



MEMORANDUM
Comfort Lake-Forest Lake Watershed District

Date: March 7, 2024
To: CLFLWD Board of Managers
From: Mike Kinney, District Administrator
Subject: 2024 Monitoring Plan



Background/Discussion

This memo details the tasks and costs for the District’s monitoring plan in 2024. The Board approved a total 2024 budget of \$176,144 for Program 3-003 Monitoring & Data Assessment to cover staff management/coordination, ongoing initiatives, stream, lake, wetland, and groundwater monitoring.

CLFLWD 2024 Adopted Monitoring Budget:

Account Number	Budget Item	2024 Expense Budget
3-003-4100	Staff Management/Coord.	\$83,144
3-003-A	Ongoing Initiatives	\$35,000
3-003-B	Stream Monitoring	\$36,000
3-003-C	Lake Monitoring	\$20,000
3-003-D	Wetland Monitoring	\$1,000
3-003-E	Groundwater Monitoring	\$1,000
		\$176,144

Proposed Monitoring Plan

The 2024 district-wide monitoring efforts will be led by both EOR and CLFLWD staff.

EOR will conduct long-term stream monitoring, effectiveness monitoring, and complete the District-wide monitoring reporting.

- EOR will draft the 2024 Water Monitoring Report – including both stream, lake, and effectiveness monitoring efforts.
- EOR will lead the stream monitoring effort that includes the six long-term stream sites that have been monitored in past years.
- EOR will evaluate project effectiveness on the CR50 IESF, and Hwy 61 Sunrise River wetland projects.
- EOR will collect filter media samples from the Broadway IESF to evaluate the replacement needs of the filter media.



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- EOR will use CAMP and lake monitoring data collected for Forest Lake to evaluate the effectiveness of the Forest Lake Alum treatment.

CLFLWD staff will take the lead on the lake monitoring effort, assist with the setup, maintenance, and water quality sample collection aspects of the long-term stream monitoring equipment (ISCO units), and implement the Citizen Assisted Lake Monitoring Program (CAMP), Citizen Assisted Tributary (CAT), and Do-It-Yourself (DIY) diagnostic programs. District Staff will also implement the Winter Lake Monitoring effort.

Note: The District-wide rotational Diagnostic Monitoring effort is on a two-year hiatus and will resume in 2025 as per the 10-year Monitoring plan. The CAT and DIY programs are continuing to investigate the many outlets to Forest and Comfort lakes during this period.

Monitoring Summary

The 2024 Lake Monitoring Program will again utilize the Metropolitan Council CAMP Program. Collected water samples will be analyzed for total phosphorus, total Kjeldahl nitrogen, and chlorophyll-a. Additionally, measurements will be taken of the surface water temperature and water transparency (Secchi depth).

- CAMP Volunteers will complete surface water quality monitoring on Bone, Moody, Comfort, the 1st and 2nd basins of Forest Lake, Heims, and Elwell.
- District Staff will collect CAMP data and additional data on several other lakes throughout the District including: Forest 3rd basin, Keewahntin, Shields, School, Little Comfort, and Neilson.
- District staff will also collect:
 - Dissolved oxygen (DO)/temperature profiles and collect bottom water (hypolimnion) samples on Forest 2nd, Forest 3rd, Comfort, Little Comfort, Neilson, Shields, and Moody Lakes.
 - Additional hypolimnion water samples will be collected on Comfort and Little Comfort lakes to evaluate chloride levels in these two lakes.
 - Metalimnion (thermocline) water samples will be taken on Little Comfort, Comfort, and Forest 2nd and 3rd basins to evaluate lake turnover and mixing of bottom released phosphorus.



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The CAT and DIY programs will continue monitoring efforts on Forest Lake (CAT) and the DIY program will focus on direct drainages to Comfort Lake and the County Line subwatershed.

- Further evaluation of the DIY HACH colorimeter technology will be undertaken by comparison of up to 50 duplicate water quality samples taken from the lake hypolimnion and metalimnion monitoring efforts. These duplicate samples will be analyzed with the Hach colorimeter and by Instrumental Laboratory in Fridley, MN. Results will be compared to determine the accuracy of the Hach DIY technology.
- Staff will evaluate the effectiveness of all O&M projects by collecting DIY grab samples during annual O&M inspections.

District staff will collect Water Samples to assess TSS Composition (organic and inorganic) at 3 sites throughout the District: School Lake outflow, abandoned Judicial Ditch 1 wetland ditch at Hwy 61, and BBSLC Channel at Manning Trail. Samples will be submitted to Instrumental Labs for analysis.

A summary of the CLFLWD proposed 2024 Monitoring Plan and associated costs are provided in the following tables. Contracted costs would be funded from line items 3-003-A, B & C. These budget line items total \$91,000. District staff time would be funded from budget line item 3-003-4100. The total budget allocated for the 2024 monitoring program is \$174,114 (not including wetland and ground water monitoring).

Program Element	Proposed Cost	Lead/Description
Stream monitoring	\$43,576	
<i>Long-term stream</i>	<i>\$27,722</i>	<i>EOR Task 1: 6 long-term sites</i>
<i>C.A.T.</i>	<i>n/a</i>	<i>Monitoring of 30+ sites along Forest Lake.</i>
<i>D.I.Y.</i>	<i>n/a</i>	<i>Monitoring of 20+ sites along Comfort Lake and the County Line subwatershed.</i>
<i>Effectiveness</i>	<i>\$15,854</i>	<i>EOR Task 2: 2 project effectiveness sites</i>
Lake monitoring	\$12,840	
<i>CAMP: volunteers</i>	<i>\$4,560</i>	<i>- Surface water quality 7 lakes</i>
<i>CAMP: District staff</i>	<i>\$3,420</i>	<i>- Surface water quality 6 lakes -DO/temp profiles and bottom water samples on 7 lakes.</i>



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<i>analysis</i>	<i>Lab</i>	\$4,860	<i>~270 hypo/metalimnion and Chloride samples</i>
Water Monitoring Reporting		\$25,776	EOR Task 3: 2024 Monitoring Report
CONTRACTED COSTS		\$82,192	

Program Element	Proposed Cost	Lead/Description
District Staff Time	\$83,144	<p>Stream Monitoring – set up, maintenance, and sample collection at 6 sites. Report review.</p> <p>DIY & CAT – Volunteer outreach, coordination, and oversight. Sample collection, analysis, data management, reporting.</p> <p>Lake Monitoring – Volunteer coordination and oversight on 7 lakes. WQ sample collection, data management on 6 lakes. Sample delivery to labs. Report review.</p> <p>Equipment maintenance – Stream Monitoring ISCO units, boat, Sonde multimeter</p>
Equipment	\$6,250	ISCO sensor replacement, CAT & DIY supplies, Sonde multimeter sensor replacement, deep-cycle batteries, solar panel replacement
Subtotal	\$89,364	
PROGRAM GRAND TOTAL	\$171,556	



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Recommended Action

Proposed Motion #1: Manager _____ moves to approve the 2024 Monitoring plan as presented in this memo. Seconded by Manager_____.

Proposed Motion #2: Manager _____ moves to authorize the administrator, on advice of counsel, to enter into an agreement with EOR to complete *Tasks 1 - 3 as in accordance with the 3-05-2024 scope of work and in an amount not to exceed \$69,352. Seconded by Manager_____.

Attached: EOR's 2024 Monitoring Proposed Scope of Work.

Project Name	(3-003-A) District Monitoring Program	Date	3-5-2024
To / Contact info	CLFLWD Board of Managers		
Cc / Contact info	Mike Kinney, District Administrator		
From / Contact info	Anne Wilkinson, PhD, Greg Graska, PE		
Regarding	2024 Water Monitoring		

The following is a proposed scope and budget for the District’s 2024 water monitoring efforts.

Task 1. Long-term Stream Monitoring:

This task covers flow monitoring for ~10 events, and stage data downloads at six stream sites (Forest Lake Outlet, Bone Lake Outlet, Bone Lake North Inlet, Big Comfort Lake Outlet, Big Comfort Lake Inlet, and Little Comfort Inlet).

This task also includes the following:

1. Installation and maintenance of 2 telemetry loggers to aid in the efficiency of the flow gauging
2. Quick surveying check of the stream staff gauges
3. Flow gauging
4. ISCO data downloads
5. Rating curve development
6. Discharge and load analysis
7. Project management, QA/QC, and data submittal to MPCA’s EQUIS database

District staff will lead ISCO triggering, composite sample collection, sample delivery, and operation & maintenance.

Expense	Unit Description	Units	Unit Cost	Cost
Labor Subtotal		185 hours		\$26,135.00
Mileage	Equipment installation visit, 100 miles round-trip @ \$0.67/mile	1 visit	\$67.00	\$67.00
	10 flow gauging visits, 100 mile round-trip x 2 staff @ \$0.67/mile	10 visits	\$67.00	\$670.00
Equipment Rental	2 telemetry level loggers x 7 months	2 loggers x 7 months	\$55.00	\$770.00
	Survey Equipment @ \$80/hour	1 hours	\$80	\$80.00
Expenses Subtotal				\$1,587.00
Total				\$27,722.00

Task 2. 2024 BMP Effectiveness Monitoring

EOR will collect samples and flow monitoring for ~8 events from the following BMPs; County Rd 50 Iron Enhanced Sand Filter (IESF), , and Highway 61 Sunrise River wetland. EOR will be taking an adaptive approach for the first monitoring season of the Highway 61 Sunrise River wetland, as we anticipate that flow monitoring will be a challenge, given the site access, grade, and outlet location.

Effectiveness monitoring includes:

1. Continuous water level stage logging 3 sites (County Rd 50 outlet, Highway 61 wetland southern inlet and outlet)
2. Supplementary flow measurements to develop rating curves at all the continuous monitoring sites.
3. Survey of the inlets and outlets
4. ~8 grab sample collections at 5 sites (County Rd 50 inlet and outlet, Highway 61 wetland inlets and outlet)
5. Rating curve development
6. Discharge and load analysis
7. Project management and QA/QC

All grab samples will be analyzed for total phosphorus, ortho-phosphate, and total suspended solids. It is important to note that there are efficiencies gained by completing both Task 1 and Task 2 together, i.e. mileage and travel time.

Expense	Unit Description	Units	Unit Cost	Cost
Labor Total		80 hours		\$12,304
Laboratory Services	TP, TSS, Orthophosphate analysis at Instrumental Research Labs at 5 sites x 8 events	40 samples	\$65	\$2,600
Equipment	Level Logger rental: 3 sites x 7 months	3 loggers x 7 months	\$30	\$630
	Survey Equipment @ \$80/hour	4 hours	\$80	\$320
Expenses Subtotal				\$3,550
Total				\$15,854

Task 3. 2024 Water Monitoring Report

EOR will develop a summary report with an annual update on climate trends, lake and stream water quality trends toward the goals, recommendations for future monitoring, and results from effectiveness monitoring. Additionally, this task will include one-page lake factsheets for major District lakes highlighting lake characteristics, current conditions, long-term trends, and progress

towards District goals; and an overall lake water quality grade for each lake and general information on lake water quality for the District website.

Expense	Unit Description	Units	Cost
Labor Total	Final report (+QA/QC & PM)	148 hours	\$25,776.00

Recommended Motion

We recommend the Board approve this 2024 scope of work for EOR to conduct long-term stream monitoring for 6 sites, effectiveness monitoring for 2 BMPs, and to complete the 2024 water monitoring report for a total cost of \$69,352.