



# DES PLAINES RIVER WATERSHED WORKGROUP

## Des Plaines River Watershed Workgroup 2026 Monitoring Strategy

### Purpose

This Monitoring Strategy for the Des Plaines River Watershed in Lake County, Illinois was developed by the Des Plaines River Watershed Workgroup (DRWW) Monitoring Committee and approved by the Illinois EPA in 2016. This Monitoring Strategy is being updated to document changes to the DRWW's monitoring program beginning in 2026. The Monitoring Strategy is considered a living document. The DRWW Monitoring Committee will continue to use adaptive management to review the results of the monitoring program and will revise and update the Monitoring Strategy if changes are needed. In 2020, the DRWW modified its Monitoring Strategy to focus the attention on the Watershed Group's Nutrient Assessment Reduction Plan (NARP).

### Program Goals

The DRWW will undertake a comprehensive monitoring program to fulfill the following goals, primary of which is to assist NPDES permittees in meeting monitoring permit requirements. Monitoring goals include:

- Assist NPDES permittees in meeting monitoring permit requirements
- Assessment of pollutant loads (nutrients, sediments, and/or contaminants) from both point and nonpoint sources
- Collect data to support evaluation of the efficacy of point and nonpoint mitigation measures
- Documentation of performance against the NARP nutrient reduction program
- Identify the quality of stream and river ecosystems along with the identification of chemical, biological, and physical stressors affecting them
- Tracking regulatory conformance for regional lakes and streams as described in Section 303d of the Clean Water Act
- Support future modeling efforts

The revised monitoring program will focus on meeting the analytical requirements of the NARP while continuing to document the existing water quality status of the rivers and streams of the Des Plaines River watershed within Lake County, Illinois. The monitoring program will emphasize the direct assessment of biological assemblages by sampling fish and macroinvertebrates using standardized sampling and assessment methodologies. In addition to determining aquatic life status, the monitoring program will also ascertain the associated causes and sources associated with biological impairments by using paired chemical, physical, and other stressor data and information within a systematic analytical process detailed in a comprehensive plan of study, specifically monitoring habitat and water and sediment chemistry. The DRWW monitoring program will establish baseline conditions and then measure progress towards meeting water quality standards. Baseline conditions were established and documented in MBI's report Biological and Water Quality Assessment of the Upper Des Plaines River and Tributaries (2016).

### Introduction and Background

The Des Plaines River Watershed covers over 130,000 acres or just over 200 square miles. The Des Plaines River starts just west of Kenosha, Wisconsin and flows south through Racine and Kenosha Counties in Wisconsin, and then through Lake, Cook, and Will Counties in Illinois. The river then joins the Sanitary and Ship Canal in Lockport, flows west through Joliet, before converging with the Kankakee River to form the Illinois River. The Illinois River then flows into the Mississippi River which flows south to the Gulf of Mexico.

Portions of the Des Plaines River, tributaries and lakes within the watershed in Lake County are listed as impaired by the Illinois EPA (**See Appendix A**) and do not meet their designated uses under the Clean Water Act. Segments listed as impaired for pollutants including arsenic, chloride, fecal coliform, manganese, mercury, methoxychlor, phosphorus, polychlorinated biphenyls, sediment/silt, and total suspended solids. Other impairments affecting the Des Plaines River include algae, cover loss, dissolved oxygen, flow alteration, flow modification, stream alterations, and unknown causes. Phosphorous is currently limited by regulatory action through Publicly Owned Treatment Works (POTWs) National Pollutant Discharge Elimination System (NPDES) permits. Total Maximum Daily Loads (TMDLs) have been completed for some stream segments and lakes within the watershed and more may continue to be developed. However, it is unclear as to whether any of these regulatory mechanisms will ultimately allow for the impaired waterbodies to meet Clean Water Act standards.

The Des Plaines River Watershed Workgroup (DRWW) brings together local stakeholders to 1) better determine stressors to the aquatic system through a long-term water quality monitoring program; and 2) to work together to preserve and enhance water quality in the Des Plaines River and its tributaries. The NARP process however represented a dramatic shift from historic monitoring and required a multi-year sampling program at multiple sites.

## Monitoring Types and Strategy

### Water Column Sampling/Analysis Programs

- 73 Monitoring Locations (**See Appendix B**)
- Five water column collection periods: February, May, July, August, & September
  - 5x/year: Total Suspended Solids, Ammonia, Total Nitrates, Total Kjeldahl Nitrogen, Total Phosphorus, Dissolved Reactive Phosphorus, Conductivity, pH, water temperature and Dissolved Oxygen
  - 4x/year: E. coli (May, July, August, September)
  - 4x/year at 18 monitoring sites: Sestonic Chlorophyll-a (May, July, August, September)
  - 2x/year: Chloride, sulfate and hardness (February & August)
- The following is a summary of the DRWW Monitoring Program for 2025 (**Appendix C**)

### Bioassessment Monitoring Program

- Bioassessment monitoring and analysis of the 73 DRWW sites will be evaluated annually based on current watershed conditions
- Bioassessment sampling and development of the report occurs over a consecutive 2-3 year period

### Sediment Sampling Program

- Sediment monitoring and analysis of the 73 DRWW sites will be evaluated annually based on current watershed conditions
- Sediment sampling and development of the report occurs over a consecutive 2-3 year period
- Sampling will focus on metals, and organic chemical analyses

### Continuous Monitoring / Chlorophyll a Sampling & Analyses Programs

- Deployment of (3) data sondes collecting D.O. temperature, TSS, pH, chlorophyll and conductivity data.
- Deploy continuous monitoring sondes year-round at 3 sites on annual basis (2020-2023). Sites 13-6, 13-1 and 16-4 on Des Plaines River mainstem during NARP development

## Quality Assurance Project Plan

All monitoring is being conducted under two Illinois EPA approved QAPPs (2016). The DRWW utilized the DuPage River Salt Creek Workgroup's (DRSCW) approved QAPP and adapted it to be watershed specific for the Des Plaines Watershed bioassessment monitoring. A separate QAPP was developed and submitted to Illinois EPA for flow monitoring. Illinois EPA requires the development of a QAPP for any activity involving the collection and analysis of environmental data. A QAPP presents the policies and procedures, organization, objectives, quality assurance requirements, and quality control activities designed to achieve the type and quality of environmental data necessary to support project or program objectives. It is the policy of Illinois EPA that no data collection or analyses will occur without an approved QAPP. All in-house and external environmental data collection activities are subject to this requirement. All contracts must address quality assurance requirements (e.g., data quality and reporting requirements) when those contracts pertain to, or have an impact on, data collection or analysis activities. Additionally, all grants and contracts need to address quality assurance requirements specified in applicable state acquisition or procurement regulations. The DRWW QAPP follows U.S. and Illinois EPA guidance for the development of a project specific QAPP.

## Data and Reporting

### Lake County Health Department

The Lake County Health Department, DRWW water chemistry contractor, sends water column chemistry data to the DRWW following analysis via email in the format of one final report of laboratory analysis in pdf form per site. After data is collected at each site for that sampling event, the laboratory sends an Excel spreadsheet summarizing all sites and parameters. DRWW staff take this data and format it to fit the Illinois EPA requirements for reporting surface-water and is submitted by the March 31<sup>st</sup> deadline to fulfill NPDES permit requirements.

### Midwest Biodiversity Institute

Midwest Biodiversity Institute (MBI), DRWW bioassessment contractor, will send biological data to the DRWW and will be appended to the project database. MBI will also be responsible for completing a final monitoring report, analyzing the results of the water column and sediment chemistry as well as the fish, macroinvertebrate, and habitat data. Interpretative statistics, such as long-term central tendencies, will be based on all available data within the database, developed over time, including past data collection efforts. This data is formatted to fit the Illinois EPA requirements and is submitted by the March 31<sup>st</sup> deadline to fulfill NPDES permit requirements.

## DRWW Monitoring Summary

### 2016 & 2017

In 2016, 44 locations were sampled for water chemistry, 49 locations for sediment, and 69 locations were sampled for biology. Midwest Biodiversity Institute's (MBI) Biological and Water Quality Assessment of the Upper Des Plaines River and Tributaries (2016) report documents the results of the baseline sampling. In 2017, the DRWW sampled 70 locations; 50 locations for water chemistry, and 1/3 of the 70 sites for biological/sediment. Indian Creek, Aptakisc Creek, and Buffalo Creek sub-watersheds plus direct tributaries to Des Plaines River adjacent those sub-watersheds and nested between the mainstem and the sub-watershed boundaries (23 sites) were sampled for biology/sediment. Continuous Flow Monitoring was conducted at 21 locations. Chlorophyll-a sampling and continuous monitoring at 14 locations for temp, pH, DO, and specific conductance.

Two Quality Assurance Project Plans (QAPPs) were developed for the monitoring program; a Bioassessment QAPP and a Flow Monitoring QAPP are available on the DRWW website [<https://www.drww.org/reports-and-data>].

### 2018 & 2019

In 2018, the DRWW sampled 71 locations for water chemistry, and 1/3 of the 71 sites for biological/sediment. The Upper Des Plaines mainstem (18 sites) plus small direct tributaries to the lower one-half of the mainstem (2 sites)

were sampled for biology/sediment in 2018 (1/3 of the watershed). Continuous Flow Monitoring was conducted at 21 locations. Chlorophyll-a sampling and continuous monitoring was collected at 14 locations for temp, pH, DO, and specific conductance. Winter season Continuous Monitoring program for conductivity as a surrogate for chlorides was collected at 9 locations. In 2019, the DRWW sampled 73 locations for water chemistry, and the remaining 1/3 of the 73 sites for biological/sediment. This included sites in the Mill Creek and Bull Creek sub-watersheds plus direct tributaries to the Des Plaines River adjacent to those two watersheds and nested between the mainstem and the sub-watershed boundaries (30 sites). Continuous Flow Monitoring was conducted at 21 locations. Chlorophyll-a sampling and continuous monitoring was collected at 14 locations for temp, pH, DO, and specific conductance.

## 2020

In 2020, the DRWW sampled 73 locations for water chemistry, 14 core site locations for benthic chlorophyll-a and 20 (including the 14 core site locations) site locations for biological fish, habitat and macroinvertebrate sampling. 3 data sondes were deployed for continuous flow monitoring. In addition to sampling, DRWW has contracted with MBI for Integrated Prioritization System (IPS) Modeling; an in-depth analysis of all chemical, physical, and biological data collected. The DRWW contracted with Geosyntec to develop a Preliminary Nutrient Assessment & Reduction Plan Workplan in 2020.

## 2021

In 2021, the DRWW sampled 73 locations for water chemistry and 3 data sondes were deployed for continuous flow monitoring. Analysis was performed on for 2020 benthic chlorophyll-a and biological fish, habitat and macroinvertebrate samples. MBI integrated DRWW's 2020-2021 biological monitoring data into the IPS Model. The DRWW contracted with Geosyntec to develop a NARP (2021 – 2023).

## 2022

In 2022, the DRWW sampled 73 locations for water chemistry, 18 core site locations for sestonic chlorophyll-a and 20 (including the 14 core site locations) site locations for biological fish, habitat and macroinvertebrate sampling. 3 data sondes were deployed for continuous flow monitoring. MBI integrated DRWW's 2022 biological monitoring data into the IPS Model.

## 2023

In 2023, DRWW's monitoring program included Water Quality sampling and analysis at 73 Monitoring Locations and 18 core site locations for sestonic chlorophyll a. Analysis and reporting of 2022 fish, habitat, macroinvertebrate, and sediment chemistry was performed. The DRWW submitted the DRWW Nutrient Assessment Reduction Plan (NARP) to the Illinois EPA on December 29, 2023.

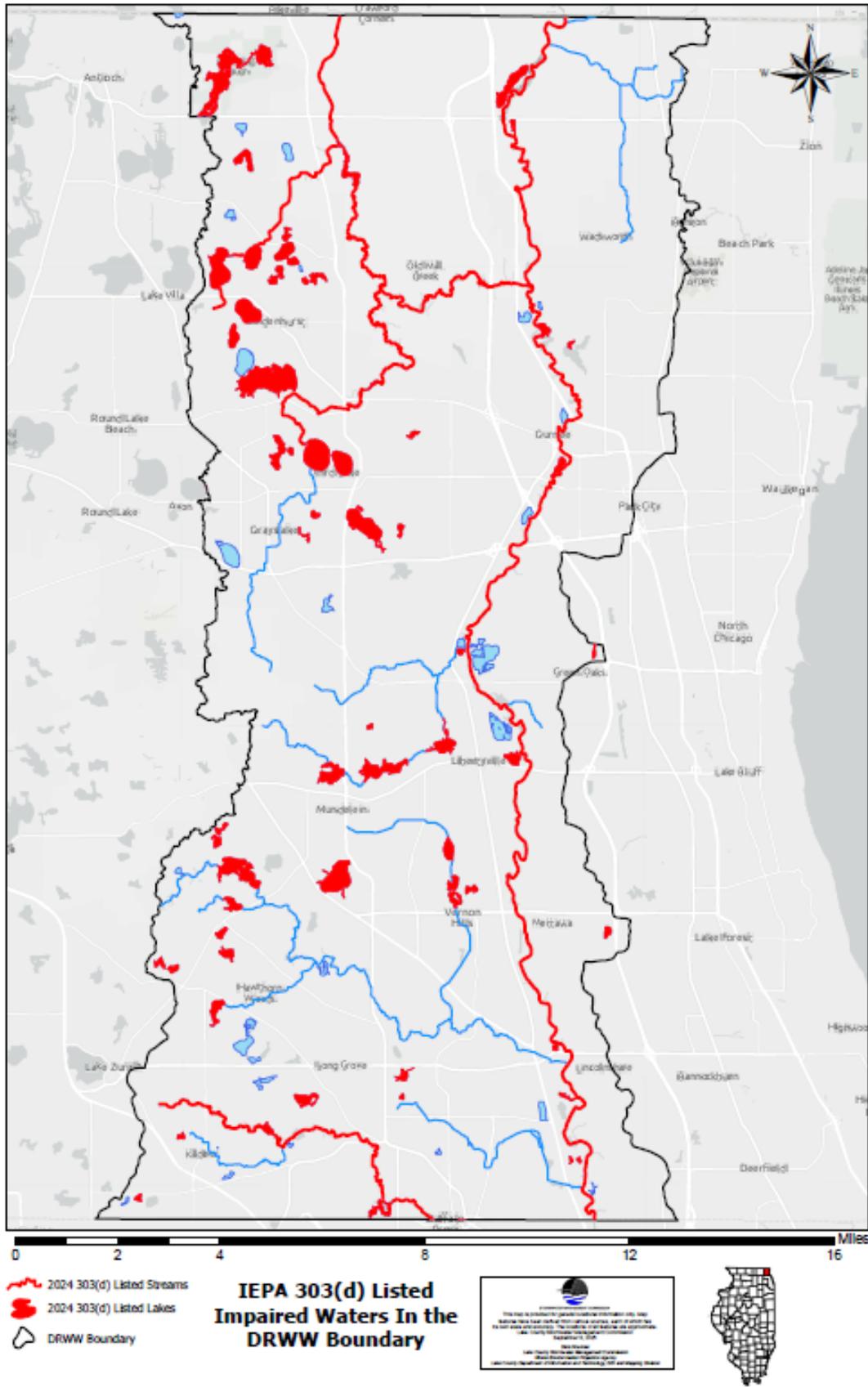
## 2024

In 2024, DRWW's monitoring program included Water Quality sampling and analysis at 73 Monitoring Locations and 18 core site locations for sestonic chlorophyll-a. Analysis and reporting of 2022 fish, habitat, macroinvertebrate, and sediment chemistry was completed June 2024.

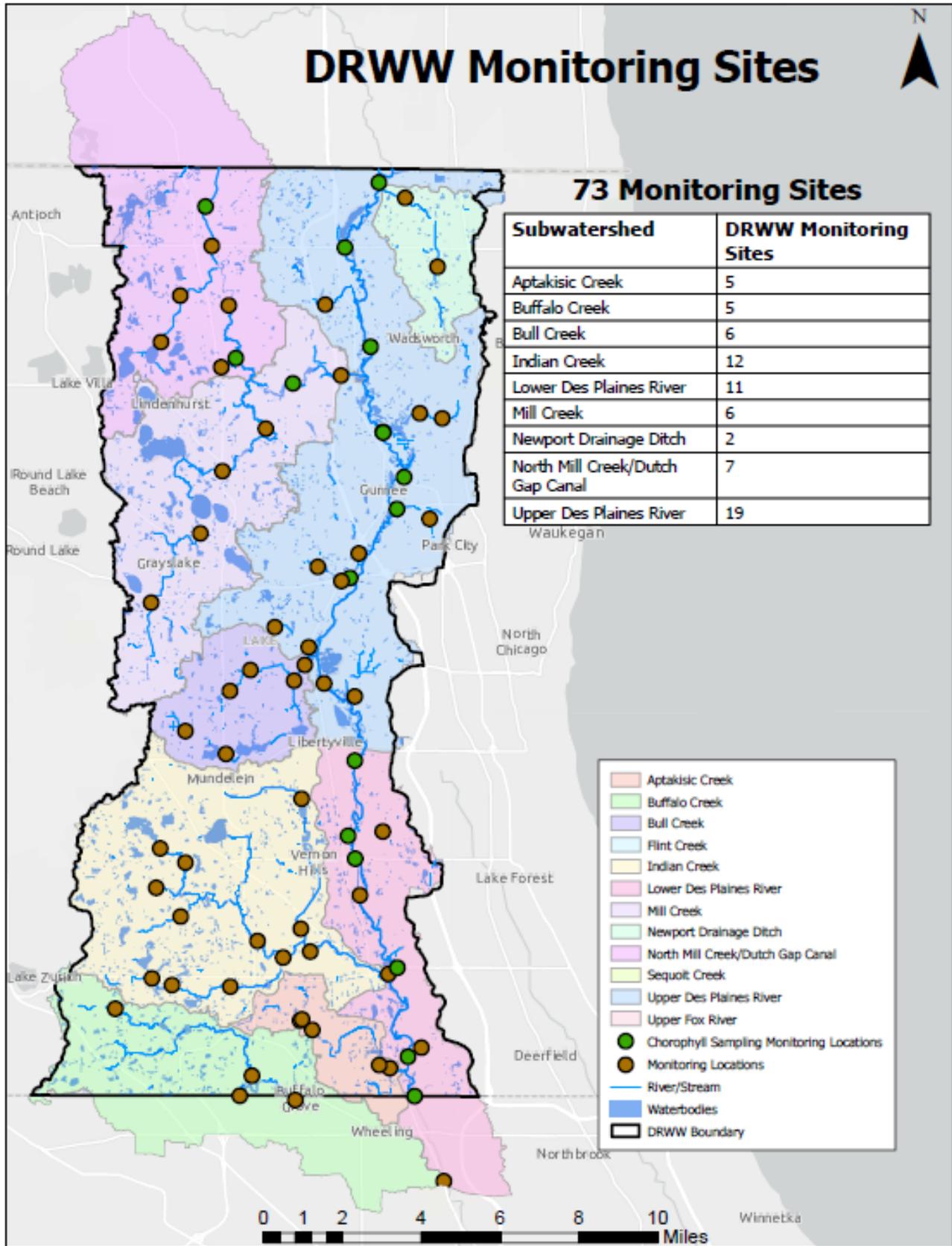
## 2025

In 2025, DRWW's monitoring program included Water Quality sampling and analysis at 73 Monitoring Locations and 18 core site locations for sestonic chlorophyll-a.

# Appendix A



Appendix B



## Appendix C

Parameter	Analysis Type (Laboratory or In-Situ)	DRWW Frequency	Tier 1	Tier 2	Tier 3
			<b>Number of Sample Events</b>		
<b><u>Demand</u></b>					
Chloride	Laboratory	Feb, Aug	2	2	2
Conductivity	In-Situ	Feb, May, July, Aug, Sept	5	5	5
pH	In-Situ	Feb, May, July, Aug, Sept	5	5	5
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	In-Situ	Feb, May, July, Aug, Sept	5	5	5
Water Temperature	In-Situ	Feb, May, July, Aug, Sept	5	5	5
Turbidity			0	0	0
<b><u>Metals</u></b>					
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
<b><u>Nutrients</u></b>					
Ammonia	Laboratory	Feb, May, July, Aug, Sept	5	5	5
Total Nitrates (NO <sub>2</sub> + NO <sub>3</sub> )	Laboratory	Feb, May, July, Aug, Sept	5	5	5
Total Kjeldahl Nitrogen	Laboratory	Feb, May, July, Aug, Sept	5	5	5
Total Phosphorous	Laboratory	Feb, May, July, Aug, Sept	5	5	5
Dissolved Reactive Phosphorous	Laboratory	Feb, May, July, Aug, Sept	5	5	5
Sestonic Chlorophyll a	Laboratory	May, July, Aug, Sept	4	0	0
<b><u>Bacteria</u></b>					
<i>E. coli</i>	Laboratory	May, July, Aug, Sept	4	4	4
<b><u>Water Organics</u></b>					
Polychlorinated Biphenyls			0	0	0
Pesticides			0	0	0
Methoxychlor			0	0	0
PNAs			0	0	0
Volatile Organic Compounds			0	0	0