is proposed to be installed in Eagle Lake in 2017, pending approval and permitting from the MDEQ.

1.2 Summary of Aeration Operation Purpose/Goals:

Eagle Lake is a well-recreated lake and is utilized by many for fishing, swimming, boating, and waterfront living. In recent years, the lake has become dominated by aggressive watermilfoil and pondweed growth and has a very mucky bottom throughout most of the lake. The local residents have desired a more holistic approach to addressing both the aquatic plant issues as well as the muck reduction. The residents desired a lake restoration strategy that would make the lake healthier and accomplish the following objectives:

The primary objectives of the implemented LFA system for Eagle Lake include:
Reduction of nuisance rooted submersed aquatic vegetation such as milfoil and pondweed
Reduction of muck in problem areas
as recommended to improve previously studied impairments of the lake which are discussed below

2.0 EAGLE LAKE SAMPLING METHODS & PARAMETERS

2.1 Summary of Equipment/Sampling Devices/Replicates/Parameters Measured:

Restorative Lake Sciences sampled 5 locations in Eagle Lake to satisfy the MDEQ permitting requirements for a lake this size. This baseline water quality data was collected on May 13, 2016, June 21, 2016, and September 15, 2016.

All chemical water samples were collected at the specified depths (one each at the top, middle, and bottom depths of each of the sampling sites) using a 4-liter VanDorn horizontal water sampler with weighted messenger (Wildco® brand). Water quality physical parameters (such as water temperature, dissolved oxygen, conductivity, and pH) were measured with a calibrated Hanna® multi-probe meter at top, middle, and bottom depths of the 4 sampling sites. Total phosphorus was titrated and analyzed in the laboratory according to method SM 4500-P E. Ortho-phosphorus was titrated and analyzed in the laboratory according to method SM 4500-P E. Total suspended solids were analyzed for each sample using SM 2540 D-97. Chlorophyll-a was analyzed with the SM 10200H method. All of the aforementioned chemical parameters were analyzed at Trace Analytical Laboratories in Muskegon, Michigan.

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Prior to analysis of the samples as described above, water samples were placed in clean, unpreserved polyethylene bottles for ortho-phosphorus and total suspended solids and placed in H2SO4-preserved, clean, polyethylene bottles for total phosphorus analysis. Chlorophyll-a samples were placed in glass brown amber 1-liter bottles. All water samples were maintained on ice in a large cooler prior to being taken to the laboratory.

Samples used for microscopic analysis of algal community composition were preserved with glutaraldehyde and counted with a Sedgewick Rafter® Counting Cell under high power objective on a bright-field Accuscope® compound microscope. Multiple 1 micro-liter (μL) aliquots were used to determine the relative abundance of algal genera in the samples.

2.2 Sampling Dates and Locations:

Since the LFA system has not yet been installed, the baseline data collection occurred on May 13, 2016, June 21, 2016, and September 15, 2016. In addition to the aforementioned parameters, 60 sediment muck depths were measured with a calibrated "muck meter" on September 22, 2016.

Aquatic vegetation survey was conducted on May 13, 2016 and again on September 15, 2016. All water quality samples were collected from the sampling locations according to Figure 1. Sediment muck depths were collected from the sampling locations according to Figure 2.

Figure 1. 2016 water quality sampling locations on Eagle Lake, Kalamazoo County, MI.



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Figure 2 below shows the sampling locations (n=63) for sediment thickness which was measured with a calibrated muck meter device. Each location was marked by GPS. RLS also scanned the lake bottom for sediment bottom hardness which is shown right in Figure 3.

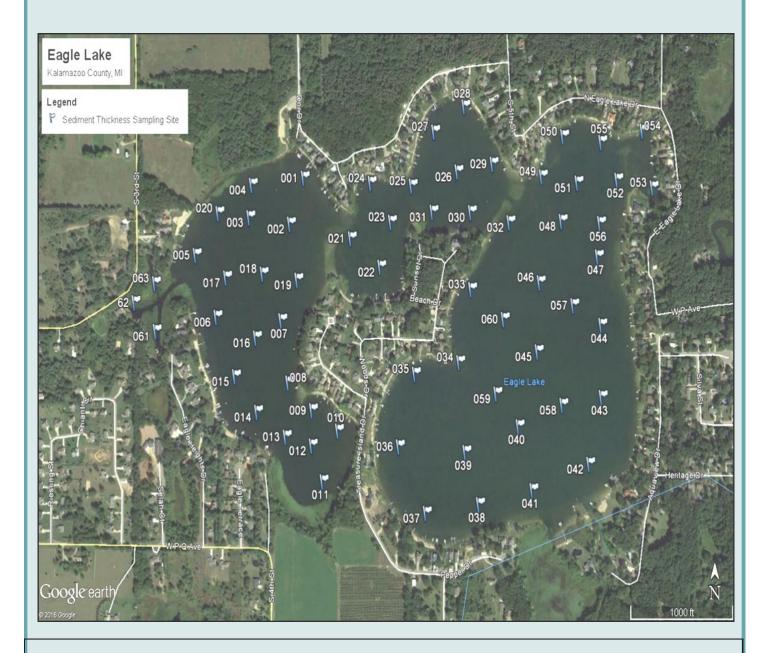


Figure 2. Eagle Lake sediment thickness sampling locations (RLS, September 22, 2016).

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Sediment Sample ID (GPS)	Sediment Thick- ness (feet)	Sediment Sample ID (GPS)	Sediment Thickness (feet)
1	1.45	34	0.12
2	4.28	35	6.7
3	4.73	36	5.89
4	2.59	37	5.18
5	3.2	38	5.98
6	3.13	39	6.0
7	3.8	40	5.5
8	5.33	41	2.73
9	2.97	42	3.02
10	2.0	43	3.45
11	2.78	44	4.73
12	2.85	45	4.5
13	3.47	46	7.35
14	3.57	47	4.08
15	4.18	48	7.32
16	5.15	49	2.97
17	5.52	50	5.0
18	5.37	51	4.55
19	5.98	52	0.57
20	4.58	53	3.47
21	3.07	54	1.27
22	4.42	55	3.78
23	4.53	56	5.65
24	2.68	57	3.78
25	5.1	58	4.28
26	4.97	59	3.72
27	5.05	60	6.8
28	3.18	61	2.62
29	3.27	62	1.6
30	3.0	63	0.98
31	1.9		
32	5.5		
33	5.7		

3.3 Eagle Lake
Baseline Sediment
Thickness Data
Table and Bottom
Scan

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3.4 Eagle Lake Baseline Phytoplankton Community:

Algal Community Composition Data Graph (Figure 4):

Algal community composition data were collected during the 3 sampling periods at each of the 5 basins. Means of the taxa were placed in the graph (Figure 4) below. Genera are listed here in the order of most abundant to least abundant. The genera present included the Chlorophyta (green algae): Scenedesmus sp., Chlorella sp., Haematococcus sp., Rhizoclonium sp., Mougeotia sp., Ulothrix sp., Pandorina sp., Pediastrum sp., Spirogyra sp., Euglena sp., and Chloromonas sp. the Cyanophyta (blue-green algae): Oscillatoria sp.; the Bascillariophyta (diatoms): Navicula sp., Fragilaria sp., Synedra sp., Tabellaria sp., and Rhoicosphenia sp.

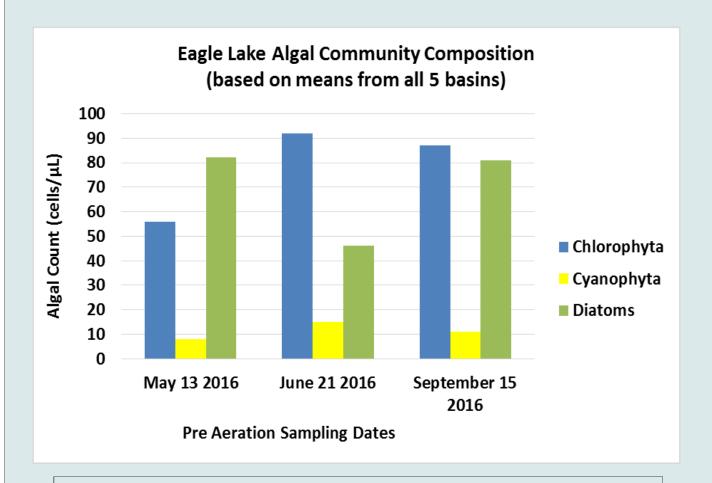


Figure 4. Baseline relative abundance of algal taxa in Eagle Lake (2016).

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3.5 Eagle Lake Aquatic Vegetation Surveys and Biovolume Scan:

Aquatic Vegetation Assessment Site Surveys were conducted on Eagle Lake on May 13, 2016 and again on September 15, 2016. The relative abundance of each aquatic plant species along with the original data sheets and maps can be found in Appendix B. In general, there were 16 native submersed, 4 native floating-leaved, and 5 emergent aquatic plant species found during the survey. A whole lake scan using a Lowrance HDS 8® sonar unit with GPS software was used to create an aquatic vegetation biovolume map (Figure 5) of the lake on May 13, 2016 as a baseline. Three invasive species were found and included Eurasian Watermilfoil which occupied approximately 4.2 acres in May, 2016 (Figure 6) and 3.5 acres in late summer of 2016 (Figure 7). Additionally, approximately 117 acres of nuisance Illinois Pondweed (Figure 8) were noted and would make recreation on the lake nearly impossible. Both milfoil and pondweeds were effectively treated in 2016. The entire lake will again be monitored in 2017 to assess any changes in aquatic plant communities. Note that changes in aquatic plant communities may occur naturally annually on inland lakes and changes due to the LFA system require not only reference to changes in relative abundance but also to bio volume.

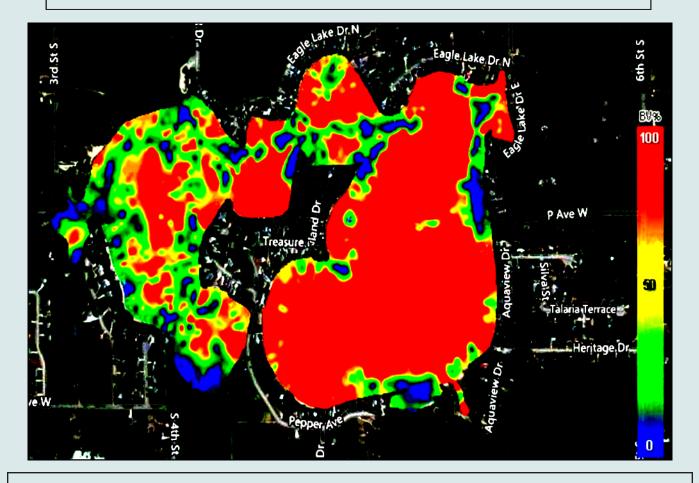


Figure 5. An aquatic vegetation biovolume scan map of Eagle Lake (May 13, 2016, RLS).

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Eagle Lake Texas Association — Texas Township, Kalamazoo County, Michigan



Protect and Improve
The Environment of Eagle Lake

Everyone in the Eagle Lake Community should follow the Aeration Project

The next edition of the Newsletter will be published in April 2017

Eagle Lake Texas Association — Our Purpose

- ... Explore opportunities to improve, maintain and protect Eagle Lake.
- ... Encourage communication, cooperation and understanding between all law-abiding users of the lake.
- ... Provide community awareness through safety programs.
- ... Control and prevent water pollution and to otherwise improve the condition of the lake for recreational and aesthetic purposes.
- ... Raise the level of awareness of the public about environmentally significant activities affecting the lake.

We are on the WEB: eaglelakekzoo.com www.facebook.com/EagleLakeAssociation