2025 TECHNICAL SERVICES AGREEMENT between the **DES PLAINES RIVER WATERSHED WORKGROUP** and **LAKE COUNTY HEALTH DEPARTMENT** for **WATER CHEMISTRY MONITORING**

This is an agreement (Agreement) by and between the DES PLAINES RIVER WATERSHED WORKGROUP, 500 West Winchester Road, Libertyville, Illinois 60048 (DRWW) and LAKE COUNTY HEALTH DEPARTMENT, 500 West Winchester Road, Libertyville, Illinois 60048 (LCHD).

PURPOSE

The DRWW wishes to engage the LCHD to provide technical services to assist the DRWW in conducting water quality monitoring in the Des Plaines River watershed located in Lake County, Illinois. The water quality monitoring will satisfactorily collect and process water column monitoring samples within the watershed. The DRWW has selected 73 sampling locations within the Des Plaines River watershed in Lake County, Illinois.

SERVICES

LCHD will conduct water quality monitoring by collecting samples, analyzing the samples collected, and providing the data to the DRWW based on the approved DRWW Quality Assurance Project Plan. The Scope of Services to be provided by the LCHD to accomplish the DRWW's objectives for the water column chemistry monitoring is set forth in Attachment A, DRWW Water Column Monitoring, SCOPE OF SERVICES.

COMPENSATION

1. LCHD agrees to perform the Scope of Services and furnish the items included in the Scope of Services for a fee (Agreement Amount) not to exceed $89,084.50 for water quality sampling and analysis according to the rates in Attachment B, Project Budget.

2. The DRWW agrees to pay LCHD for a total project cost not to exceed $89,084.50 using the compensation schedule identified in Attachment B. The final ten percent of the Agreement Amount shall be retained by the DRWW until the project is successfully completed and all deliverables have been received and approved.

3. LCHD shall furnish the DRWW with an itemized invoice monthly. Invoices shall describe the work completed; show the actual number of hours worked by team members; and actual travel and other expenses that have occurred. Payments by the DRWW shall be made in accordance with the Illinois Local Prompt Payment Act (50 ILCS 505/1 et. seq.).

SCHEDULE AND DELIVERABLES

All sampling and reporting shall be completed by November 30, 2025. Sampling will be conducted at all sites within one week per month and approximately the same week every month.

Sampling Schedule

- February 2025
- May 2025
- July 2025
- August 2025
- September 2025

Project Deliverables:

- Electronic data deliverables (EDDs) and the sample results in an editable Microsoft Excel file, as specified by the DRWW.
- A final report consisting of a PDF file of all analytical results, analytical methods, chain(s) of custody, and a field log. Any sampling or testing observations which may have affected accuracy will be noted in the report narrative. Any applicable data qualifiers (e.g., matrix spike failure) will also be noted in the project specific comments portion of the report narrative page.

TERMS and CONDITIONS

1. The DRWW may, by written Order, make changes in the scope of work if such changes are within the general scope of the Agreement. If such changes cause an increase or decrease in the LCHD's cost or the time required to complete the project, the parties hereto shall agree to an adjustment in the Agreement Amount, prior to issuance of the Change Order. Adjustment of the Agreement Amount shall be based on the estimated change in the number of staff hours required plus any changes in the LCHD's expense. The LCHD will not be compensated for additional services performed without an approved Change Order.

2. Either party may terminate this Agreement by providing thirty (30) day written notice to the other party. DRWW shall pay LCHD for all qualifying expenses incurred prior to the date of termination. Any and all services or deliverables provided to DRWW by LCHD shall remain the property of DRWW.

3. This Agreement shall be governed by and construed according to the laws of the State of Illinois. Jurisdiction and venue shall be exclusively found in the 19th Judicial Circuit Court, State of Illinois (735 ILCS 5/2-103), or Federal District Court, Northern District, whichever is applicable.

4. This Agreement supersedes any and all other agreements, oral or written, between the parties hereto with respect to the subject matter hereof.

5. This Agreement shall not be assigned, altered or modified without the express written consent of both parties.

NOTICES AND COMMUNICATION

All notices and communications given to either party by the other relative to this Agreement shall be addressed to the respective parties as follows:

To the DRWW: Des Plaines River Watershed Workgroup
500 West Winchester Road
Libertyville, Illinois 60048
ATTENTION: Anna Niedzinski, Administrative Agent
aniedzinski@lakecountyil.gov

To the LCHD: Lake County Health Department
500 West Winchester Road
Libertyville, Illinois 60048
ATTENTION: Alana Bartolai, Project Manager
ABartolai2@lakecountyil.gov

For the DRWW:

Paul Kendzior, President
Des Plaines River Watershed Workgroup

Date: 11/26/24

Attest:

Des Plaines River Watershed Workgroup

For the LCHD:

Jerry Nordstrom, Director of Business Operations
Lake County Health Department

Date: 12/11/24

Attest:

Lake County Health Department

ATTACHMENT A

DRWW Water Column Monitoring
SCOPE OF SERVICES

1.Sampling Schedule

1.1 Tier 1, 2, 3 Water Sampling and Analysis

Sampling will be conducted using a three-tier monitoring strategy following the attached Illinois EPA approved Quality Assurance Project Plan (QAPP) (Attachment A). Sampling sites and their associated tier are listed in Attachment C. Tier 1 sites have been identified by the DRWW as the core sites and are to be sampled for water column analyses along with Sestonic Chlorophyll a. Tier 2 and 3 sites will be sampled for water column analyses. Tier 2 and 3 are differentiated, as Tier 3 sites will not be sampled for sediment analyses in future years (sediment sampling will not occur during this contract period). Water quality sampling will occur at 73 sites for one week. The weekly sampling will occur for 5 months: February, May, July, August and September. These collected samples will be tested for the water quality monitoring parameters listed in Table 1 utilizing agreed upon standard operating procedures and the reporting limits and the laboratory method detection limits (MDLs) listed in table 2 (Test Methods and Reporting Limits). If DRWW assistance is needed in gaining access or permission to sites for monitoring, a three-week notice will be provided by LCHD to DRWW.

It is the goal of the DRWW that this data be available for use by the Illinois EPA, the Illinois Department of Natural Resources, local decision makers, and all other interested parties; therefore, it is essential that the data collected is accurate, precise, cost-effective, and has low variability, making the results of the assessments comparable.

1.2 Field QA/QC samples

For every 20 samples collected, LCHD will also collect a blank and duplicate sample. The blank will be made up in the field by pouring deionized water into the same type of sample containers that are used for the surface water. The deionized water will be laboratory grade water from Lake County Health Department Environmental Laboratory facility. This water will be placed inside a pre-cleaned and certified container.

1.3 Field Parameters

Lake County Health Department is equipped with an YSI field meter. This meter will be utilized for the following analyses in the field:

- Conductivity
- pH
- Temperature

The results of these parameters will be reported after each sampling event and on the final report along with the results of the analyses performed in the laboratory. This meter is calibrated each day prior to sampling.

2.Field Reporting

2.1 Field Log

A field log will be kept each day that samples are collected. The field log will include:

- Name and signature of the field services technician
- Location of sampling site
- Weather and water conditions (if unordinary condition apply)
- Dates and times of sample collection
- GPS location of sampling (in latitude/longitude and state plane) for first event on each site
- Preservatives
- Field measurements
- Descriptions of any unusual conditions at the sample locations
- Chains of Custody
- Indication of duplicate sample location

3.Sample Custody and Handling

3.1 Labeling and Storage

All samples will be placed in non-contaminated containers provided by Lake County Health Department. All containers will be properly labeled. The duplicate sample will be labeled with the sample location and identified as "duplicate". When preservation is required, pre-preserved bottles will be used. Samples will be placed inside a cooler with wet ice until they reach the laboratory.

3.2 Chain of custody

Proper chain of custody documentation will accompany the collected samples. The chain of custody will contain the sample IDs, analyses to be performed, date and time of collection, type and number of containers, preservatives added, date and time of transfers, and the signature of each person involved in custody transfer. The chain of custody will be placed in a water-resistant plastic bag inside each cooler. Indelible ink will be used on the container labels and chain of custody records. A copy of the chain of custody form will be included with the final report.

3.3 Sample preservation

Preservatives will be added to sample bottles prior to sample collection.

4.Project Deliverables

4.1 Final Report

The final report will consist of a PDF file of all analytical results, analytical methods, chain(s) of custody and a field log. Any sampling or testing observations which may have affected accuracy will be noted in the report narrative. Any applicable data qualifiers (e.g., matrix spike failure) will also be noted in the project specific comments portion of the report narrative page.

4.2 Electronic Data Deliverable

An electronic data deliverable (EDD) which includes the sample results in an editable Microsoft Excel file will be included for every report, in the format DRWW specified.

4.3 Turnaround Time

The results for all analytical analyses will be provided no later than 45 business days following the date of collection.

TABLE 1: Water Quality Sampling Parameters

Parameter	Analysis Type (Laboratory or In-Situ)	DRWW Frequency	Tier 1	Tier 2	Tier 3
			Number of Sample Events		
Demand					
Chloride	Laboratory	Feb, Aug	2	2	2
Conductivity	In-Situ	Feb, Aug	2	2	2
pH	In-Situ	Feb, Aug	2	2	2
Total Organic Carbon			0	0	0
Sulfate	Laboratory	Feb, Aug	2	2	2
Total Suspended Solids	Laboratory	Feb, May, July, Aug, Sept	5	5	5
Volatile Suspended Solids			0	0	0
Dissolved Oxygen			0	0	0
Water Temperature	In-Situ	Feb, Aug	2	2	2
Turbidity			0	0	0
Metals					
Total Hardness	Laboratory	Feb, Aug	2	2	2
Iron			0	0	0
Sodium			0	0	0
Arsenic			0	0	0
Manganese			0	0	0
Mercury - Low Level Detection Limit			0	0	0
Copper			0	0	0
Nickel			0	0	0
Zinc			0	0	0
Nutrients					
Ammonia	Laboratory	Feb, May, July, Aug, Sept	5	5	5
Total Nitrates (NO2 + NO3)	Laboratory	Feb, May, July, Aug, Sept	5	5	5
Total Kjeldahl Nitrogen	Laboratory	Feb, May, July, Aug, Sept	5	5	5
Total phosphorus	Laboratory	Feb, May, July, Aug, Sept	5	5	5
Dissolved Reactive Phosphorus	Laboratory	Feb, May, July, Aug, Sept	5	5	5
Sestonic Chlorophyll a	Laboratory	May, July, Aug, Sept	4	0	0
Bacteria					
E. coli	Laboratory	Feb, Aug	2	2	2
Water Organics					
Polychlorinated Biphenyls			0	0	0
Pesticides			0	0	0
Methoxychlor			0	0	0
PNAs			0	0	0
Volatile Organic Compounds			0	0	0

Parameter	Analysis Type (Laboratory or In-Situ)	DRWW Frequency	Tier 1	Tier 2	Tier 3
			Number of Sample Events		
Sediment Metals					
Aluminum			0	0	0
Arsenic			0	0	0
Barium			0	0	0
Beryllium			0	0	0
Boron			0	0	0
Cadmium			0	0	0
Chromium			0	0	0
Cobalt			0	0	0
Copper			0	0	0
Fluoride			0	0	0
Iron			0	0	0
Lead			0	0	0
Manganese			0	0	0
Mercury			0	0	0
Nickel			0	0	0
Potassium			0	0	0
Silver			0	0	0
Sodium			0	0	0
Strontium			0	0	0
Vanadium			0	0	0
Zinc			0	0	0
Sediment Organics					
Polychlorinated Biphenyls			0	0	0
Pesticides			0	0	0
Methoxychlor			0	0	0
PNAs			0	0	0
Total Kjeldahl Nitrogen			0	0	0
Phosphorus			0	0	0
Cyanide			0	0	0
Herbicides (2, 4, D, 2,4,5 TP)			0	0	0
Phenols			0	0	0

TABLE 2: Test Methods and Reporting Limits

Parameter	Method	MDL/Reporting Limit
Demand		
Chloride	325.2, EPA	0.5 mg/L
Conductivity	2510B, SM18th Ed.	2 µmhos/cm
pH	4500-H B, SM18th Ed.	N/A
Sulfate	375.4, EPA	1 mg/L
TSS	2540D, SM18th Ed.	0.2 mg/L
VSS	2540E	0.2 mg/L
DO	4500 YSI field meter	0.1 mg/L
Temperature	170.1	°C
Turbidity	180.1	0.1 mg/L
Metals		
Total Hardness	2340 C EDTA. SM18th Ed.	5 mg/L
Iron	200.7, EPA	0.005 mg/L
Sodium	200.7	0.1 mg/L
Arsenic	200.8	0.0008 mg/L
Manganese	200.8	0.002 mg/L
Mercury * (LOW LEVEL DETECTION LIMIT)	245.1, EPA or *1631 low det	0.0002 mg/L or 0.5 Ng/L
Copper	200.8, EPA	0.0005 mg/L
Nickel	200.8	0.0004 mg/L
Zinc	200.8, EPA	0.007 mg/L
Nutrients		
Ammonia	4500 NH3 D, SM18th Ed.	0.1 mg/L
Total Nitrates (NO2 + NO3)	353.2 EPA	0.05 mg/L
Total Kjeldahll Nitrogen	4500-N_{org} D, SM18th Ed	0.5 mg/L
Phosphorous	SM4500- P B 5 and #4500P E	0.02 mg/L
Dissolved reactive Phosphorus	SM4500P E	0.005 mg/L
Chlorophyll a		
Sestonic Chlorophyll a	SM 10200H	4 mg/M^3
Bacteria		
E-coli	9213D	1 CFU/100ml
Water Organics		
PCBs	8082, EPA	0.1 ug/L
Pesticides	8081, EPA	0.025 ug/L
Methoxychlor	8081 EPA	0.25 ug/L
PNAs	8270, EPA	0.1 ug/L
VOCs	8260, EPA	1.0 ug/L
Sediment Organics		
PCBs	8082, EPA	16.7 ug/Kg
Pesticides	8081, EPA	0.833 ug/Kg
Methoxychlor	8081 EPA	0.833 ug/Kg
PNAs	8270, EPA	40 ug/Kg
Herbicides (2,4,D & 2,4,5 TP)	8321	0.004 ug/Kg
Sediment inorganics		
TKN	4500 NH3E	100 mg/Kg
Phosphorus	6010B, EPA	2.3 mg/Kg
Cyanide	9014	0.005 mg/Kg
Phenols	420.1	0.005 mg/Kg
Sediment Metals		

Parameter	Method	MDL/Reporting Limit
Aluminum	6010B, EPA	2.50 mg/Kg
Arsenic	6010B, EPA	1.15 mg/Kg
Barium	6010B, EPA	0.125 mg/Kg
Beryllium	6010B, EPA	0.0025 mg/Kg
Boron	6010B, EPA	0.05 mg/Kg
Cadmium	6010B, EPA	0.075 mg/Kg
Chromium	6010B, EPA	0.0600 mg/Kg
Cobalt	6010B, EPA	0.625 mg/Kg
Copper	6101B EPA	0.150 mg/Kg
Iron	6010B, EPA	0.625 mg/Kg
Lead	6010B, EPA	0.6 mg/Kg
Manganese	6010B, EPA	0.625 mg/Kg
Mercury	245.1	0.02 mg/Kg
Nickel	6010B, EPA	0.235 mg/Kg
Potassium	6010B, EPA	2.5 mg/Kg
Silver	6010B, EPA	0.06 mg/Kg
Sodium	6010B EPA	1.25 mg/Kg
Strontium	6010B, EPA	0.120 mg/Kg
Vanadium	6101B EPA	0.150 mg/Kg
Zinc	6010B, EPA	0.075 mg/Kg
Fluoride	4500	0.05 mg/Kg

STANDARD OPERATING PROCEDURES

Surface Water Collection Procedures: Grab Samples
Updated 12/18/20
Written by: Lake County Health Department

SCOPE AND APPLICATION:

This standard operating procedure document (SOP) has been developed to maintain consistent data collection procedures and to ensure the quality of the data collected. This SOP is applicable to the collection of representative surface water samples from rivers, streams, lakes, or any other surface waters. This procedure is grab sample method that utilizes a high density polyethylene (HDPE) or stainless steel bucket, dip sampler, or direct method grab sampling.

SUMMARY OF METHODS

Sampling situations can vary widely depending on the location and characteristic of the waterbody. Generally, a surface water grab sample is accomplished through the use of one of the following techniques

- Dip sampler
- HDPE bucket (polyethelyene not for collection of organic samples)
- Direct Method

EQUIPMENT AND SUPPLIES

Equipment can vary depending on the location and characteristic of the waterbody but can include the following:

1. Stainless steel or HDPE bucket with rope or dip sampler
2. Deionized rinse water
3. Decontamination equipment and supplies
4. Appropriate sample bottles
5. Cooler with ice packs and/or wet ice
6. Field instrumentation
7. Field Log Book and Sample Chain of Custody
8. Waders/Boots if needed
9. Rubber Gloves if needed
10. Antibacterial soap
11. Sharpie, markers and labels

REAGENTS AND STANDARDS

Reagents may be used for preservation of samples. Preservatives will be specific to the analysis and determined by the laboratory. Cleaning solutions may be used for decontamination of sampling equipment.

PROCEDURE:

Preparation

a. Before samples are collected, sample bottles should be labeled correctly with sampling ID number, Samplers initials, and a space for date and time to be filled in later.
b. Prior to being used for sample collection or holding, all sampling equipment is decontaminated and cleaned. Sample buckets should be scrubbed with solution of soap and water making sure the cleaning detergent is free of phosphates.
c. Coolers and samples bottles should be inspected before samples are collected. If dirt, residual chemicals or any other types of contaminants are present, the sample bottle should be discarded. The coolers should be washed with mild soap and wiped down if any contaminants are present.
d. Determine the sample locations by performing general site survey if possible. Prior knowledge of the locations will aid in determining exact equipment needs and safety considerations

Sample Collection

a. Sample bottles should be kept closed until they are filled.
b. Take sample at specified location. If sampling a river or stream, sample at the middle of the main channel at mid depth. Collect the sample from a representative site on the stream. Try to locate an area where the water is well mixed, and the velocity of flow is great enough that the chance of solids settling is minimal. Depending on the site characteristics, the sampler may use a bucket, pole sampler, or wade in and collect the sample. If samples are taken from a bridge, collect the sample from the upstream side of the structure unless otherwise noted in site description maps.

1. Bucket and Pole Sample Method: The bucket and wide mouth bottle must be cleaned before samples are collected and between sampling sites. The equipment shall be cleaned with phosphate-free detergent and blank water. Blank water should be deionized water. The equipment should be scrubbed with detergent and deionized water before the rinsing steps below are followed. Alternatively, a new bottle may be used for each sample. The following steps should be taken to ensure proper decontamination of the sample equipment:

   Step 1 – Blank Water Rinse
   - Rinse the inside of the bucket or wide mouth bottle by swirling with blank water.
   - Discard the remaining blank water.
   - Repeat Step 1.

   Step 1a – River Rinse and Field Measurements from Bucket
   - Lower the bucket into the stream and fill.
   - Discard the contents.

   Step 2 – Sample Collection - Bucket
   - Lower the bucket to mid-depth at center of flow, do not disturb bottom sediment

   Step 3 – Fill Sample Bottles

2. Wading Method

   To reduce the chance of disturbing the substrate/sediment the following protocols will be followed. The field technician will wade into stream and collect the sample, standing downstream of the collection point so as not to collect kicked up sediment.

c. A log-sheet/chain of custody should be maintained during sampling and should include the following information:

    1. Date and time of sample
    2. Signature of collector and transporter
    3. Signature of person who relinquished the sample to lab
    4. Weather conditions during sampling (i.e., air temperature; cloudy, rain, snow)
    5. Time
    6. Visual observation of sample
    7. Field measurements such as pH

d. Field Measurements:
Field measurements should be performed on site after all sample bottles have been filled. Follow the laboratory and manufacturer's instructions for calibrating, cleaning and using the sonde equipment. All data should be recorded in the field book or field collection sheet.

SAMPLE HANDLING, STORAGE, & PRESERVATION

Once samples have been collected, the following procedures should be followed:

a. Transfer the sample into a suitable, properly labeled sampled container specific for the analysis to be performed.
b. Preserve the sample, if appropriate. Pre-preserved sample containers are preferred for simplicity and convenience. Do not overfill containers if they are pre-preserved
c. Cap the container securely and cool immediately by placing in a sample cooler with wet ice or reusable ice packs.
d. Record all relevant information in the sample log book and collection sheets
e. All samples are placed in a cooler with ice after labeling. Samples are to be transported to the laboratory within the prescribed holding times. All samples will be taken to Lake County Health Department

QUALITY ASSURANCE, QUALITY CONTROL AND DUPLICATE SAMPLES

a. All personnel involved in the sampling collection process must be properly trained and understand the sampling SOP. Any deviations must be recorded in the field book and or on the field collection sheet. The laboratory supervisor must be notified of any deviations from the SOP and evaluate appropriately.
b. All field equipment shall be maintained following manufacturers recommendations. All field equipment shall be inspected, calibrated, and tested prior to sampling events and after the equipment returns from the field. Any problems encountered or maintenance required must be noted in the equipment maintenance log.
c. Field blank and duplicates shall be collected. The laboratory shall adhere to their Quality Assurance Plan for samples received in the lab. Samples will be analyzed by methods and reporting limits as described in Table 1.
    1. Duplicate Samples

Duplicate samples are to be filled from the same round of stream water. Duplicate samples will be taken for all parameters once per 20 samples.

2. Field Blank
   Sample bottles should be filled with blank water (deionized) from unopened blank water containers once per 20 samples.

d. Chain of Custody: Chain of Custody forms must be filled out and accompany all samples to their laboratory. An example chain of custody is included (Figure 1)

CALIBRATION AND STANDARDIZATION

Field meter must be calibrated daily following manufacturers calibration procedures and documented in the field instrument calibration log book

SAFETY PRECAUTIONS

1. Personal Protection:
   Work or disposable gloves are recommended. Hip boots or waders may or may not be required during sample collection.
2. Chemical Hazards:
   Pre-preserved sample containers may contain hazardous chemicals. Handle all samples carefully to minimize exposure
3. Biological Hazards:
   Water samples may contain potential health hazards. Handle all samples carefully to minimize exposure.

INTERFERENCES

The two most common interferences in surface water collection include contamination and improper collection technique

1. Cross contamination can be eliminated by using dedicated or disposable sampling equipment and proper cleaning/decontamination procedures
2. Improper sample collection can occur when using contaminated sampling equipment or poor technique. It is important to collect the sample in the most representative area. Care should be taken to minimize bottom substrate and avoid surface scum or debris.

Figure 1: Chain of Custody LCHD

Chain of Custody DRWW

Feb/Aug

Site Name: _____

Sample Date: _____

Sampled by: _____

Sampled by: _____

LAB	
Date Received:	
Time Received:	
Received by:	
Relinquished by:	

#	LOCATION	DEPTH	TIME SAMPLED	LAB#

PARAMETERS	X	COMPLETION DATE	BOTTLE	PRESERVATIVE
Ammonia	X		500mL	*pre-preserved
Nitrate-Nitrite	X		2L	
TKN	X		500mL	
TP	X		500mL	*
SRP	X		500mL	*
TOTAL HARDNESS	X		2L	
TSS	X		2L	
Cl-	X		2L	
SULFATE	X		2L	
E.Coli	X		120 mL	
FIELD DATA (Sonde is Calibrated same day as Collection)				
PARAMETERS		Result	Method	
pH			YSI Sonde	
Temp			YSI Sonde	
Conductivty			YSI Sonde	
Dissolved Oxygen				

Comments: DRWW Project

Lab Only		
*Preservation:	*pH	*Initials
750µL 14.4M H2SO4, per 500mL	pH=<2	

OIL PRESENT? (circle one)	
NO	YES

Email reports to: abartolai2@lakecountyil.gov; jfitzgerald2@lakecountyil.gov

Chain of Custody DRWW

May/July/Sept

Site Name: _____

Sample Date: _____

Sampled by: _____

Sampled by: _____

LAB

Date Received: _____

Time Received: _____

Received by: _____

Relinquished by: _____

#	LOCATION	DEPTH	TIME SAMPLED	LAB#
		0.5		

PARAMETERS	X	COMPLETION DATE	BOTTLE	PRESERVATIVE
Ammonia	X		500mL	*pre-preserved
Nitrate-Nitrite	X		2L	
TKN	X		500mL	*
TP	X		500mL	*
SRP	X		500mL	
TOTAL HARDNESS			2L	
TSS	X		2L	
Cl^-			2L	
SULFATE			2L	
E.Coli			120 mL	
FIELD DATA (Sonde is Calibrated same day as Collection)				
PARAMETERS		Result	Method	
pH			YSI Sonde	
Temp			YSI Sonde	
Conductivty			YSI Sonde	
Dissolved Oxygen			YSI Sonde	

Comments: DRWW Project

OIL PRESENT? (circle one) NO YES

Lab Only

*Preservation: 750µL 14.4M H_2SO_4, per 500mL

*pH pH=<2

*Initials

Email reports to: abartolai2@lakecountyil.gov; jfitzgerald2@lakecountyil.gov

TABLE 1: LCHD Test Methods and Reporting Limits

Analytical methods used for water quality parameters.

Parameter	*Method*
Temperature	Hydrolab DataSonde® 4a or YSI 6600 Sonde® YSI Exo Sonde®
Dissolved oxygen	Hydrolab DataSonde ®4a or YSI 6600 Sonde® YSI Exo Sonde®
Nitrate and Nitrite nitrogen	USEPA 353.2 rev. 2.0 EPA-600/R-93/100 Colorimetric Automated Cadmium Reduction Method Reporting Limit = 0.05 mg/L
Ammonia nitrogen	Rev SM 21st ed. Electrode method, #4500 NH_3-D Method Reporting Limit = 0.1 mg/L
Total Kjeldahl nitrogen	Rev SM 21st ed, 4500-N_{org} C Semi-Micro Kjeldahl, plus 4500 NH_3-D Method Reporting Limit = 0.5 mg/L
pH	Hydrolab DataSonde® 4a, or YSI 6600 Sonde® or YSI Exo Sonde Electrometric method
Total solids	SM, Method #2540B 1997 Method Reporting Limit 0.04 mg/L
Total suspended solids	SM, Method #2540D 1997 Detection Limit = 1.3 mg/L
Chloride	SM 21st ed, Method #4500C1-D 1997 Method Reporting Limit = 5 mg/L
Total volatile solids	SM, Method #2540E, from total solids plus 2540 G 1997
Conductivity	Hydrolab DataSonde® 4a or YSI 6600 Sonde® YSI Exo Sonde®
Total phosphorus	SM 21st ed, Methods #4500-P B 5 and #4500-P E 1999 Method Reporting Limit = 0.01 mg/L
Soluble reactive phosphorus	SM 21st ed, Methods #4500-P B 1 and #4500-P E 5.Method Reporting Limit = 0.005 mg/L
E.coli	Method: 9213D Method Reporting Limit: 1 CFU/100ml
Total Hardness	Method: 2340 C EDTA Method Reporting Limit: 5 mg/L
Sulfate	Method: 375.4, EPA Method Reporting Limit: 10 mg/L

ATTACHMENT B

LCHD Project Budget – Water Chemistry

2025 LCHD-DRWW Monitoring Budget Quotation

	Tier 1,2 & 3				Quality Control			TOTAL (Tier 1, 2&3, QC)
Analyte	Quoted Price	Proposed Quantity	Total		Proposed Quantity	Total QC		
Demand								
Chloride	$ 12.00	146	$ 1,752.00		12	$ 144.00		$ 1,896.00
Conductivity*	Field							$ -
pH*	Field							$ -
Sulfate	$ 15.00	146	$ 2,190.00		12	$ 180.00		$ 2,370.00
TSS	$ 18.00	365	$ 6,570.00		30	$ 540.00		$ 7,110.00
Temperature*	Field							$ -
			$ -			$ -		$ -
Metals			$ -			$ -		$ -
Total Hardness	$ 12.00	146	$ 1,752.00		12	$ 144.00		$ 1,896.00
			$ -			$ -		$ -
Nutrients			$ -			$ -		$ -
Ammonia	$ 12.00	365	$ 4,380.00		30	$ 360.00		$ 4,740.00
Total Nitrates (NO2+NO3)	$ 12.00	365	$ 4,380.00		30	$ 360.00		$ 4,740.00
TKN	$ 18.00	365	$ 6,570.00		30	$ 540.00		$ 7,110.00
Total Phosphorus	$ 25.00	365	$ 9,125.00		30	$ 750.00		$ 9,875.00
Dissolved Reactive Phosphorus	$ 15.00	365	$ 5,475.00		30	$ 450.00		$ 5,925.00
			$ -			$ -		$ -
Chlorophyll			$ -			$ -		$ -
Sestonic Chlorophyll a	$ 60.00	72	$ 4,320.00		4	$ 240.00		$ 4,560.00
Chlorophyll Shipping	$ 25.00	4	$ 100.00			$ -		$ 100.00
Bacteria			$ -			$ -		$ -
E. Coli	$ 25.00	146	$ 3,650.00		12	$ 300.00		$ 3,950.00
Contingent Analysis Fee								$ 1,500.00
* denotes field measurement								$ -
Analysis Subtotal			$ 50,264.00			$ 4,008.00		$ 55,772.00
Personnel								$ 29,812.50
Supplies								$ 3,500.00
TOTAL								$ 89,084.50

5 months
2 months (Feb & Aug)
4 months chlorophyll 18 sites

ATTACHMENT C

2025 List of Sample Sites

DRWW ID	NewDRNAREA	Lat	Long	River/Stream Name	Subwatershed	Tier 1	Tier 2	Tier 3	Location	Comment
10-1	31.90	42.4248	-87.9973	North Mill	North Mill Creek	1			Milbourne Road	USGS Site (discontinued)
10-2	29.38	42.4442	-88.0007	North Mill	North Mill Creek		2		Kelly Road	Dam removal site - dam is notched
10-3	20.79	42.4661	-88.0090	North Mill Creek	North Mill Creek		2		Route 173	
10-4	5.64	42.4479	-88.0247	North Mill	North Mill Creek		2		Hastings Creek @ Miller Rd	
10-5	3.91	42.4308	-88.0343	North Mill	North Mill Creek		2		Hastings Creek @ Grass Lake Rd	
10-6	0.99	42.4215	-88.0045	Unnamed Trib to North Mill Creek	North Mill Creek			3	Ust. (W) of Route 45 - need better parking access	
10-7				North Mill	North Mill Creek	1			Edwards Road	Site added in 2019.
11-1	63.80	42.4183	-87.9451	Mill Creek	Mill Creek		2		Dilley's Road	
11-2	59.88	42.4154	-87.9690	Mill Creek	Mill Creek	1			Hunt Club Road	sample at POTW call Austin 847-377-7134 USGS Site
11-3	21.34	42.3989	-87.9824	Mill Creek	Mill Creek		2		Sterns School Road	
11-4	18.33	42.3833	-88.0041	Mill Creek	Mill Creek		2		Route 45	
11-5	9.35	42.3605	-88.0151	Mill Creek	Mill Creek		2		Washington St	
11-6	4.32	42.3350	-88.0397	Mill Creek	Mill Creek		2		Wick Street	
12-1	7.35	42.4835	-87.9128	Newport Drainage Ditch	Newport Drainage Ditch		2		Newport Drainage Ditch @ Kilbourne Ave	
12-2	2.82	42.4581	-87.8968	Newport Drainage Ditch	Newport Drainage Ditch		2		W. 21st Street along Union Pacific RR	
13-1	232.03	42.3438	-87.9411	Des Plaines River	Upper Des Plaines River	1			Hwy 120	USGS Site
13-10	4.02	42.4042	-87.9061	Suburban Country Club Trib	Upper Des Plaines River		2		Suburban Country Club Trib @ Shirley Dr	
13-11	2.37	42.4444	-87.9527	Slocum Corners Creek	Upper Des Plaines River		2		N. Mill Creek Rd.; E. of I-94	
13-12	2.35	42.4023	-87.8949	Suburban County Club Trib	Upper Des Plaines River			3	E. of Northwestern Ave.	Removed from chemical analyses in 2019
13-13	1.06	42.3654	-87.9014	Unnamed trib. - Greenleaf Creek	Upper Des Plaines River			3	Swanson Trigg Conservation Area - 42.3700 -87.9085	
13-14	1.10	42.3480	-87.9570	Unnamed Trib to Belvidere Rd Tri	Upper Des Plaines River			3	Leonard Dr.	
13-15	1.92	42.3259	-87.9784	Bull's Brook	Upper Des Plaines River			3	Almond Rd.	
13-16	253.75	42.3051	-87.9542	Des Plaines River	Upper Des Plaines River		2		Dst. Buckley Rd.	Need to access via Desplaines Trail
13-17	0.84	42.3002	-87.9390	Unnamed Trib to Des Plaines Rive	Upper Des Plaines River			3	Behind pump station off of Sprucewood Lane	
13-18	214.84	42.3975	-87.9245	Des Plaines River	Upper Des Plaines River	1			40' Above Riffle Structure	Access through Wetlands Research property
13-19				Des Plaines River	Upper Des Plaines River			3	Below Riffle Structure	Access through Wetlands Research property
13-2	225.36	42.3691	-87.9176	Des Plaines River	Upper Des Plaines River	1			McClure Ave	Canoe launch
13-3	220.39	42.3808	-87.9140	Des Plaines River	Upper Des Plaines River	1			Above Hwy 41	
13-4	145.54	42.4288	-87.9304	Des Plaines River	Upper Des Plaines River	1			Wadsworth Road	
13-5	137.29	42.4653	-87.9428	Des Plaines River	Upper Des Plaines River		2		Hwy 173	
13-6	123.67	42.4892	-87.9258	Des Plaines River	Upper Des Plaines River	1			Russel Road	USGS Site
13-7	2.69	42.3184	-87.9617	Bull's Brook @ Rt 21	Upper Des Plaines River		2		N. Milwaukee Ave.	
13-8	3.71	42.3427	-87.9454	Belvidere Rd Tributary	Upper Des Plaines River		2		Belvidere Rd Tributary @ Highway 21 and 120	
13-9	4.08	42.3528	-87.9367	Stone Roller @ Lake Carina	Upper Des Plaines River		2		Stone Roller @ Lake Carina	
14-1	11.67	42.3119	-87.9637	Bull Creek	Bull Creek		2		Hwy 21	
14-2	2.87	42.3061	-87.9690	Bull Creek	Bull Creek		2		Route 137	
14-3	0.99	42.3101	-87.9906	Bull Creek	Bull Creek			3	N. Countyryside Drive	
14-4	5.08	42.3025	-88.0008	W. Branch Bull Creek	Bull Creek		2		Northwind Blvd. - access 1600 behind warehouse	
14-5	1.33	42.2793	-88.0028	Bull Creek	Bull Creek			3	Adj. University Drive	call Clay K 847-312-3657
14-6	2.39	42.2877	-88.0229	Bull Creek	Bull Creek		2		Hazelnut Xing	
15-1	36.43	42.1981	-87.9231	Indian Creek	Indian Creek		2		Marriot Inn parking lot - adj. Cranes Landing GC	
15-10	2.22	42.2301	-88.0376	West Branch Indian Creek	Indian Creek			3	Gilmer Rd.	
15-11	1.70	42.2196	-88.0256	Forest Lake Drain	Indian Creek			3	Hawthorne Grove Rd.	
15-12	2.06	42.1969	-88.0399	Kildeer Creek	Indian Creek			3	IL Rt. 22	
15-13	3.43	42.1937	-88.0012	Kildeer Creek	Indian Creek			3	Willowbrook Rd. S. of Half Day Rd.	
15-2	35.02	42.2065	-87.9616	Indian Creek	Indian Creek		2		Sullivan Woods Preserve, North of Creekview Dr.	
15-3	5.07	42.2627	-87.9655	Indian Creek	Indian Creek		2		Gregg's Parkway	
15-4	6.78	42.2044	-87.9750	Indian Creek	Indian Creek		2		Port Clinton Rd at Kildeer Creek	
15-5	17.26	42.2105	-87.9876	Indian Creek	Indian Creek		2		Oakwood Rd.	
15-6	3.66	42.2394	-88.0231	Indian Creek	Indian Creek		2		Washitay Ave	
15-7	2.85	42.1943	-88.0300	Indian Creek	Indian Creek		2		Salem Lake Drive S. of Rt 22	
15-8	9.36	42.2149	-87.9662	Seavey Drainage Ditch	Indian Creek		2		Near Vernon Hills GC	
15-9	2.68	42.2446	-88.0356	Indian Creek	Indian Creek		2		N. Midlothian Rd.	
16-1	358.85	42.1094	-87.8878	Des Plaines River	Lower Des Plaines River	1			Palantine Frontage Rd.	
16-10	2.00	42.2505	-87.9255	Werhane Lake Drain	Lower Des Plaines River			3	St. Marys Rd.	
16-2	323.96	42.1531	-87.9102	Des Plaines River	Lower Des Plaines River		2		E. Lake Cook Rd.	
16-3	314.68	42.1676	-87.9134	Des Plaines River	Lower Des Plaines River	1			Deerfield Rd.	
16-4	273.21	42.2004	-87.9185	Des Plaines River	Lower Des Plaines River	1			Half Day Rd.	USGS Site
16-5	268.06	42.2405	-87.9392	Des Plaines River	Lower Des Plaines River	1			Illinois Route 60 - Town Line Rd.	
16-6	260.11	42.2767	-87.9391	Des Plaines River	Lower Des Plaines River	1			Rockland Rd.	
16-7	266.48	42.2490	-87.9426	Des Plaines River	Lower Des Plaines River		2		Hollister Dam site - adj. to Hollister Intl.	
16-8	268.90	42.2271	-87.9368	Des Plaines River	Lower Des Plaines River		2		Wright Woods Dam site - immediately ust. bike bridge	Dam removal access route - need key
16-9	1.19	42.1709	-87.9069	Unnamed Trib to Des Plaines Rive	Lower Des Plaines River			3	Timberleaf Lane	
17-1	29.23	42.1218	-87.8960	Buffalo Creek	Buffalo Creek		2		Route 21	
17-2	22.10	42.1519	-87.9692	Lake Cook Rd @ Farington Ditch	Buffalo Creek		2		Lake Cook Rd @ Farington Ditch	
17-3	9.59	42.1609	-87.9907	Buffalo Creek	Buffalo Creek		2		Checker Road	
17-4	8.55	42.1536	-87.9966	Buffalo Creek	Buffalo Creek		2		Lake Cook Rd @ Buffalo Creek Trib	
17-5	1.19	42.1858	-88.0580	Unnamed trib.	Buffalo Creek			3	Quentin Rd.	
18-1	5.50	42.1635	-87.9224	Aptakisic	Aptakisic Creek		2		Aspen Road	
18-2	4.94	42.1646	-87.9277	Aptakisic	Aptakisic Creek		2		Pekara Rd, West of Hwy. 21	
18-3	2.26	42.1777	-87.9608	Aptakisic Creek	Aptakisic Creek		2		Copperwood Dr. bike xing	
18-4	1.09	42.1812	-87.9667	Aptakisic Creek	Aptakisic Creek			3	N. Buffalo Grove Rd.	
18-5	0.99	42.1815	-87.9657	Unnamed Trib to Aptakisic Creek	Aptakisic Creek			3	Dst. Aptakapsic Rd.; W of N. Buffalo Grove Rd.	
Tier 1 Sites will be established as "core" sites which will receive bi-annual Biological Assessment and continous monitoring.										
						14	41	18		