

Welcome to the Cedar Lake Improvement Board

Special Public Meeting

April 3, 2023

Board Members

Carolyn Brummund

Jesse Campbell

Dave Dailey

Steve Wusterbarth

Rob Huebel

Fred Strauer

Rex Vaughn

Alcona County Commissioner

Alcona County Road Commission Rep.

Greenbush Twp. Representative

Oscoda Twp. Trustee

Iosco County Commissioner

Iosco County Drain Commissioner

Citizen Riparian Representative

Cedar Lake Improvement Board  
Special Public Meeting  
Greenbush Township Hall  
Greenbush, MI 48738  
Monday, April 3, 2023  
10:00 AM ST

Proposed Agenda

1. Call to Order.
2. Roll Call.
3. Conference Call Meeting Operating Protocol & Housekeeping.
4. Public Comment.
5. Approval of Agenda as Presented.
6. Meeting Minutes.
  - a. Review & approve addition to the Minutes of the February 13, 2023, Special Public Meeting, as directed by motion from 3-20-23 meeting.
    - i. Report from Wusterbarth confirming names of the public comment speakers and the summarized subject matter.
  - b. Approve amended minutes from the February 13, 2023, Special Public Meeting.
  - c. Additions, corrections, and approval of Minutes of the 3-20/21-2023 Special Public Meeting.
7. Old Business.
  - a. Briarwood Bay “Cut” Investigation Project Update.
    - i. Initial phone & multiple email contacts with potential contractor made, awaiting first reply.
    - ii. Consider motion for Closed Session to review privileged and confidential written information from legal counsel.
  - b. Herbicide Applicator Alternate Bid Review.
    - i. RFB documents for the Alternate Bid that were emailed to bidders on 3/24/23 are included in Board Packet.
    - ii. Analytical cost review from original bid form results by Dr. Doug Pullman.
      1. LakeScan™ Contractor Bid Form.
      2. Most Probable Use Scenarios.
    - iii. Alternate Bid Forms received from bidders.
      1. Bid Tabulation
    - iv. Decisions & next steps.
8. New Business.
  - a. Scope of Work Discussion/Contract conversation with Kieser & Associates.
    - i. Selection of sub-committee and meeting date.
    - ii. AICLA request for guest attendance at the meeting with K&A.
  - b. 2022 Hydrology Report by Mark Kieser of Kieser & Associates.
    - i. Executive Summary included in Board Packet. Digital copy of full report available on CLIB website: <https://cedarlakewmp.net/monitoring-reports>
  - c. 2022 LakeScan™ Report by Dr. Doug Pullman of Aquest, Inc.
    - i. Executive North Lake & South Lake Summaries included in Board Packet. Digital copy of full report available on CLIB website: <https://cedarlakewmp.net/aquatic-plant-management>

Cedar Lake Improvement Board  
Special Public Meeting  
Alcona County Courthouse  
Harrisville, MI 48740  
Monday, April 3, 2023  
10:00 AM ST

Proposed Agenda

Cont'd,

- d. Review and approve bills that are now due.
  - i. Board Chairman, updated survey recording fees, \$30.00 (new).
- 9. Public Comment.
- 10. Next Regular Meeting Date: Friday, April 14, 2023 @ 10 AM, Greenbush Township Hall.
- 11. Adjournment

**Cedar Lake Improvement Board Special Public Meeting  
Public Access Instructions**

**Monday, April 3, 2023, at 10:00 AM ET**

**CONFERENCE CALL-IN INFORMATION:**

**To join the conference call, participants should call 302-202-1110 & enter Conference Code:  
639770**

Cedar Lake Improvement Board Meeting Minutes  
Special Public Meeting  
Alcona County Courthouse Commissioner Room  
Friday, February 13, 2023, 10:00 a.m.

1. Call to order 10:03 a.m.
2. Board Roll Call: Present---Vaughn, Brummund, Dailey, Wusterbarth, Huebel, Strauer. Absent—Campbell. There was a quorum. Total of 4 guests.
3. Online Meeting operating protocol and housekeeping reviewed.
4. Public Comment: 10:09 a.m.: One in-house guest and one on-line guest had comments and questions.
5. Approval of agenda 2-13-23: Motion to approve agenda as amended (added Item 8c) made by Brummund/Wusterbarth. All ayes, motion passed.
6. Approval of minutes 2-3-23 Public Hearing & Special Board Meeting: Motion to approve minutes of the 2-3-23 Public Hearing & Special Board Meeting as presented made by Dailey/Huebel. All ayes: motion passed.
7. Old Business
  - a. Jones Ditch & Property Acquisition
    - i. Invoice received from Travis Sanitation exceeds original contract. Motion to pay original contract amount of \$9,892.00 minus the seeding allowance (\$500.), net due \$9392.00 made by Wusterbarth/Brummund. Roll call vote: all ayes. Motion passed. Wusterbarth volunteered to contact Travis Sanitation about the extra charges for work outside the original scope of work and report back to the Board at the next meeting.
    - ii. Vaughn and Dailey volunteered to inspect property and work done by Travis Sanitation and report back to the Board. (Note: Site visit completed on 2/13/23)
8. New Business
  - a. Reviewed drafts for three new requests for bids (RFB).
    - i. Discussed term of Aquatic Herbicide Applicator contract. The Chair’s recommendation to set the applicator contract to a one-year term due to price volatility in the aquatic chemical market made sense.
    - ii – iii Lake Manager, Watershed Management Consultant...see iv-v
    - iv-v Discussed longer terms for Lake Manager and Watershed Management Consultant for continuity (up to five years). Discussion regarding timeline for bid document preparation, advertising for bids, etc. Current timeline: Feb 22 & 3/1 advertise, March 17 bid deadline, March 20 open bids at special public meeting @ 10 am to choose who to select or interview. Motion to have advertisements prepared for three RFBs for publication on 2/22 and 3/1 made by Vaughn/Brummund. All ayes, motion passed. Motion to approve the three RFBs and set RFB terms to 5 years for Lake Manager and Watershed Consultant made by Vaughn/Brummund. All ayes, motion passed.
  - b. Review bills:
    - i. Kieser & Associates, inv. 23-165, \$5,124.20, Motion to pay Kieser & Associates Inv 23-165 made by Vaughn/Brummund. Roll call vote: 5 ayes, 1 nay. Motion passed.
    - ii. Travis Sanitation: see 7.a.i. of these minutes.
    - iii. Chairman meeting attendance mileage reimbursement: 279 miles @.655cents as per updated IRS policy, \$180.78. Motion to reimburse the chairman mileage as submitted made by Wusterbarth/Brummund. Roll call vote: 5 ayes, 1 abstain (Vaughn) motion passed.
    - iv. Chairman postage reimbursement: \$1.50. Motion to reimburse chairman for postage of \$1.50 made by Brummund/Huebel. Roll call vote: 5 ayes, 1 abstain (Vaughn). Motion passed.
  - c. Dredging the “Cut” at Briarwood Bay: Motion that as a board, the dredging of the “Cut” at Briarwood Bay should be taken on as an investigative project made by Wusterbarth/Huebel. All ayes, motion passed. Vaughn volunteered to call lawyer to obtain legal opinion on adding a navigation restriction abatement project to the existing SAD. Vaughn also volunteered to contact EGLE and/or DNR to determine regulatory jurisdiction and permitting requirements for such a project.

Cedar Lake Improvement Board Meeting Minutes  
Special Public Meeting  
Alcona County Courthouse Commissioner Room  
Friday, February 13, 2023, 10:00 a.m.

Cont'd:

9. Public Comments: Concerns regarding lake level and Briarwood Bay were expressed by several guests.
10. Motion to schedule a Special Meeting for March 20, 2023, 10am, Alcona County Courthouse Commissioner Room made by Vaughn/Wusterbarth. All ayes. Motion passed.
11. Adjournment. 11:29pm

Cedar Lake Improvement Board Meeting Minutes  
Special Public Meeting  
Alcona County Courthouse, Harrisville, MI  
Monday-Tuesday, March 21 & 22, 2023 10:00 a.m.

1. Call to order 10:02 a.m.
2. Board Roll Call: Present---Vaughn, Huebel, Dailey, Wusterbarth, Brummund, Strauer. Absent—Campbell. There was a quorum. Total of 15 participants joined meeting in person or by phone, 6 of whom were board members.
3. Online Meeting Operating Protocol & Housekeeping was discussed.
4. Public Comments: The following attendees had questions and concerns: Bruce Chalmers, Mike Cecil, Jeff Linderdman. The questions and concerns were regarding meeting minutes format, Briarwood area, augmentation, lake levers, lake muck, the dam, hydrology reports, and how a bill was paid.
5. Approval of 2-20-23 Agenda - Motion to approve agenda as amended made by Strauer/Brummund. All ayes, motion passed.
6. Approval of Minutes from 2-13-2023 – Motion to table the approval of 2-13-23 minutes until Wusterbarth can confirm names of the public speakers and identify the subject matter made by Wusterbarth/Strauer. Roll Call vote: 5 ayes, 1 nay. Motion passed.
7. Old Business:
  - a) Jones Ditch & Property Acquisition
    - i. Wusterbarth reported on his conversation with Travis and recommends the \$900 invoice for stump removal be paid.
    - ii. Report given by Vaughn and Dailey regarding their site inspection from 2-13-23 and explanation of pictures taken. Dailey added that the stumps were massive.  
Motion to authorize the payment of \$900 for the stump removal, but delay payment and combine with the \$500 hold back payment for seeding and cleanup once those tasks are completed later this year made by Wusterbarth/Brummund. Roll Call vote: all ayes. Motion passed.
  - b) Briarwood Bay “Cut” Investigation Project Update:
    - i. Waiting for legal opinion from attorney
    - ii. EGLE/DNR inquiries regarding any action for Briarwood Bay Cut: A great deal of discussion regarding jurisdiction, permit process, possible grants, special assessment, dredging, spoils, etc. Motion to have Chair contact the company Wusterbarth recommends to set up a pre-application visit not to exceed \$200. Made by Wusterbarth/Dailey. Roll Call vote: All ayes, motion passed.
  - c) By-laws draft will be available for the next meeting.
8. New Business
  - a) Sealed Bid Opening
    - i. Sealed envelopes opened in public meeting
    - ii Bid Tabulation: Vaughn directed everyone to look at the table of bid requests. After advertising in four (4) newspapers and Builders Exchange, and sending out 11 individual requests for bids for the three positions being sought to fill: Lake Manager, Aquatic Herbicide Applicator, WatershedManagement, only three (3) companies returned bids. They were: Kieser & Associates Bid

for Lake Manager and Watershe Management; Solitude Lake Management for Herbicide Applicator; and PLM for Herbicide Applicator.

iii. Decisions on next steps: Lots of discussion. A Motion to table discussion on 8a of this Agenda until Tuesday 3-21-23 10 am in the Commissioners Room and move onto Item 8b was made by Brummund/Dailey. Roll Call vote: All ayes.

b) Review and approve bills now due:

MOTION to approve and pay:

- i. Straley Lamp & Kraenzlein inv 37065, \$4,500. Made by Brummund/Huebel. Roll Call vote: all ayes. Motion passed.
- ii. Alpena News invoice 02080 \$260.45 made by Dailey/Wusterbarth. Roll Call vote: all ayes. Motion passed.
- iii. Alcona County Review inv 27519 \$32.50 made by Brummund/Dailey. Roll Call vote: all ayes. Motion passed.
- iv. Iosco County news/Osc Press ad on 2-22-23 \$177.10 made by Wusterbarth/Dailey. Roll Call vote: all ayes. Motion passed.
- v. Bloom Sluggett PC inv 23471 \$1.170. made by Brummund/Huebel. Roll Call vote: all ayes. Motion passed.
- vi. Kieser & Associates inv 23-175 \$3,257.50 made by Brummund/Huebel. Roll Call vote: all ayes. Motion passed.
- vii. Kieser & Associates inv 23-172 \$1,140. Made by Brummund/Dailey. Roll Call vote: all ayes. Motion passed.
- viii. Chairman expenses printer paper \$9.40 made by Brummund/Strauer. Roll Call vote: 5 ayes, 1 abstain (Vaughn) Motion passed.
- ix. Chairman expenses laser printer cartridge \$127.19 made by Dailey/Strauer. Roll Call vote: 5 ayes, 1 abstain (Vaughn) Motion passed.

Note: Huebel excused from meeting 11:52 am, quorum maintained.

9. Public Comment: The following attendees had questions and concerns: Jim Sloan, Chuck Kowalski, Frank Kramarz, Jeff Linderman, Dennie Staller, Bruce Chalmers, Jim Suchy. The questions and concerns were regarding lake level, grant writing class available, asbestos in purchased property home, Travis extra charge, Briarwood Bay, dredging company in Montross, bids, outflow of water, Lakewood Shores drains, how CLIB board members are selected and appointed.

12:17 pm Motion to Recess until Tuesday (3-21-23) at 10 am to continue the business of the bids made by Brummund/Dailey. All ayes, motion passed.

10:08 am Tuesday, March 22, 2023 Reconveening of March 21, 2023 meeting in the Commissioner's room.  
Roll Call: Brummund, Dailey, Wusterbarth, Huebel, Strauer, Vaughn. Absent: Campbell. Quorum met. 6 guests.

8. Sealed Bid Opening continued:

ii. Bid tabulations: Much discussion regarding the comparison of the two companies that bid for the Herbicide contract. A Motion to go with the bid from Solitude for Cedar Lake 2023 made by Brummund/Dailey. Roll Call vote: 1 aye, 4 nays, 1 abstain. Motion failed. Motion to send out and ask that the two applicants to change their bid format to one that we will send them including the amount and acreage done and chemicals used made by Dailey/Wusterbarth. Roll Call vote: all ayes. Motion passed. Discussion regarding Watershed Management bid...only one....Kieser & Associates. Discussion included the possibility of designating a sub committee to recommend to the board the scope of work to be done. Discussion regarding Lake Manager bid....only one....Kieser & Associates. Again, discussion including the scope of work to be done be recommended by a sub committee. Motion to accept a 5 year contract with Kieser & Associated for each position of Watershed Management and Lake Manager with an annual scope of work review by a committee made by Vaughn/Brummund. Roll Call vote: all ayes. Motion passed.

10. Next regular meeting date: Friday, April 14, 2023 10 am Greenbush Township Hall.

Next special meeting date: Monday, April 3, 2023 10 am Greenbush Township Hall.

Public Comments: The following attendees had questions and concerns: Chuck Kowalski, Jeff Linderman. Their questions and concerns regarded CLIB roster, procedures, and a request to participate in contractor meeting.

11. Adjourned 11:27 am



**CEDAR LAKE IMPROVEMENT BOARD**  
**REQUEST FOR ALTERNATE BID**  
**for**  
**AQUATIC PLANT HERBICIDE TREATMENTS**  
**OF CEDAR LAKE**  
**IOSCO COUNTY & ALCONA COUNTY**  
**MICHIGAN**

The Cedar Lake Improvement Board (CLIB) is requesting alternate bids for aquatic plant herbicide treatments on Cedar Lake in Iosco and Alcona Counties in the State of Michigan for the year 2023. The Board has requested the alternate bid to simplify the cost review process the Board is currently undertaking. The alternate bid form has been streamlined for both the Board and the bidders. The final selection of the aquatic applicator will be made based on both the original bid already received and the alternate bid. All the previously submitted General Information, Instructions, Requirements, and Specifications, included herein by reference for the proposed work, remain in effect.

Technical questions on the alternate bid requirements and documents should be directed to the CLIB's Lake Manager, Dr. Doug Pullman. Commercial or general questions should be directed to the CLIB Chairman, Rex Vaughn. Contact information follows:

Dr. Doug Pullman  
Email: [aquest@mac.com](mailto:aquest@mac.com)  
Mobile: 810-516-6830

Rex Vaughn  
Email: [rvaughn@tir.com](mailto:rvaughn@tir.com)  
Mobile: 810-516-6686

All Alternate Bids may be submitted by email to the address noted on the Alternate Bid Form.

Cedar Lake Improvement Board  
Alternate Bid Form For Aquatic Plant Herbicide Treatments Of Cedar Lake  
Invitation For Revised Bids

**ALTERNATE BID FORM**

BID DATE: \_\_\_\_\_, 2023

BID TO: Cedar Lake Aquatic Herbicide Bid  
Cedar Lake Improvement Board  
PO Box 53  
Greenbush, MI 48738

**Please submit this completed Alternate Bid Form on or before 5:00 PM, Friday, March 31, 2023, by email to: [rvaughn@tir.com](mailto:rvaughn@tir.com)**

The undersigned bidder hereby declares that this bid is made in good faith and without fraud or collusion with any other bidder or any competitor.

The bidder has carefully read, examined, and understands the previously submitted General Information, Instructions, Requirements, and Specifications, included herein by reference, for the proposed work. The bidder has investigated the lake and its condition to determine the character and difficulties attending the execution of the proposed work.

The bidder understands that the acreages listed are approximate and subject to change based upon lake surveys performed by the Lake Manager. For each application event, the Lake Manager will specify the location and acreage, and the consensus decision of the management team including the application contractor on the chemicals to be used and the application rate per acre will be made. The bidder agrees that the unit prices named will be used and invoice amounts will be calculated based upon unit volume or weight, application rate per acre, and total acres treated.

All work described in the bid specifications and required for completion of the project shall be considered as incidental work unless designated as a pay item on the Bid Form. The CLIB assumes no responsibility or liability for any costs incurred by the Contractor prior to the signing of an agreement. Total liability of the CLIB is limited to the terms and conditions of the Contract resulting from this bid document.

The undersigned agrees that this bid shall be good for 90 calendar days after the scheduled closing time for receiving bids. Within that timeframe, the CLIB shall provide a written

Cedar Lake Improvement Board  
Alternate Bid Form For Aquatic Plant Herbicide Treatments Of Cedar Lake  
Invitation For Revised Bids

Notice of Award to the successful bidder. Upon receipt of a written Notice of Award, the bidder shall enter into a formal contract with the CLIB incorporating the content and spirit of the bid specifications. Within 10 days of the Notice of Award, the Contractor shall deliver the required certificates of insurance described in the "Bidder Requirements". In the event the contract and certificates of insurance are not provided within the time set the CLIB reserves the right to void the Notice of Award and the Contract.

The bidder understands the CLIB reserves the rights to reject any or all bids, to waive any irregularities in the bidding, and to award the contract to other than the low bidder.

The bidder proposes and agrees, upon acceptance of the bid, to contract with the CLIB, incorporating the content and spirit of the bid specifications. The bidder will provide all necessary equipment, products, personnel, and transportation necessary to execute the work referred to in this invitation to bid. Furthermore, the bidder agrees to perform all work in the manner and time prescribed and according to the requirements of the CLIB.

The undersigned, having familiarized themselves with the previously supplied Instructions to Bidders and the Work Specifications, included herein by reference, hereby proposes to perform everything required and to provide and furnish all of the labor, materials, equipment, and all utility and transportation services necessary to perform and complete all the work required for aquatic herbicide treatments of Cedar Lake in a workmanlike manner, all in accordance with the previous specifications, and at prices as listed in the Alternate Bid Form worksheet located on the next page.

# Cedar Lake Improvement Board 2023 Alternate Bid Form

Item	Target Plant	Application Rate	Quantity	Price per Acre	Total
2,4-D Ester (e.g. Navigate)	Eurasian Milfoil	150 lbs./ acre	10 Acres		
2,4-D Ester (e.g. Navigate) + Chelated Copper Algicide	Eurasian Milfoil	100 lbs./acre +1 gal./acre.	40 Acres		
Triclopyr Dry	Eurasian Milfoil	160 lbs./ acre	10 Acres		
Diquat Dibromide	Eurasian Milfoil CurlyLeaf Pondweed	1.0 gal./ acre	40 Acres		
	Nuisance Natives	2.0 gal./ acre	40 Acres		
Flumioxazin	CurlyLeaf Pondweed Nuisance Natives	2.0 lbs./ acre	10 Acres		
Flumioxazin + Diquat Dibromide	Nuisance Natives	1.6 lbs./ acre + 1.0 gal/ acre	10 Acres		
Aquathol K	Curly-Leaf Pondweed	1.0 gal. / acre	10 Acres		
	Nuisance Natives	2.0 gal./ acre	10 Acres		
Glyphosate	Water Lilies Phragmites	6.0 pints/ acre	5 Lots (1600 ft2 per lot)		
Chelated Copper Algicides	Algae Control	3.6 gal./ acre	40 Acres		
ProcellaCOR EC + Diquat Dibromide	Eurasian and Hybrid Milfoils	16 oz./acre + 1 gal./acre	40 Acres		
Add AMP Adjuvant to any liquid or granular mix.	Eurasian and Hybrid Milfoils	1 gal./ acre	40 Acres		
Add Chleated Copper as an Adjuvant to any liquid or granular mix.	Nuisance Species	1 gal./acre	40 Acres		
			MDEQ Permit Fee	100 + Acres	
				Grand Total	

Cedar Lake Improvement Board  
Alternate Bid Form For Aquatic Plant Herbicide Treatments Of Cedar Lake  
Invitation For Revised Bids

The undersigned, by execution of this document, certifies that he/she is the representative of the firm named as the bidder and that he/she is authorized to execute this bid on behalf of the said firm.

SIGNATURE: \_\_\_\_\_

NAME: \_\_\_\_\_

(Printed)

TITLE: \_\_\_\_\_

COMPANY NAME: \_\_\_\_\_

COMPANY ADDRESS: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

TELEPHONE: \_\_\_\_\_

FAX: \_\_\_\_\_

E-MAIL \_\_\_\_\_

DATE: \_\_\_\_\_

Most Probably Use

Off-Shore Variable Milfoil  
Navigate

			<b>Annual</b>		<b>Varies</b>	<b>Per Event</b>
		<b>Permit Processing Fee</b>	Each	\$160		
		<b>7 - Day Notice Cost</b>	Each	\$700	\$500	
		<b>Pre-Survey and Surveys</b>	Each	\$800	\$800	
		<b>Meeting Attendance</b>	Each			
		<b>Mobilization</b>	Each			\$500
		<b>Day of Application Posting</b>	Each			
<b>L3</b>		<b>1 Product Liquid</b>	>10 acres	\$125	\$75	
<b>L2</b>		<b>2 Product Liquid</b>	>10 acres	\$150	\$95	
<b>L3</b>		<b>3 Product Liquid</b>	>10 acres	\$175	\$105	
<b>G1</b>		<b>1 Product Granular</b>	>10 acres	\$150	\$75	
<b>L1G1</b>		<b>1 Product Liquid 1 Product Granular</b>	>10 acres	\$200	\$80	
<b>L1W1</b>		<b>1 Product Liquid and 1 Product Wettable Powder</b>	>10 acres	\$150	\$95	
<b>G1W1</b>		<b>1 Product Wettable Powder and 1 Product Granular</b>	>10 acres	\$200	\$100	
<b>L1G1W1</b>		<b>Product Wettable Powder and 1 Product Granular 1 Product Wettable Powder</b>	>10 acres	\$200	\$100	

**Bid Amounts**

**Cost at Normal Dose Rates**

**Weighted for Likely Use**

Prob Use	Dose	Code	Control Agent	Brand Name	Unit Volume or Weight	Solitude		PLM		Solitude	PLM	Solitude	PLM
						Volume or Weight Including all Taxes and Delivery \$US	Volume or Weight Including all Taxes and Delivery \$US	Bid Cost Per Unit Including all Taxes and Delivery \$US	Bid Cost Per Unit Including all Taxes and Delivery \$US				
5	150	1650	2,4-D BEE Granular	Navigate	1 lb.	\$5.51	\$5.50	\$826.50	\$825.00	\$4,132.50	\$4,125.00		
3	150	1670	2,4-D Combo	Renovate Max G	1 lb.	\$5.14	\$4.15	\$771.00	\$622.50	\$2,313.00	\$1,867.50		
5	1		Protein Adjuvant	AMP	1 gal	\$93.68	\$105.00	\$93.68	\$105.00	\$468.40	\$525.00		
4	0.125	1010	Carfentrazone	Stingray	1 gal.	\$689.00	\$325.00	\$86.13	\$40.63	\$344.50	\$162.50		
5	2	1050	Copper Chelate Emulsified Liquid	Cutrine Ultra, Captain XTR	1 gal.	\$35.63	\$40.00	\$71.26	\$80.00	\$356.30	\$400.00		
1	80	1085	Copper Chelate Granular Herbicide	Harpoon or Komeen Granular	1 lb.	\$2.57	\$15.00	\$205.60	\$1,200.00	\$205.60	\$1,200.00		
3	2	1040	Copper Chelate Liquid	Cutrine Captain	1 gal.	\$32.84	\$40.00	\$65.68	\$80.00	\$197.04	\$240.00		
2	8	1060	Copper Chelate, Ethylenediamine	Komeen, Harpoon	1 gal.	\$41.70	\$42.00	\$333.60	\$336.00	\$667.20	\$672.00		
1	2.5	1030	Copper Sulfate		1 lb.	\$2.00	\$2.50	\$5.00	\$6.25	\$5.00	\$6.25		
5	2	1070	Diquat Combo	Aquastrike	1 gal.	\$93.56	\$110.00	\$187.12	\$220.00	\$935.60	\$1,100.00		
5	2	1140	Diquat Dibromide		1 gal.	\$73.00	\$90.00	\$146.00	\$180.00	\$730.00	\$900.00		
3	25	1240	Endothall Amine Granular	Hydrothol 191 Granular	1 lb.	\$5.00	\$6.00	\$125.00	\$150.00	\$375.00	\$450.00		
3	0.5	1220	Endothall Amine Liquid	Hydrothol 191	1 gal.	\$105.70	\$115.00	\$52.85	\$57.50	\$158.55	\$172.50		
5	2	1080	Endothall Salt Liquid	Aquathol K	1 gal.	\$101.54	\$110.00	\$203.08	\$220.00	\$1,015.40	\$1,100.00		
5	0.25	1290	Florpyrauxifen-benzyl		1 gal.	\$2,096.68	\$2,880.00	\$524.17	\$720.00	\$2,620.85	\$3,600.00		
5	0.25	1300	Flumioxazin		1 lb.	\$45.42	\$75.00	\$11.36	\$18.75	\$56.78	\$93.75		
1	25	1290	Fluridone Granular	Sonar One	1 lb.	\$43.19	\$45.00	\$1,079.75	\$1,125.00	\$1,079.75	\$1,125.00		
1	1	1270	Fluridone Liquid		1 qt.	\$633.25	\$625.00	\$633.25	\$625.00	\$633.25	\$625.00		
1	1	1320	Glyphosate		1 gal.	\$52.55	\$75.00	\$52.55	\$75.00	\$52.55	\$75.00		
1	100	1100	Hydrogen Peroxide		1 lb.	\$1.63	\$1.50	\$163.00	\$150.00	\$163.00	\$150.00		
1	1	1400	Imazamox	Clearcast	1 gal.	\$361.35	\$325.00	\$361.35	\$325.00	\$361.35	\$325.00		
1	1	1420	Imazapyr	Habitat	1 gal.	\$117.50	\$75.00	\$117.50	\$75.00	\$117.50	\$75.00		
1	1	1440	Penoxsulam	Galleon	1 gal.	\$798.14	\$1,175.00	\$798.14	\$1,175.00	\$798.14	\$1,175.00		
3	100	1625	Triclopyr Amine Granular	OTF	1 lb.	\$6.34	\$4.25	\$634.00	\$425.00	\$1,902.00	\$1,275.00		
3	3	1550	Triclopyr Amine Liquid	Renovate	1 gal.	\$144.41	\$100.00	\$433.23	\$300.00	\$1,299.69	\$900.00		

\$5,587.33 \$6,390.60

\$7,980.79 \$9,136.63

\$20,988.95 \$22,339.50

# Most Probable Use Scenarios

							Solitude	PLM
							Cost	Cost
<b>Annual Admin, On-Site, Notification Fees</b>							\$1,660	\$500
				Unit or				
		Acres	Amount	Code	Product			
<b>Scenario 1</b>		<b>2,4-D BEE</b>						
<b>Event 1</b>								
Required	Mobilization and Posting					\$500		
TmtZ 1	Application Cost	40		L1G1W1	Liquid, Granular, Wettable Powder	\$8,000	\$4,000	
	Off-Shore Variable Milfoil	40	100 Lbs		2,4-D BEE Granular	\$22,040	\$22,000	
		40	1 Gal		Copper Chelate Emulsified Liquid	\$1,425	\$1,600	
TmtZ 2	Application Cost	35		L1W1	Liquid, Wettable Powder	\$5,250	\$3,325	
	Trenches and NearShore	35	0.2 Gal		Florpyrauxifen-benzyl	\$14,677	\$20,160	
		35	1 Gal		Diquat Dibromide	\$2,555	\$3,150	
		35	1 Lbs		Flumioxazin	\$1,590	\$2,625	
<b>Sub-Total</b>						<b>\$56,037</b>	<b>\$56,860</b>	
<b>Event 2</b>								
Required	Mobilization and Posting					\$500		
TmtZ 1	Application Cost	30		L1W1	Liquid, Wettable Powder	\$4,500	\$2,850	
	General Nuisance	30	1 Gal		Diquat Dibromide	\$2,190	\$2,700	
		30	1 Lbs		Flumioxazin	\$1,363	\$2,250	
		30	1 Gal		Copper Chelate Emulsified Liquid	\$1,069	\$1,200	
	Application Cost	5		L3	Liquid	\$625	\$375	
	Water Lilies	5	1 Gal		Glyphosate	\$263	\$375	
		5	0.5 Gal		Imazapyr	\$294	\$188	
		5	0.2 Lbs		Flumioxazin	\$45	\$75	
<b>Sub-Total</b>						<b>\$10,848</b>	<b>\$10,013</b>	
<b>Total Scenario Cost</b>						<b>\$68,545</b>	<b>\$67,373</b>	
							2%	
<b>Scenario 2</b>		<b>ProcellaCOR</b>						
<b>Event 1</b>								
	Mobilization and Posting					\$500		
TmtZ 1	Application Cost	30		L1W1	Liquid, Wettable Powder	\$4,500	\$2,850	
	Off-Shore Variable Milfoil	40	0.2 Gal		Florpyrauxifen-benzyl	\$16,773	\$23,040	
		40	1 Gal		Protein Adjuvant	\$3,747	\$4,200	
TmtZ 1	Application Cost	30		L1W1	Liquid, Wettable Powder	\$4,500	\$2,850	
	Trenches and NearShore	35	0.2 Gal		Florpyrauxifen-benzyl	\$14,677	\$20,160	
		35	1 Gal		Diquat Dibromide	\$2,555	\$3,150	
		35	1 Lbs		Flumioxazin	\$1,590	\$2,625	
<b>Sub-Total</b>						<b>\$48,842</b>	<b>\$58,875</b>	
<b>Event 2</b>								
	Mobilization and Posting					\$500		
TmtZ 1	Application Cost	30		L1W1	Liquid, Wettable Powder	\$4,500	\$2,850	
	General Nuisance	30	1 Gal		Diquat Dibromide	\$2,190	\$2,700	
		30	1 Lbs		Flumioxazin	\$1,363	\$2,250	
		30	1 Gal		Copper Chelate Emulsified Liquid	\$1,069	\$1,200	
TmtZ 2	Application Cost	30		L3	Liquid, Wettable Powder	\$3,750	\$2,250	
	Water Lilies	5	1 Gal		Glyphosate	\$263	\$375	
		5	0.5 Gal		Imazapyr	\$294	\$188	
		5	0.2 Lbs		Flumioxazin	\$45	\$75	
<b>Sub-Total</b>						<b>\$13,973</b>	<b>\$11,888</b>	
<b>Total Scenario Cost</b>						<b>\$64,476</b>	<b>\$71,263</b>	
							10%	

Cedar Lake Improvement Board  
Alternate Bid Form For Aquatic Plant Herbicide Treatments Of Cedar Lake  
Invitation For Revised Bids

**ALTERNATE BID FORM**

BID DATE:           March 27,  
\_\_\_\_\_ , 2023

BID TO:           Cedar Lake Aquatic Herbicide Bid  
Cedar Lake Improvement Board  
PO Box 53  
Greenbush, MI 48738

**Please submit this completed Alternate Bid Form on or before 5:00 PM, Friday, March 31, 2023, by email to: rvaughn@tir.com**

The undersigned bidder hereby declares that this bid is made in good faith and without fraud or collusion with any other bidder or any competitor.

The bidder has carefully read, examined, and understands the previously submitted General Information, Instructions, Requirements, and Specifications, included herein by reference, for the proposed work. The bidder has investigated the lake and its condition to determine the character and difficulties attending the execution of the proposed work.

The bidder understands that the acreages listed are approximate and subject to change based upon lake surveys performed by the Lake Manager. For each application event, the Lake Manager will specify the location and acreage, and the consensus decision of the management team including the application contractor on the chemicals to be used and the application rate per acre will be made. The bidder agrees that the unit prices named will be used and invoice amounts will be calculated based upon unit volume or weight, application rate per acre, and total acres treated.

All work described in the bid specifications and required for completion of the project shall be considered as incidental work unless designated as a pay item on the Bid Form. The CLIB assumes no responsibility or liability for any costs incurred by the Contractor prior to the signing of an agreement. Total liability of the CLIB is limited to the terms and conditions of the Contract resulting from this bid document.

The undersigned agrees that this bid shall be good for 90 calendar days after the scheduled closing time for receiving bids. Within that timeframe, the CLIB shall provide a written



Cedar Lake Improvement Board  
Alternate Bid Form For Aquatic Plant Herbicide Treatments Of Cedar Lake  
Invitation For Revised Bids

Notice of Award to the successful bidder. Upon receipt of a written Notice of Award, the bidder shall enter into a formal contract with the CLIB incorporating the content and spirit of the bid specifications. Within 10 days of the Notice of Award, the Contractor shall deliver the required certificates of insurance described in the "Bidder Requirements". In the event the contract and certificates of insurance are not provided within the time set the CLIB reserves the right to void the Notice of Award and the Contract.

The bidder understands the CLIB reserves the rights to reject any or all bids, to waive any irregularities in the bidding, and to award the contract to other than the low bidder.

The bidder proposes and agrees, upon acceptance of the bid, to contract with the CLIB, incorporating the content and spirit of the bid specifications. The bidder will provide all necessary equipment, products, personnel, and transportation necessary to execute the work referred to in this invitation to bid. Furthermore, the bidder agrees to perform all work in the manner and time prescribed and according to the requirements of the CLIB.

The undersigned, having familiarized themselves with the previously supplied Instructions to Bidders and the Work Specifications, included herein by reference, hereby proposes to perform everything required and to provide and furnish all of the labor, materials, equipment, and all utility and transportation services necessary to perform and complete all the work required for aquatic herbicide treatments of Cedar Lake in a workmanlike manner, all in accordance with the previous specifications, and at prices as listed in the Alternate Bid Form worksheet located on the next page.

# Cedar Lake Improvement Board 2023 Alternate Bid Form

Item	Target Plant	Application Rate	Quantity	Price per Acre	Total
2,4-D Ester (e.g. Navigate)	Eurasian Milfoil	150 lbs./ acre	10 Acres	\$700.00	\$7,000.00
2,4-D Ester (e.g. Navigate) + Chelated Copper Algicide	Eurasian Milfoil	100 lbs./acre +1 gal./acre.	40 Acres	\$540.00	\$21,600.00
Triclopyr Dry	Eurasian Milfoil	160 lbs./ acre	10 Acres	\$700.00	\$7,000.00
Diquat Dibromide	Eurasian Milfoil CurlyLeaf Pondweed Nuisance Natives	1.0 gal./ acre	40 Acres	\$140.00	\$5,600.00
		2.0 gal./ acre	40 Acres	\$190.00	\$7,600.00
Flumioxazin	CurlyLeaf Pondweed Nuisance Natives	2.0 lbs./ acre	10 Acres	\$188.00	\$1,880.00
Flumioxazin + Diquat Dibromide	Nuisance Natives	1.6 lbs./ acre + 1.0 gal/ acre	10 Acres	\$290.00	\$2,900.00
Aquathol K	Curly-Leaf Pondweed Nuisance Natives	1.0 gal. / acre	10 Acres	\$160.00	\$1,600.00
		2.0 gal./ acre	10 Acres	\$250.00	\$2,500.00
Glyphosate	Water Lilies Phragmites	6.0 pints/ acre	5 Lots (1600 ft2 per lot)	\$50.00/lot	\$250.00
Chelated Copper Algicides	Algae Control	3.6 gal./ acre	40 Acres	\$252.00	\$10,080
ProcellaCOR EC + Diquat Dibromide	Eurasian and Hybrid Milfoils	16 oz./acre + 1 gal./acre	40 Acres	\$588.00	\$23,520
Add AMP Adjuvant to any liquid or granular mix.	Eurasian and Hybrid Milfoils	1 gal./ acre	40 Acres	\$150.00	\$6,000.00
Add Chleated Copper as an Adjuvant to any liquid or granular mix.	Nuisance Species	1 gal./acre	40 Acres	\$70.00	\$2,800.00
			MDEQ Permit Fee	100 + Acres	\$1600.00
				<b>Grand Total</b>	<b>\$101,930.00</b>

Cedar Lake Improvement Board  
Alternate Bid Form For Aquatic Plant Herbicide Treatments Of Cedar Lake  
Invitation For Revised Bids

The undersigned, by execution of this document, certifies that he/she is the representative of the firm named as the bidder and that he/she is authorized to execute this bid on behalf of the said firm.

SIGNATURE: Michael Pichla

NAME: Michael Pichla and BreAnne Grabill

(Printed)

TITLE: Regional Manager - Gaylord      Senior Regional Manager

COMPANY NAME: PLM Lake and Land Management

COMPANY ADDRESS: P.O. Box 424

Evart, MI 49631

TELEPHONE: 800-382-4434

FAX: 231-372-5900

E-MAIL michaelp@plmcorp.net and/or breg@plmcorp.net

DATE: March 27, 2023

Cedar Lake Improvement Board  
Alternate Bid Form For Aquatic Plant Herbicide Treatments Of Cedar Lake  
Invitation For Revised Bids

**ALTERNATE BID FORM**

BID DATE: March 30, 2023

BID TO: Cedar Lake Aquatic Herbicide Bid  
Cedar Lake Improvement Board  
PO Box 53  
Greenbush, MI 48738

**Please submit this completed Alternate Bid Form on or before 5:00 PM, Friday, March 31, 2023, by email to: [rvaughn@tir.com](mailto:rvaughn@tir.com)**

The undersigned bidder hereby declares that this bid is made in good faith and without fraud or collusion with any other bidder or any competitor.

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The bidder understands that the acreages listed are approximate and subject to change based upon lake surveys performed by the Lake Manager. For each application event, the Lake Manager will specify the location and acreage, and the consensus decision of the management team including the application contractor on the chemicals to be used and the application rate per acre will be made. The bidder agrees that the unit prices named will be used and invoice amounts will be calculated based upon unit volume or weight, application rate per acre, and total acres treated.

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Cedar Lake Improvement Board  
Alternate Bid Form For Aquatic Plant Herbicide Treatments Of Cedar Lake  
Invitation For Revised Bids

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The bidder proposes and agrees, upon acceptance of the bid, to contract with the CLIB, incorporating the content and spirit of the bid specifications. The bidder will provide all necessary equipment, products, personnel, and transportation necessary to execute the work referred to in this invitation to bid. Furthermore, the bidder agrees to perform all work in the manner and time prescribed and according to the requirements of the CLIB.

The undersigned, having familiarized themselves with the previously supplied Instructions to Bidders and the Work Specifications, included herein by reference, hereby proposes to perform everything required and to provide and furnish all of the labor, materials, equipment, and all utility and transportation services necessary to perform and complete all the work required for aquatic herbicide treatments of Cedar Lake in a workmanlike manner, all in accordance with the previous specifications, and at prices as listed in the Alternate Bid Form worksheet located on the next page.

# Cedar Lake Improvement Board 2023 Alternate Bid Form

Item	Target Plant	Application Rate	Quantity	Price per Acre	Total
2,4-D Ester (e.g. Navigate)	Eurasian Milfoil	150 lbs./ acre	10 Acres	\$720.00	\$ 7,200.00
2,4-D Ester (e.g. Navigate) + Chelated Copper Algicide	Eurasian Milfoil	100 lbs./acre +1 gal./acre.	40 Acres	\$610.00	\$24,400.00
Triclopyr Dry	Eurasian Milfoil	160 lbs./ acre	10 Acres	\$882.00	\$ 8,820.00
Diquat Dibromide	Eurasian Milfoil CurlyLeaf Pondweed Nuisance Natives	1.0 gal./ acre	40 Acres	\$145.00	\$ 5,800.00
		2.0 gal./ acre	40 Acres	\$210.00	\$ 8,400.00
Flumioxazin	CurlyLeaf Pondweed Nuisance Natives	2.0 lbs./ acre	10 Acres	\$225.00	\$2,250.00
Flumioxazin + Diquat Dibromide	Nuisance Natives	1.6 lbs./ acre + 1.0 gal/ acre	10 Acres	\$250.00	\$ 2,500.00
Aquathol K	Curly-Leaf Pondweed Nuisance Natives	1.0 gal. / acre	10 Acres	\$170.00	\$ 1,700.00
		2.0 gal./ acre	10 Acres	\$255.00	\$ 2,550.00
Glyphosate	Water Lilies Phragmites	6.0 pints/ acre	5 Lots (1600 ft2 per lot)	\$ 50.00	\$ 250.00
Chelated Copper Algicides	Algae Control	3.6 gal./ acre	40 Acres	\$120.00	\$4,800.00
ProcellaCOR EC + Diquat Dibromide	Eurasian and Hybrid Milfoils	16 oz./acre + 1 gal./acre	40 Acres	\$550.00	\$22,000.00
Add AMP Adjuvant to any liquid or granular mix.	Eurasian and Hybrid Milfoils	1 gal./ acre	40 Acres	\$106.00	\$ 4,240.00
Add Chleated Copper as an Adjuvant to any liquid or granular mix.	Nuisance Species	1 gal./acre	40 Acres	\$ 55.00	\$ 2,200.00
			MDEQ Permit Fee	100 + Acres	\$1,600.00
				Grand Total	\$98,710.00

Cedar Lake Improvement Board  
Alternate Bid Form For Aquatic Plant Herbicide Treatments Of Cedar Lake  
Invitation For Revised Bids

The undersigned, by execution of this document, certifies that he/she is the representative of the firm named as the bidder and that he/she is authorized to execute this bid on behalf of the said firm.

SIGNATURE: Peter Filpansick  
Digitally signed by Peter Filpansick  
DN: cn=Peter Filpansick, o=Clarke Aquatic  
Services, ou, email=pfilpansick@clarke.com, c=US  
Date: 2023.03.30 13:40:36 -04'00'

NAME: Pete Filpansick

(Printed)

TITLE: Business Development Consultant

COMPANY NAME: SOLitude Lake Management, LLC

COMPANY ADDRESS: 3390 N State Rd, Suite D

Davison, MI 48423

TELEPHONE: (810) 625 - 5605

FAX: \_\_\_\_\_

E-MAIL pete.filpansick@solitudelake.com

DATE: March 30, 2023

# Cedar Lake Improvement Board 2023 Herbicide Applicator Alternate Bid Tabulation

SOLitude: \$98,710.00

PLM: \$101,930.00



## **Cedar Lake 2022 Hydrology Report: Executive Summary**

The Cedar Lake Hydrology Report presents the technical results of the 2022 Cedar Lake water level monitoring program, ongoing since 2004. The purpose of the long-term program is to understand the critical management needs and influences toward supporting desired lake levels, particularly during the summer recreational season. Maintaining these desirable water levels in Cedar Lake is a function of summer rainfall amounts and strategic management strategies in areas draining directly to the lake. These strategies relate to ongoing efforts to bolster water retention in the northwest cedar swamp throughout the year, including railroad culvert cleanouts since 2014, wetland enhancement berm construction in 2017, and Sherman Creek in-stream grade structures built in 2019. Also influential has been the replacement and lowering of the culvert in Jones Ditch under West Cedar Lake Road, connecting a much larger wetland drainage area to the lake. This culvert modification now put Jones Creek summer-time water inputs after rainstorms well above contributions from Sherman Creek.

The water level monitoring program continues to be vital for assessing, understanding, and cost-effectively pursuing appropriate and phased water level augmentation options.

### **2022 Water Level Monitoring Program Results**

Precipitation, spring snow melt, and evaporation remain the three dominant factors that influence the Cedar Lake elevation throughout the summer. For the second year in a row, the average lake level has been below the historic average. In the early stages of hydrologic monitoring in the mid-to-late 2000s, Cedar Lake had been under a dry period followed by a wetter period from 2008-2011. Low precipitation in two of the past three years supports a decadal pattern of alternating dry and wet periods for the watershed. While the lake level has been improving even with declining or stagnant precipitation totals, drier conditions in the future may require additional management.

Despite lower precipitation in 2022, improvements in water retention continue to prove effective in limiting outflows from the watershed. Water retention improvements are reflected in the limited outflows through King's Corner culvert (0.156 Mgal), among the lowest recorded since 2014. Jones Ditch continues to supply an increased amount of discharge following the culvert replacement in 2018. The purchasing of the parcel adjacent to Jones Ditch will allow the CLIB to continue to protect Jones Ditch and further facilitate improved connectivity between the northwest wetland complex and Cedar Lake.

### **Recommendations for the 2022 Monitoring Program**

- 1) Additional hydraulic improvements for both Sherman Creek and Jones Ditch areas including the maintenance of the railroad culverts to increase watershed flows;
- 2) Further calibration of the Jones Ditch discharge equation with new piezometer data along with wetland topographic data to determine volume control options for surface and groundwater flow enhancements.
- 3) Redeployment of some ground water piezometers to the northeast gap to verify groundwater losses along the northeast shoreline.

**Figure 2. Historic Summer (Jun - Sep) Precipitation Totals for Cedar Lake**

*[Precipitation Sources: Cedar Lake Rain Gauge, Alcona County, MI,  
Harrisville 2 NNE (USC00203628), Alcona County, MI  
Oscoda Wurtsmith Airport (Station #14808), Iosco County, MI*

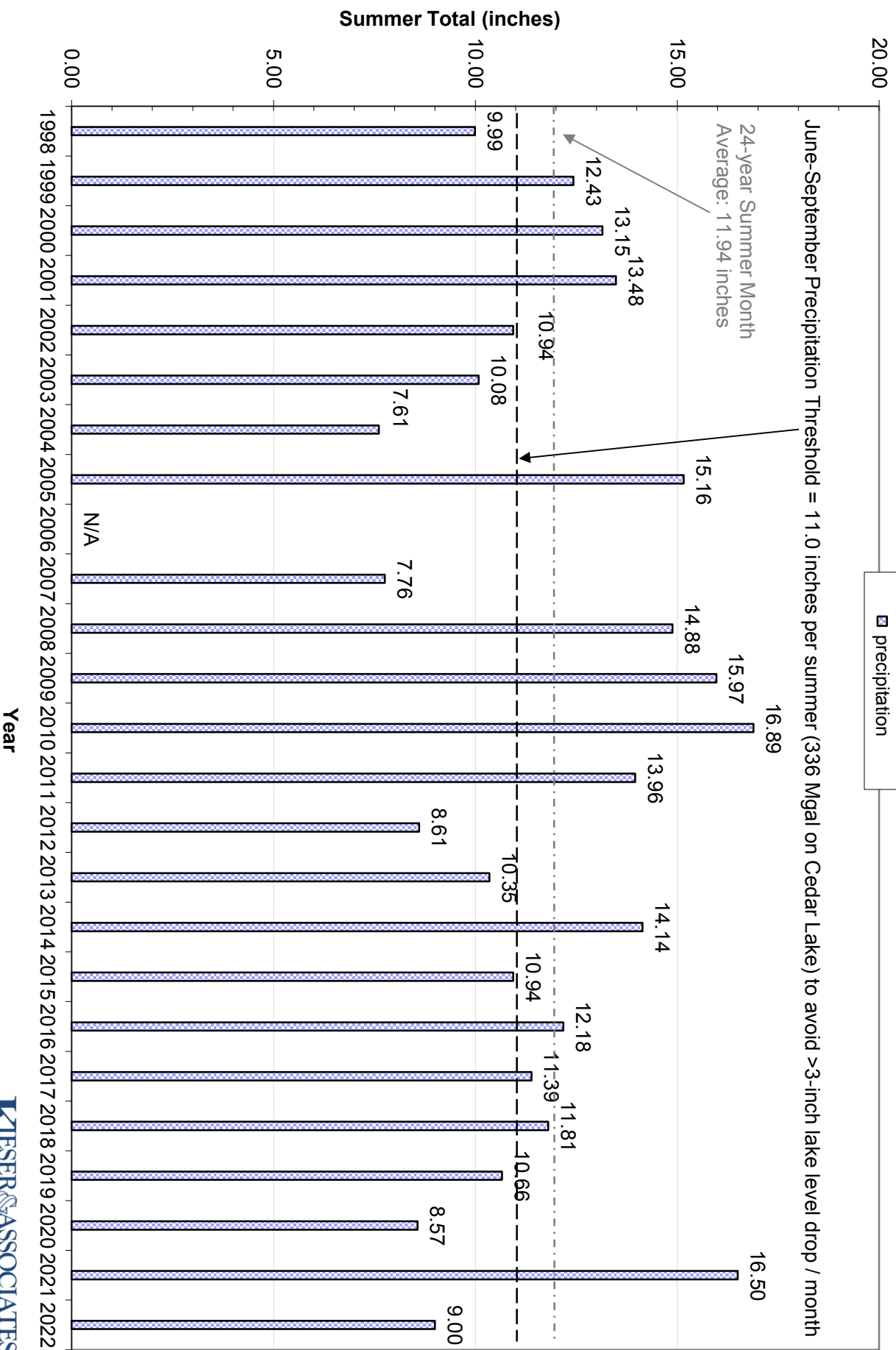
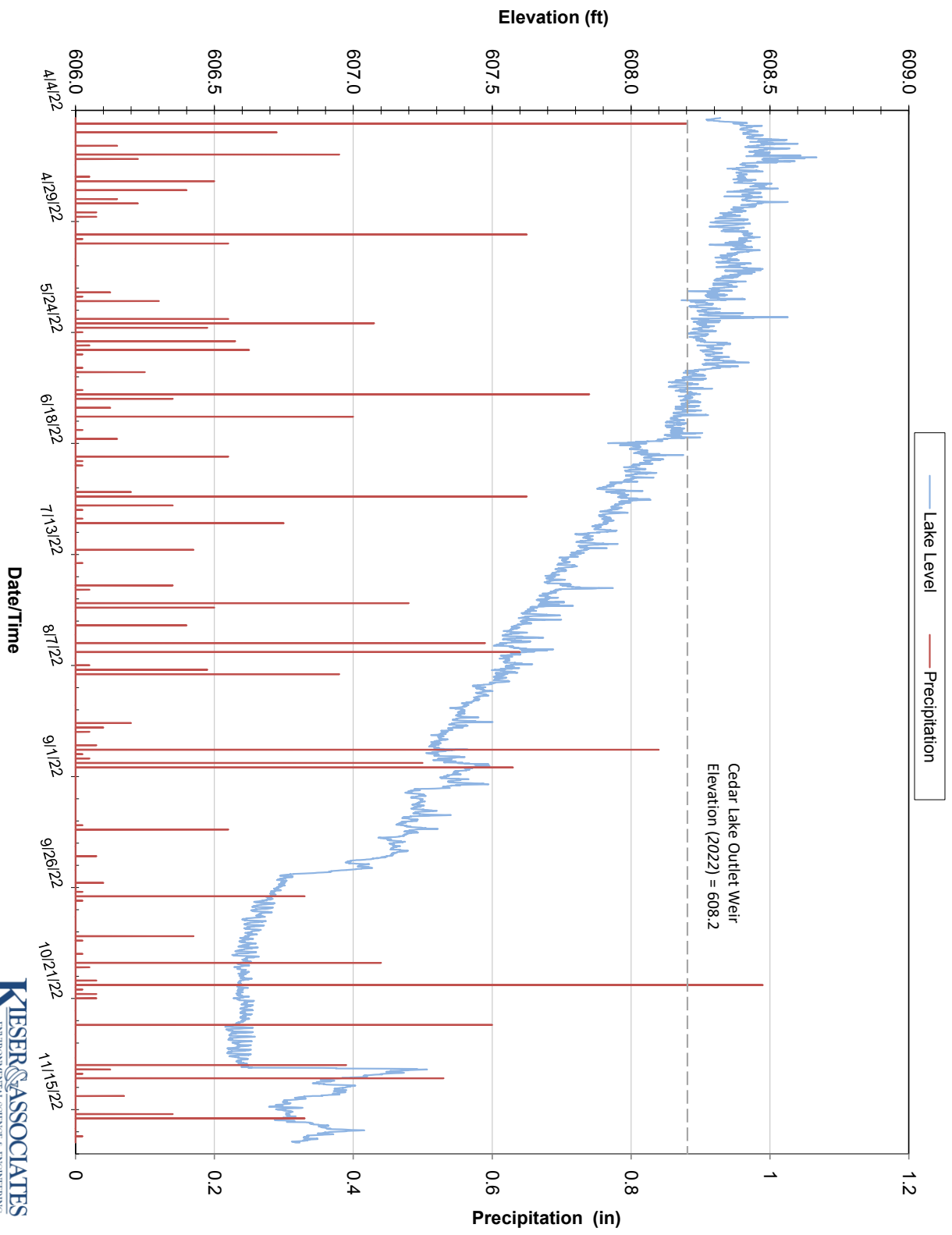


Figure 3. 2022 Cedar Lake Water Elevation and Measured Rainfall



**Figure 2. Historic Summer (Jun - Sep) Precipitation Totals for Cedar Lake**

*[Precipitation Sources: Cedar Lake Rain Gauge, Alcona County, MI,  
Harrisville 2 NNE (USC00203628), Alcona County, MI  
Oscoda Wurtsmith Airport (Station #14808), Iosco County, MI*

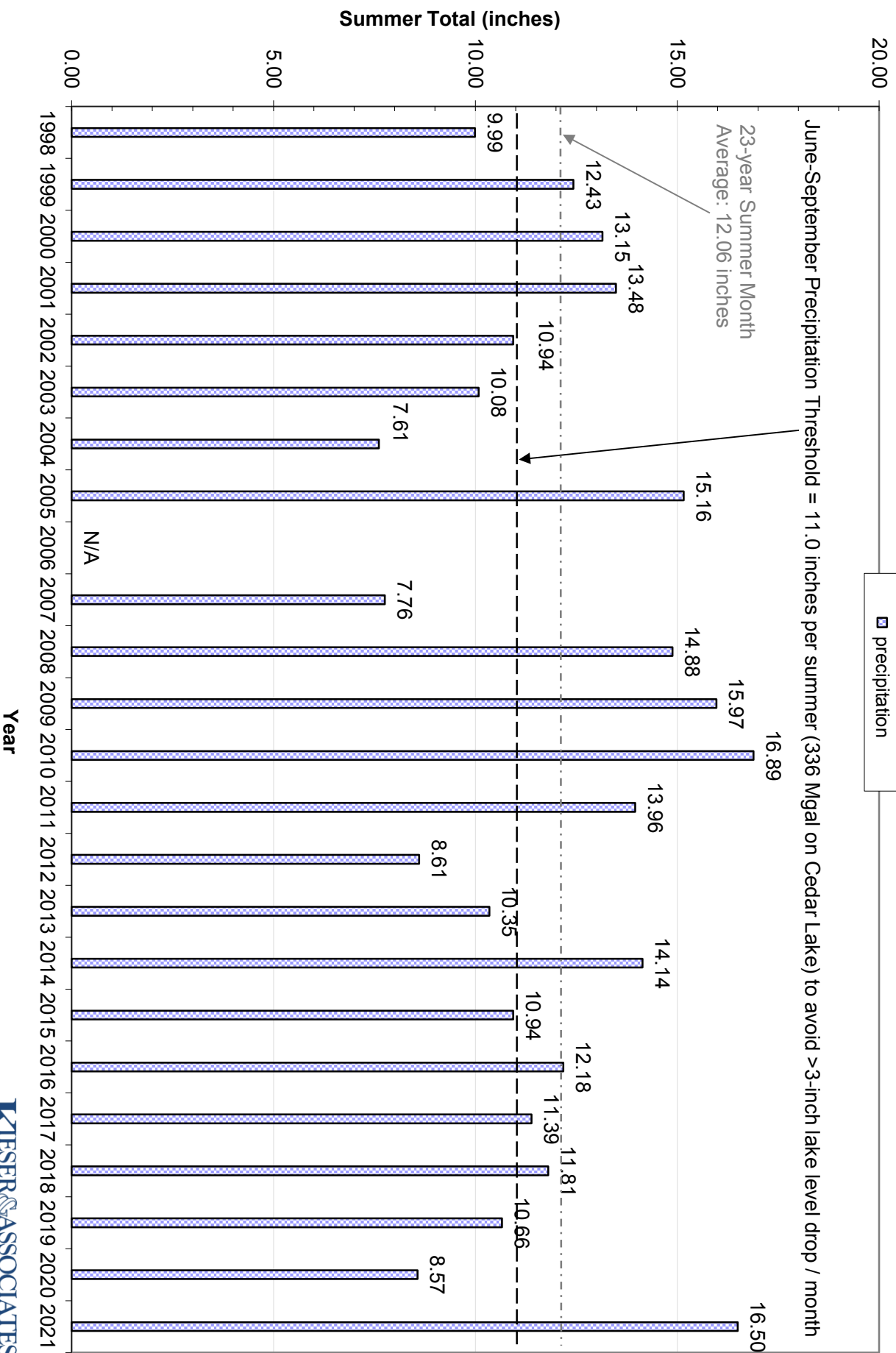
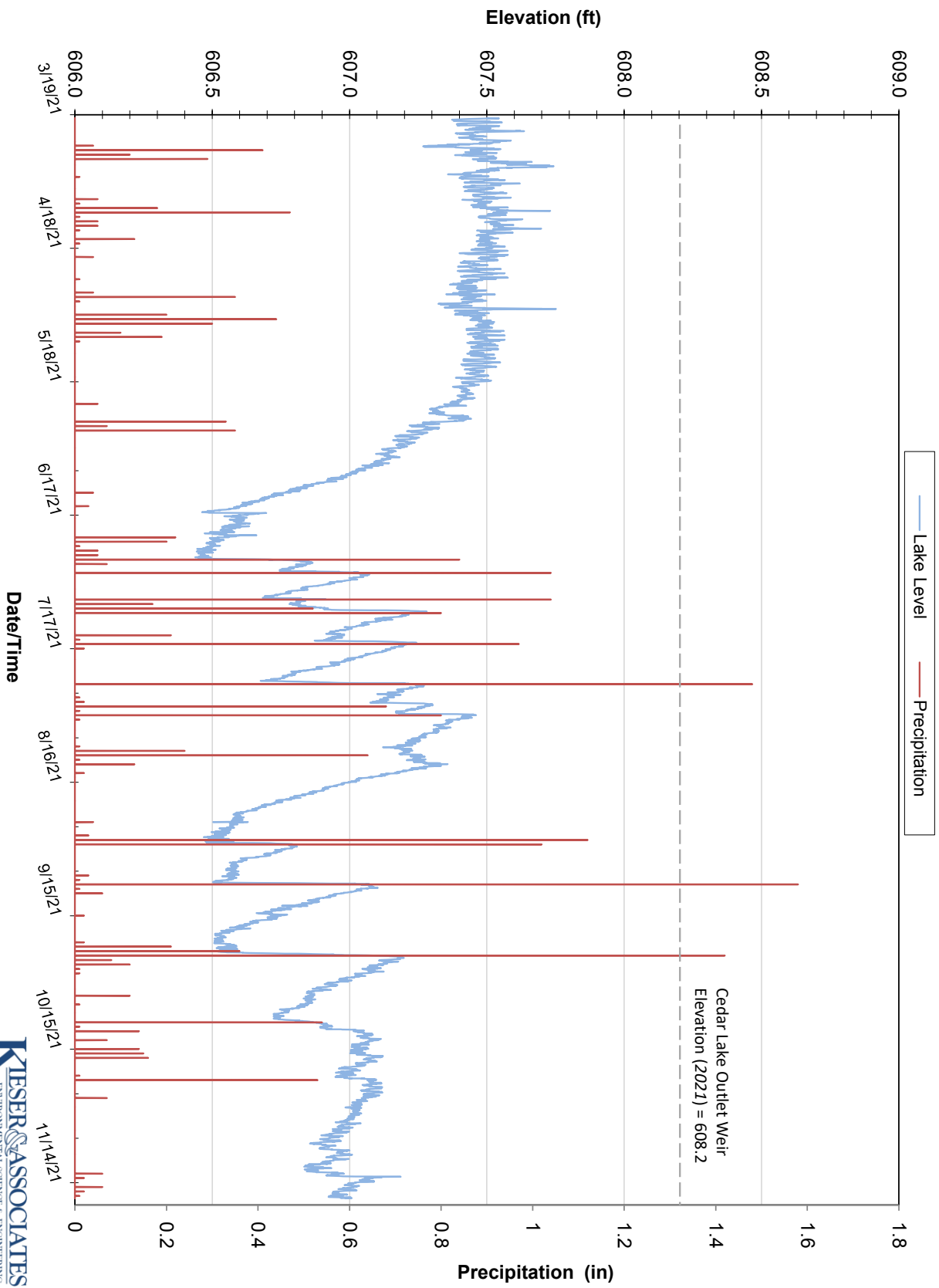


Figure 3. 2021 Cedar Lake Water Elevation and Measured Rainfall



**Figure 2. Historic Summer (Jun - Sep) Precipitation Totals for Cedar Lake**

*(Precipitation Sources: Cedar Lake Rain Gauge, Alcona County, MI,  
 Harrisville 2 NNE (USC00203628), Alcona County, MI  
 Oscoda Wurtsmith Airport (Station #14808), Iosco County, MI*

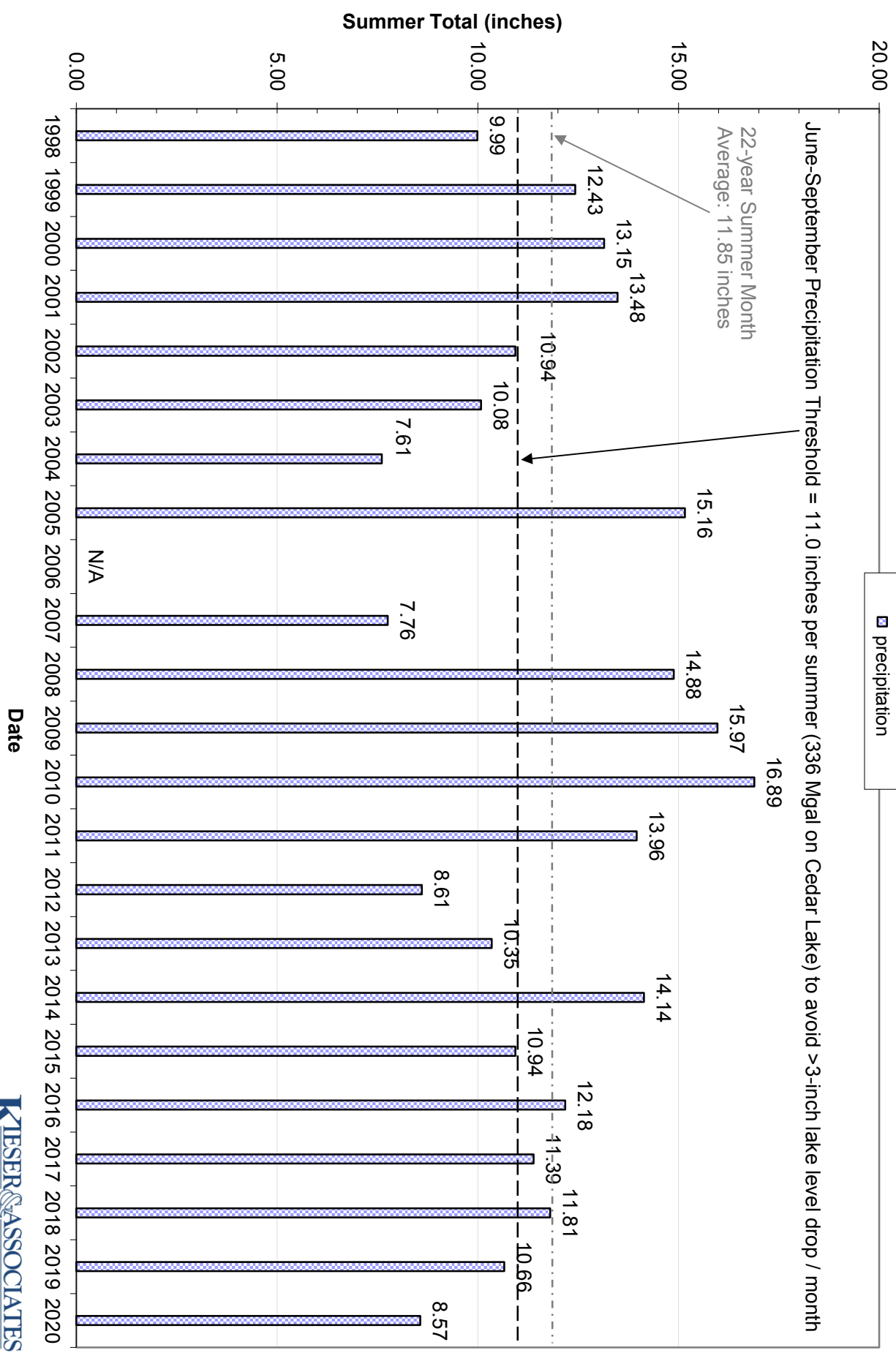
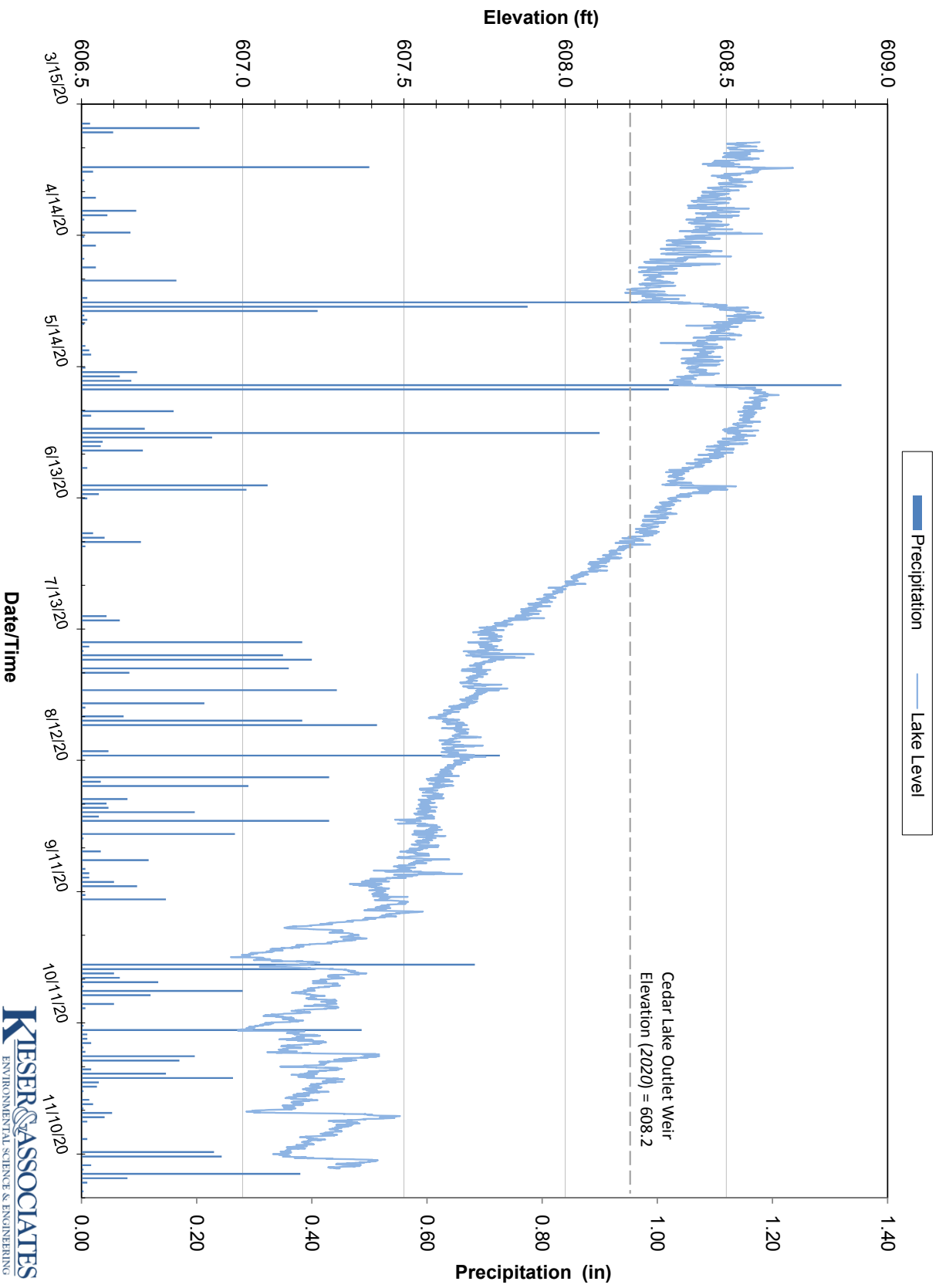


Figure 3. 2020 Cedar Lake Water Elevation and Measured Rainfall



**Figure 2. Summer (Jun - Sep) Precipitation Totals for Cedar Lake**

*(Precipitation Sources: Cedar Lake Rain Gauge, Alcona County, MI  
 Harrisville 2 NNE (USC00203628), Alcona County, MI  
 Oscoda Wurtsmith Airport (Station #14808), Iosco County, MI  
 East Tawas (US*

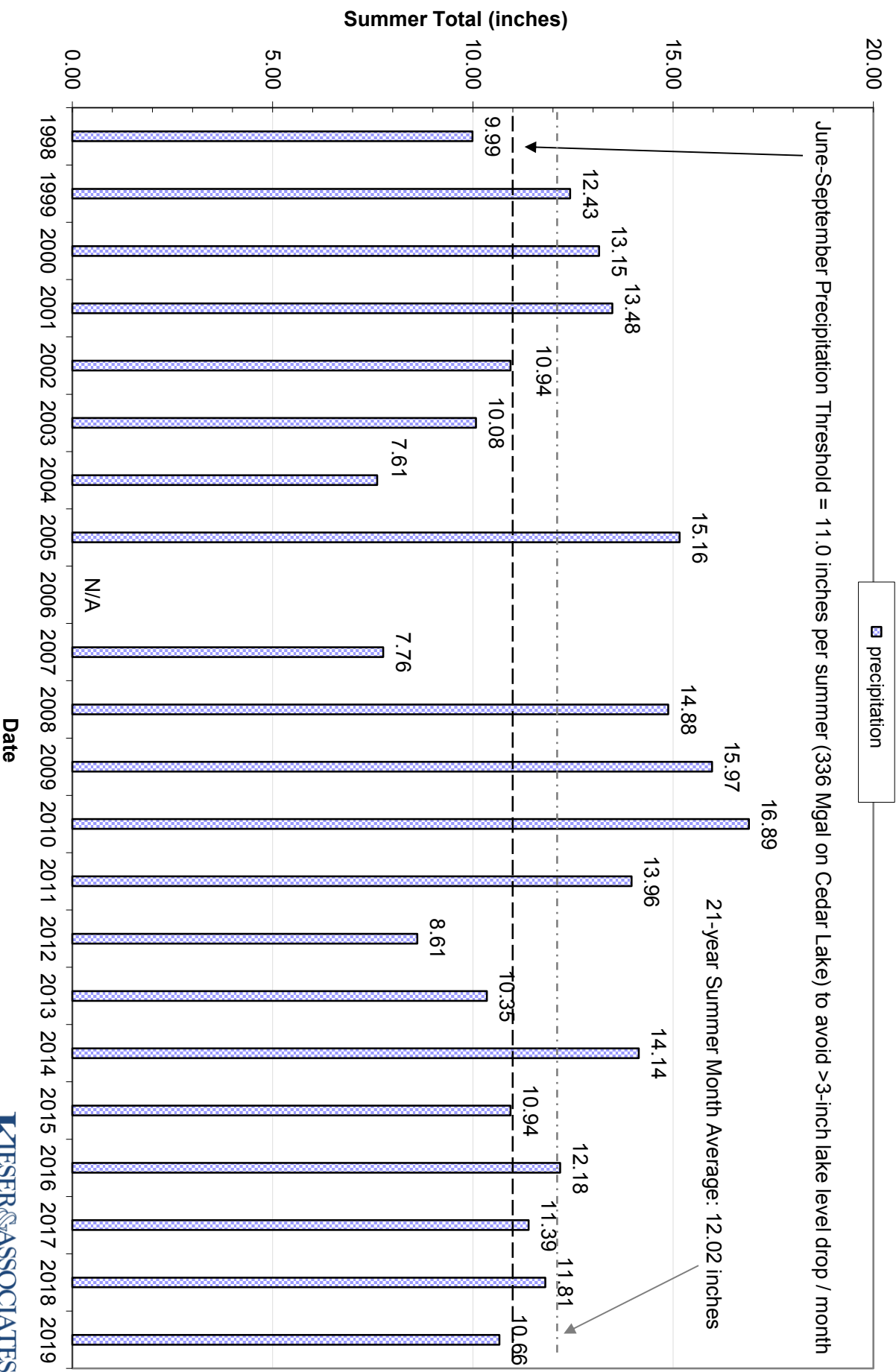
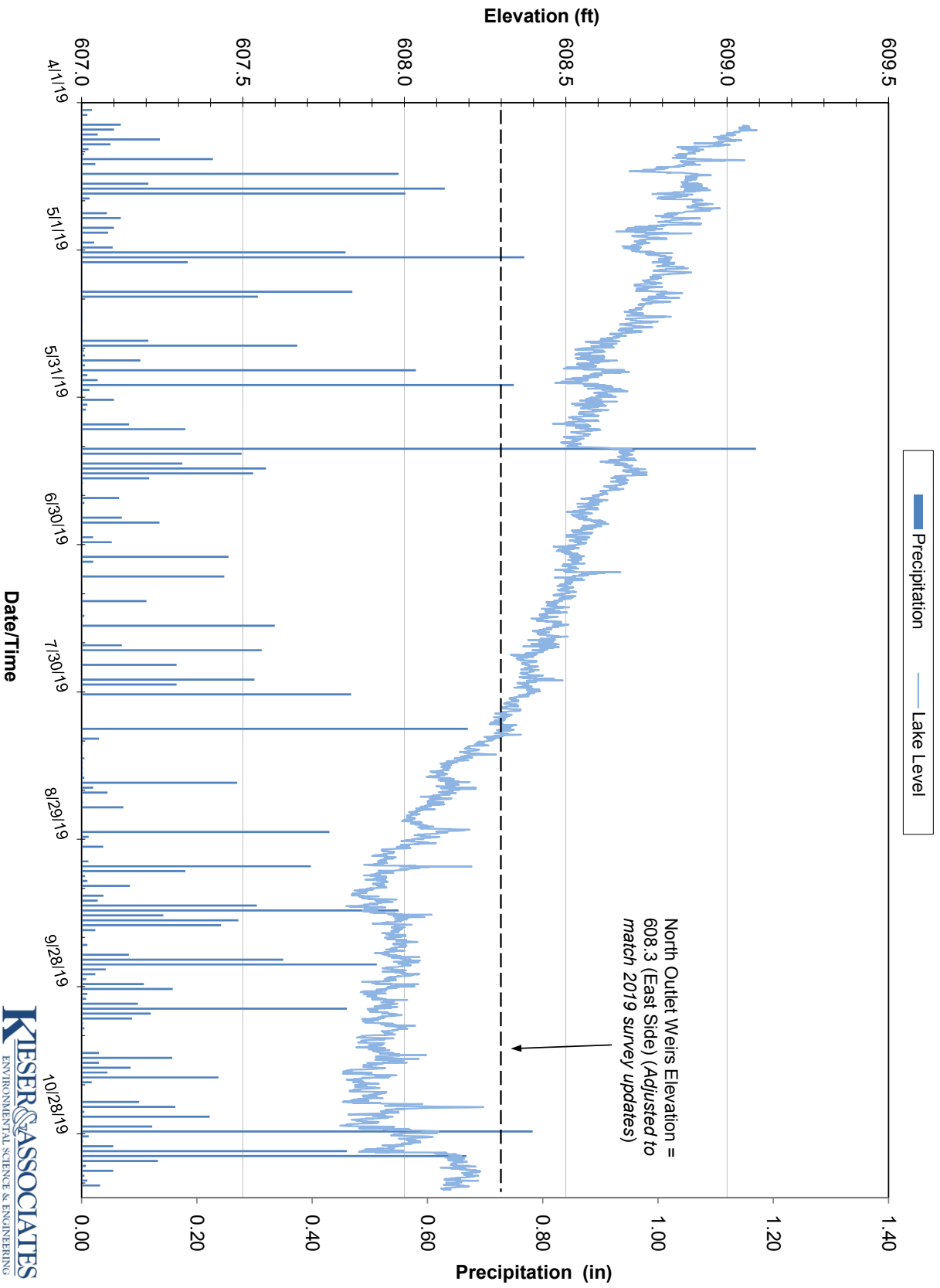




Figure 3. 2019 Cedar Lake Water Elevation and Measured Rainfall



A Summary of Findings from LakeScan™  
Guided Surveys and Analysis of:

# Cedar Lake North

Iosco County

2022 DATA AND ANALYSIS SUMMARY REPORT WITH MANAGEMENT RECOMMENDATIONS

February 28, 2023

Submitted by:

**Mark S. Kieser, Senior Scientist**  
**Mike Foster, Environmental Engineer**  
*Kieser & Associates, LLC*  
**Doug Pullman, PhD**  
*Aquest*



## Executive Summary

Kieser & Associates, LLC (K&A) conducted vegetation monitoring on Cedar Lake (Alcona and Iosco Counties, MI) during the summer of 2022 using LakeScan™ assessment methods. The purpose of these efforts was to assess aquatic vegetation during the summer recreational season in the context of nuisance conditions and management needs/outcomes. LakeScan™ methods combine detailed field data collection with mapping capabilities and whole-lake analyses based on established scientific metrics to score various lake conditions. This approach allows lake managers to readily and consistently identify successful lake management activities highlight potential issues requiring intervention, and gather critical planning information necessary for improving the lake’s ecological and recreational conditions.

Cedar Lake North averaged scores from early-season and late-season LakeScan™ 2022 surveys are summarized in Table ES - 1.<sup>1</sup> Results show scores met or exceeded management goals for all LakeScan™ Metrics. High scores for the Shannon Biodiversity and Shannon Morphological indices indicate Cedar Lake North has a diverse plant community harboring good habitat for fish and macroinvertebrates. The consistently high Floristic Quality Index results indicate a higher distribution of desirable, native plant species and a lower distribution of undesirable species, such as Eurasian watermilfoil (*Myriophyllum spicatum x sibiricum*; EWM). Recreational Nuisance Presence was below the optimal management goal of <10%, which is an improvement from previous years. Eurasian watermilfoil presented some nuisance conditions, but most were caused by native species such as variable-leaf watermilfoil (*Myriophyllum heterophyllum*), variable pondweed (*Potamogeton gramineus*), Richardson’s pondweed (*Potamogeton richarsonii*), and wild celery (*Vallisneria americana*). These species exhibited growth that could impede boating activities due to the location and height in the water column. The Algal Bloom Risk rating for Cedar Lake North is “low” reflecting the low proportion of agricultural and urban land use draining to the lake.

Table ES-1 – Summary of lake analysis metrics.

LakeScan™ Metrics	2022 Average	Management Goal
Species Richness	23	n/a
Shannon Biodiversity Index	11.0	> 8.4
Shannon Morphology Index	8.2	> 6.0
Floristic Quality Index	28.1	> 20
Recreational Nuisance Presence	5%	< 10%
Algal Bloom Risk	Low	Low

<sup>1</sup> See LakeScan™ Metrics section for a more detailed explanation of these management indices.

The Cedar Lake North early-season Lakescan™ vegetation survey was conducted on Wednesday, July 13, 2022. Variable-leaf watermilfoil, variable pondweed, Illinois pondweed (*Potamogeton Illinoensis*), *Chara* (*Chara sp.*), naiad (*Najas sp.*), and elodea (*Elodea canadensis*) were among the most common native species observed during the early-season survey. Emergent plants observed included white water-lily (*Nymphaea odorata*), spatterdock (*Nuphar advena*), and bullrush (*Scirpoides holoschoenus*). The only aquatic invasive species observed was Eurasian watermilfoil. Nuisance conditions were primarily found within the trenches and offshore (Tier 4 AROS) along the western shoreline.

The late-season LakeScan™ survey on North Cedar took place on Tuesday, September 20, 2022. The most common native species observed during the vegetation survey include variable-leaf watermilfoil, variable pondweed, Illinois pondweed, Richardson’s pondweed, wild celery, naiad, and *Chara*. Eurasian watermilfoil was again the only aquatic invasive species observed. Abundances of EWM were much lower compared to the early-season survey, suggesting that the late-season treatments successfully controlled the population.

For this report, K&A also analyzed the past five years of LakeScan™ data for invasive species coverage (Figure ES -1). Cedar Lake North’s Eurasian watermilfoil coverage maintains a minimal presence and has begun to exhibit a slight downward trend over the past five years. It is likely management activities are successfully controlling the Eurasian watermilfoil population and suppressing any additional population growth. While variable-leaf watermilfoil is not considered an invasive species, it does contribute to nuisance conditions on Cedar Lake. Over the last five years, variable-leaf watermilfoil has exhibited a slight decrease in coverage, after two relatively high coverage years in 2019 and 2020. This suggests that recent management activities have been an effective means to suppress the growth of this species. During both 2021 and 2022, variable-leaf watermilfoil coverage decreased from previous highs to 3.8% and 3.7%, respectively.

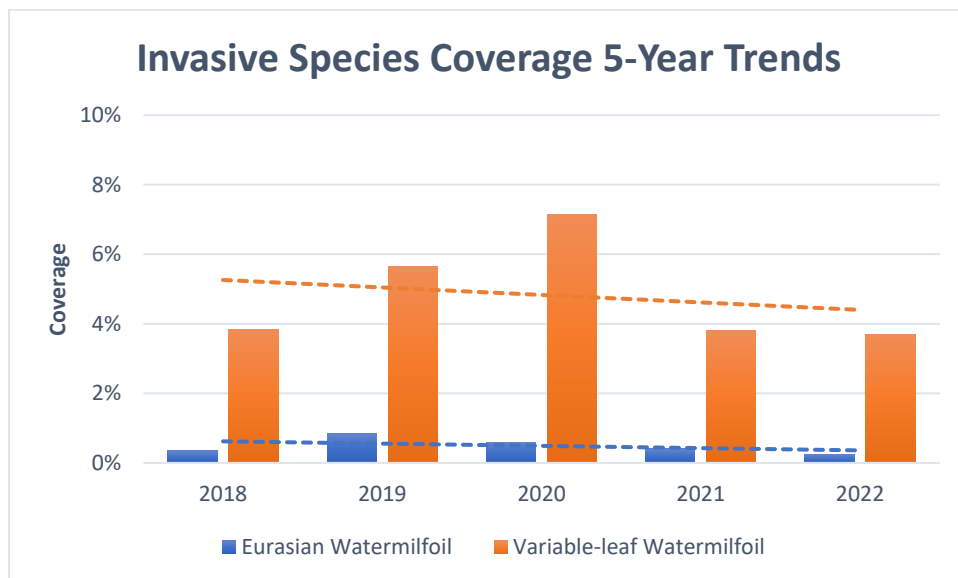


Figure ES-1 – Invasive and Nuisance Species Coverage 5-year Trends.

Based on 2022 findings, K&A recommends the following management considerations for 2023:

- **Continued management intervention is recommended for Eurasian watermilfoil.** Eurasian watermilfoil coverages have trended downward over the last five years and coverage in 2022 was the lowest observed since 2018. Thus, current management interventions appear to be effective at suppressing growth and reducing the cumulative coverage of EWM. Cedar Lake Improvement Board should explore the use of new chemical technologies as they become available to treat Eurasian watermilfoil residing in the northern trenches.
- **Continued ProcelleCOR applications to treat Eurasian watermilfoil in the northern trenches of Cedar Lake North is recommended.** Recent ProcelleCOR applications in Cedar Lake appear to have been an effective strategy for treating Eurasian watermilfoil in 2021 and 2022. Applications and testing should continue through 2023 to determine if ProcelleCOR continues to be an effective means to control Eurasian watermilfoil.
- **Consider a combination of management strategies to control EWM,** such as diver assisted suction harvesting (DASH), with targeted herbicide applications to reach even lower populations of target species. K&A recommends a desktop feasibility assessment for 2023 that will look at potential costs and effectiveness of DASH being used in other Michigan and Midwest settings.
- **Continue to monitor coverage and nuisance conditions of Variable-leaf watermilfoil.** Treatments in 2020 targeting variable-leaf watermilfoil causing recreational nuisance conditions should have lasting effects for up to three years. Based on 2021 and 2022 LakeScan™ surveys, the 2020 treatments appear to have suppressed nuisance conditions. It will be important to closely monitor these areas to see if treatment results persist into 2023.
- **K&A recommends exploring alternative management strategies to control native aquatic plant nuisance conditions.** Because EGLE restricts chemical treatments for native aquatic plant nuisance conditions, it may be feasible to explore other options, such as harvesting, to alleviate nuisance variable-leaf watermilfoil conditions in the future.
- **Continued LakeScan™ vegetation monitoring twice a year** (once during the late-spring or early-summer and another during the late-summer) is recommended to assess aquatic vegetation during the growing season. Information collected during these surveys allows lake managers to readily and consistently identify successful lake management activities, highlight potential issues requiring intervention, and gather critical information necessary to improve the lake's ecological and recreational conditions.

A Summary of Findings from LakeScan™  
Guided Surveys and Analysis of:

# Cedar Lake South

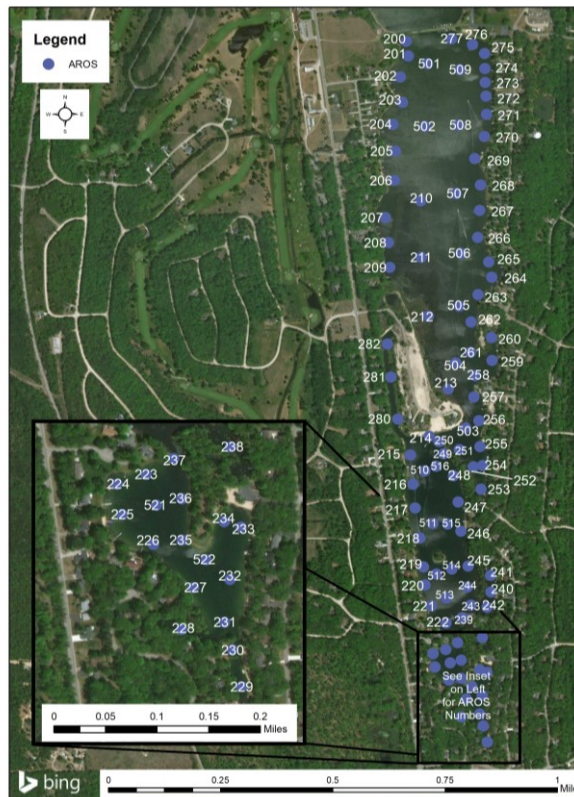
Iosco County

2022 DATA AND ANALYSIS SUMMARY REPORT WITH MANAGEMENT RECOMMENDATIONS

February 27, 2023

Submitted by:

**Mark S. Kieser, Senior Scientist**  
**Mike Foster, Environmental Engineer**  
*Kieser & Associates, LLC*  
**Doug Pullman, PhD**  
*Aquest*



## Executive Summary

Kieser & Associates, LLC (K&A) conducted vegetation monitoring on Cedar Lake South (Iosco County, MI) during the summer of 2022 using LakeScan™ assessment methods with the support of Doug Pullman of Aquest. The purpose of these efforts was to assess aquatic vegetation during the summer recreational season in the context of nuisance conditions and management needs/outcomes. LakeScan™ methods combine detailed field data collection with mapping capabilities and whole-lake analyses based on established scientific metrics to score various lake conditions. This approach allows lake managers to readily and consistently identify successful lake management activities, highlight potential issues requiring intervention, and gather critical planning information necessary for improving the lake’s ecological and recreational conditions.

Cedar Lake South averaged scores from early-season and late-season LakeScan™ 2022 surveys are summarized in Table ES - 1.<sup>1</sup> Results indicate scores meeting management goals set for all LakeScan™ analysis metrics. These scores indicate a diverse plant community harboring good habitat for fish and macroinvertebrates. The high Floristic Quality Index score indicates a higher distribution of desirable, native plant species and a lower distribution of undesirable species, such as Eurasian watermilfoil (*Myriophyllum spicatum x sibiricum*; EWM). Recreational Nuisance Presence also met management goals, suggesting that in 2022 very few problematic aquatic plant conditions were present in this southern portion of Cedar Lake. The Algal Bloom Risk rating for Cedar Lake South is “low” reflecting the low proportion of agricultural and urban land use draining to the lake.

Table ES-1 – Summary of lake analysis metrics.

LakeScan™ Metrics	2022 Average	Management Goal
Species Richness	23.0	n/a
Shannon Biodiversity Index	10.2	> 8.4
Shannon Morphology Index	7.3	> 6.0
Floristic Quality Index	27.3	> 20
Recreational Nuisance Presence	1%	< 10%
Algal Bloom Risk	Low	Low

The Cedar Lake South early-season LakeScan™ vegetation survey was conducted over the course of two days; the afternoon of Wednesday, July 13, 2022 and the morning of Thursday, July 14, 2022. The most common native species observed during the early-season survey include variable pondweed, Illinois pondweed (*Potamogeton Illinoensis*), Richardson’s pondweed (*Potamogeton richardsonii*), sago

<sup>1</sup> See LakeScan™ Metrics section for a more detailed explanation of these management indices.

pondweed (*Stuckenia pectinata*), and *Chara* (*Chara sp.*) Eurasian watermilfoil was the only aquatic invasive species observed during the survey. In the past, a small population of starry stonewort (*Nitellopsis obtusa*; SSW) has occasionally been observed in South Cedar Lake; however, no observations of this species were made during the early-season survey.

The late-season LakeScan™ vegetation survey on Cedar Lake South was conducted over the course of two days; Tuesday, September 20, 2022 and Wednesday, September 21, 2022. *Chara*, naiad (*Najas sp.*), Illinois pondweed, Richardson’s pondweed, and variable pondweed were the most dominant native species observed during the late-season survey. Aquatic invasive species (AIS) observed during this survey included Eurasian watermilfoil and starry stonewort. The latter AIS was not observed in 2021.

For this report, K&A also analyzed the past 5 years of LakeScan™ data for invasive species coverage (Figure ES -1). Cedar Lake South’s coverage of Eurasian watermilfoil has exhibited a slight increasing trend and starry stonewort has exhibited a slightly decreasing trend over the last five years. In 2022, starry stonewort was only observed during the late-season survey at low abundances. Despite the increasing trend of EWM, coverage in 2022 was the lowest observed since 2019. Variable-leaf (native) watermilfoil (*Myriophyllum heterophyllum*; VWM) coverage has decreased over the last five years, suggesting that management activities have suppressed growth for this particular species.

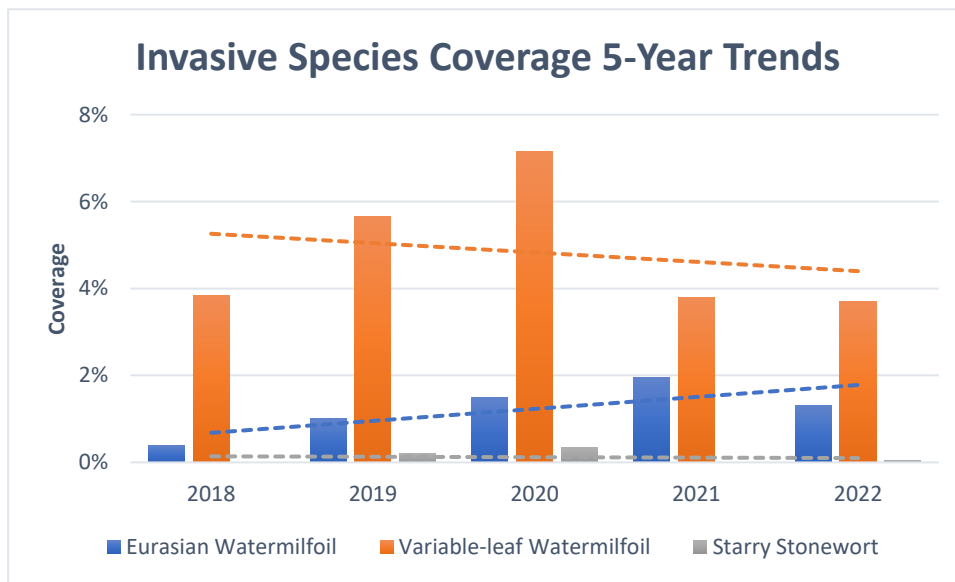


Figure ES-1 – Invasive and nuisance species coverage 5-year trends.

Based on 2022 findings, K&A recommends the following management considerations for 2023:

- **Continued Eurasian watermilfoil management is recommended.** The trend in percent coverage of Eurasian watermilfoil over the past 5-year has slightly increased, though current management activities still appear to be suppressing its growth.
- **K&A suggests considering a combined management approach of physical and chemical management techniques** to reach even lower populations of Eurasian watermilfoil and other target species. Due to EGLE’s restrictions on chemical usage within Cedar Lake, it may be beneficial to utilize diver assisted suction harvesting (DASH) to remove nuisance species. DASH management has shown positive results for controlling and reducing aquatic invasive species



populations. Utilizing DASH in targetted areas could allow for management during times when chemical applications are restricted, potentially further reducing Eurasian watermilfoil populations. Manual physical removal of the limited starry stonewort observation in late summer could provide a reasonable alternative for control as EGLE copper-based algacide restrictions become more imposing, particularly with the 2022 confirmed presence of the endangered Eastern pondmussel, *Sagittunio nasutus* (originally referred to as, *Ligumia nasuta*).

- **K&A recommends consideration of harvesting be explored to control native plant nuisance conditions.** Native aquatic plants, such as variable watermilfoil, tend to create recreational nuisances on Cedar Lake South. Locations that received the September 2020 treatment did, however, still appear to have suppressed variable watermilfoil growth. These observations suggest that the chemical treatment of variable-leaf watermilfoil was successful. Because EGLE restricts chemical applications to treat native aquatic plant nuisance conditions, chemical treatment of natives may continue to become more difficult. Management strategies such as aquatic weed harvesting could help to alleviate native plant nuisance conditions as chemical usage becomes more restricted.
- **Continued LakeScan™ vegetation monitoring twice a year** (once during the spring-early summer and another during the late summer) to assess aquatic vegetation during the growing season is recommended. Information collected during these surveys allows lake managers to readily and consistently identify successful lake management activities, highlight potential issues requiring intervention, and gather critical information necessary to improve the lake's ecological and recreational conditions.

03/20/2023 10:18 AM  
VALUED CUSTOMER

TRANSACTION # 4016947  
DOCUMENT # 20230000988

SURVEY

RECORDING FEE: 30.00  
TOTAL: 30.00  
CASH: 30.00 REX

THANK YOU

MELISSA A. CORDES  
REGISTER OF DEEDS  
ALCONA COUNTY MICHIGAN

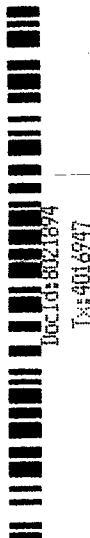
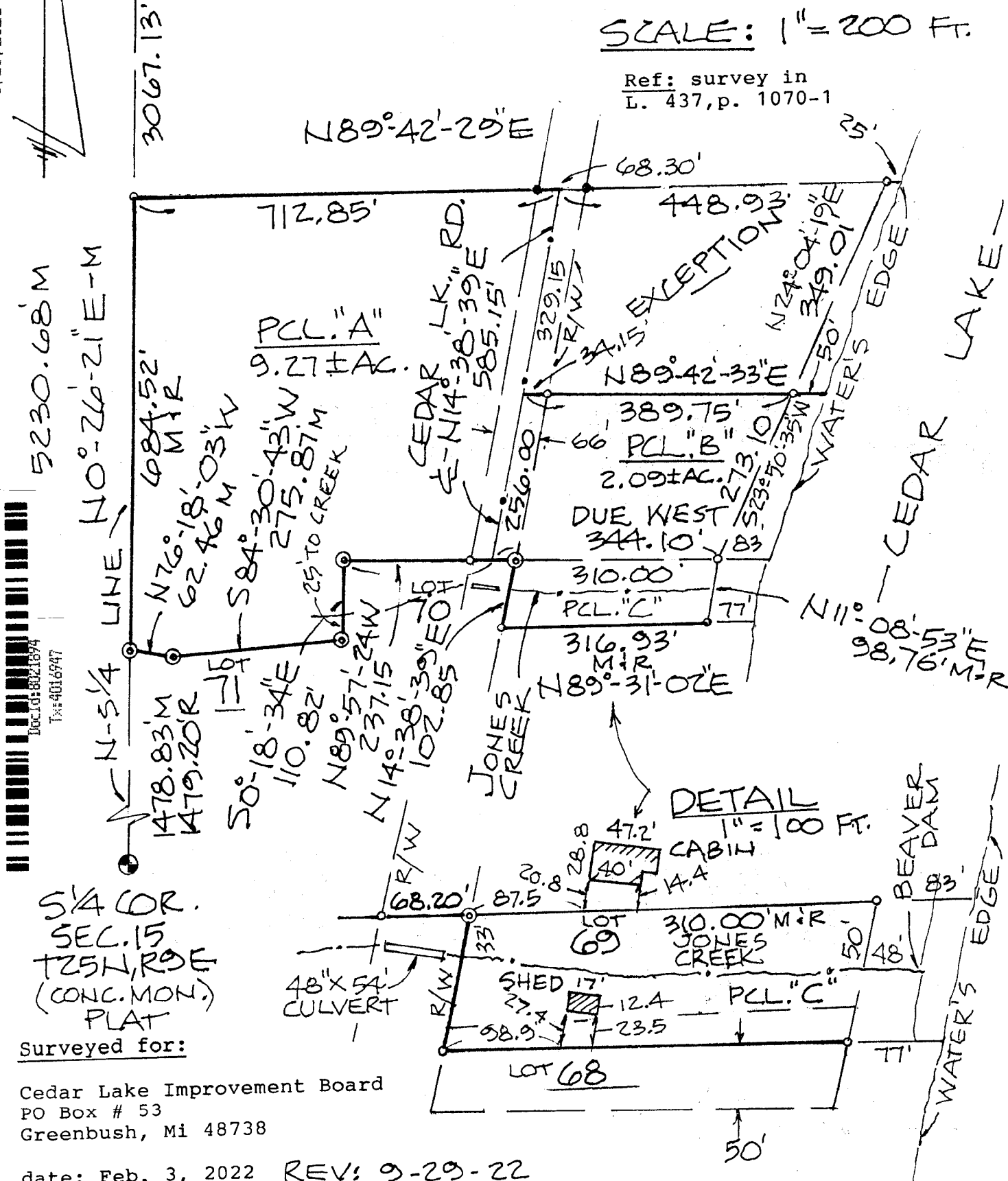
N 1/4 COR.  
SEC. 15  
T25N, R9E  
(PAVT. BOX)  
WISSMILLER  
RD.

**LEGEND:**

- = SET 1/2" BAR + CAP
- = FOUND IRON
- = " CONC. MON.
- M = MEASURED
- R = RECORDED

SCALE: 1" = 200 FT.

Ref: survey in  
L. 437, p. 1070-1



S 1/4 COR.  
SEC. 15  
T25N, R9E  
(CONC. MON.)  
PLAT

Surveyed for:

Cedar Lake Improvement Board  
PO Box # 53  
Greenbush, Mi 48738

date: Feb. 3, 2022 REV: 9-29-22

I, John F. Oliver, a Professional Surveyor in the State of Michigan, certify that I have surveyed the parcel(s) of land hereon described and that there are no encroachments except as shown and that I have complied with the survey requirements of Public Act 132 of 1970 and that the error of closure is less than 1 in 12,000.

John F. Oliver, P.S. 19840  
ALCONA AREA LAND SURVEY  
101 W. Millen St. box 435  
Lincoln, Mi 48742  
(989) 736-6210 fax 736-3483



202300000988  
FILED FOR RECORD IN  
ALCONA COUNTY MICHIGAN  
MELISSA A. CORDES  
03/20/2023 10:18 AM  
RECORDING FEE 30.00  
PAGES: 2

# SHEET 2 OF 2

## Descriptions of land surveyed:

Parcel "A": Commencing at the South 1/4 Corner of Section 15, T25N, R9E, Greenbush Township, Alcona County, Michigan; thence N 00°26'21"E along the North and South 1/4 line of said section, 1478.83 ft to the Point of Beginning; thence continuing N 00°26'21"E along said 1/4 line, 684.52 ft; thence N 89°42'29"E 712.85 ft; thence S 14°38'39"W along the centerline of Cedar Lake Road, 585.15 ft; thence along the North line of Lots 70 and 71 of the First Addition to McClatchey's Cedar Lake Estates Subdivision as recorded in Liber 1 of Plats, page 163 of Alcona County Records in the following four(4) courses: N 89°57'24"W 237.15 ft, S 00°18'34"E 110.82 ft, S 84°30'43"W 275.87 ft and N 76°18'03"W 62.46 ft to the Point of Beginning. Said Parcel being a part of the E-1/2 of said Section 15 and containing 9.27 acres of land, more or less. Being subject to the rights of the public over the Easterly 33 feet thereof. Also being subject to easements, restrictions and zoning of record, if any.

Parcel "B": Commencing at the South 1/4 Corner of Section 15, T25N, R9E, Greenbush Township, Alcona County, Michigan; thence N 00°26'21"E along the North and South 1/4 line of said section, 1478.83 ft; thence along the Northerly line of Lots 71 and 70 of the First Addition to McClatchey's Cedar Lake Estates Subdivision as recorded in Liber 1 of Plats, page 163 of Alcona County Records, in the following four (4) courses: S 76°18'03"E 62.46 ft, N 84°30'43"E 275.87 ft, N 00°18'34"W 110.82 ft and S 89°57'24"E 237.15 ft to the Point of Beginning; thence N 14°38'39"E along the centerline of Cedar Lake Road, 256.00 ft; thence N 89°42'33"E 389.75 ft; thence S 23°50'35"W along the shore of Cedar Lake, 273.10 ft; thence Due West along the North line of Lot 69 of said McClatchey's Plat, 344.00 ft to the Point of Beginning. Said Parcel being a part of the E-1/2 of said Section 15 and containing 2.09 acres of land, more or less. Being subject to the rights of the public over the Westerly 33 feet thereof. Side Parcel lines extend to the water's edge of Cedar Lake. Being subject to easements, restrictions and zoning of record, if any.

Parcel "C": Lot 68, EXCEPT the South 50 feet and entire Lot 69 of the First Addition to McClatchey's Cedar Lake Estates Subdivision in Section 15, T25N, R9E, Greenbush Township, Alcona County, Michigan as recorded in Liber 1 of Plats, page 163 of Alcona County Records. Containing 0.71 acres of land, more or less. Side lines extend to the water's edge of Cedar Lake. Being subject to easements, restrictions and zoning of record, if any.

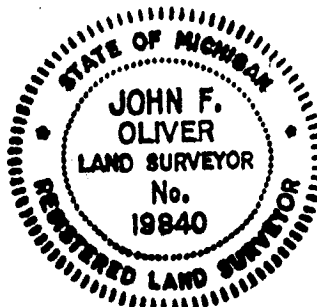
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Cedar Lake Improvement Board  
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John F. Oliver, P.S. 19840  
ALCONA AREA LAND SURVEY  
101 W. Millen St. box 435  
Lincoln, Mi 48742  
(989) 736-6210 fax 736-3483



# 2023 Calendar

## January

Su	Mo	Tu	We	Th	Fr	Sa
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	1	2	3	4

## February

Su	Mo	Tu	We	Th	Fr	Sa
29	30	31	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	1	2	3	4

## March

Su	Mo	Tu	We	Th	Fr	Sa
26	27	28	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	1

## April

Su	Mo	Tu	We	Th	Fr	Sa
26	27	28	29	30	31	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	1	2	3	4	5	6

## May

Su	Mo	Tu	We	Th	Fr	Sa
30	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	1	2	3

## June

Su	Mo	Tu	We	Th	Fr	Sa
28	29	30	31	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	1

## July

Su	Mo	Tu	We	Th	Fr	Sa
25	26	27	28	29	30	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31	1	2	3	4	5

## August

Su	Mo	Tu	We	Th	Fr	Sa
30	31	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	1	2

## September

Su	Mo	Tu	We	Th	Fr	Sa
27	28	29	30	31	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

## October

Su	Mo	Tu	We	Th	Fr	Sa
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	1	2	3	4

## November

Su	Mo	Tu	We	Th	Fr	Sa
29	30	31	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	1	2

## December

Su	Mo	Tu	We	Th	Fr	Sa
26	27	28	29	30	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	1	2	3	4	5	6