

To: Rex Vaughn, Chair
Cedar Lake Improvement Board

Date: June 15, 2026

From: Mark S. Kieser
Senior Scientist, K&A

cc: Natalie Crum, K&A

RE: **Preliminary Summary of June 3, 2026 Water Quality Sampling of Shallow Groundwater at the CLIB Property and Surface Water in Jones Ditch for *E. coli*, Total Coliform Bacteria and Soluble Reactive Phosphorus**

Overview

A June 3, 2026 water quality survey was conducted by Kieser & Associates, Inc. (K&A) of shallow groundwater at the CLIB property north of Jones Ditch, as well as surface water in Jones Ditch. These efforts were conducted at the behest of the CLIB as a follow-up to 2025 monitoring that identified possible local sources of elevated phosphorus and bacteria in Jones Ditch, as well as shoreline areas adjacent to the confluence of the ditch and lake.

Sampling Conditions on June 3, 2026

A previous November 24, 2025 attempt by K&A to retrieve a shallow groundwater sample at the CLIB property directly adjacent to, and north of Jones Ditch was unsuccessful due to non-water bearing lithology encountered in the wetland immediately downgradient of the historic septic system drain field. The June 3, 2026 sampling was conducted further to the west of the 2025 attempted groundwater sampling location in the former yard area of the original cabin on the CLIB property. Two manually installed, shallow groundwater monitoring wells encountered groundwater approximately 6 feet below ground surface at locations approximating downgradient conditions of the former drain field. One-inch diameter, stainless steel groundwater monitoring well materials were used to retrieve groundwater samples via low-flow pumping. Each well was purged for approximately 20 minutes before sampling, recovering between 1.5-3.0 gallons of groundwater before samples were retained for bacterial and soluble reactive phosphorus (SRP) samples. This methodology is consistent with groundwater monitoring at the Cedar Lake shoreline conducted by K&A in November 2025 (as reported on November 18, 2026).

Figure 1 identifies the two locations on the CLIB property where groundwater sampling was completed. In addition to groundwater sampling, three surface water samples were taken from Jones Ditch; one just to the west of the West Cedar Lake Road culvert

crossing, a second at the private walking bridge moving east from the roadway between the CLIB property and the property to the south of Jones Ditch, and a third at a location further down Jones Ditch to the east, upstream of the confluence with Cedar Lake. Bacterial testing was conducted at the local Enviro Lab Services in Oscoda, MI for *E. coli* and Total Coliform bacteria. Samples were delivered for processing at the lab within six hours of collection.

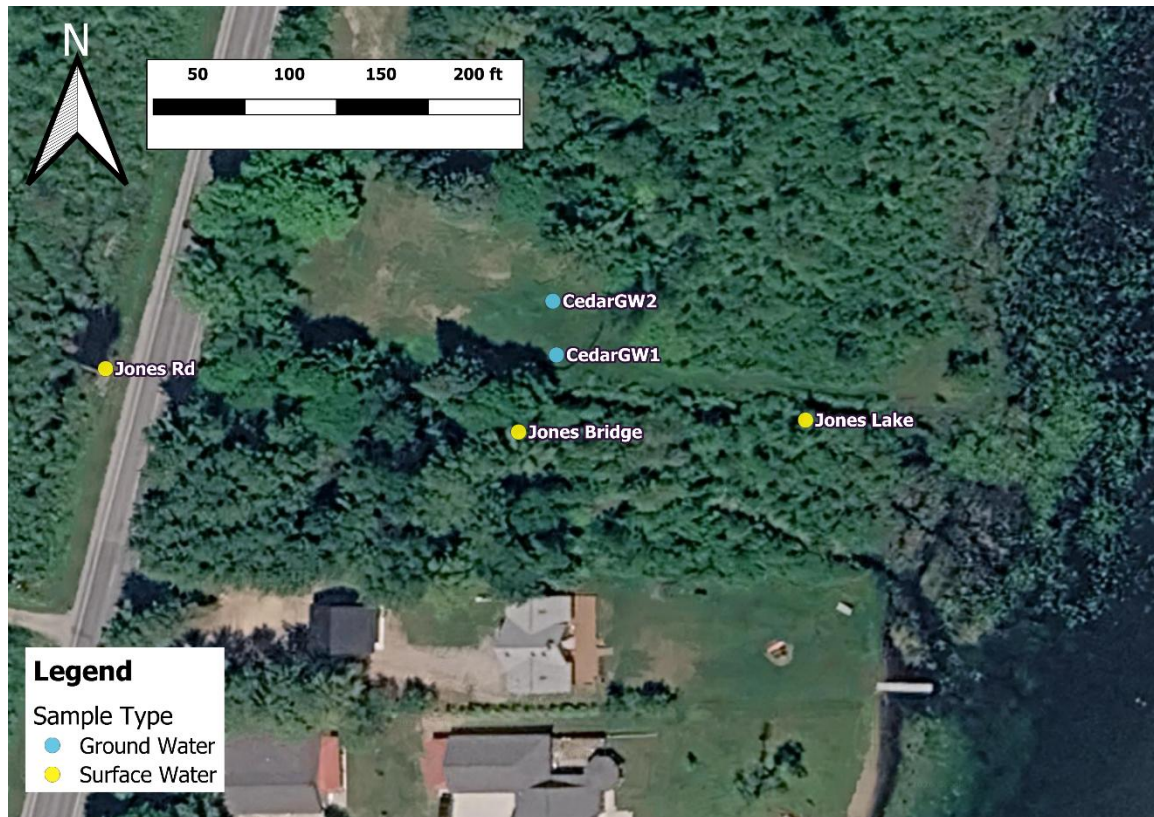


Figure 1. Groundwater and Water Quality Sampling Locations on June 3, 2026.

Preliminary Findings

Results of groundwater sampling at the Jones Ditch CLIB property and Jones Ditch surface water samples are shown in Table 1. SRP lab analyses and results are pending. Attachment A includes a copy of lab results for bacterial analyses.

Groundwater sampling results were non-detect for both *E. coli* and Total Coliform bacteria suggesting that there are no indications of residual discharge impacts from the former septic system at this location. For Jones Ditch, both *E. coli* and Total Coliform results showed elevated levels of bacteria. The lowest concentrations were seen at West Cedar Lake Road (“Jones Rd”), the highest concentrations were observed at the pedestrian bridge (“Jones Bridge”), while intermediate levels were noted above the confluence with Cedar Lake (“Jones Lake”) (refer to Figure 1).

Table 2. Groundwater and Water Quality Sampling Bacterial Results from June 3, 2026 (SRP results are pending laboratory analysis).

Sample Description	Type	Sampling Date	Time	Conductivity (µs/cm)	E. coli (CFU/100mL)	Total Coliforms (CFU/100mL)	SRP (µg/L)
CedarGW1	GW	6/3/2026	9:40	424.6	ND	ND	(pending)
CedarGW2	GW	6/3/2026	10:15	433.6	ND	ND	(pending)
Jones Lake	SW	6/3/2026	10:45	234.3	330	1,280	(pending)
Jones Bridge	SW	6/3/2026	11:00	376.1	1,112	3,620	(pending)
Jones Rd	SW	6/3/2026	11:20	434.4	120	1,190	(pending)

It is preliminarily suspected that a possible source for the higher bacteria concentrations noted halfway down the ditch may be related to an active septic system to the south of the ditch. A tile field drain on the property to the south may be located closer to West Cedar Lake Road and Jones Ditch as suggested by the county health department in 2025. December 2025 sampling along the Cedar Lake shoreline at this residence revealed no substantial indications of a drain field discharge to the east. Additional sampling of groundwater might be warranted in this area on the south side of Jones Ditch to determine if there are possible septic system discharges into the ditch.

Elevated levels at West Cedar Lake Road suggest that there is also an upstream source of *E. coli* and Total Coliform bacteria at this location. A second round of surface water monitoring along the Jones Ditch water course should include collection of additional water quality samples for DNA analysis by the Green Lakes and Environmental Center lab in Traverse City, MI. These samples could help identify if these are human and/or animal sources of observed bacterial levels in the ditch. A flow net analysis of groundwater flow direction towards the deeply incised ditch channel will further reveal the potential for contributions from adjacent properties. Sourcing will be important given high bacterial levels in the ditch along with background water quality considerations for the forthcoming ditch restoration through a Midwest Glacial Lakes Partnership grant to the CLIB.

ATTACHMENT A

Surface and Groundwater Monitoring Results for June 3, 2026 Samples of *E. coli* and Total Coliform Bacteria as Analyzed by Enviro Lab Services of Oscoda, MI



USEPA Lab ID: MI9885

Michigan EGLE Lab ID: 9115

Order ID:	26060301	Client:	Kieser & Associates, LLC
Sample ID:	26060301-1	Project Name:	E. coli/ Total Coliform Enumeration
Client Sample ID:	Jones Lake	Address:	Jones Ditch, Cedar Lake Oscoda, MI
Sample Matrix:	Surface Water	Contact:	Mark Kieser
Sample Date/Time:	6/3/2026 10:45	Reporting To:	data@kieser-associates.com
Received Date/Time:	6/3/2026 12:18		rvaughn@tir.com
Sample Collected By:	Natalie Crum	Phone #:	(269) 344-7117
Analyst:	Jonas Berenkowski	Report Date:	6/5/2026

TEST: E. coli / Total Coliforms Enumeration	Analysis Date/Time:	6/3/2026 4:35:00 PM	Read Date:	6/4/2026 4:41:00 PM
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Analyte	CAS #	Method	Result	Units	Reporting Limit	MCL ^A	MCLG ^A
Total Coliforms	N/A	mColiBlue-24	1280	CFU/100mL	1	0	0
E. coli	N/A	mColiBlue-24	330	CFU/100mL	1	0	0

Definitions:

ND = Not detected
 POS = Analyte detected in sample above reporting limit
 MCL = Maximum contaminant level
 MCLG = Maximum contaminant level goal

Comments:

FINAL APPROVAL

APPROVED BY:		Lab Director	Date:	6/5/2026
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The results herein relate only to the items/batch tested, calibrated, or sampled in this report. "ND" indicates that the analyte was not detected nor present in the sample tested at levels at or above the limit of quantitation. Results only pertain to sample as recived or sampled by Enviro Lab Services Inc.

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 Phone: (620) 417-3608
www.envirolabservice.com



USEPA Lab ID: MI9885

Michigan EGLE Lab ID: 9115

Order ID:	26060301	Client:	Kieser & Associates, LLC
Sample ID:	26060301-2	Project Name:	E. coli/ Total Coliform Enumeration
Client Sample ID:	Jones Bridge	Address:	Jones Ditch, Cedar Lake Oscoda, MI
Sample Matrix:	Surface Water	Contact:	Mark Kieser
Sample Date/Time:	6/3/2026 11:08	Reporting To:	data@kieser-associates.com
Received Date/Time:	6/3/2026 12:18		rvaughn@tir.com
Sample Collected By:	Natalie Crum	Phone #:	(269) 344-7117
Analyst:	Jonas Berenkowski	Report Date:	6/5/2026

TEST: E. coli / Total Coliforms Enumeration	Analysis Date/Time:	6/3/2026 4:35:00 PM	Read Date:	6/4/2026 4:41:00 PM
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Analyte	CAS #	Method	Result	Units	Reporting Limit	MCL ^A	MCLG ^A
Total Coliforms	N/A	mColiBlue-24	3620	CFU/100mL	1	0	0
E. coli	N/A	mColiBlue-24	1112	CFU/100mL	1	0	0

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USEPA Lab ID: MI9885

Michigan EGLE Lab ID: 9115

Order ID:	26060301	Client:	Kieser & Associates, LLC
Sample ID:	26060301-3	Project Name:	E. coli/ Total Coliform Enumeration
Client Sample ID:	Jones Rd	Address:	Jones Ditch, Cedar Lake Oscoda, MI
Sample Matrix:	Surface Water	Contact:	Mark Kieser
Sample Date/Time:	6/3/2026 11:20	Reporting To:	data@kieser-associates.com
Received Date/Time:	6/3/2026 12:18		rvaughn@tir.com
Sample Collected By:	Natalie Crum	Phone #:	(269) 344-7117
Analyst:	Jonas Berenkowski	Report Date:	6/5/2026

TEST: E. coli / Total Coliforms Enumeration	Analysis Date/Time:	6/3/2026 4:35:00 PM	Read Date:	6/4/2026 4:41:00 PM
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Analyte	CAS #	Method	Result	Units	Reporting Limit	MCL ^A	MCLG ^A
Total Coliforms	N/A	mColiBlue-24	1190	CFU/100mL	1	0	0
E. coli	N/A	mColiBlue-24	120	CFU/100mL	1	0	0

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USEPA Lab ID: MI9885

Michigan EGLE Lab ID: 9115

Order ID:	26060301	Client:	Kieser & Associates, LLC
Sample ID:	26060301-4	Project Name:	E. coli/ Total Coliform Enumeration
Client Sample ID:	Cedar GW1	Address:	Jones Ditch, Cedar Lake Oscoda, MI
Sample Matrix:	Ground Water	Contact:	Mark Kieser
Sample Date/Time:	6/3/2026 9:40	Reporting To:	data@kieser-associates.com
Received Date/Time:	6/3/2026 12:18		rvaughn@tir.com
Sample Collected By:	Natalie Crum	Phone #:	(269) 344-7117
Analyst:	Jonas Berenkowski	Report Date:	6/5/2026

TEST: E. coli / Total Coliforms Enumeration	Analysis Date/Time:	6/3/2026 4:35:00 PM	Read Date:	6/4/2026 4:41:00 PM
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Analyte	CAS #	Method	Result	Units	Reporting Limit	MCL ^A	MCLG ^A
Total Coliforms	N/A	mColiBlue-24	ND	CFU/100mL	1	0	0
E. coli	N/A	mColiBlue-24	ND	CFU/100mL	1	0	0

Definitions:

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USEPA Lab ID: MI9885

Michigan EGLE Lab ID: 9115

Order ID:	26060301	Client:	Kieser & Associates, LLC
Sample ID:	26060301-5	Project Name:	E. coli/ Total Coliform Enumeration
Client Sample ID:	Cedar GW2	Address:	Jones Ditch, Cedar Lake Oscoda, MI
Sample Matrix:	Ground Water	Contact:	Mark Kieser
Sample Date/Time:	6/3/2026 10:15	Reporting To:	data@kieser-associates.com
Received Date/Time:	6/3/2026 12:18		rvaughn@tir.com
Sample Collected By:	Natalie Crum	Phone #:	(269) 344-7117
Analyst:	Jonas Berenkowski	Report Date:	6/5/2026

TEST: E. coli / Total Coliforms Enumeration	Analysis Date/Time:	6/3/2026 4:35:00 PM	Read Date:	6/4/2026 4:41:00 PM
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Analyte	CAS #	Method	Result	Units	Reporting Limit	MCL ^A	MCLG ^A
Total Coliforms	N/A	mColiBlue-24	ND	CFU/100mL	1	0	0
E. coli	N/A	mColiBlue-24	ND	CFU/100mL	1	0	0

Definitions:

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