DOWNERS GROVE SANITARY DISTRICT
GENERAL MANAGER'S REPORT
January 12, 2024

January Board Meeting

Copies of documentation for the following agenda items are enclosed for the January 16, 2024 meeting:

1) Proposed Agenda
2) Minutes of the December 19, 2023 regular meeting
3) Change Order No. 1 – Basin 2D Sewer Rehabilitation
4) Claim Ordinance 1933
5) Resolution No. R2024-01 – Presidential Powers and Duties
6) Operations Report – 2023 WWTC Annual Summary
7) Operations Report – 2023 Collection System Construction Summary
8) Operations Report – 2023 Collection System Performance
9) Operations Report – 2024 Collection System Work Plan
10) Executive Session – 2024-25 Salary Schedule *(Confidential under Separate Cover)*
11) Executive Session – Memo regarding General Manager review *(Confidential under Separate Cover)*
12) Executive Session – Memo regarding Part-Time Employees *(Confidential under Separate Cover)*

BOLI Meeting

There is no BOLI meeting scheduled this month.

Operations Reports

Copies of the following are enclosed for December operations:

1) Progress Report from Carly on Administrative Services activities.
2) The WWTC Operations Report from Marc.
3) The WWTC/Lift Station Maintenance Report from Nick.
4) Progress Report from Todd on Collection System Maintenance activities.
5) Progress Report from Keith on Collection System Construction activities.
6) Progress Report from Reese on Laboratory activities.
7) Engineering Report

Infiltration/Inflow Removal Work

Inspection efforts on private property under the I/I program with the intention of conducting I/I removal are ongoing in the 2C-025 in downtown Downers Grove. A map showing progress for the 2C-025 area is included herein, as well as a status summary sheet.

Safety

An informational document about the work performed at lift stations and in manholes was created and shared with police and fire departments within the District's service area. The goal is to improve the safety of our employees by sharing helpful information with emergency responders.

The next Safety Committee meeting is scheduled for January 23.

Financial

A copy of the Investment Schedule as of December 31, 2023 is enclosed.

The Treasurer's Report for December 2023 covering the first eight months of FY 23-24 is included herein, along with a summary cover memo.

Meetings

I took vacation on December 20, 22, 26, 28 and 29.

Performance reviews for all Supervisors and the Safety Coordinator were completed in December.

I attended the following meetings since the December 15, 2023 General Manager's report:

- December 19 attended CSWEA Local Arrangements Committee meeting
- January 8 attended meeting with other local wastewater treatment facilities to discuss the Climate Pollution Reduction Grant program
- January 9 attended CSWEA Local Arrangements Committee meeting
- January 11 attended kickoff meeting for the Maple Grove Bridge Replacement study at the Forest Preserve District of DuPage County's office in Wheaton
- January 12 attended IAWA Executive Committee meeting
- January 12 attended IAWA Technical Committee meeting. Reese also attended.
- January 12 attended IAWA Legislative Subcommittee meeting

Miscellaneous

Copies of the following items are enclosed:

1) Notice on Wipes Class Action Settlement dated November 17
2) Plant profile on DGSD in the Winter 2023 edition of the Central States Water magazine
3) BSSRAP questionnaire dated December 17
4) General Manager's Report to the Employees dated December 29 and January 12
5) Nutrient Implementation Plan (NIP) dated December 31
6) December 2023 DGSD WWTC wastewater reports of SARS-CoV-2, influenza A & B and RSV levels
7) Midwest Biosolids Association Emerging Issues Quarterly Report – December 2023
8) January 2 email confirming IEPA receipt of the NIP
9) January 5 letter from the Village of Downers Grove regarding the Odgen Avenue TIF
10) January 10 cover letter transmitting documents to DuPage County Board Chair Deb Conroy

cc: WDVB, AES, JMW, BOLI, DM, CS

DOWNERS GROVE SANITARY DISTRICT
BOARD OF TRUSTEES MEETING
JANUARY 16, 2024 – 7:00 PM
BOARD ROOM

PROPOSED AGENDA

I. APPROVAL OF MINUTES
   A. REGULAR MEETING – DECEMBER 19, 2023

II. APPROVAL OF CHANGE ORDER NO. 1 – BASIN 2D SEWER REHABILITATION

III. APPROVAL OF CLAIM ORDINANCE NO. 1933

IV. PUBLIC COMMENT

V. OLD BUSINESS

VI. NEW BUSINESS
   A. RESOLUTION NO. R2024-01 – PRESIDENTIAL POWERS AND DUTIES
   B. OPERATIONS REPORTS
      1. 2023 WWTC OPERATIONS SUMMARY
      2. 2023 COLLECTION SYSTEM CONSTRUCTION SUMMARY
      3. 2023 COLLECTION SYSTEM PERFORMANCE
      4. 2024 COLLECTION SYSTEM WORK PLAN

VII. EXECUTIVE SESSION
   To discuss employee compensation and performance per exception 2(c)1 of the Illinois Open Meetings Act.

PUBLIC COMMENT:

The District has an online form for the Public who cannot attend the meeting to submit public comment. District staff shall read aloud any received public comments during the Public Comment portion of the meeting. Public comments for Public not attending the meeting in person need to be submitted before 4:00 p.m. on January 16, 2024. The form can be found here: https://www.dgsd.org/government/public-comment/

December 19, 2023

MINUTES

The monthly meeting of the Downers Grove Sanitary District Board of Trustees was held on Tuesday, December 19, 2023, convening at 7:00 p.m. The meeting was held at the District's Administration Center, 2710 Curtiss Street, Downers Grove. Present were Trustees Amy E. Sejnost, Jeremy M. Wang, General Manager Amy R. Underwood, Administrative Supervisor Carly S. Shaw, Sewer Construction Supervisor Keith Shaffner, Information Coordinator Alyssa J. Caballero, and Attorney Dan McCormick. Trustee Wally D. Van Buren was absent.

Minutes of Regular Meeting – November 21, 2023

A motion was made by Trustee Wang seconded by Trustee Sejnost approving the minutes of the regular meeting held on November 21, 2023 and authorizing the President and Clerk to sign same. The motion carried.

Claim Ordinance No. 1932

A motion was made by Trustee Wang seconded by Trustee Sejnost adopting Claim Ordinance No. 1932 in the total amount of $827,485.52 as presented and authorizing the President and Clerk to sign same. The motion carried. (Votes recorded: Ayes–Sejnost and Wang.)

Public Comment – None

New Business

Annexation Ordinance AO 2023-06 – 7124 Matthias Road, Downers Grove

Staff presented Annexation Ordinance No. AO 2023-06 for the annexation of a single-family lot located at 7124 Matthias Road, Downers Grove. A motion was made by Trustee Wang seconded by Trustee Sejnost accepting the Petition for Annexation, adopting Annexation Ordinance No. AO 2023-06 as presented and authorizing the President and Clerk to sign same. The motion carried. (Votes recorded: Ayes–Sejnost and Wang.).

Annexation Ordinance AO 2023-07 – 7128 Matthias Road, Downers Grove

Staff presented Annexation Ordinance No. AO 2023-07 for the annexation of single-family lot located at 7128 Matthias Road, Downers Grove. A motion was made by Trustee Wang seconded by Trustee Sejnost accepting the Petition for Annexation, adopting Annexation Ordinance No. AO 2023-07 as presented and authorizing the President and Clerk to sign same. The motion carried. (Votes recorded: Ayes–Sejnost and Wang.).

Credit Card Policy

Staff presented proposed District Credit Card and Line of Credit Use Policies and Procedures.

A motion was made by Trustee Wang seconded by Trustee Sejnost approving the Credit Card and Credit Line of Use Policies and Procedures as presented. The motion carried. (Votes recorded: Ayes–Sejnost and Wang.).

Employee Policy Manual Revisions

Staff presented proposed revisions to the District's Employee Policy Manual to update specific sections to comply with statutory changes including the Paid Leave for All Workers Act. A motion was made by Trustee Wang seconded by Trustee Sejnost to approve the proposed revisions to the District's Employee Policy Manual. The motion carried. (Votes recorded: Ayes–Sejnost and Wang.)

Decennial Committee Facilitator

General Manager Underwood presented a proposal to hire the Northern Illinois University (NIU) Center for Government Studies (CGS) to facilitate review and analysis of the District and write the report required by the Decennial Committees on Local Government Efficiency Act (PA-102-1088) in the amount of $19,450. A motion was made by Trustee Wang seconded by Trustee Sejnost to approve the proposal to engage CGS to complete the work identified in the amount of $19,450. The motion carried. (Votes recorded: Ayes–Sejnost and Wang.)

Schedule of 2024 Regular Meetings

Administrative Supervisor Shaw presented the proposed Schedule of Regular Meetings for Calendar Year 2024. The Board concurred with the schedule. The finalized schedule will be provided to the local papers and posted on the District's website.

Other New Business

Trustee Wang inquired about the proposed new accounting software. He noted the valve actuator replacements, Administration Building security camera upgrades, and the WWTC and Lift Station Arc Flash studies, noted in Maintenance Supervisor Whitefleet's report. He noted the employee holiday lunch and thanked staff for their work.

Trustee Sejnost congratulated Brian Meng for his 25 years of service with the District and Bill Smith for his promotion to Lead Mechanic. She expressed her appreciation for the recent safety updates including all employees attending CPR and First Aid recertification. She also inquired about the informational documents on the lift stations maintenance that will be provided to the appropriate first responders. Trustee Sejnost inquired about the hiring status of the Maintenance Mechanic posting. She also inquired about the new accounting software. She noted the Waters Worth It essay contest and thanked Stephanie Cioni for her work on the contest. She noted that CHP 1 and 2 are both operating as expected. She also noted the WWTC and Lift Station Arc Flash studies, noted in Maintenance Supervisor Whitefleet's report. Trustee Sejnost commented on the letter from the Midwest Biosolids Association welcoming the District as a member. Lastly, she wished staff happy holidays.

A motion was made by Trustee Wang seconded by Trustee Sejnost to adjourn the regular meeting at 8:48 p.m. The motion carried.

Approved: January 16, 2024

____
Acting President

Attest: _______________________________
Clerk

Downers Grove Sanitary District

2710 Curtiss Street
P.O. Box 1412
Downers Grove, IL 60515-0703
Phone: 630-969-0664
Fax: 630-969-0827
www.dgsd.org

Providing a Better Environment for South Central DuPage County

MEMORANDUM

To: Board of Trustees

From: Amy R. Underwood, General Manager

Date: January 12, 2024

Subject: Change Order No. 1 – Basin 2D Sewer Rehabilitation

The video provided by Visu-Sewer, the contractor on the Basin 2D Sewer Rehabilitation project, showed heavy mineral deposits at several pipe joints. Mineral deposits were unexpected and as such removal of the deposits was not included in the original scope of work. The deposits needed to be removed prior to lining the pipe. Sewer Maintenance Supervisor Bob Swirsky reviewed the video and authorized Visu-Sewer to remove the mineral deposits on a time & materials basis.

Actual quantities for several of the work items varied from the quantities estimated on the bid form by the engineer. District staff verified the actual quantities. In addition, root removal and sample testing were not needed.

The combined impact of the quantities adjustment and the mineral deposit removal resulted in a net decrease of $1,230.00.

At the January 16 Board meeting, I will be requesting approval from the Board for Change Order No. 1 to the Basin 2D Sewer Rehabilitation agreement with Visu-Sewer of Illinois, LLC. for a net decrease in contract price of $1,230.00 and for the General Manager to sign same.

C: BOLI, CS, DM

CHANGE ORDER NO. 1

PROJECT: Basin 2D Sewer Rehabilitation	DATE OF ISSUANCE: 01-16-2024
OWNER: Downers Grove Sanitary District	CONTRACTOR: Visu-Sewer of Illinois, LLC

You are directed to make the following changes in the Contract Documents:

DESCRIPTION:

1. Remove heavy mineral deposits at pipe joints prior to lining the pipe.

2. Adjust work item quantities from the bid quantity to the actual quantity as identified on Contractor's Invoice Number 9882.

CHANGE IN CONTRACT PRICE:

Original Contract Price:	$ 61,270.00
Current Contract Price:	$ 61,270.00
Net <u>decrease</u> of this Change Order:	$ 1,230.00
Contract Price with this Change Order:	$ 60,040.00

APPROVED: ________________________________
Amy R. Underwood, General Manager
DOWNERS GROVE SANITARY DISTRICT

ACCEPTED: _________________________________
Keith M. Alexander, President
VISU-SEWER OF ILLINOIS, LLC

Visu-Sewer
Inspect. Maintain. Rehabilitate.

DOWNERS GROVE SANITARY DISTRICT
2710 CURTISS STREET
DOWNERS GROVE, IL 60515

ATTN: KEITH SHAFFNER
RE: BASIN 2D SEWER REHABILITATION
FIRST AND FINAL PAY REQUEST

www.visu-sewer.com
INVOICE NUMBER: 9882
INVOICE DATE: 11/30/2023

CUSTOMER NO. 1778
JOB NO. 23121i-11

ITEM	DESCRIPTION	EST. QTY	U/M	PRICE	COMPLETED THIS PERIOD	COMPLETED TO DATE	AMOUNT
1	MOBILIZATION	1	LS	3500.00	1.00	1.00	3,500.00
2	SANITARY SEWER LIGHT CLEAN & TV	1	LS	3,475.00	1.00	1.00	3,475.00
3	SANITARY SEWER LATERAL CLEAN & TV	1	EA	1,650.00	1.00	1.00	1,650.00
4	ROOT REMOVAL	8	HR	390.00	-	-	-
5	CURED IN PLACE PIPE(MH TO MH)						
	8 INCH, 8 - 12' DEEP	541	LF	40.00	536.00	536.00	21,440.00
	8 INCH, 12 - 16' DEEP	154	LF	40.00	149.00	149.00	5,960.00
6	END SEALS	9	EA	135.00	8.00	8.00	1,080.00
7	CURED IN PLACE SAMPLE TESTING	2	EA	150.00	-	-	-
8	LATERAL SERVICE REINSTATEMENT	14	EA	50.00	15.00	15.00	750.00
9	CIPP PIPE SERVICE LATERAL	1	EA	8,500.00	1.00	1.00	8,500.00
10	ADDITIONAL CIPP SERVICE LATERAL	40	LF	68.00	65.00	65.00	4,420.00
11	SEALING LATERAL CONNECTIONS	14	EA	485.00	14.00	14.00	6,790.00
12	TRAFFIC CONTROL AND PROTECTION	1	LS	1,500.00	1.00	1.00	1,500.00
EX	GRIND OUT MINERAL DEPOSITS	3	HR	390.00	2.50	2.50	975.00

PLEASE REMIT TO:

VISU-SEWER OF ILLINOIS, LLC
P.O. BOX 804
PEWAUKEE, WI 53072-0804

TOTAL WORK COMPLETED	60,040.00
0% RETAINAGE	-
LESS PREVIOUS INVOICES	-
TOTAL AMOUNT DUE	60,040.00

DUE UPON RECEIPT OF INVOICE.
A SERVICE CHARGE OF 1 1/2 % PER MONTH MAY
BE CHARGED ON ALL PAST DUE ACCOUNTS

Visu-Sewer, Inc.
W230 N4855 Betker Dr, Pewaukee, WI 53072 (P) 800-876-8478 / 262-695-2340 (F) 262-695-2359

Downers Grove, Illinois

Date: January 16, 2024

Claim Ordinance No. 1933

An Ordinance Providing for the Payment of Certain Claims.

WHEREAS, it appears to the Board of Trustees of the Downers Grove Sanitary District that there are certain claims against said District which would be allowed and paid therefore,

BE IT ORDAINED, by the Board of Trustees of the Downers Grove Sanitary District

That the following claims be and they are hereby approved and ordered paid and that an order be drawn on the Treasurer of said District out of the funds shown below. Said claims, totaling **$604,158.09** being in words and figures as follows:

PAYROLL END DATE: 12.15.23
PAYROLL PAID DATE: 12.19.23
G/L DATE: 01.31.24

GENERAL LEDGER RECAP

DATE 12/18/23 PERIOD END 12/15/23

G/L NUMBER	COST DESCRIPTION	DEBIT	CREDIT
01-00.1001	CASH - PAYROLL ACCOUNT		22536.96-
01-00.2000	FEDERAL TAX WITHHELD		3368.90-
01-00.2001	STATE TAX WITHHELD		1516.85-
01-00.2002	SOCIAL SECURITY WITHHELD		2006.08-
01-00.2003	IMRF WITHHELD		1115.87-
01-00.2013	CREDIT UNION WITHHELD		515.00-
01-00.2014	VOLUNTARY ADDITIONAL PENSION CONTRIBUTION		676.50-
01-00.2017	VOLUNTARY GROUP LIFE		64.00-
01-00.2021	FLEXIBLE ACCOUNT WITHHELD - MEDICAL		283.33-
01-00.2024	FLEXIBLE ACCOUNT WITHHELD - PREM CONVERSION		741.09-
01-00.2026	DEFERRED COMPENSATION WITHHELD - IPPFA		125.00-
01-00.2027	DEFERRED COMPENSATION WITHHELD - IPPFA ROTH		40.00-
01-00.2028	DC PLAN LOAN REPAYMENT WITHHELD		77.06-
01-11.A003	GENERAL MANAGEMENT	9786.37	
01-11.A004	FINANCIAL RECORDS	43.78	
01-11.A007	CODE ENFORCEMENT	8217.83	
01-11.A008	SAFETY ACTIVITIES	195.15	
01-11.A030	BUILDING AND GROUNDS	108.01	
01-12.A006	ENGINEERING	874.78	
01-12.A009	OPERATIONS MANAGEMENT	6250.27	
01-12.A011	MAINTENANCE - WWTC	930.47	
01-12.A013	MAINTENANCE - ENERGY RECOVERY	281.09	
01-12.A014	MAINTENANCE - ELECTRICAL	86.77	
01-12.A021	WWTC - OPERATIONS	151.39	
01-12.A022	WWTC - SLUDGE HANDLING	338.72	
01-12.A030	BUILDING AND GROUNDS	129.70	
01-13.A009	OPERATIONS MANAGEMENT	2164.53	
01-13.A042	LAB - PRETREATMENT	2596.89	
01-14.A006	ENGINEERING	87.57	
01-15.A006	ENGINEERING	43.78	
01-15.A009	OPERATIONS MANAGEMENT	649.39	
01-15.A080	LIFT STATION MAINTENANCE	130.15	
		33066.64	33066.64-

PAYROLL END DATE: 12.23.23
PAYROLL PAID DATE: 12.29.23
G/L DATE: 01.31.24

GENERAL LEDGER RECAP

DATE 12/27/23 PERIOD END 12/23/23 PAGE 5

G/L NUMBER	COST DESCRIPTION	DEBIT	CREDIT
01-00.1001	CASH - PAYROLL ACCOUNT		53537.55-
01-00.2000	FEDERAL TAX WITHHELD		8945.16-
01-00.2001	STATE TAX WITHHELD		4016.35-
01-00.2002	SOCIAL SECURITY WITHHELD		6551.30-
01-00.2003	IMRF WITHHELD		3791.49-
01-00.2005	CLEARING		20.89-
01-00.2013	CREDIT UNION WITHHELD		2182.00-
01-00.2014	VOLUNTARY ADDITIONAL PENSION CONTRIBUTION		4007.97-
01-00.2021	FLEXIBLE ACCOUNT WITHHELD - MEDICAL		305.00-
01-00.2022	FLEXIBLE ACCOUNT WITHHELD - DEPENDENT CARE		192.31-
01-00.2024	FLEXIBLE ACCOUNT WITHHELD - PREM CONVERSION		1160.95-
01-00.2025	EMPLOYEE INS PREM CONTRIBUTION - POST TAX		308.71-
01-00.2026	DEFERRED COMPENSATION WITHHELD - IPPFA		506.91-
01-00.2027	DEFERRED COMPENSATION WITHHELD - IPPFA ROTH		423.64-
01-00.2028	DC PLAN LOAN REPAYMENT WITHHELD		195.91-
01-11.A003	GENERAL MANAGEMENT	1331.56	
01-11.A004	FINANCIAL RECORDS	7707.77	
01-11.A005	ADMINISTRATIVE RECORDS	1445.99	
01-11.A007	CODE ENFORCEMENT	4166.96	
01-11.A008	SAFETY ACTIVITIES	1594.30	
01-11.A030	BUILDING AND GROUNDS	76.78	
01-12.A011	MAINTENANCE - WWTC	12703.53	
01-12.A014	MAINTENANCE - ELECTRICAL	7736.85	
01-12.A021	WWTC - OPERATIONS	14035.59	
01-12.A022	WWTC - SLUDGE HANDLING	6961.65	
01-12.A023	WWTC - ENERGY RECOVERY	228.79	
01-12.A030	BUILDING AND GROUNDS	3367.12	
01-13.A041	LAB - WWTC	5207.77	
01-13.A048	LAB - ENERGY RECOVERY	186.63	
01-14.A051	SEWER MAINTENANCE	10051.07	
01-14.A054	SEWER MAINTENANCE - BACKUPS AND HIGH FLOWS	211.25	
01-14.A061	INSPECTION - NEW CONSTRUCTION	70.90	
01-14.A062	INSPECTION - CONSTRUCTION OF DGSD PROJECTS	895.45	
01-14.A063	INSPECTION - PERMIT INSPECTIONS	453.28	
01-14.A064	INSPECTION - MISCELLANEOUS	565.02	
01-14.A065	INSPECTION - CONSTR BY VILLAGES, UTILITIES	3191.21	
01-14.A066	INSPECTION - CODE ENFORCEMENT	3637.91	
01-15.A080	LIFT STATION MAINTENANCE	318.76	
		86146.14	86146.14-

PAYROLL END DATE: 12.31.23
PAYROLL PAID DATE: 01.03.24
G/L DATE: 01.31.24

GENERAL LEDGER RECAP

DATE 01/02/24 PERIOD END 12/31/23 PAGE 4

G/L NUMBER	COST DESCRIPTION	DEBIT	CREDIT
01-00.1001	CASH - PAYROLL ACCOUNT		21293.57-
01-00.2000	FEDERAL TAX WITHHELD		3172.68-
01-00.2001	STATE TAX WITHHELD		1490.13-
01-00.2002	SOCIAL SECURITY WITHHELD		2458.49-
01-00.2003	IMRF WITHHELD		1446.17-
01-00.2013	CREDIT UNION WITHHELD		515.00-
01-00.2014	VOLUNTARY ADDITIONAL PENSION CONTRIBUTION		1424.00-
01-00.2021	FLEXIBLE ACCOUNT WITHHELD - MEDICAL		283.33-
01-00.2024	FLEXIBLE ACCOUNT WITHHELD - PREM CONVERSION		741.09-
01-00.2026	DEFERRED COMPENSATION WITHHELD - IPPFA		124.80-
01-00.2027	DEFERRED COMPENSATION WITHHELD - IPPFA ROTH		40.00-
01-00.2028	DC PLAN LOAN REPAYMENT WITHHELD		77.38-
01-11.A003	GENERAL MANAGEMENT	9981.64	
01-11.A004	FINANCIAL RECORDS	257.76	
01-11.A007	CODE ENFORCEMENT	7955.13	
01-11.A008	SAFETY ACTIVITIES	164.02	
01-11.A030	BUILDING AND GROUNDS	47.00	
01-12.A006	ENGINEERING	677.31	
01-12.A009	OPERATIONS MANAGEMENT	6056.72	
01-12.A011	MAINTENANCE - WWTC	1319.60	
01-12.A013	MAINTENANCE - ENERGY RECOVERY	258.04	
01-12.A014	MAINTENANCE - ELECTRICAL	258.04	
01-12.A021	WWTC - OPERATIONS	475.22	
01-12.A030	BUILDING AND GROUNDS	94.00	
01-13.A009	OPERATIONS MANAGEMENT	4199.41	
01-13.A041	LAB - WWTC	47.00	
01-13.A042	LAB - PRETREATMENT	755.91	
01-15.A006	ENGINEERING	144.75	
01-15.A009	OPERATIONS MANAGEMENT	305.04	
01-15.A080	LIFT STATION MAINTENANCE	70.05	
		33066.64	33066.64-

PAYROLL END DATE: 01.06.24
PAYROLL PAID DATE: 01.12.24
G/L DATE: 01.30.24

G/L NUMBER	COST DESCRIPTION	DEBIT	CREDIT
01-00.1001	CASH - PAYROLL ACCOUNT		56096.53-
01-00.2000	FEDERAL TAX WITHHELD		8976.24-
01-00.2001	STATE TAX WITHHELD		4051.59-
01-00.2002	SOCIAL SECURITY WITHHELD		6720.71-
01-00.2003	IMRF WITHHELD		3938.73-
01-00.2005	CLEARING		20.89-
01-00.2013	CREDIT UNION WITHHELD		2182.00-
01-00.2014	VOLUNTARY ADDITIONAL PENSION CONTRIBUTION		4244.47-
01-00.2021	FLEXIBLE ACCOUNT WITHHELD - MEDICAL		305.00-
01-00.2022	FLEXIBLE ACCOUNT WITHHELD - DEPENDENT CARE		192.31-
01-00.2024	FLEXIBLE ACCOUNT WITHHELD - PREM CONVERSION		1160.95-
01-00.2025	EMPLOYEE INS PREM CONTRIBUTION - POST TAX		449.15-
01-00.2026	DEFERRED COMPENSATION WITHHELD - IPPFA		557.41-
01-00.2027	DEFERRED COMPENSATION WITHHELD - IPPFA ROTH		418.64-
01-00.2028	DC PLAN LOAN REPAYMENT WITHHELD		195.91-
01-11.A003	GENERAL MANAGEMENT	324.48	
01-11.A004	FINANCIAL RECORDS	8856.30	
01-11.A005	ADMINISTRATIVE RECORDS	642.49	
01-11.A007	CODE ENFORCEMENT	5746.37	
01-11.A008	SAFETY ACTIVITIES	1549.60	
01-12.A011	MAINTENANCE - WWTC	11967.60	
01-12.A014	MAINTENANCE - ELECTRICAL	7683.83	
01-12.A021	WWTC - OPERATIONS	16302.96	
01-12.A022	WWTC - SLUDGE HANDLING	7001.39	
01-12.A023	WWTC - ENERGY RECOVERY	337.11	
01-12.A030	BUILDING AND GROUNDS	3744.27	
01-13.A041	LAB - WWTC	5876.27	
01-13.A048	LAB - ENERGY RECOVERY	189.72	
01-14.A051	SEWER MAINTENANCE	8662.81	
01-14.A054	SEWER MAINTENANCE - BACKUPS AND HIGH FLOWS	718.32	
01-14.A062	INSPECTION - CONSTRUCTION OF DGSD PROJECTS	942.54	
01-14.A063	INSPECTION - PERMIT INSPECTIONS	288.68	
01-14.A064	INSPECTION - MISCELLANEOUS	954.96	
01-14.A065	INSPECTION - CONSTR BY VILLAGES, UTILITIES	3191.20	
01-14.A066	INSPECTION - CODE ENFORCEMENT	3929.63	
01-15.A080	LIFT STATION MAINTENANCE	600.00	
		89510.53	89510.53-

=============== VENDOR =============== NAME	NUMBER	====== INVOICE ======= DATE	NUMBER	G/L NUMBER	EXPENSE DESCRIPTION	EXPENSE	CHECK AMT	CHECK NO
ACCURATE OFFICE SUPPLY	A000093	12/21/23	606791	01-11.B116	OFFICE SUPPLIES	9.23		
		12/21/23	606791	01-14.B116	CLIPBOARDS	8.17		
		12/29/23	607056	01-11.B116	OFFICE SUPPLIES	89.19	106.59	064611
ACI Payments Inc.	A000096	12/16/23	1000106937	01-11.B110	OLR FEES	35.40	35.40	105420
ADVOCATE OCCUPATIONAL HEALTH	A000150	12/11/23	851856	01-12.B117	DRUG SCREENING	108.00	108.00	064612
ALLAN J COLEMAN	A000245	12/21/23	0294207	01-14.B913	CENTER GUIDES FOR CAMERA	148.43		
		01/02/24	0294648	01-14.B913	CREDIT	133.00-	15.43	064613
ALTORFER INDUSTRIES, INC.	A000292	12/19/23	PM6A0022705	01-12.B513	EMERGENCY GEN 3 PM	174.00		
		12/19/23	PM6A0022706	01-12.B513	EMERGENCY GEN 2 PM	174.00		
		12/20/23	PM6A0022769	01-12.B513	EMERGENCY GEN 1 PM	174.00	522.00	105421
Amazon Business	A000296	12/14/23	111537688203	01-12.B116	DAILY PLANNER	15.75		
		12/23/23	11M7Q7X6GPVW	01-12.B116	MOTOR OIL	41.99		
		12/15/23	14F63WMG63RR	01-12.B116	DAY PLANNER	15.75		
		12/27/23	1743PJ1CWFXL	01-12.B510	MOTOR OIL	41.99		
		12/27/23	17M9FRXRWMRJ	01-13.B116	FOLDABLE DOOR HOOKS	26.94		
		01/01/24	17TT3NRJ4K7Q	01-12.B112	CREDIT	5.47-		
		01/02/24	1C71J6WJ31X7	01-11.B115	ADMIN MONITORS	620.00		
		12/15/23	1C79VRTF6RRC	01-11.B116	BR KEYBOARD	19.99		
		12/23/23	1HQQK9F4GNY4	01-12.B116	GARBAGE CANS/AIR GUN TIP	99.48		
		01/02/24	1KG7D9KR4CKL	01-13.B116	AA BATTERIES	61.97		
		01/04/24	1MYHRL4434FW	01-14.B117	OA OUTERWEAR	159.98		
		12/13/23	1PXNYCVHMDCK	01-12.B113	GLOVES/OIL BARREL	211.49		
		01/02/24	1Q4RKXW413RY	01-12.B112	CREDIT	1.52-		
		12/22/23	1V6314T9DWHP	01-12.B504	HYDRAULIC OIL	113.13		
		01/01/24	1VCLFKMXYVJ6	01-12.B112	PHN CASES/TEMPERED GLASS	83.73		
		12/29/23	1WPKWG69J4C6	01-12.C225	TAIL LIGHT REPLACEMENT	45.98	1551.18	105422
AUTOZONE - AZ COMMERCIAL	A000600	12/12/23	2576468100	01-12.C225	OIL CHANGE SUPPLIES	15.13		
		12/28/23	2576477520	01-12.C225	OIL CHANGE SUPPLIES	24.88		
		01/08/24	2576483928	01-12.C225	OPERATIONS TRUCK BATTERY	163.99	204.00	064614
BAXTER & WOODMAN, INC.	B000120	12/18/23	0253580	01-11.B124	FLOW MONITORING	808.25		
		12/18/23	0253581	01-14.B902	OUTFALL SEWER SAG CS	2807.48		
		12/18/23	0253585	01-14.B903	BASIN 2D CIPP	346.25		
		12/18/23	0253590	01-13.B124	PRETREATMENT ASSISTANCE	2195.00		
		12/18/23	0253594	01-15.B124	BUTTERFIELD LS STUDY	3574.00	9730.98	105423
BradyIFS	B000319	11/27/23	8471177	01-12.B116	MSB SUPPLIES	74.00		
		12/28/23	8536611	01-12.B116	MSB SUPPLIES	39.10		
		12/28/23	8537091	01-12.B116	MSB SUPPLIES	53.70		
		12/28/23	8537599	01-12.B116	MSB SUPPLIES	282.43		
		01/10/24	8561478	01-12.B116	MSB SUPPLIES	43.66	492.89	105424
BREUER METAL CRAFTSMEN INC.	B000330	12/14/23	14289	01-12.B506	RAS CHANNEL RAIL/GRATING	23700.00	23700.00	064615
BRUCKER COMPANY	B000400	01/11/24	216084	01-12.B812	HVAC FILTERS	288.00	288.00	105425
CINTAS #344	C000300	09/26/23	4168953691	01-12.B117	PLANT UNIFORMS	87.81		
		09/26/23	4168953691	01-14.B117	SS UNIFORMS	42.00		
		12/19/23	4177526054	01-12.B117	PLANT UNIFORMS	87.81		
		12/19/23	4177526054	01-14.B117	SS UNIFORMS	42.00		
		12/27/23	4178315080	01-12.B117	PLANT UNIFORMS	97.11		

=============== VENDOR ===============		====== INVOICE =======						
NAME	NUMBER	DATE	NUMBER	G/L NUMBER	EXPENSE DESCRIPTION	EXPENSE	CHECK AMT	CHECK NO
		12/27/23	4178315080	01-14.B117	SS UNIFORMS	42.89		
		01/03/24	4178983649	01-12.B117	PLANT UNIFORMS	97.11		
		01/03/24	4178983649	01-14.B117	SS UNIFORMS	42.89		
		01/09/24	4179663179	01-12.B117	PLANT UNIFORMS	100.75		
		01/09/24	4179663179	01-14.B117	SS UNIFORMS	42.89	683.26	064616
CINTAS FIRST AID & SAFETY	C000320	01/10/24	5192193904	01-11.B113	FIRST AID REPLENISHMENT	234.83	234.83	064617
CLOUDMELLOW	C000333	01/01/24	237309	01-11.B115	MONTHLY WEB HOSTING	95.00	95.00	064646
COMCAST	C000373	11/03/24	877120120055	01-11.B112	BACK UP INTERNET	144.85	144.85	064618
Comcast	C000375	01/02/24	001001054241	01-11.B112	INTERNET SERVICE	830.00	830.00	064619
COMED	C000380	12/12/23	0055025057	01-15.B100	COLLEGE LS ELECTRIC	345.13		
		12/12/23	0068029014	01-15.B100	CENTEX LS ELECTRIC	79.43		
		12/12/23	0120089072	01-15.B100	WROBLE LS ELECTRIC	1010.73		
		12/12/23	0458029046	01-15.B100	LIBERTY PARK LS ELECTRIC	359.07		
		12/19/23	0562080004	01-15.B100	VENARD LS ELECTRIC	492.11		
		12/12/23	1095091170	01-15.B100	NORTHWEST LS ELECTRIC	903.23		
		12/12/23	1810068039	01-15.B100	EARLSTON LS ELECTRIC	307.80		
		12/12/23	3240038012	01-15.B100	BUTTERFIELD LS ELECTRIC	196.98		
		12/12/23	4657083017	01-15.B100	HOBSON LS ELECTRIC	2080.24		
		12/21/23	6770572011	01-12.B100	WALNUT HSE ELECTRIC	84.36		
		12/21/23	6770572011	01-14.B910	BSSRAP PROGRAM ELECTRIC	227.31		
		12/21/23	8762083052	01-12.B100	BIG TOP ELECTRIC	129.49	6215.88	064620
CONCENTRIC INTEGRATION, LLC	C000410	12/18/23	0253582	01-12.B513	SCADA SFTWRE PLTFRM RPLC	11607.50		
		12/18/23	0253584	01-15.B529	REMOTE CELL CONNECTIVITY	33.75		
		12/18/23	0253587	01-11.B115	2023-2024 SUPP AGRMNT	2038.80		
		12/18/23	0253587	01-12.B513	2023-2024 SUPP AGRMNT	3058.20	16738.25	105426
COVERALL NORTH AMERICA, INC	C000557	01/01/24	1010723825	01-12.B812	PLANT CLEANING	304.00		
		01/01/24	1010723825	01-13.B116	LAB CLEANING	157.00		
		01/01/24	1010723826	01-11.B116	ADMIN CTR CLEANING	429.00		
		12/31/23	1010724352	01-11.B116	ADMIN CLEAN CONTRACT INCR	480.00		
		01/10/24	1010724421	01-11.B116	ADMIN CLEANING	60.00	1430.00	105427
CURTIS MARTIN GROUP, INC.	C000660	01/05/24	8881	01-11.B115	BILLING PROGRAM WORK	120.00		
		01/05/24	8882	01-11.B115	BILLING PROGRAM WORK	540.00	660.00	105428
D&S SALES, INC	D000025	12/07/23	29774	01-12.C225	BUMPER CRANE REPAIR	313.37	313.37	064621
DANIEL MCCORMICK, P. C.	D000035	12/27/23	008	01-11.B124	LEGAL SERVICES	660.00	660.00	064622
DELTA INDUSTRIES, INC.	D000210	12/15/23	SIN014277	01-15.B524	HOBSON LS COMPRESSOR PM	913.43	913.43	105429
DELTA SONIC	D000220	12/29/23	0011909	01-14.C225	SS CAR WASHES	33.32	33.32	064623
THE REINALT-THOMAS CORPORATION	D000260	01/10/24	4496754	01-12.C225	VAN TIRE REPLACEMENT	807.00	807.00	064624
VILLAGE OF DOWNERS GROVE	D000480	12/20/23	12537	01-11.B121	METER READINGS	475.31		
		01/08/24	12624	01-11.C222	ADMIN FUEL	133.57		
		01/08/24	12624	01-12.C222	PLANT FUEL	1130.62		
		01/08/24	12624	01-13.C222	LAB FUEL	48.90		
		01/08/24	12624	01-14.C222	SS FUEL	1187.87		
		01/01/24	C20272700	01-12.B102	PLANT WATER	423.72		
		01/01/24	C20272710	01-11.B102	ADMIN CTR WATER	99.48	3499.47	064625
DYNEGY ENERGY SERVICES	D000800	12/14/23	131643523121	01-15.B100	COLLEGE LS ELECTRIC	187.48		
		12/14/23	131643623121	01-15.B100	CENTEX LS ELECTRIC	37.57		

VENDOR NAME	VENDOR NUMBER	INVOICE DATE	INVOICE NUMBER	G/L NUMBER	EXPENSE DESCRIPTION	EXPENSE	CHECK AMT	CHECK NO
		12/14/23	131643723121	01-15.B100	WROBLE LS ELECTRIC	616.42		
		12/14/23	131643823121	01-15.B100	LIBERTY PARK LS ELECTRIC	181.48		
		12/27/23	131643923121	01-15.B100	VENARD LS ELECTRIC	278.95		
		12/14/23	131644023121	01-15.B100	NORTHWEST LS ELECTRIC	925.83		
		12/15/23	131644223121	01-15.B100	EARLSTON LS ELECTRIC	166.68		
		12/15/23	131644323121	01-15.B100	BUTTERFIELD LS ELECTRIC	126.87		
		12/15/23	131644423121	01-15.B100	HOBSON LS ELECTRIC	1240.90	3762.18	105430
EDWARD-ELMHURST HEALTH EDUCATIO	E000272IN	01/05/24	22158	01-11.B113	CPR CERTIFICATIONS	2380.00	2380.00	064626
EYE MED VISION CARE	E000600	01/01/24	166098713	01-17.E455	VISION INSURANCE	441.65	441.65	064627
FASTENAL COMPANY	F000060	01/03/24	ILWES105883	01-12.B501	AUGER SUPPORT HUB BOLTS	8.10	8.10	105431
FEDEX KINKO'S	F000075	12/27/23	361300025340	01-13.B116	BINDER COVERS	32.44	32.44	064628
FIRST ADVANTAGE	F000130	11/30/23	2501232311	01-12.B117	DRUG TEST	82.89	82.89	105432
FIRST ENVIRONMENTAL LAB	F000140	12/13/23	180388	01-13.B123	BIOSOLIDS CLASS B	288.00		
		12/13/23	180389	01-13.B123	2023 NPDES SEMI ANNUAL	1420.20		
		12/20/23	180553	01-13.B123	NOV 2023 NPDES MONTHLY	117.60	1825.80	105433
G COOPER OIL COMPANY INC.	G000005	12/01/23	34899	01-12.B116	DRUMS	1004.03	1004.03	064629
GASVODA & ASSOCIATES INC.	G000200	12/13/23	23PTS0590	01-15.B529	SEAL WATER FILTERS	525.77	525.77	064630
W. W. GRAINGER, INC.	G000520	12/12/23	9932207310	01-12.B805	SEE SHEET	41.84		
		12/13/23	9934057168	01-12.B512	SEE SHEET	229.90		
		12/14/23	9935388968	01-15.B526	SEE SHEET	146.22		
		12/15/23	9936818518	01-12.B502	SEE SHEET	56.65-		
		12/18/23	9939615721	01-12.B513	SEE SHEET	480.00		
		12/19/23	9939845682	01-12.B812	SEE SHEET	62.40		
		12/19/23	9939845690	01-12.B812	SEE SHEET	400.30		
		12/19/23	9939845708	01-12.B812	SEE SHEET	313.52		
		12/19/23	9940424204	01-12.B812	SEE SHEET	313.52-		
		12/19/23	9940804033	01-12.B504	SEE SHEET	1010.90		
		12/19/23	9940804041	01-12.B116	SEE SHEET	176.76		
		12/21/23	9942756389	01-12.B512	SEE SHEET	15.92		
		12/28/23	9947281524	01-13.B116	SEE SHEET	660.36		
		12/29/23	9948210191	01-12.B512	SEE SHEET	379.81		
		01/04/24	9952330604	01-12.B512	SEE SHEET	358.76		
		01/05/24	9953176253	01-12.B512	SEE SHEET	186.18		
		01/09/24	9955955373	01-12.B513	SEE SHEET	434.42		
		01/09/24	9955955381	01-12.B113	SEE SHEET	144.10	4671.22	105434
HML, INC.	H000035	12/15/23	105162	01-13.B123	BIOSOLIDS PATHOGEN TEST	1025.00	1025.00	064631
HACH COMPANY	H000040	12/29/23	13866852	01-13.B114	LAB CHEMICALS	839.84	839.84	105435
HARBOR FREIGHT TOOLS	H000060	12/19/23	1034746	01-12.B116	HOSES & TOOLS FOR OPS	245.91	245.91	064632
HOME DEPOT	H000400	12/28/23	0021351	01-13.B115	SEE SHEET	16.01		
		12/28/23	0021354	01-12.B506	SEE SHEET	25.32		
		11/27/23	1044557	01-12.B512	SEE SHEET	24.94		
		11/27/23	1044557	01-12.B805	SEE SHEET	49.96		
		12/15/23	3040579	01-12.B512	SEE SHEET	109.86		
		12/13/23	5024751	01-12.B116	SEE SHEET	13.70		
		01/09/24	8011000	01-12.B116	SEE SHEET	161.87		
		01/09/24	8130057	01-14.B116	SEE SHEET	19.98		

===== VENDOR ===== NAME	NUMBER	===== INVOICE ===== DATE	NUMBER	G/L NUMBER	EXPENSE DESCRIPTION	EXPENSE	CHECK AMT	CHECK NO
		12/20/23	8524126	01-14.B115	SEE SHEET	64.97		
		12/29/23	9021460	01-12.B512	SEE SHEET	15.44		
		12/29/23	9623985	01-12.B504	SEE SHEET	34.48		
		12/29/23	9624241	01-12.B504	SEE SHEET	29.91	566.44	064633
IMPACT NETWORKING, LLC	I000400	12/20/23	3125510	01-11.B115	COLOR PRINTER COPIES	102.99	102.99	105436
INFOSEND, INC.	I000415	12/31/23	253560	01-11.B121	MAILING SERVICES	5183.15	5183.15	105437
KANSAS CITY LIFE INSURANCE CO	K000045	11/11/24	1601817	01-17.E455	LIFE INSURANCE	445.63	445.63	105438
KOMLINE-SANDERSON	K000230	12/22/23	42058730	01-12.B509	BELT FLTR PRESS SEAL KIT	438.65	438.65	105439
MCHENRY COUNTY COLLEGE	M000348	12/13/23	637	01-11.B113	BM FLAGGER CERTIFICATION	150.00	150.00	064647
MCMASTER-CARR SUPPLY COMPANY	M000360	12/26/23	19541675	01-12.B505	THREADED ROD & NUTS	107.26		
		12/26/23	19542682	01-12.B501	AUGER BOLTS	83.20		
		12/26/23	19545034	01-12.B505	COUPLING NUTS	58.22	248.68	105440
BRIAN MENG	M000440	12/19/23	REIMBURSE	01-12.B117	BOOTS	61.18	61.18	105441
MIDAMERICAN ENERGY SERVICES, LL	M000554	12/14/23	11964294	01-12.B100	PLANT ELECTRIC	275.83	275.83	105442
BRANDON MORRIS	M000695	01/02/24	REIMBURSE	01-14.B117	CDL PERMIT	51.13	51.13	105443
NCPERS GROUP LIFE INSURANCE	N000010	01/01/24	3266022024	01-00.2017	VOL LIFE INSURANCE	240.00	240.00	105444
NALCO WATER PRETREATMENT	N000030	01/09/24	6660233645	01-13.B116	DI WATER SUPPLIES	523.91	523.91	105445
NAPA AUTO PARTS	N000040	12/26/23	4343869153	01-12.B501	OIL FOR AUGERS	76.68	76.68	064634
NEUCO, INC.	N000260	12/18/23	7364594	01-12.B508	SOLENOID VALVE	234.36		
		12/21/23	7378577	01-12.B805	EXC FLW BLDG HEAT PARTS	500.85	735.21	105446
NICOR GAS	N000330	12/13/23	15876210004	01-12.B101	PLANT GAS	324.51		
		12/13/23	44976210003	01-12.B101	PLANT 2 GAS	269.05		
		12/13/23	51006900008	01-12.B101	CHEM FEED GAS	178.24		
		12/13/23	5497621002	01-11.B101	ADMIN CTR GAS	218.50		
		12/13/23	87801017812	01-12.B101	WALNUT HSE GAS	99.31	1089.61	064635
NISSEN ENERGY INC	N000350	12/22/23	352	01-12.B513	CHP 1 & 2 MAINT PARTS	2277.00		
		12/31/23	354	01-12.B513	CHP 1 & 2 OIL	4370.00	6647.00	105447
NORTHERN TOOL & EQUIPMENT	N000560	12/31/23	1653249666	01-12.B116	CREDIT LINE RENEWAL	39.99	39.99	105448
Northwest Electric Motor Co.	N000565	12/15/23	2312078	01-12.B506	PRIM 6 CROSS COLLECT MTR	476.63	476.63	064636
PEERLESS NETWORK, INC	P000175	12/15/23	40046	01-12.B112	ACTIVE CIRCUITS	49.98	49.98	105449
PETTY CASH	P000350	01/11/24	CASH BOX	01-11.B119	POSTAGE	5.65		
		01/11/24	CASH BOX	01-13.B116	ICE	6.99	12.64	064637
PORTABLE JOHN, INC	P000410	01/15/24	2815256	01-12.B812	PORTABLE JOHN RENTAL	203.56	203.56	105450
PORTER PIPE AND SUPPLY CO.	P000420	12/13/23	1270337400	01-12.B512	INFLUENT GATE ACT INSTALL	157.19		
		12/27/23	1271155000	01-13.B115	LAB DI WATER REPAIRS	175.43	332.62	105451
QUADIENT LEASING	Q000250	11/22/23	Q1078112	01-11.B115	POSTAGE MACHINE RENTAL	641.04	641.04	105452
RED WING SHOE STORE	R000180	12/20/23	140201	01-12.B117	SA BOOTS	203.99	203.99	105453
Republic Services #551	R000264	12/31/23	055101584041	01-12.B102	RECYCLING	949.87	949.87	064638
S. Schroeder Trucking, Inc.	S000059	11/21/23	24260	01-12.B509	SAND	1118.98	1118.98	064648
SEYFARTH SHAW	S000280	01/08/24	4403671	01-11.B124	EMPL MANUAL REVIEW	4165.00	4165.00	105454
CARLY SHAW	S000305	12/15/23	REIMBURSE	01-12.B117	EMPLOYEE GIFT CARD	50.00		
		12/15/23	REIMBURSE 2	01-14.B117	EMPLOYEE GIFT CARD	50.00		
		12/28/23	REIMBURSE3	01-11.B117	TRAINING CLASS	199.00		
		12/29/23	REIMBURSE4	01-11.B117	PRYOR & TRAINING PROG	199.00		
		12/28/23	REIMBURSE5	01-11.B117	SHRM MEMBERSHIP	244.00		
		12/21/23	REIMBURSE6	01-11.B117	SUPS LUNCH	111.29		

NAME	NUMBER	DATE	NUMBER	G/L NUMBER	EXPENSE DESCRIPTION	EXPENSE	CHECK AMT	CHECK NO
		01/08/24	REIMBURSE7	01-11.B120	BUSINESS CARDS	94.51	947.80	105455
SHERWIN-WILLIAMS CO.	S000320	12/20/23	38899	01-13.B115	LAB PAINTING	159.92	159.92	105456
STAPLES INC.	S000640	11/07/23	3553355571	01-11.B116	CALENDAR	22.89		
		11/07/23	3553355571	01-14.B116	DAILY PLANNERS	87.32		
		12/13/23	3555904654	01-11.B116	OFFICE SUPPLIES	305.77	415.98	105457
SUBURBAN LIFE PUBLICATIONS	S000867	12/31/23	10071278	01-11.B112	LEGAL PUBLICATION	147.42	147.42	064639
TERRACE SUPPLY COMPANY	T000250	12/31/23	0001054688	01-12.B116	CYLINDER RENTAL	47.12		
		12/21/23	0071029886	01-12.B116	SUPPLIES	151.02	198.14	105458
TRI-STATE HYDRAULICS, INC	T000570	12/19/23	504181	01-12.B501	AUGER MOTORS RPR & RPLC	4829.00	4829.00	064640
USABLUEBOOK	U000150	12/12/23	00219224	01-12.B113	LIFE RING	558.55		
		12/28/23	00232438	01-13.B114	AMMONIA STANDARD	87.91		
		01/05/24	00237856	01-13.B114	CHEMICALS	119.56	766.02	064641
UNO CONSTRUCTION CO., INC.	U000450	01/01/24	DECEMBER2023	01-14.B910	BSSRAP PROGRAM	47755.56	47755.56	105459
VERIZON WIRELESS	V000135	12/28/23	9952913588	01-12.B112	RAIN GAUGE	67.59		
		12/28/23	9952913588	01-15.B112	LS REMOTE COMS	269.83		
		01/01/24	9953103026	01-11.B112	ADMIN CELL PHONES	215.10		
		01/01/24	9953103026	01-12.B112	PLANT CELL PHONES	1066.58		
		01/01/24	9953103026	01-13.B112	LAB CELL PHONES	155.70		
		01/01/24	9953103026	01-14.B112	SS CELL PHONES	484.60		
		01/01/24	9953103027	01-12.B112	PLANT TABLETS	165.45		
		01/01/24	9953103027	01-14.B112	SS TABLETS	30.06		
		01/01/24	9953103027	01-15.B112	LS TABLETS	36.01	2490.92	064642
VILLA PARK ELECTRICAL SUPPLY	V000145	12/11/23	25596400	01-12.B512	REDUCING BUSHING	26.33		
		12/19/23	25640300	01-12.B507	CONDUIT PARTS	90.05		
		12/27/23	25676400	01-12.B507	CONDUIT PARTS	200.22		
		12/29/23	25676600	01-12.B512	ELECTRIC REPAIR SUPPLIES	126.49	443.09	064643
VISU-SEWER OF ILLINOIS, LLC	V000200	11/30/23	9882	01-14.B903	BASIN 2D SEWER REHAB	60040.00	60040.00	064644
WAGNER COMMUNICATIONS, INC	W000070	01/01/24	000031501751	01-11.B112	ANSWERING SERVICE	313.13	313.13	105460
WESTFAX	W000350	01/01/24	1441441	01-11.B112	FAXING SERVICE	8.99	8.99	105461
VILLAGE OF WESTMONT	W000450	12/20/23	1075	01-11.B121	METER READINGS	370.01	370.01	064645
XYLEM WATER SOLUTIONS USA	X000110	12/08/23	3356D02764	01-15.B825	LIB PARK PUMP PM	1400.00		
		12/08/23	3356D02764	01-15.B827	VENARD PUMP PM	1400.00		
		12/08/23	3556D02765	01-12.B510	EAST/WEST GRSE PIT MIX PM	675.00	3475.00	105462
						==========	==========	
					Total Payments:	234249.33	234249.33	
					ACH Payments Total:	117416.22	.00	
					Check Payments Total:	116833.11	234249.33	

VENDOR NAME	VENDOR NUMBER	INVOICE DATE	INVOICE NUMBER	G/L NUMBER	EXPENSE DESCRIPTION	EXPENSE	CHECK AMT	CHECK NO
AMERICLAIM INC.	A000305	01/02/24	1385134	01-14.B129	BURP CLAIM ADJUSTER	631.20	631.20	064608
CHASE	B000050	12/20/23	SUPVPR121523	01-00.2000	FEDERAL TAX WITHHELD	3368.90		
		12/20/23	SUPVPR121523	01-00.2002	EMPL SOC SEC TAX	2006.08		
		12/20/23	SUPVPR121523	01-17.E461	EMPLR SOC SEC TAX	2006.09	7381.07	105403
CHASE	B000050	01/02/24	EMPLPR122323	01-00.2000	FEDERAL TAX WITHHELD	8945.16		
		01/02/24	EMPLPR122323	01-00.2002	EMPL SOC SEC TAX	6551.30		
		01/02/24	EMPLPR122323	01-17.E461	EMPLR SOC SEC TAX	6551.30	22047.76	105404
CHASE	B000050	01/04/24	SUPVPR123123	01-00.2000	FEDERAL TAX WITHHELD	3172.68		
		01/04/24	SUPVPR123123	01-00.2002	EMPL SOC SEC TAX	2458.49		
		01/04/24	SUPVPR123123	01-17.E461	EMPLR SOC SEC TAX	2458.49	8089.66	105405
CHASE	B000050	01/12/24	EMPLPR010624	01-00.2000	FEDERAL TAX WITHHELD	8976.24		
		01/12/24	EMPLPR010624	01-00.2002	EMPL SOC SEC TAX	6720.71		
		01/12/24	EMPLPR010624	01-17.E461	EMPLR SOC SEC TAX	6720.69	22417.64	105415
D.G. SANIT DIST #XXXXXXXXX1117	D000400	01/16/24	REIMBURSE	01-00.1001	PAYROLL REIMBURSE	153464.56	153464.56	105418
D.G. SANIT DIST #XXXXXXXXX1114	D000420	12/20/23	REFUNDS	01-05.3001	REFUNDS	3470.03	3470.03	105412
D.G. SANIT DIST #XXXXXXXXX1112	D000440	01/11/24	REIMBURSE	01-11.B120	OUTERWEAR EMBROIDERY	24.00		
		01/11/24	REIMBURSE	01-12.C225	TOLLS	33.60		
		01/11/24	REIMBURSE	01-14.B910	RODDING FEES	2553.00	2610.60	105419
DUPAGE CREDIT UNION	D000650	12/20/23	SUPVPR121523	01-00.2013	EMPL AUTHORIZED W/HOLDING	515.00	515.00	105400
DUPAGE CREDIT UNION	D000650	01/02/24	EMPLPR122323	01-00.2013	EMPL AUTHORIZED W/HOLDING	2182.00	2182.00	105401
DUPAGE CREDIT UNION	D000650	01/04/24	SUPVPR123123	01-00.2013	EMPL AUTHORIZED W/HOLDING	515.00	515.00	105402
DUPAGE CREDIT UNION	D000650	01/15/24	EMPLPR010624	01-00.2013	EMPL AUTHORIZED W/HOLDING	2182.00	2182.00	105414
HEALTH CARE SERVICE CORP.	H000190	12/29/23	165585	01-17.E455	HEALTH INSURANCE	49177.77	49177.77	105392
ILLINOIS DEPARTMENT OF REVENUE	I000240	12/20/23	SUPVPR121523	01-00.2001	STATE TAX WITHHELD	1516.85	1516.85	105406
ILLINOIS DEPARTMENT OF REVENUE	I000240	01/04/24	SUPVPR123123	01-00.2001	STATE TAX WITHHELD	1490.13	1490.13	105407
ILLINOIS DEPARTMENT OF REVENUE	I000240	01/02/24	EMPLPR122323	01-00.2001	STATE TAX WITHHELD	4016.35	4016.35	105408
ILLINOIS DEPARTMENT OF REVENUE	I000240	01/12/24	EMPLPR010624	01-00.2001	STATE TAX WITHHELD	4051.59	4051.59	105416
ILLINOIS MUNICIPAL	I000300	01/08/24	PENSION	01-00.2003	EMPL PENSION DEPOSIT	13814.39		
		01/08/24	PENSION	01-00.2014	EMPL VOL PENSION DEPOSIT	13643.41		
		01/08/24	PENSION	01-17.E460	EMPLR VOL PENSION DEPOSIT	20537.49	47995.29	105393
J.J. Keller & Associates, Inc.	J000011	10/11/23	0200120790	01-14.B117	BM CDL	250.00	250.00	105391
KUBIS AUTO BODY SHOP INC	K000310	01/02/24	4681	01-14.C225	SS TRUCK REPAIR	1665.23	1665.23	064609
MIDAMERICA ADMIN HRA ACCOUNT	M000557	01/02/24	HRA FUNDING	01-17.E455	HRA ACCT FUNDING	600.00	600.00	105394
NCPERS GROUP LIFE INSURANCE	N000010	01/02/24	3266012024	01-00.2017	VOLUNTARY LIFE INSURANCE	240.00	240.00	105396
PRINCIPAL LIFE INSURANCE CO	P000650	01/02/24	109309910001	01-17.E455	DENTAL INSURANCE	3039.77	3039.77	105398
Republic Services #551	R000264	01/02/24	055101582255	01-12.B102	GRIT SCREEN DUMPSTER	762.45	762.45	064610
TRANSAMERICA RETIREMENT	T000415	01/02/24	SUPVPR121523	01-00.2026	DEF COMP IPPFA	125.00		
		01/02/24	SUPVPR121523	01-00.2027	DEF COMP ROTH IPPFA	40.00		
		01/02/24	SUPVPR121523	01-00.2028	DEF COMP LOAN REPAY IPPFA	77.06	242.06	105409
TRANSAMERICA RETIREMENT	T000415	01/02/24	EMPLPR122323	01-00.2026	DEF COMP IPPFA	506.91		
		01/02/24	EMPLPR122323	01-00.2027	DEF COMP ROTH IPPFA	423.64		
		01/02/24	EMPLPR122323	01-00.2028	DEF COMP LOAN REPAY IPPFA	195.91	1126.46	105410
TRANSAMERICA RETIREMENT	T000415	01/04/24	SUPVPR123123	01-00.2026	DEF COMP IPPFA	124.80		
		01/04/24	SUPVPR123123	01-00.2027	DEF COMP ROTH IPPFA	40.00		
		01/04/24	SUPVPR123123	01-00.2028	DEF COMP LOAN REPAY IPPFA	77.38	242.18	105411
TRANSAMERICA RETIREMENT	T000415	01/12/24	EMPLPR010624	01-00.2026	DEF COMP IPPFA	557.41		

=============== VENDOR ===============		====== INVOICE =======						
NAME	NUMBER	DATE	NUMBER	G/L NUMBER	EXPENSE DESCRIPTION	EXPENSE	CHECK AMT	CHECK NO
		01/12/24	EMPLPR010624	01-00.2027	DEF COMP ROTH IPPFA	418.64		
		01/12/24	EMPLPR010624	01-00.2028	DEF COMP LOAN REPAY IPPFA	195.91	1171.96	105417
U.S. POSTAL SERVICE	U000130	01/04/24	REFILL	01-11.B119	POSTAGE	1000.00	1000.00	105413
						==========	==========	
					Total Payments:	344094.61	344094.61	
					ACH Payments Total:	341035.73	.00	
					Check Payments Total:	3058.88	344094.61	

Downers Grove Sanitary District

02 IMPROVEMENT FUND STANDARD CHECK REGISTER FOR 01/16/24

Date: 01/12/24
Time: 12:56pm

VENDOR NAME	VENDOR NUMBER	INVOICE DATE	INVOICE NUMBER	G/L NUMBER	EXPENSE DESCRIPTION	EXPENSE	CHECK AMT	CHECK NO
BAXTER & WOODMAN, INC.	B000120	12/18/23	0253586	02-48.0502	VENARD FM REPLACEMENT	1216.25	1216.25	105463
						==========	==========	
					Total Payments:	1216.25	1216.25	
					ACH Payments Total:	1216.25	.00	
					Check Payments Total:	.00	1216.25	

Downners Grove Sanitary District

03 CONSTRUCTION FUND STANDARD CHECK REGISTER FOR 01/16/24

Date: 01/12/24
Time: 12:56pm

VENDOR NAME	VENDOR NUMBER	INVOICE DATE	INVOICE NUMBER	G/L NUMBER	EXPENSE DESCRIPTION	EXPENSE	CHECK AMT	CHECK NO
BAXTER & WOODMAN, INC.	B000120	12/18/23	0253591	03-20.0502	CGD SYSTEM DESIGN	1936.25		
		12/18/23	0253595	03-21.0501	BIOSOLIDS STUDY	22605.00	24541.25	105464
						==========	==========	
					Total Payments:	24541.25	24541.25	
					ACH Payments Total:	24541.25	.00	
					Check Payments Total:	.00	24541.25	

DATE ____________________________

REVIEWED ____________________________

TRUSTEE APPROVAL ____________________________
ACTING PRESIDENT

____
CLERK

Downers Grove Sanitary District

ACCOUNTS PAYABLE GENERAL LEDGER RECAP FOR 01/16/24

Date: 01/12/24
Time: 12:56pm

G/L NUMBER	COST ACCTG DESCRIPTION	DEBIT	CREDIT
01-00.1000	CASH		578343.94-
01-00.1001	CASH - PAYROLL ACCOUNT	153464.56	
01-00.2000	FEDERAL TAX WITHHELD	24462.98	
01-00.2001	STATE TAX WITHHELD	11074.92	
01-00.2002	SOCIAL SECURITY WITHHELD	17736.58	
01-00.2003	IMRF WITHHELD	13814.39	
01-00.2013	CREDIT UNION WITHHELD	5394.00	
01-00.2014	VOLUNTARY ADDITIONAL PENSION CONTRIBUTION	13643.41	
01-00.2017	VOLUNTARY GROUP LIFE	480.00	
01-00.2026	DEFERRED COMPENSATION WITHHELD - IPPFA	1314.12	
01-00.2027	DEFERRED COMPENSATION WITHHELD - IPPFA ROTH	922.28	
01-00.2028	DC PLAN LOAN REPAYMENT WITHHELD	546.26	
01-05.3001	USER RECEIPTS	3470.03	
01-11.B101	NATURAL GAS	218.50	
01-11.B102	WATER, GARBAGE AND OTHER UTILITIES	99.48	
01-11.B110	BANK CHARGES	35.40	
01-11.B112	COMMUNICATION	1659.49	
01-11.B113	EMERGENCY/SAFETY EQUIPMENT	2764.83	
01-11.B115	EQUIPMENT/EQUIPMENT REPAIR	4157.83	
01-11.B116	SUPPLIES	1416.07	
01-11.B117	EMPLOYEE/DUTY COSTS	753.29	
01-11.B119	POSTAGE	1005.65	
01-11.B120	PRINTING/PHOTOGRAPHY	118.51	
01-11.B121	USER BILLING MATERIALS	6028.47	
01-11.B124	CONTRACT SERVICES	5633.25	
01-11.C222	GAS/FUEL	133.57	
01-12.B100	ELECTRICITY	489.68	
01-12.B101	NATURAL GAS	871.11	
01-12.B102	WATER, GARBAGE AND OTHER UTILITIES	2136.04	
01-12.B112	COMMUNICATION	1426.34	
01-12.B113	EMERGENCY/SAFETY EQUIPMENT	914.14	
01-12.B116	SUPPLIES	2506.26	
01-12.B117	EMPLOYEE/DUTY COSTS	976.65	
01-12.B501	EQPT/EQPT REPAIR - BIOSOLIDS AGING & DISPOSAL	4996.98	
01-12.B502	EQPT/EQPT REPAIR - DISINFECTION		56.65-
01-12.B504	EQPT/EQPT REPAIR - GRIT REMOVAL	1188.42	
01-12.B505	EQPT/EQPT REPAIR - INFLUENT PUMPING	165.48	
01-12.B506	EQPT/EQPT REPAIR - PRIMARY TREATMENT	24201.95	
01-12.B507	EQPT/EQPT REPAIR - SECONDARY TREATMENT	290.27	
01-12.B508	EQPT/EQPT REPAIR - SLUDGE CONCENTRATION	234.36	
01-12.B509	EQPT/EQPT REPAIR - SLUDGE DEWATERING	1557.63	
01-12.B510	EQPT/EQPT REPAIR - SLUDGE DIGESTION	716.99	
01-12.B512	EQPT/EQPT REPAIR - WWTC GENERAL	1630.82	
01-12.B513	EQPT/EQPT REPAIR - WWTC UTILITIES	22749.12	
01-12.B805	BLDG AND GROUNDS - INFLUENT PUMPING	592.65	
01-12.B812	BLDG AND GROUNDS - WWTC GENERAL	1258.26	

G/L NUMBER	COST ACCTG DESCRIPTION	DEBIT	CREDIT
01-12.C222	GAS/FUEL	1130.62	
01-12.C225	OPERATION/REPAIR	1403.95	
01-13.B112	COMMUNICATION	155.70	
01-13.B114	CHEMICALS	1047.31	
01-13.B115	EQUIPMENT/EQUIPMENT REPAIR	351.36	
01-13.B116	SUPPLIES	1469.61	
01-13.B123	OUTSIDE LAB SERVICES	2850.80	
01-13.B124	CONTRACT SERVICES	2195.00	
01-13.C222	GAS/FUEL	48.90	
01-14.B112	COMMUNICATION	514.66	
01-14.B115	EQUIPMENT/EQUIPMENT REPAIR	64.97	
01-14.B116	SUPPLIES	115.47	
01-14.B117	EMPLOYEE/DUTY COSTS	723.78	
01-14.B129	REIMBURSEMENT PROGRAM/PUBLIC SEWER BLOCKAGES	631.20	
01-14.B902	SEWER SYSTEM REPAIRS - REPLACEMENT	2807.48	
01-14.B903	SEWER SYSTEM REPAIRS - REHABILITATION	60386.25	
01-14.B910	SEWER SYSTEM REPAIRS - BSSRAP PROGRAM	50535.87	
01-14.B913	SEWER SYSTEM REPAIRS - BSSRAP-REPAIR/REPL/REH	15.43	
01-14.C222	GAS/FUEL	1187.87	
01-14.C225	OPERATION/REPAIR	1698.55	
01-15.B100	ELECTRICITY	9536.90	
01-15.B112	COMMUNICATION	305.84	
01-15.B124	CONTRACT SERVICES	3574.00	
01-15.B524	EQPT/EQPT REPAIR - HOBSON	913.43	
01-15.B526	EQPT/EQPT REPAIR - NORTHWEST	146.22	
01-15.B529	EQPT/EQPT REPAIR - LIFT STATIONS GENERAL	559.52	
01-15.B825	BLDG AND GROUNDS - LIBERTY PARK	1400.00	
01-15.B827	BLDG AND GROUNDS - VENARD	1400.00	
01-17.E455	EMPLOYEE GROUP HEALTH	53704.82	
01-17.E460	IMRF	20537.49	
01-17.E461	SOCIAL SECURITY	17736.57	
02-00.1000	CASH		1216.25-
02-48.0502	DESIGN ENGINEERING/ARCHITECTURAL	1216.25	
03-00.1000	CASH		24541.25-
03-20.0502	DESIGN ENGINEERING/ARCHITECTURAL	1936.25	
03-21.0501	REPORT ENGINEERING/ARCHITECTURAL	22605.00	
		==============	==============
		604158.09	604158.09-

Vendor	Invoice Date	Amount	Coding	Coding Description	Purchase Location	Emp.	Procurement	Project Name (If applicable)	Item Description
Grainger	12/12/2023	$41.84	01-12.B805	BLDG & GROUNDS - INFLUENT PUMPING	in-store	MR		Raw sewag bldg. sump pit	liquid level switch
Grainger	12/12/2023	$229.90	01-12.B512	EQPT/EQPT REPAIR - WWTC GENERAL	Delivered	AC		Excess Flow 003 Valves	Sch40 clear PVC 4" x 8'
Grainger	12/14/2023	$146.22	01-15.B529	EQUIP/EQUIP REPAIR - LIFT STATIONS GENERAL	Delivered	AC		Air Relief valve parts	1" stainless steel ball valve
Grainger	12/15/2023	-$56.65	01-12.B502	EQPT/EQPT REPAIR - DISINFECTION	in-store	NW		OSEV	1/2" union ball valve
Grainger	12/15/2023	$62.40	01-12.B812	BLDG & GROUNDS - WWTC GENERAL	Delivered	MR		HVAC Maintenance	20x25x2 air filter (12)
Grainger	12/18/2023	$480.00	01-12.B513	EQPT/EQPT REPAIR - WWTC UTILITIES	Delivered	MR		WWTC Outdoor lighting	LED Bollard retrofit lamp (10)
Grainger	12/18/2023	$400.30	01-12.B812	BLDG & GROUNDS - WWTC GENERAL	Delivered	MR		HVAC Maintenance	Air filters: 12x20x2 (12), 16x25x5 2pk. (2)
Grainger	12/19/2023	$313.52	01-12.B812	BLDG & GROUNDS - WWTC GENERAL	Delivered	MR		HVAC Maintenance	2pk. 24x25x5 air filter (4)
Grainger	12/19/2023	-$313.52	01-12.B812	BLDG & GROUNDS - WWTC GENERAL	Delivered	MR	Return	HVAC Maintenance	2pk. 24x25x5 air filter (4)
Grainger	12/19/2023	$1,010.90	01-12.B504	EQPT/EQPT REPAIR - GRIT REMOVAL	Delivered	BS		Seal water tank install	Water Tank 80 gallon
Grainger	12/19/2023	$176.76	01-12.B116	WWTC SUPPLIES	Delivered	MM			Bell and Gosset oil
Grainger	12/21/2023	$15.92	01-12.B512	EQPT/EQPT REPAIR - WWTC GENERAL	Delivered	AC		Maintenance Repair supplies	1/2" - 6' Thread Rod (2)
Grainger	12/28/2023	$660.36	01-13.B116	LAB SUPPLIES	Delivered	RB			Lab Supplies
Grainger	12/29/2023	$379.81	01-12.B512	EQPT/EQPT REPAIR - WWTC GENERAL	Delivered	AC		Maintenance Repair supplies	Plumbing fittings- pipe nipples / valves
Grainger	1/4/2024	$358.76	01-12.B512	EQPT/EQPT REPAIR - WWTC GENERAL	Delivered	AC		Maintenance Repair supplies	Misc. Hardware / plumbing supplies
Grainger	1/5/2024	$186.18	01-12.B512	EQPT/EQPT REPAIR - WWTC GENERAL	Delivered	AC		Maintenance Repair supplies	Misc. Hardware / plumbing supplies
Grainger	1/4/2024	$144.10	01-12.B113	WWTC EMERGENCY/SAFETY EQUIPMENT	Delivered	MM			Disposable gloves
Home Depot	12/28/2023	$16.01	01-13.B115	LAB EQUIPMENT/EQUIPMENT REPAIR	in-store	AC		Lab. DI water faucet repair	1/2" coupling, 3/8" adapter, 3/8" poly tube(25')
Home Depot	12/28/2023	$25.32	01-12.B506	EQPT/EQPT REPAIR - PRIMARY TREATMENT	In-store	AC		Primary sludge pump 2 rplc.	masonry cut-off wheels(6)
Home Depot	11/27/2023	$74.90	01-12.B512	EQT/EQT REPAIR - WWTC UTILITIES	Delivered	MR			Supplies
Home Depot	12/15/2023	$109.86	01-12.B512	EQPT/EQPT REPAIR - WWTC GENERAL	in-store	CP		Maintenance Repair supplies	5gal. Bucket & lid (6), PVC hardware, Drain Pan
Home Depot	12/13/2023	$13.70	01-13.B115	LAB EQUIPMENT/EQUIPMENT REPAIR	In-store	CP		Lab West - Window	Clear caulk / utility knife
Home Depot	1/9/2024	$161.87	01-12.B116	WWTC SUPPLIES	in-store	MM			Supplies
Home Depot	1/9/2024	$19.98	01-14.B116	SS SUPPLIES	in-store	DJ			Ice/Snow brush for truck
				SEWER SYSTEM EQUIPMENT/EQUIPMENT REPAIR	In-Store	ADH		Equipment/Tools	
Home Depot	12/20/2023	$64.97	01-14.B115						Measuring Wheel
Home Depot	12/29/2023	$15.44	01-12.B512	EQPT/EQPT REPAIR - WWTC GENERAL	in-store	MR		Maintenance Repair supplies	SDS drill bit, hex bits(5)
Home Depot	12/29/2023	$34.48	01-12.B504	EQPT/EQPT REPAIR - GRIT REMOVAL	in-store	AG		Seal water tank install	Pipe fittings
Home Depot	12/29/2023	$29.91	01-12.B504	EQPT/EQPT REPAIR - GRIT REMOVAL	in-store	AC		Seal water tank install	1" union coupler

Date:	**01.11.24**	**Petty Cash Checking Reimbursement**	**D-440**
Due Date:	**01.16.24**		
Invoice #:	**Reimburse**		

Date	Purchased From	Description	Code	Amount	Ck No.
12.19.23	Holy Cow Sports	Outerwear Embroidery	11B120	24	3884
12.21.23	T. & C. Blonn	Rodding Fee	14B910	400	3885
12.21.23	IL Tollway	Tolls	12C225	33.6	3886
12.22.23	L. Blaney	Rodding Fee	14B910	430.2	3887
12.22.23	E. LaRocca	Rodding Fee Overpayment	14B910	2	3888
12.22.23	C. Danko	Rodding Fee	14B910	430.2	3889
12.22.23	K. Puralewski	Rodding Fee	14B910	430.2	3890
12.22.23	C. & V. Legg	Rodding Fee	14B910	430.2	3891
12.22.23	D. & E. Ganto	Rodding Fee	14B910	430.20	3892
			Total Receipts/Reimbursement	2610.60	

Expense by code

11B120	24.00
12C225	33.60
14B910	2553.00
TOTAL	2610.60

Date: 01.11.24 **Petty Cash Reimbursement** **P - 350**

Due Date: 01.16.24

Invoice #: **Cash Box**

Date	Purchased From	Reimbursed To	Description	Code	Amount
12.22.23	USPS	Megan	Postage	11B119	5.65
01.03.24	Jewel	Reese	Ice	13B116	6.99
			Total Receipts		12.64

Expense by code

11B119	5.65
13B116	6.99
TOTAL:	12.64

RESOLUTION NO. R2024-01

WHEREAS, WALLACE D. VAN BUREN, President of the Board of Trustees of the DOWNERS GROVE SANITARY DISTRICT passed away on January 11, 2024;

THEREFORE, NOW BE IT RESOLVED BY THE BOARD OF TRUSTEES of the DISTRICT that the powers, duties and emoluments of the office of President and position of Trustee, by operation of law, devolve upon the Vice-President, AMY E. SEJNOST, to serve as said President until a successor is appointed and chosen. The Clerk is directed to notify the Chairman of the County Board of DuPage County of this writing by delivering a duplicate of same.

PASSED AND APPROVED at a regular meeting held on the 16th day of January 2024.

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Amy E. Sejnost
Acting President

____

Jeremy M. Wang
Clerk

DOWNERS GROVE SANITARY DISTRICT

2023 WWTC PERFORMANCE REPORT

DOWNERS GROVE SANITARY DISTRICT
2023 WWTC PERFORMANCE REPORT

TO: Board of Trustees

FROM: Amy R. Underwood
General Manager

DATE: January 12, 2024

SUMMARY OF 2023 OPERATIONS

Total Flow to WWTC: 3,749,073,700 gallons
Average Daily Flow: 10.27 MGD

Total Complete Treatment Flow: 3,669,151,800 gallons
Average Daily Complete Treatment Flow: 10.05 MGD

District Billed Flow: 1,787,062,523 gallons
Ratio of Billed Flow to Total WWTC Flow: 47.7%
Ratio of Billed Flow to Total Complete Treatment Flow: 48.7%

Precipitation Total for 2023: 36.58''

Net ComEd Electrical Consumption: 601,983 KW Hrs.
Average Daily ComEd Electric Usage: 1,649 KW Hrs.

Complete Treatment Flow Characteristics – Average Daily Values

Influent Concentrations:	BOD	243 mg/L
	TSS	200 mg/L
	NH3-N	17.6 mg/L

Influent Loadings:	BOD	18,176 lbs. /day
	TSS	14,889 lbs. /day
	NH3-N	1,278 lbs. /day

Effluent Concentrations:	CBOD	1.6 mg/L
	TSS	0.8 mg/L
	NH3-N	0.2 mg/L

Effluent Loadings:	CBOD	139 lbs. /day
	TSS	76 lbs. /day
	NH3-N	17 lbs. /day

Biosolids Production, after digestion:	11,738,133 gallons 2,628,450 lbs. dry solids 1,314 dry tons

WASTEWATER TREATMENT CENTER FLOWS

WWTC FLOW (TABLES 1, 2, 3 & 4)

As shown in Table 1, the total flow to the treatment center in 2023 was 3,749,073,700 gallons, with 97.9% of this total, or 3,669,151,800 gallons, receiving tertiary treatment. The total flow for the year equates to an average daily flow of 10.27 MGD as compared to an average tertiary flow of 10.05 MGD. Excess flow treatment was in operation for 220 hours during the year, or 2.5% of the time, and accounted for 79,921,900 gallons.

Table 2 compares the 2023 flows to the past 48 years:

- 2023 was an average precipitation year, with the annual rainfall of 36.58 inches being close to the median annual precipitation total in the 48-year reporting period. This resulted in the 17th lowest historic total flow volume of 3,749.1 MG. The 48-year reporting period has an annual average of 34.26 inches of rainfall. In comparison, the past ten years has had an average of 40.50 inches of annual rainfall.

- The tertiary or complete treatment volume of 3,669.2 MG for 2023 was the 22nd lowest flow year at the WWTC when viewed over the 48-year period, making it very close to the median.

- The excess flow volume of 79.9 MG for 2023 was the 7th lowest for the 48-year period.

Wet weather discharges are summarized in Table 3. Outfall 002, which discharges to St. Joseph Creek, was in use for 455.6 hours in 2023 and accounted for 165 MG. The operation hours represent 5.2% of the year. The St. Joseph discharge for 2023 represented 4.4% of the total flow. St. Joseph Creek is intended to be used when the combined tertiary and excess flows exceed the capacity of the Outfall 001 pipe, rated for 30.0 MGD. All the flow in November was due to a diversion to Outfall 002 from Outfall 001 for the Outfall Sag Repair project. Without this diversion, the Outfall 002 was only used for 115.2 hours (1.3% of the year) in 2023, accounting for 69.1 MG (1.8% of the total).

Outfall C01 discharge can be used when flows exceed both the tertiary plant capacity and the capacity of the excess flow clarifiers. Intermediate Clarifier No. 1 is temporarily converted from a tertiary treatment unit to an excess flow treatment unit. This outfall was not used in 2023.

Outfall 003 can be used when peak flows exceed both the tertiary plant capacity and the capacity of the excess flow clarifiers. Operators typically do not use Outfall 003 until Outfall C01 is already in service. Intermediate Clarifiers Nos. 2 & 3 are temporarily converted from tertiary treatment to excess flow treatment units. This outfall was not used in 2023.

As shown in Table 4, the current plant design of 11.0 MGD for tertiary treatment was exceeded on 107 days, or 29.3% of the days, during 2023.

WWTC CAPACITY (TABLE 5)

The Illinois EPA determines remaining capacity at a treatment facility by reviewing the past twelve months of average influent flow data at the facility. The three lowest flow months for the period plus outstanding Illinois EPA permits for new development issued to the District over the past two years determines the remaining hydraulic capacity. Table 5 indicates the remaining capacity at the WWTC during the course of the past six years. As indicated, the WWTC is currently at 67% capacity in terms of remaining hydraulic capacity. This is based on an average flow of 7.4 MGD, which is the average of the three lowest flow months during 2023. Remaining capacity, based on organic loading, is also indicated in Table 5. The WWTC organic loading is currently in the range of 77% to 129% of capacity, depending on the parameter. Organic loading can be used by IEPA as an indicator of reserve capacity if hydraulic limits are approached or operational difficulties stem from high organic loading.

TREATMENT PROVIDED (TABLES 6, 7 and 8)

The yearly average effluent results in 2023 were well below the NPDES Permit requirements. The effluent CBOD concentration averaged 1.6 mg/l, TSS was at 0.8 mg/l, and ammonia-nitrogen was 0.2 mg/l. Over the ten-year period, as indicated in Table 6, the yearly averages have ranged from 1.0 to 1.6 mg/L for CBOD, 0.6 to 1.2 mg/L for TSS, and 0.2 to 0.6 mg/L for ammonia-nitrogen.

Table 7 provides the monthly process performance and removal values for 2023. Removal of BOD through the tertiary treatment (i.e., the sand filters) appears to be negative in June, July and September. The filter on the end of the intermediate effluent sampler tube plugs with algae during the sunny, warm months. It is believed that the algae consumes BOD, and hence the samples' BOD results are not representative of the intermediate effluent. Keeping algae out of the filter would require cleaning it multiple times each day. Since this sample is for internal process monitoring and not compliance, a solution to this issue has not been a priority. Staff will be reviewing this to hopefully find a low maintenance solution.

A ten-year history indicating yearly process performance and removal values is presented in Table 8.

NPDES PERMIT COMPLIANCE

The WWTC operated with one permit excursion in 2023. A daily maximum fecal coliform concentration excursion occurred at Outfall 002 on November 21. This was the last day of diversion of the Outfall 001 to the Outfall 002 while the Outfall 001 pipe was repaired and cleaned. The excursion was due to faulty equipment which operators were using to test the hypochlorite strength. As the analysis was reading higher than the actual level, operators underdosed the hypochlorite. The equipment has been replaced.

SLUDGE QUANTITIES (TABLES 9 and 10)

Total raw sludge pumping to the digestion processes is shown in Table 9. The total of primary sludge, waste activated sludge (WAS), thickened waste activated sludge (TWAS) and hauled grease waste was 19,978,894 gallons for 2023. This is 1.6% lower than in 2022. 2,314,600 gallons of WAS was sent directly to the digester, a significant increase over the past two years. This was due to the WAS thickener being out of service from mid-July through early November for maintenance. Digester supernatant (clear water decanted from the process) was significantly lower than in 2022. The hauled grease waste accepted at the WWTC was 2,916,708, which is a 23.5% decrease from 2022. In order to avoid exceeding the capacity of the waste gas burners (flares), the WWTC accepts less hauled grease waste when the CHP units are out of service. One or both CHP units were out of service for maintenance frequently during 2023 in comparison to 2021 and 2022.

In 2023, total digested sludge pumping was 11,738,133 gallons. Of the total, 81.7% or 9,595,473 gallons was dewatered on the belt filter press. 301,836 gallons, or 2.6% of the total, was placed in the sludge lagoons seeded with reeds. The remaining 15.7% of the digested sludge in 2023, or 1,840,824 gallons, was dewatered on the drying beds. A ten-year history on sludge production is included in Table 10.

BIOSOLIDS DISPOSAL (TABLE 11 & 12)

Table 11 summarizes the Class A biosolids distribution for the last ten years. Class A biosolids disposal through the public distribution program for 2023 totaled 1,548 cubic yards, which is below the average for the last ten years. This was an increase over the 2022 annual total of 1,192 cubic yards. Deliveries for 2023 accounted for 69% of the total or 1,067 yards. The pickup station accounted for 17% or 266 yards. The District did not use any biosolids at its facilities in 2023. Contractor pickup was 14% of the total or 215 yards, which is over double the amount picked up by contractors in 2022.

Table 12 compares the Class A and Class B biosolids disposal for the last ten years. 3,999 cubic yards of Class B material were removed in September by a hauling contractor and hauled to farm field for Class B land application in order to make space available for belt press cake storage. This represents 426 dry tons of solids.

UTILITIES (TABLES 13, 14, and 15)

Table 13 summarizes the utility monthly utility usage for 2023 and also provides a ten-year summary. Natural gas consumption for 2023 was at 706,922 cubic feet, a decrease from 2022.

City water consumption for the year was 1,202,709 gallons. This was lower than in 2022, likely due to the OSEC unit (hypochlorite generator) being out of service for a month in 2023 during disinfection season.

The total 2023 net electricity from ComEd was 601,983 kW-hours, for an average daily use of 1,649 kW-hours. This is the first year of net positive electricity after two years of net negative electricity. This change is due to one or both CHP units being out of service for maintenance frequently through the year.

Table 14 provides a monthly Net Energy Summary for the WWTC. All energy used and produced in the WWTC is taken into consideration and not just electricity from ComEd. Unfortunately, the WWTC was unable to meet the District's goal of being a net zero energy facility for 2023. This is due to the above-mentioned CHP maintenance.

DIGESTER GAS UTILIZATION (TABLE 16)

Total digester gas production for 2023 was at 64,547,803 cubic feet, for a daily average of 176,843 cubic feet. Gas was utilized in the CHP facility, where a total of 48,391,914 cubic feet of gas was used in 2023. The digester heat exchangers used 3,816,929 cubic feet of gas, a 244% increase over 2022. Wasting of digester gas (gas flared) totaled 8,572,366 cubic feet in 2023, a 763% increase over 2022. Gas was flared when the supply exceeded the demand and when needed due to equipment outages. The significant increase in digester gas use in the heat exchangers and the waste gas burners is due to the before mentioned CHP down time in 2023.

CHEMICAL USAGE (TABLES 17 and 18)

Table 17 summarizes the monthly chemical usage at the WWTC during 2023, and Table 18 provides a ten-year summary. Sodium hypochlorite and sodium bisulfite were utilized for the year for disinfection and dechlorination. In 2023, hypochlorite was used at 14.7 pounds per million gallons of tertiary flow, a decrease compared to 2022.

The amount of hypochlorite reported for excess flow includes the totals used to treat return activated sludge for filamentous control.

Hypochlorite used in 2023 was mostly that produced by the OSEC unit (hypochlorite generator) with a little supplemented from delivered bulk hypochlorite. We received 25,600 gallons of bulk hypochlorite (16% solution) and produced 1,001,448 gallons (0.8% solution) from the OSEC unit to meet the disinfection needs for the year. The OSEC unit failed in July, and the operators were able to get it running. It failed again at the end of September, just a month before the end of disinfection season. District staff determined that the OSEC has reached the end of its useful life.

Sodium bisulfite was used at a rate of 7.8 pounds per million gallons.

In 2023, dewatering polymer use, which is used in the belt filter press, was 18,000 pounds for 2,098,003 pounds of sludge on a dry solids basis and equated to 7.2 pounds of active polymer per dry tons of solids. Thickening polymer use, which is used in the WAS Thickener, was 18,450 pounds for 979,310 pounds of sludge on a dry basis and equated to 15.1 pounds of active polymer per dry tons of solids.

NUTRIENTS (TABLES 19 and 20)

The NPDES permit requires routine monitoring of influent and effluent total nitrogen and total phosphorus concentrations. Table 19 summarizes that data and applies the concentration data to the monthly flows to estimate loads. 40% removal of total phosphorus and 49% removal of total nitrogen occurred across the plant in 2023.

Table 20 compares the annual average nutrients influent, effluent and percentage removals since monitoring began in 2015. Percent removal of nutrients was lower in 2023 than the average for the nine-year period shown.

SUMMARY

The rainfall and total flow to the WWTC in 2023 were slightly above average over the 48-year reporting period.

Billable flow as a proportion of total flow was approximately 48%, reflecting the high proportion of inflow and infiltration (I/I) in the collection system due to annual precipitation. The need for collection system I/I reduction continues.

Plant reserve capacity appears to be adequate. Dry weather low flows remain well below the plant's hydraulic capacity, the primary method used to determine reserve capacity.

The hypochlorite generation unit (OSEC) reached the end of its useful life in 2023. Alternative options for disinfection, including a new OSEC unit, are being investigated.

The CHP units were out of service or only capable of operating at a minimum output for a significant combined period of time in 2023. This resulted in the WWTC not meeting its goal of being a net zero energy facility. At the end of the year, both CHP units were operational at their full capacity.

Overall, plant effluent quality was excellent for parameters controlled in the NPDES permit. The plant operated with one permit excursion in 2023. The fecal coliform limit was not met at Outfall 002 on November 21. This was due to faulty sampling equipment being used by the operators to monitor the residual chlorine. As the analysis was reading higher than the actual level, operators underdosed the hypochlorite. The equipment has been replaced.

Biosolids disposal through the public distribution program was at a ten-year low in 2022. District staff were successful in getting renewed interest from customers, and the Class A distribution went up by 23% this year over 2022 but remains low for the ten-year period. The lower public demand is believed to be due to the finished product being less desirable after the District began co-digesting sludge and hauled grease waste. Since the District implemented its co-digestion operation, the dewatered product takes longer to dry. As a result, sufficient drying bed space is not available to produce a Class A product from all the co-digested biosolids and a portion of it has to be disposed of as a Class B product. For these two reasons, Class B hauling and land application through a contractor were performed again in 2023. The District's consulting engineer is currently working on a biosolids study to provide a recommendation on how to improve the quality of our biosolids and thereby reduce or eliminate the need for Class B land application.

The Phosphorus Discharge Optimization Plan, submitted in July 2017, committed to continuing attempt to achieving biological phosphorus removal within the existing facilities. The RAS fermenter, which was started in June 2016, was taken out of service in July 2022 as it was determined it was not providing the desired phosphorus removal. In 2024, District staff plan to collect data from the existing plant to be used to recalibrate the BioWin model of the facility and then use the model to re-evaluate nutrient removal modifications that may be used in the future.

TABLE 1
WWTC FLOW
2023

MONTH	PRECIPITATION INCHES	TERTIARY FLOW RECEIVED (MG)	EXCESS FLOW RECEIVED (MG)	TOTAL FLOW RECEIVED (MG)	EXCESS FLOW HOURS ON	EXCESS FLOW % HRS. ON	EXCESS FLOW % OF TOTAL
Jan	2.61	336.33	9.33	345.66	19.30	2.59	2.70
Feb	3.88	390.10	32.63	422.73	76.00	11.31	7.72
Mar	3.03	426.23	10.06	436.29	32.70	4.40	2.30
Apr	2.09	334.78	5.01	339.78	34.90	4.85	1.47
May	0.60	248.62	0.00	248.62	0.00	0.00	0.00
Jun	1.59	217.31	0.00	217.31	0.00	0.00	0.00
Jul	8.72	345.26	18.39	363.65	41.20	5.54	5.06
Aug	2.93	271.32	2.56	273.89	10.30	1.38	0.93
Sep	3.95	257.23	1.94	259.17	6.00	0.83	0.75
Oct	3.12	274.71	0.00	274.71	0.00	0.00	0.00
Nov	0.86	212.33	0.00	212.33	0.00	0.00	0.00
Dec	3.20	354.93	0.00	354.93	0.00	0.00	0.00
TOTALS	36.58	3,669.15	79.92	3,749.07	220.40	2.52	2.13

WWTC FLOW RATES FOR	2023
Daily average total treatment flow -	10.27
Daily average tertiary treatment flow -	10.05
Daily average excess treatment flow -	0.22

TABLE 2
VOLUME OF FLOW RECEIVED AND DURATION OF EXCESS FLOW OPERATION
January 1, 1976 to December 31, 2023

PERIOD	PRECIPITATION INCHES	TERTIARY FLOW	EXCESS FLOW RECEIVED MG	TOTAL FLOW RECEIVED MG	% EXCESS OF TOTAL FLOW	OPERATIONAL HRS. EXCESS FLOW	% EXCESS OF TOTAL HRS.
1/1/76 - 12/31/76	29.39	2,960.9	174.9	3,135.8	5.6%	400.25	4.6%
1/1/77 - 12/31/77	33.22	3,334.6	104.5	3,439.1	3.0%	329.50	3.8%
1/1/78 - 12/31/78	31.02	3,419.0	228.3	3,647.3	6.3%	790.25	9.0%
1/1/79 - 12/31/79	36.55	3,518.2	820.8	4,339.0	18.9%	1,791.25	20.4%
1/1/80 - 12/31/80	33.00	3,866.1	235.0	4,101.1	5.7%	697.50	7.9%
1/1/81 - 12/31/81	23.02	3,510.1	141.0	3,651.1	3.9%	347.00	4.0%
1/1/82 - 12/31/82	33.10	3,531.3	370.3	3,901.6	9.5%	826.87	9.4%
1/1/83 - 12/31/83	34.34	3,726.4	328.0	4,054.4	8.1%	613.50	7.0%
1/1/84 - 12/31/84	25.38	3,742.1	206.5	3,948.6	5.2%	456.75	5.2%
1/1/85 - 12/31/85	31.97	3,611.2	228.0	3,839.2	5.9%	440.26	5.0%
1/1/86 - 12/31/86	25.60	3,550.1	54.3	3,604.4	1.5%	162.83	1.9%
1/1/87 - 12/31/87	33.47	3,754.9	187.3	3,942.2	4.8%	374.38	4.3%
1/1/88 - 12/31/88	22.56	3,518.6	148.2	3,666.8	4.0%	446.07	5.1%
1/1/89 - 12/31/89	25.19	3,377.9	62.9	3,440.8	1.8%	110.58	1.3%
1/1/90 - 12/31/90	43.12	4,189.3	286.4	4,475.7	6.4%	413.33	4.7%
1/1/91 - 12/31/91	39.06	4,064.8	173.8	4,238.6	4.1%	257.79	2.9%
1/1/92 - 12/31/92	30.34	3,609.3	59.4	3,668.7	1.6%	97.20	1.1%
1/1/93 - 12/31/93	40.83	4,056.9	307.1	4,364.0	7.0%	416.11	4.8%
1/1/94 - 12/31/94	33.03	3,555.8	85.6	3,641.4	2.4%	160.68	1.8%
1/1/95 - 12/31/95	29.87	3,684.8	174.6	3,859.4	4.5%	275.70	3.1%
1/1/96 - 12/31/96	37.50	3,672.2	141.7	3,813.9	3.7%	193.40	2.2%
1/1/97 - 12/31/97	34.18	3,582.0	178.5	3,760.5	4.7%	239.40	2.7%
1/1/98 - 12/31/98	45.05	4,088.6	269.6	4,358.2	6.2%	479.80	5.5%
1/1/99 - 12/31/99	31.38	3,716.3	228.9	3,945.2	5.8%	347.33	4.0%

PERIOD	PRECIPITATION INCHES	TERTIARY FLOW	EXCESS FLOW RECEIVED MG	TOTAL FLOW RECEIVED MG	% EXCESS OF TOTAL FLOW	OPERATIONAL HRS. EXCESS FLOW	% EXCESS OF TOTAL HRS.
1/1/00 - 12/31/00	33.98	3,565.5	142.9	3,708.4	3.9%	242.66	2.8%
1/1/01 - 12/31/01	35.51	4,158.0	171.2	4,329.2	4.0%	287.46	3.3%
1/1/02 - 12/31/02	29.23	3,594.0	107.5	3,701.5	2.9%	200.71	2.3%
1/1/03 - 12/31/03	32.63	3,343.4	99.3	3,442.7	2.9%	211.13	2.4%
1/1/04 - 12/31/04	37.31	3,436.5	97.9	3,534.4	2.8%	184.64	2.1%
1/1/05 - 12/31/05	27.09	3,443.8	101.4	3,545.2	2.9%	162.25	1.9%
1/1/06 - 12/31/06	47.08	4,337.0	135.9	4,472.8	3.0%	315.57	3.6%
1/1/07 - 12/31/07	36.06	3,709.0	124.7	3,833.7	3.3%	228.15	2.6%
1/1/08 - 12/31/08	47.45	4,085.2	297.2	4,382.4	6.8%	438.42	5.0%
1/1/09 - 12/31/09	45.10	4,134.5	373.4	4,507.9	8.3%	571.55	6.5%
1/1/10 - 12/31/10	40.11	3,742.3	217.1	3,959.4	5.5%	339.68	3.9%
1/1/11 - 12/31/11	43.13	4,034.3	275.9	4,310.2	6.4%	638.12	7.3%
1/1/12 - 12/31/12	26.16	3,272.5	26.2	3,298.8	0.8%	69.88	0.8%
1/1/13 - 12/31/13	47.18	3,812.2	305.7	4,117.9	7.4%	392.85	4.5%
1/1/14 - 12/31/14	39.04	4,075.9	172.4	4,248.3	4.1%	409.63	4.7%
1/1/15 - 12/31/15	38.93	3,990.7	114.5	4,105.1	2.8%	233.84	2.7%
1/1/16 - 12/31/16	42.28	4,093.5	84.9	4,178.3	2.0%	204.37	2.3%
1/1/17-12/31/17	42.23	3,769.1	197.5	3,967.1	5.0%	283.50	3.2%
1/1/18-12/31/18	44.57	4,007.8	221.6	4,229.4	5.2%	311.40	3.6%
1/1/19-12/31/19	56.22	4,597.8	307.4	4,905.2	6.3%	511.20	5.8%
1/1/20-12/31/20	39.63	3,865.8	177.8	4,043.6	4.4%	245.10	2.8%
1/1/21-12/31/21	29.66	3,499.0	54.5	3,553.5	1.5%	147.80	1.7%
1/1/22-12/31/22	34.91	3,583.8	175.1	3,758.8	4.7%	433.5	4.9%
1/1/23-12/31/23	36.58	3,669.2	79.9	3,749.1	2.1%	220.4	2.5%
1/1/76 to 12/31/23	1,164.69	179,462.2	9,257.5	188,719.9		17,951.5	
Average Yearly Values	34.26	3,738.8	192.9	3,931.7	4.8%	374.0	4.3%

TABLE 3
WET WEATHER DISCHARGES
2023

MONTH	TO ST. JOSEPH CREEK CREEK OUTFALL 002 MG	TO ST. JOSEPH CREEK CREEK OUTFALL 002 HOURS	FROM INTERMEDIATE NO. 1 OUTFALL C01 MG	FROM INTERMEDIATE NO. 1 OUTFALL C01 HOURS	FROM INTERMEDIATES NOS. 2 & 3 OUTFALL 003 MG	FROM INTERMEDIATES NOS. 2 & 3 OUTFALL 003 HOURS
Jan	8.26	15.80		0.00		0.00
Feb	29.04	47.20		0.00		0.00
Mar	6.41	12.40		0.00		0.00
Apr	0.00	0.00		0.00		0.00
May	0.00	0.00		0.00		0.00
Jun	0.00	0.00		0.00		0.00
Jul	20.04	30.30		0.00		0.00
Aug	2.96	5.10		0.00		0.00
Sep	2.40	4.40		0.00		0.00
Oct	0.00	0.00		0.00		0.00
Nov*	95.53	340.42		0.00		0.20
Dec	0.00	0.00		0.00		0.00
Total	164.65	455.62		0.00		0.20
Total - Nov	69.12	115.20		0.00		0.20

*November Outfall 002 flow was not wet weather discharge. Flow was diverted from Outfall 001 to Outfall 002 while a section of the Outfall 001 pipe was replaced and the pipe was cleaned.

TABLE 4

PERCENT DAYS AT OR ABOVE DESIGN FLOW OF 11.0 MGD

2023

MONTH	Days at 11.0 MGD or Above	Influent Avg. MGD for Month	% Days 11.0 MGD or Above	Total Rainfall (in.)
Jan	8	10.81	25.8	2.61
Feb	20	14.06	71.4	3.88
Mar	28	13.72	90.3	3.03
Apr	11	10.92	36.7	2.09
May	0	7.18	0.0	0.60
Jun	0	6.27	0.0	1.59
Jul	11	10.76	35.5	8.72
Aug	5	8.31	16.1	2.93
Sep	4	8.36	13.3	3.95
Oct	4	8.75	12.9	3.12
Nov	1	7.35	3.3	0.86
Dec	15	11.35	48.4	3.20
Total	107	9.82	29.3	36.58

10 YEARS

YEAR	% Days above 11.0 MGD	Rainfall (in.)
2014	38	39.04
2015	36	38.93
2016	35	42.28
2017	30	42.23
2018	35	44.57
2019	50	44.57
2020	30	39.63
2021	18	29.66
2022	29	34.91
2023	29	36.58

Table 5
WWTC REMAINING CAPACITY
2023

	2018	2019	2020	2021	2022	2023
Hydraulic Capacity						
Three Low Flow Months (MGD), Plant Influent	Jul 7.6 Aug 8.3 Sep 9.1	Aug 8.3 Dec 10.3 Jul 10.5	Aug 6.5 Sep 7.6 Jul 8.2	Sep 6.3 Aug 7.3 Nov 7.9	Oct 5.2 Nov 6.8 Aug 7.1	Nov 7.1 Jun 7.2 May 8.0
Average, 3 Low Flow Months (MGD)	8.3	9.7	7.4	7.2	6.4	7.4
Annual Average Flow (PE)	83,000	97,000	74,000	72,000	64,000	74,000
IEPA Permitted Flow - last 2 years (PE)	654	99	422	717	515	178
Total Load (PE)	83,654	97,099	74,422	72,717	64,515	74,178
WWTC Hydraulic Capacity (PE)	110,000	110,000	110,000	110,000	110,000	110,000
Remaining Hydraulic Capacity (PE)	26,346	12,901	35,578	37,283	45,485	35,822
% of Hydraulic Capacity Utilized	76.05%	88.27%	67.66%	66.11%	58.65%	67.43%
Organic Capacity						
Influent Loadings (annual avg. lbs/day)						
BOD	20,064	16,676	16,854	16,878	16,602	18,176
TSS	17,290	15,427	14,654	14,665	14,654	14,889
NH3-N	1,524	1,506	1,319	1,312	1,262	1,278
WWTC Organic Capacity (lbs/day)						
BOD	14,120	14,120	14,120	14,120	14,120	14,120
TSS	15,920	15,920	15,920	15,920	15,920	15,920
NH3-N	1,651	1,651	1,651	1,651	1,651	1,651
% of WWTC Organic Capacity Utilized						
BOD	142.10%	118.10%	119.36%	119.53%	117.58%	128.73%
TSS	108.61%	96.90%	92.05%	92.12%	92.05%	93.52%
NH3-N	92.31%	91.22%	79.89%	79.47%	76.44%	77.41%

Table 6
DAILY AVERAGE CONCENTRATIONS
2014-2023

YEAR	EFFLUENT DAILY AVG. FLOW - MGD	INFLUENT (MG/L)			EFFLUENT (MG/L)		
		BOD	TSS	NH3-N	CBOD	TSS	NH3-N
2014	11.2	127	154	16.0	1.0	0.7	0.3
2015	10.9	130	140	14.7	1.3	0.7	0.2
2016	11.2	189	183	16.1	1.1	0.6	0.2
2017	10.3	213	199	20.3	1.2	0.9	0.4
2018	11.0	230	210	18.7	1.5	1.2	0.6
2019	12.6	169	162	16.4	1.4	1.0	0.3
2020	10.6	213	188	16.4	1.3	0.8	0.6
2021	9.6	225	203	19.7	1.1	0.9	0.3
2022	9.8	216	196	17.8	1.0	0.9	0.5
2023	10.1	243	200	17.6	1.6	0.8	0.2
AVG.	10.7	196	184	17.4	1.3	0.9	0.4

DAILY AVERAGE LOADINGS
2014-2023

YEAR	EFFLUENT DAILY AVG. FLOW - MGD	INFLUENT (LBS/DAY)			EFFLUENT (LBS/DAY)		
		BOD	TSS	NH3-N	CBOD	TSS	NH3-N
2014	11.2	10,937	13,459	1,337	96	69	26
2015	10.9	11,630	12,028	1,218	115	67	23
2016	11.2	17,056	15,857	1,317	103	58	25
2017	10.3	17,380	15,498	1,505	121	111	40
2018	11.0	20,038	17,312	1,528	169	177	62
2019	12.6	16,676	15,427	1,506	163	124	33
2020	10.6	16,854	14,654	1,319	115	86	66
2021	9.6	16,878	14,665	1,312	97	93	38
2022	9.8	16,602	14,654	1,262	90	79	49
2023	10.1	18,176	14,889	1,278	139	76	17
AVG.	10.7	16,223	14,844	1,358	121	94	38

TABLE 7
WWTC PERFORMANCE DATA - MONTHLY CONCENTRATIONS
2023

				PRIMARY TREATMENT		INTERMEDIATE TREATMENT		TERTIARY TREATMENT		
	EFFLUENT DAILY AVERAGE		RAW SEWAGE	PRIM EFFLUENT	PRIM REMOVAL	INT EFFLUENT	INT REMOVAL	TERT EFFLUENT	TERT REMOVAL	OVERALL REMOVAL
Month	FLOW - MGD	PARAMETER	(MG/L)	(MG/L)	(% OF RAW)	(MG/L)	(% OF PRI)	(MG/L)	(% OF INT)	(% OF RAW)
Jan 2023	10.85	TSS	144	51	64.91	5.0	90.21	0.6	88.41	99.60
		BOD	180	89	50.86	2.9	96.76	1.9	34.11	98.95
		AMM-N	14.30					0.14		98.99
Feb 2023	13.93	TSS	122	32	74.14	10.5	66.62	0.9	90.16	99.26
		BOD	147	57	61.21	3.9	93.25	1.8	52.76	98.76
		AMM-N	10.59					0.20		98.16
Mar 2023	13.75	TSS	110	35	67.98	11.2	68.26	1.0	91.22	99.11
		BOD	142	63	55.75	4.5	92.94	1.5	67.42	98.98
		AMM-N	12.05					0.38		96.87
Apr 2023	11.16	TSS	153	41	72.96	13.4	67.58	0.8	93.72	99.45
		BOD	210	77	63.34	4.6	93.98	2.3	49.65	98.89
		AMM-N	12.71					0.18		98.56
May 2023	8.02	TSS	262	69	73.72	5.5	91.95	0.5	90.56	99.80
		BOD	357	128	64.11	2.3	98.23	1.4	40.44	99.62
		AMM-N	22.85					0.12		99.47
Jun 2023	7.24	TSS	313	81	74.02	3.4	95.87	1.2	65.25	99.63
		BOD	388	143	63.20	1.5	98.94	1.9	-23.01	99.52
		AMM-N	24.43					0.14		99.41
Jul 2023	11.14	TSS	163	36	77.97	2.1	94.17	1.3	35.56	99.17
		BOD	185	74	60.21	1.6	97.85	1.9	-21.91	98.96
		AMM-N	15.40					0.30		98.04
Aug 2023	8.75	TSS	168	61	63.56	7.7	87.44	1.0	87.42	99.42
		BOD	173	96	44.72	1.8	98.08	1.6	15.05	99.10
		AMM-N	20.97					0.14		99.36
Sep 2023	8.57	TSS	201	115	42.56	3.5	96.99	0.6	81.49	99.68
		BOD	236	137	42.01	1.3	99.09	1.3	-2.00	99.46
		AMM-N	19.45					0.12		99.36
Oct 2023	8.86	TSS	231	120	47.92	5.9	95.14	0.5	90.97	99.77
		BOD	281	160	43.12	1.5	99.06	1.1	24.44	99.60
		AMM-N	21.02					0.10		99.52
Nov 2023	7.08	TSS	296	147	50.24	6.0	95.96	0.7	88.20	99.76
		BOD	327	187	43.03	2.2	98.80	1.6	29.24	99.52
		AMM-N	22.45					0.10		99.55
Dec 2023	11.45	TSS	229	85	62.83	4.6	94.60	0.5	88.05	99.76
		BOD	271	132	51.23	2.4	98.17	0.9	61.60	99.66
		AMM-N	13.99					0.14		99.02
Total Year Avg.	10.07	TSS	200	81	59.61	6.4	92.07	0.8	87.35	99.59
		BOD	243	120	50.76	2.5	97.92	1.6	35.83	99.34
		AMM-N	17.58					0.17		99.03

TABLE 8
WWTC PERFORMANCE DATA 2014-2023

				PRIMARY TREATMENT		INTERMEDIATE TREATMENT		TERTIARY TREATMENT		
YEAR	MGD	PARAMETER	RAW SEWAGE (MG/L)	PRIM EFFLUENT (MG/L)	PRIM REMOVAL (% OF RAW)	INTER EFFLUENT (MG/L)	INTER REMOVAL (% OF PRI)	TERT EFFLUENT (MG/L)	TERT REMOVAL (% OF INT)	TOTAL REMOVAL (% OF RAW)
2014	11.2	BOD	126	75	40.5%	3.1	95.9%	1.0	67.7%	99.2%
		TSS	152	62	59.2%	3.9	93.7%	0.7	82.1%	99.5%
		NH3	15.8					0.28		98.2%
2015	10.9	BOD	130	73	43.8%	2.9	96.0%	1.3	55.2%	99.0%
		TSS	140	49	65.0%	5.6	88.6%	0.7	87.5%	99.5%
		NH3	14.7					0.24		98.4%
2016	11.2	BOD	189	81	57.1%	2.7	96.7%	1.1	59.3%	99.4%
		TSS	183	52	71.6%	5.9	88.7%	0.6	89.8%	99.7%
		NH3	16.0					0.24		98.5%
2017	10.3	BOD	213	94	55.9%	2.8	97.0%	1.2	57.1%	99.4%
		TSS	199	73	63.3%	7.3	90.0%	0.9	87.7%	99.5%
		NH3	20.3					0.40		98.0%
2018	11.0	BOD	227	103	54.6%	3.1	97.0%	1.5	51.6%	99.3%
		TSS	211	81	61.6%	9.3	88.5%	1.2	87.1%	99.4%
		NH3	18.9					0.60		96.8%
2019	12.6	BOD	169	83	50.9%	2.6	96.9%	1.4	46.2%	99.2%
		TSS	162	68	58.0%	6.6	90.3%	1.0	84.8%	99.4%
		NH3	16.4					0.26		98.4%
2020	10.6	BOD	213	89	58.2%	2.5	97.2%	1.3	48.0%	99.4%
		TSS	188	55	70.7%	6.4	88.4%	0.8	87.5%	99.6%
		NH3	16.4					0.62		96.2%
2021	9.6	BOD	225	93	58.7%	2.3	97.5%	1.1	52.2%	99.5%
		TSS	203	52	74.4%	6.3	87.9%	0.9	85.7%	99.6%
		NH3	19.7					0.30		98.5%
2022	9.8	BOD	216	100	51.8%	1.9	98.1%	1.0	47.4%	99.3%
		TSS	196	64	58.0%	5.0	92.2%	0.9	82.0%	99.4%
		NH3	17.8					0.47		96.8%
2023	10.1	BOD	243	120	51.8%	2.5	97.9%	1.6	36.0%	99.3%
		TSS	200	81	58.0%	6.4	92.1%	0.8	87.5%	99.6%
		NH3	17.6					0.17		99.0%
TEN YEAR AVG	10.7	BOD	195	91	53.3%	2.6	97.1%	1.3	52.7%	99.4%
		TSS	183	64	65.3%	6.3	90.2%	0.9	86.4%	99.5%
		NH3	17.4					0.36		97.9%

TABLE 9

DIGESTER FEED VOLUMES
2023

MONTH	GALLONS PRIMARY	GALLONS WAS	GALLONS TWAS	GALLONS GREASE	GALLONS TOTAL FEED	GALLONS SUPERNATANT
Jan	1,051,937	0	290,763	273,336	1,616,036	601,872
Feb	929,607	0	269,635	238,079	1,437,321	609,077
Mar	1,096,384	0	283,723	185,061	1,565,168	596,090
Apr	987,999	0	180,996	227,402	1,396,397	598,194
May	1,092,518	0	253,644	285,977	1,632,139	627,633
Jun	1,169,132	0	251,926	186,047	1,607,105	502,845
Jul	1,273,098	170,860	120,001	231,463	1,795,422	964,483
Aug	983,177	529,560	21,162	253,830	1,787,729	745,236
Sep	871,658	627,590	0	261,137	1,760,385	717,134
Oct	989,281	729,160	0	287,647	2,006,088	663,559
Nov	983,027	235,350	137,386	254,252	1,610,015	716,211
Dec	1,271,416	22,080	239,120	232,477	1,765,093	560,855
TOTAL	12,699,230	2,314,600	2,048,356	2,916,708	19,978,894	7,903,188

YEAR	TOTAL GALLONS PRIMARY	TOTAL GALLONS WAS	TOTAL GALLONS TWAS	TOTAL GALLONS GREASE	TOTAL GALLONS FEED	TOTAL GALLONS SUPERNATANT
2014	10,556,827	8,726,360	0	2,637,907	21,921,094	7,669,632
2015	12,856,865	7,917,270	0	2,388,320	23,162,455	10,452,628
2016	16,005,236	9,480,829	0	3,669,377	29,155,442	21,897,719
2017	12,710,097	8,894,754	0	3,479,599	25,084,451	18,908,335
2018	12,790,989	7,632,530	0	4,450,410	24,873,929	9,292,026
2019	12,983,091	9,017,620	0	3,225,805	25,226,516	8,475,445
2020	11,268,548	7,249,980	7,762	2,797,874	21,324,164	8,966,994
2021	13,528,802	62,390	2,548,833	3,629,717	19,769,742	9,351,240
2022	13,435,637	124,400	2,923,922	3,812,192	20,296,151	9,049,545
2023	12,699,230	2,314,600	2,048,356	2,916,708	19,978,894	7,903,188

TABLE 10
DIGESTED SLUDGE PUMPING
2023

MONTH	GALLONS TO DRYING BEDS	GALLONS TO LAGOONS	GALLONS TO BELT PRESS	TOTAL GALLONS	TOTAL DRY SOLIDS (LBS)	DRY TONS
Jan	199,428		691,133	890,561	224,596	112
Feb	160,440		577,944	738,384	176,750	88
Mar	125,580		708,349	833,929	198,286	99
Apr	49,140	61,320	642,902	753,362	180,607	90
May	112,140	77,700	752,582	942,422	223,407	112
Jun	478,836	162,816	243,227	884,879	203,363	102
Jul	84,000		670,168	754,168	171,427	86
Aug	166,740		981,964	1,148,704	273,890	137
Sep			1,134,876	1,134,876	252,385	126
Oct	126,000		1,176,620	1,302,620	258,747	129
Nov	141,540		977,996	1,119,536	214,489	107
Dec	196,980		1,037,712	1,234,692	250,506	125
TOTAL	1,840,824	301,836	9,595,473	11,738,133	2,628,450	1,314

YEAR	TOTAL TO DRYING BEDS	TOTAL TO LAGOONS	TOTAL TO BELT PRESS	TOTAL GALLONS	TOTAL DRY SOLIDS (LBS)	DRY TONS
2014	2,111,002	900,582	7,757,099	10,768,684	2,311,647	1,156
2015	1,637,510	708,388	8,575,670	10,921,568	2,390,913	1,195
2016	2,684,707	722,430	5,483,122	8,890,259	1,773,261	1,006
2017	2,876,333	838,116	7,918,682	11,633,131	2,005,847	1,003
2018	2,734,442	498,168	11,821,260	15,053,870	2,410,325	1,206
2019	2,006,624	539,572	12,591,073	15,137,269	2,577,423	1,290
2020	1,840,304	288,600	10,932,096	13,061,000	2,166,043	1,083
2021	2,164,700	511,212	8,067,464	10,743,376	2,274,125	1,137
2022	2,093,536	501,396	8,930,847	11,525,779	2,504,877	1,252
2023	1,840,824	301,836	9,595,473	11,738,133	2,628,450	1,314
					Ten Year Avg.	1,164

TABLE 11
CLASS A BIOSOLIDS DISTRIBUTION

YEAR	DELIVERED		CONTRACTOR P/UP		PICK-UP ST.		DGSD USE		TOTAL
	Cu. Yd.	% of Total	Cu. Yd.	% of Total	Cu. Yd.	% of Total	Cu. Yd.	% of Total	
2014	3,012	87%	72	2%	321	9%	41	1%	3,446
2015	3,185	88%	75	2%	358	10%	7	0%	3,625
2016	2,269	67%	648	19%	451	13%	12	0%	3,380
2017	3,307	83%	322	8%	253	6%	101	10%	3,983
2018	2,414	79%	399	13%	253	8%	6	0%	3,072
2019	1,339	81%	120	7%	176	11%	9	1%	1,644
2020	820	54%	220	14%	464	30%	18	1%	1,522
2021	2,170	86%	47	2%	308	12%	12	0%	2,537
2022	832	70%	100	8%	251	21%	9	1%	1,192
2023	1,067	69%	215	14%	266	17%	0	0%	1,548
TEN YEAR AVG	2,042	79%	222	9%	310	12%	22	1%	2,595

Table 12
BIOSOLIDS DISPOSAL

Year	Class A Distribution	Class B Hauling	Total	Class A Distribution		Class B Hauling		Total
	Cu. Yd.	Cu. Yd.	Cu. Yd.	Dry Tons	% of Total	Dry Tons	% of Total	Dry Tons
2014	3,446	0	3,446	2,068	100%	0	0%	2,068
2015	3,625	0	3,625	1,948	100%	0	0%	1,948
2016	3,380	1,018	4,398	1,821	92%	164	8%	1,985
2017	3,983	1,718	5,701	1,964	90%	223	10%	2,187
2018	3,072	3,000	6,072	1,685	79%	449	21%	2,134
2019	1,644	4,830	6,474	938	60%	619	40%	1,557
2020	1,522	5,915	7,437	799	56%	634	44%	1,433
2021	2,537	3,780	6,317	1,405	76%	440	24%	1,845
2022	1,192	5,300	6,492	632	54%	542	46%	1,174
2023	1,548	3,999	5,547	892	68%	426	32%	1,318
Ten Year Avg	2,595	3,695	5,551	1,415	80%	350	20%	1,765

TABLE 13

UTILITIES

2023

MONTH	NET ELECTRICITY FROM COMED KW HOURS	ELECTRICITY FROM CHP KW HOURS	NATURAL GAS - CU.FT. WWTC	MSB	HYPO BLDG	5006 WALNUT	CITY WATER GALLONS
Jan	99,581	260,534	40,500	48,833	46,367	17,275	34,134
Feb	220,117	147,285	30,100	49,300	36,100	11,900	88,339
Mar	232,697	165,477	33,500	45,200	27,500	10,200	103,598
Apr	10,817	370,921	15,200	13,900	4,367	1,000	84,349
May	-48,479	425,699	9,600	7,700	633	0	179,096
Jun	106,460	243,599	7,400	3,000	0	0	173,686
Jul	138,812	247,245	5,700	2,600	100	0	199,342
Aug	72,951	292,932	5,600	2,000	0	2	151,769
Sep	-66,182	415,759	7,233	2,100	0	34	135,288
Oct	-88,800	434,970	10,667	12,400	1,500	4,210	21,941
Nov	-77,500	418,162	23,700	34,700	14,400	5,800	14,586
Dec	1,508	377,035	28,367	45,500	30,300	10,433	16,581
TOTAL	601,983	3,799,618	217,567	267,233	161,267	60,855	1,202,709

YEAR	NET ELECTRICITY FROM COMED KW HOURS	ELECTRICITY FROM CHP KW HOURS	NATURAL GAS - CU.FT. WWTC	MSB	HYPO BLDG	5006 WALNUT	CITY WATER GALLONS
2014	4,147,605	906,097	556,600	354,300	256,200	112,612	1,360,462
2015	3,088,543	1,618,114	330,725	242,300	243,341	90,150	2,022,867
2016	2,914,349	1,764,802	279,466	242,566	208,867	100,500	1,398,325
2017	2,099,643	2,598,796	206,667	261,833	217,700	95,500	801,133
2018	346,456	3,964,426	219,600	271,867	152,733	134,700	422,321
2019	476,040	3,951,914	219,900	296,700	232,300	136,200	227,990
2020	1,519,580	2,800,854	241,200	213,000	196,700	140,700	930,812
2021	-374,173	2,455,704	227,900	247,200	223,000	104,450	1,126,039
2022	-375,444	5,069,784	251,300	290,167	183,533	150,725	1,428,281
2023	601,983	3,799,618	217,567	267,233	161,267	60,855	1,202,709

TABLE 14
NET ENERGY SUMMARY
2023

MONTH	ENERGY USED, MWH	ENERGY PRODUCED, MWH	NET ENERGY, MWH
Jan	782	640	142
Feb	878	622	256
Mar	896	630	266
Apr	722	701	21
May	677	720	-43
Jun	548	438	110
Jul	649	507	142
Aug	587	512	75
Sep	535	598	-63
Oct	579	660	-81
Nov	604	659	-55
Dec	766	731	35
TOTAL	8,223	7,418	805

TABLE 15

ELECTRICAL USAGE AND WWTC FLOWS

YEAR	MGD	COMED KWHRS PER DAY	TOTAL FLOW MG	TOTAL KWHRS	KWHRS PER MG
1998	11.9	20,643	4,358.23	7,534,800	1,729
1999	10.8	20,831	3,945.26	7,603,200	1,927
2000	10.1	19,503	3,708.38	7,138,220	1,925
2001	11.9	18,837	4,329.23	6,875,400	1,588
2002	10.1	17,670	3,701.50	6,449,400	1,742
2003	9.4	17,648	3,442.68	6,441,600	1,871
2004	9.6	18,138	3,534.37	6,638,400	1,878
2005	9.7	17,859	3,545.21	6,518,400	1,839
2006	12.3	18,652	4,472.81	6,808,073	1,522
2007	10.5	18,549	3,831.59	6,770,460	1,767
2008	12.0	16,473	4,382.37	6,029,248	1,376
2009	12.4	13,912	4,507.87	5,077,824	1,126
2010	10.8	13,417	3,959.40	4,897,032	1,237
2011	11.8	14,089	4,310.18	5,142,655	1,193
2012	9.0	12,980	3,298.75	4,737,602	1,436
2013	10.4	12,906	4,117.91	4,710,718	1,144
2014	11.6	11,363	4,248.26	4,147,605	976
2015	11.3	8,462	4,105.10	3,088,543	752
2016	11.4	7,963	4,178.33	2,914,349	697
2017	10.3	5,752	3,769.61	2,099,643	557
2018	11.0	949	4,007.81	346,456	86
2019	12.6	1,304	4,597.81	476,040	104
2020	10.6	4,163	3,865.84	1,519,580	393
2021	9.6	-1,025	3,498.95	-374,173	-107
2022	9.8	-1,029	3,583.76	-375,444	-105
2023	10.1	1,649	3,669.15	601,983	164

TABLE 16

DIGESTER GAS UTILIZATION
2023

MONTH	TOTAL PRODUCED Cu. Ft.	CHP Cu. Ft.	DEHUMIDIFIER Cu. Ft.	HEAT EXCHANGERS Cu. Ft.	WASTE (FLARED) Cu. Ft.	HAULED GREASE WASTE Gals.
Jan	5,247,372	3,299,420	751,093	258,288	938,572	273,336
Feb	5,658,944	1,851,007	745,493	1,212,242	1,850,201	238,079
Mar	4,914,271	2,265,692	627,182	1,096,893	924,504	185,061
Apr	6,034,055	4,891,668	404,833	100,048	637,506	227,402
May	6,504,427	5,513,819	213,899	84,507	692,202	285,977
Jun	4,198,634	3,002,041	34,295	499,131	663,167	186,047
Jul	5,090,828	3,268,195	209,715	183,525	1,429,393	231,463
Aug	5,067,484	3,857,932	121,484	186,442	901,626	253,830
Sep	5,460,164	5,238,562	1,486	35,360	184,755	261,137
Oct	5,617,861	5,409,537	1,530	50,816	155,978	287,647
Nov	5,499,119	5,153,001	142,920	23,851	179,347	254,252
Dec	5,254,645	4,641,039	512,664	85,827	15,115	232,477
TOTAL	64,547,803	48,391,914	3,766,594	3,816,929	8,572,366	2,916,708

YEAR	TOTAL PRODUCED Cu. Ft.	ENGINE/ CHP Cu. Ft.	DEHUMIDIFIER Cu. Ft.	HEAT EXCHANGERS Cu. Ft.	WASTE (FLARED) Cu. Ft.	HAULED GREASE WASTE Gals.
2014	65,301,203	16,426,989	11,353,641	26,667,787	17,011,975	2,728,840
2015	68,198,366	31,095,549	5,858,902	20,643,295	21,656,843	2,389,320
2016	84,415,051	34,504,340	11,057,844	10,918,707	27,934,160	3,669,377
2017	73,206,201	39,848,809	4,836,981	11,239,249	17,095,933	3,479,599
2018	82,004,810	59,259,962	4,877,385	2,558,378	15,309,085	4,450,410
2019	82,452,685	57,564,552	8,000,079	1,775,449	15,112,605	3,225,805
2020	60,068,754	37,039,990	6,140,934	2,033,589	14,854,243	2,797,874
2021	66,902,773	60,574,223	3,652,697	1,173,765	1,456,328	3,629,717
2022	70,628,326	63,737,424	4,789,505	1,108,193	993,204	3,812,192
2023	64,547,803	48,391,914	3,766,594	3,816,929	8,572,366	2,916,708

TABLE 17

CHEMICALS
2023

	LIQUID DISINFECTANT USE			LIQUID DISINFECTANT SOURCE			SLUDGE TREATMENT	
	0.8% SODIUM HYPOCHLORITE TERTIARY	0.8% SODIUM HYPOCHLORITE EXCESS	40% SODIUM BISULFITE TERTIARY	SOLAR SALT DELIVERY	0.8% SODIUM HYPOCHLORITE FROM OSEC	16% SODIUM HYPOCHLORITE DELIVERED	DEWATERING POLYMERS	THICKENING POLYMERS
MONTH	Gallons	Gallons	Gallons	Tons	Gallons	Gallons	lbs.	lbs.
Jan	9,761	8,003	113		17,864		3,600	2,250
Feb	44,479	41,125	302	25	80,304	4,500		2,250
Mar	67,412	17,996	364		81,480		3,600	2,250
Apr	26,714	12,213	104	25	65,520			2,250
May	115,439	13	684		158,088			2,250
Jun	82,321	12	651	25	154,392		3,600	2,250
Jul	117,856	35,334	884	23	185,808	3,600		900
Aug	94,638	8,649	782	25	145,544	4,000		450
Sep	86,643	9,583	786		112,448	4,500	3,600	
Oct	89,527	5,018	1,059		0	4,500		
Nov	105,678	9	653		0	4,500	1,800	1,350
Dec	2,101	1,843	15		0		1,800	2,250
TOTAL	842,570	139,798	6,396	123	1,001,448	25,600	18,000	18,450

TABLE 18

CHEMICAL USAGE

SODIUM HYPOCHLORITE USAGE

YEAR	TERTIARY lbs.	Flow MG	lbs./MG	EXCESS lbs.	FLOW MG	lbs./MG
2014	57,131	4,075.9	14.0	12,448	172.4	72.2
2015	47,388	3,990.7	11.9	8,294	114.5	72.4
2016	47,954	4,093.5	11.7	13,733	84.9	161.8
2017	36,336	3,769.6	9.6	12,200	193.6	63.0
2018	39,153	4,007.8	9.8	10,984	221.6	49.6
2019	48,154	4,597.8	10.5	17,002	307.4	55.3
2020	51,073	3,865.8	13.2	8,600	177.8	48.4
2021	56,632	3,499.0	16.2	6,802	54.5	124.7
2022	87,474	3,583.8	24.4	18,078	175.1	103.3
2023	53,987	3,669.2	14.7	10,995	79.9	137.6

SODIUM BISULFITE

YEAR	TERTIARY lbs.	FLOW MG	lbs./MG
2014	14,742	4,075.9	3.6
2015	25,048	3,990.7	6.3
2016	19,432	4,093.5	4.7
2017	22,167	3,769.6	5.9
2018	23,824	4,007.8	5.9
2019	30,079	4,597.8	6.5
2020	26,901	3,865.8	7.0
2021	32,508	3,499.0	9.3
2022	35,357	3,583.8	9.9
2023	28,490	3,669.2	7.8

SALT AND HYPOCHLORITE SOURCE

YEAR	SOLAR SALT DELIVERY TONS	0.8% SODIUM HYPOCHLORITE FROM OSEC Gals.	16% SODIUM HYPOCHLORITE DELIVERED Gals.
2014	144	1,035,552	9,600
2015	144	859,180	4,420
2016	189	1,012,424	3,956
2017	0	115,416	49,500
2018	0	0	58,000
2019	0	0	72,500
2020	125	707,168	9,000
2021	150	784,084	8,500
2022	175	1,174,320	12,500
2023	123	1,001,448	25,600

POLYMERS DEWATERING (BELT PRESS)

YEAR	POLYMER lbs	DRY SOLIDS lbs	DOSE lb active polymer per dry ton solids
2017	16,200	1,266,862	10.7
2018	30,600	1,696,122	15.2
2019	36,000	1,962,111	15.4
2020	29,700	1,644,937	15.2
2021	27,000	1,645,493	13.8
2022	24,300	1,908,133	10.7
2023	18,000	2,098,003	7.2

POLYMERS THICKENING (WAS)

YEAR	POLYMERS lbs.	DRY SOLIDS lbs.	DOSE lb active polymer per dry ton solids
2017			
2018			
2019			
2020			
2021	22,275	1,190,702	15.0
2022	22,950	1,340,189	13.7
2023	18,450	979,310	15.1

TABLE 19
NUTRIENTS
2023

Phosphorus

	Influent Concentration, mg/L	Influent Load, lbs/day	Effluent Concentration, mg/L	Effluent Load, lbs/day	% Removal of Load, %
January	3.95	316	2.34	187	41
February	3.74	341	2.15	179	47
March	2.81	325	1.55	186	43
April	4.23	367	2.03	175	52
May	7.80	442	4.34	279	37
June	8.22	432	5.06	313	28
July	3.74	334	2.58	252	25
August	4.70	318	3.76	299	6
September	4.43	346	2.51	170	51
October	6.73	390	3.39	200	49
November	6.81	426	3.61	216	49
December	4.54	392	1.93	169	57
Min	2.81	316	1.55	169	6
Max	8.22	442	5.06	313	57
Annual Total		134,737		79,869	
Avg	5.14	369	2.94	219	40

Nitrogen

	Influent Concentration, mg/L	Influent Load, lbs/day	Effluent Concentration, mg/L	Effluent Load, lbs/day	% Removal of Load, %
January	28.00	2,122	16.20	1,262	41
February	19.90	1,895	12.30	1,177	38
March	19.40	2,612	10.60	1,432	45
April	24.70	2,537	10.60	1,068	58
May	38.20	2,650	14.80	1,145	57
June	55.10	3,115	22.20	1,514	51
July	34.30	2,596	15.90	1,234	52
August	37.80	2,283	19.20	1,249	45
September	30.00	3,075	19.80	2,097	32
October	44.00	2,408	19.90	1,083	55
November	44.00	2,363	22.80	1,225	48
December	55.00	3,961	16.40	1,197	70
Min	19.40	1,895	10.60	1,068	32
Max	55.10	3,961	22.80	2,097	70
Annual Total		961,744		476,995	
Avg	35.87	2,635	16.73	1,307	49

TABLE 20
NUTRIENTS
ANNUAL AVERAGES SINCE 2015

Total Phosphorus

	Avg Influent Concentration mg/L	Avg Influent Load lbs/day	Avg Effluent Concentration mg/L	Avg Effluent Load lbs/day	% Removal of Load, %
2015	4.37	352	2.54	206	39
2016	5.44	464	2.58	219	53
2017	5.62	454	2.99	235	47
2018	5.43	448	2.99	235	53
2019	4.68	434	2.99	235	53
2020	5.33	418	2.90	228	45
2021	5.72	405	3.33	238	40
2022	5.12	373	2.91	200	46
2023	5.14	369	2.94	219	40
Average	5.21	413	2.91	224	46

Total Nitrogen

	Avg Influent Concentration mg/L	Avg Influent Load lbs/day	Avg Effluent Concentration mg/L	Avg Effluent Load lbs/day	% Removal of Load, %
2015	31.80	2,853	17.98	1,620	43
2016	36.18	2,602	15.96	1,155	56
2017	38.52	3,128	16.04	1,318	57
2018	35.00	2,791	14.38	1,181	59
2019	28.88	2,527	13.20	1,189	53
2020	33.27	2,632	18.08	1,474	42
2021	34.84	2,472	17.02	1,278	48
2022	31.64	2,110	16.13	1,075	51
2023	35.87	1,635	16.73	1,307	49
Average	34.00	2528	16.17	1289	51

DOWNERS GROVE SANITARY DISTRICT
M E M O

DATE: January 05, 2024

TO: Amy R. Underwood
General Manager

FROM: Keith Shaffner
Sewer Construction Supervisor

RE: Sewer Construction Year End Summary – 2023

The following is a summary of the construction activities that occurred in the past year:

Permits: The year 2023 saw an 11% decrease in single family permits issued over the prior year (Exhibit A). Single family tear downs and rebuilds continue to be a significant factor in new home construction within the District (Exhibit B). Also attached for reference is the Annual Summary of Sewer Permits issued for the last five years 2019–2023 (Exhibit C).

Annexations: Seven parcels totaling 7.12 acres were added to the Sanitary District from the 2023 annexations. Trunk Sewer Service Charges (TSSC) collected from annexations totaled $25,518.26. Please find attached a summary of the parcels annexed into the Sanitary District in 2023 and a comparison of the last five years of annexations (Exhibit D).

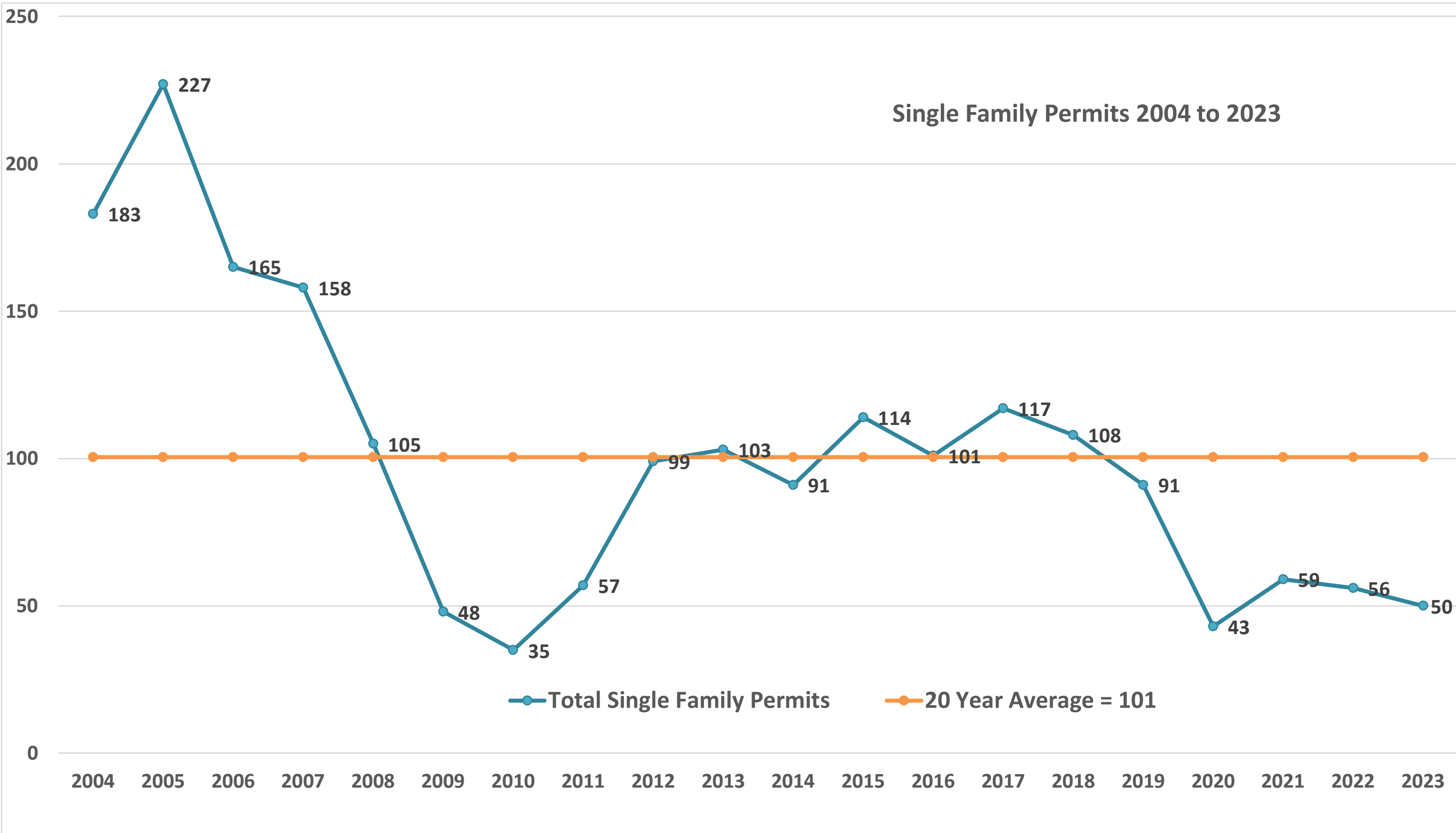
Board of Local Improvements: There were no BOLI meetings held in 2023.

Illinois EPA Permits: IEPA issued construction permits for 1 new project in the District, with an estimated wastewater flow totaling 36 PE (3,600 gallons per day).

Public Sewer Main Construction: There was one new public sewer main project constructed in 2023, which added 100 linear feet of sewer main and 1 manhole.

CC: WDVB, AES, JMW, KJR, RTJ, MJS, TF & DM

EXHIBIT A



SINGLE FAMILY PERMITS AVERAGES

5 YEAR AVERAGE (2018-2022)	60
10 YEAR AVERAGE (2013-2022)	83
20 YEAR AVERAGE (2003-2022)	101

EXHIBIT B

SINGLE FAMILY TEAR-DOWNS & RE-BUILDS

YEAR	TOTAL SF PERMITS	TEAR DOWN RE-BUILDS	% RE-BUILDS
2004	183	115	62.84%
2005	227	136	59.91%
2006	165	99	60.00%
2007	158	63	39.87%
2008	105	27	25.71%
2009	48	24	50.00%
2010	35	19	54.29%
2011	57	32	56.14%
2012	99	48	48.48%
2013	103	56	54.37%
2014	91	62	68.13%
2015	114	58	50.88%
2016	101	57	56.44%
2017	117	70	59.83%
2018	108	54	50.00%
2019	91	44	48.35%
2020	43	28	65.12%
2021	59	48	81.36%
2022	56	31	55.36%
2023	50	25	50.00%
20-YEAR AVE	**101**	**55**	**54.53%**

20 YEAR SUMMARY:

	SF PERMITS	RE-BUILDS	% RE-BUILDS
TOTAL	**2010**	**1096**	**54.53%**

EXHIBIT C DOWNERS GROVE SANITARY DISTRICT - SUMMARY OF SEWER PERMITS ISSUED

YEAR	PERMIT TYPE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTALS
2023	SINGLE FAMILY	2	3	4	8	4	4	5	5	1	8	2	4	50
2023	MULTIPLE FAMILY	0	0	0	0	0	0	0	0	0	0	0	0	0
2023	COMMERCIAL	1	0	1	2	1	2	0	2	0	1	0	1	11
2023	REPAIR	1	0	2	0	1	1	1	0	3	0	0	2	11
2023	DISCONNECT	4	1	1	0	0	3	1	1	3	1	2	2	19
2023	TOTAL	8	4	8	10	6	10	7	8	7	10	4	9	91
YEAR	PERMIT TYPE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTALS
2022	SINGLE FAMILY	2	3	11	4	6	2	6	6	3	6	6	1	56
2022	MULTIPLE FAMILY	1	0	0	0	0	0	0	0	0	0	0	0	1
2022	COMMERCIAL	0	1	1	0	1	1	1	3	0	1	1	0	10
2022	REPAIR	2	0	2	0	0	2	0	3	5	7	2	2	25
2022	DISCONNECT	3	5	0	3	2	6	6	0	1	3	8	2	39
2022	TOTAL	8	9	14	7	9	11	13	12	9	17	17	5	131
YEAR	PERMIT TYPE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTALS
2021	SINGLE FAMILY	5	5	10	3	5	5	2	2	6	6	7	3	59
2021	MULTIPLE FAMILY	0	0	1	0	0	0	0	1	0	0	0	0	2
2021	COMMERCIAL	0	0	0	1	0	1	1	2	2	0	0	1	8
2021	REPAIR	3	0	1	0	2	1	3	0	1	3	1	2	17
2021	DISCONNECT	3	3	2	3	5	5	2	2	1	6	6	3	41
2021	TOTAL	11	8	14	7	12	12	8	7	10	15	14	9	127
YEAR	PERMIT TYPE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTALS
2020	SINGLE FAMILY	4	6	0	4	3	5	4	3	4	3	6	1	43
2020	MULTIPLE FAMILY	0	0	0	0	0	0	0	1	0	0	0	0	1
2020	COMMERCIAL	1	1	2	0	3	2	0	0	0	0	0	0	9
2020	REPAIR	1	0	1	0	0	0	0	2	4	1	1	0	10
2020	DISCONNECT	7	1	0	2	4	1	3	5	4	3	5	0	35
2020	TOTAL	13	8	3	6	10	8	7	11	12	7	12	1	98
YEAR	PERMIT TYPE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTALS
2019	SINGLE FAMILY	7	5	8	6	19	12	7	9	4	7	2	5	91
2019	MULTIPLE FAMILY	0	0	0	0	0	0	0	0	0	0	0	0	0
2019	COMMERCIAL	0	0	2	2	3	0	1	1	3	0	1	1	14
2019	REPAIR	0	1	1	0	0	2	1	0	0	0	1	2	8
2019	DISCONNECT	2	2	7	4	4	3	6	8	0	3	11	0	50
2019	TOTAL	9	8	18	12	26	17	15	18	7	10	15	8	163

Exhibit D 2023 Annexations

LOCATION	NAME	TSSC	PAID	APPROVAL	AO#	ACRES
2424 Ogden	Pugi LLC	$1,550.00	03/29/23	03/19/19	2023-01	1.80
1634 63rd	Mathe	$2,072.72	04/03/23	05/16/23	2023-02	0.43
6120 Fairview **#**	Rexhepi	$0.00	N/A	08/15/23	2023-03	0.50
5707 Elinor	Quitschau	$2,629.48	10/09/23	10/21/23	2023-04	0.53
6002-6030 Fairview	Teton Dev.	$14,442.00	10/26/23	11/21/23	2023-05	2.90
7124 Matthias	Chraca	$2,412.03	12/13/23	12/19/23	2023-06	0.48
7128 Matthias	Ossey	$2,412.03	12/13/23	12/19/23	2023-07	0.48
TOTAL		**$25,518.26**				**7.12**

Annexed in 1967 according to DGSD record. County does not have record.
DGSD collecting new annexation.

Annexations Five Year Comparison

Year	2019	2020	2021	2022	2023
Number of Annexations	7	4	6	8	7
TSSC	$21,023.88	$8,887.00	$13,132.58	$94,635.32	$25,518.26
Acres	4.84	1.74	2.74	10.49	7.12

DOWNERS GROVE SANITARY DISTRICT
MEMO

TO: Amy Underwood
General Manager

FROM: Todd Freer
Sewer System Maintenance Supervisor

DATE: January 5, 2024

RE: Review of Operations – Collection System Performance for 2023

I have enclosed copies of the following items for your review:

1) Annual Sewer Backup Comparisons for 1995 through 2023
2) Manhole Overflow and Sewer Backup Summary by Event
3) Manhole Overflow and Sewer Backup Summary by Year
4) 2023 Public Sewer Blockages
5) 2023 Building Service Blockages
6) Current I&I Ranking of Flow Metering Basins

CC: AES, JMW, RTJ, KJR, MS, CSS, DM

DOWNERS GROVE SANITARY DISTRICT ANNUAL SEWER BACK UP COMPARISONS

REPORTING YEAR	TOTAL BACK UPS FOR YEAR ***	PUBLIC SEWER BLOCKAGES	BUILDING SERVICE PROBLEMS	HEAVY RAIN SURCHARGE ***	LIFT STATION FAILURE
1995	164	26	136	2	0
1996	765	23	199	542	1
1997	632	24	114	494	0
1998	209	32	137	40	0
1999	227	31	191	5	0
2000	241	29	205	7	0
2001	216	22	132	61	0
2002	190	35	155	0	0
2003	207	27	180	0	0
2004	213	18	193	2	0
2005	328	21	300	7	0
2006	373	13	330	30	0
2007	286	11	275	0	0
2008	418	17	312	101	0
2009	312	19	242	59	0
2010	305	11	285	9	0
2011	280	15	262	3	0
2012	273	14	258	1	0
2013	474	13	322	139	0
2014	311	21	281	9	0
2015	238	11	227	0	0
2016	203	11	188	4	0
2017	242	9	200	33	0
2018	202	8	183	11	0
2019	199	2	192	5	0
2020	263	8	219	36	0
2021	270	12	258	0	0
2022	274	8	266	0	0
2023	244	9	253	0	0
20 year AVE	285	13	252	22	0
5 year AVE	250	8	238	8	0

*** TOTALS FOR YEARS 1996 & 1997 INCLUDES DATA FROM SURVEY RESPONSES

MANHOLE OVERFLOW AND SEWER BACKUP HISTORY -

DOWNERS GROVE SANITARY DISTRICT - OVERFLOW BACKUP HISTORY

DATE OF EVENT	9/28/2023	4/4/2023	6/6/2022	4/6/2022	1/27/2022	1/5/2022
PRECIP FOR 24 Hrs			N/A	N/A	N/A	N/A
PRECIP FOR 3 PREVIOUS DAYS	Dry Weather Overflow	Dry Weather Overflow	Dry Weather Overflow	Dry Weather Overflow	Dry Weather Overflow	Dry Weather Overflow
10- day rainfall						
PEAK WWTC FLOW		0.64				
# OF OVERFLOWS	1					
MH LOCATIONS	Parker's Restaurant Inspection MH Private Property	1B-050 Root Blockage	N/A Broken Force Main FMCL-001 to Bend	N/A Broken Force Main FMW-008 to FMW-007	5300 Katrine Ave Inspection MH Private Property	N/A Broken Force Main FMV-001-B to FMV-001

OF BACKUPS

MANHOLE OVERFLOW AND SEWER BACKUP HISTORY -

DOWNERS GROVE SANITARY DISTRICT - OVERFLOW BACKUP HISTORY

DATE OF EVENT	12/20/2021	6/26/2021	2/11/2021	1/22/2021	12/4/2020
PRECIP FOR 24 Hrs	N/A	2.35	N/A	N/A	N/A
PRECIP FOR 3 PREVIOUS DAYS	Dry Weather Overflow	2.15	Dry Weather Overflow	Dry Weather Overflow	Dry Weather Overflow
10- day rainfall		5.46			
PEAK WWTC FLOW					
# OF OVERFLOWS		5	1	1	N/A
MH LOCATIONS	N/A Broken Force Main FMV-Bend-005 to FMV-002	1M-050 2D-001 1H-005 1H-004 2A-011-A	LA Fitness Inspection MH Private Property	N1-025-6	Broken Force Main FMV-Bend-004 to FMV-Bend-003

OF BACKUPS

MANHOLE OVERFLOW AND SEWER BACKUP HISTORY -

DOWNERS GROVE SANITARY DISTRICT - OVERFLOW BACKUP HISTORY

DATE OF EVENT	5/17/2020	11/1/2019	10/26/2019	9/15/2019	7/18/2019	5/27/2019
PRECIP FOR 24 Hrs	3.13	N/A	2.65	0.79	1.99	1.72
PRECIP FOR 3 PREVIOUS DAYS	2.73	Dry Weather Overflow	2.66	Mainline Blockage Dry Weather Overflow	0.86	0.3
10- day rainfall	6.23	4.39	2.91		3.18	3.62
PEAK WWTC FLOW	116.5		86		73.84	75.3
# OF OVERFLOWS	9	1	5	1	1	2
MH LOCATIONS	1M-050 2D-001 1H-005 1H-004 1K-049 G4-007 2A-011 G1-012	N1-025-6	1M-050 2D-001 1H-005 1H-004 1K-049	1K-046	2D-001	2D-001 1K-049
# OF BACKUPS	36		2			
	5604 Carpenter 4013 Elm 5543 Wilcox 5713 Main 4018 N. Adams 471 7Main 1105 Sixty Second 5501 Fairview 4524 Prince 1660 Bolson 145 N. Hudson 5615 Brookbank 4717 Main 5543 Wilcox 4518 Prince 643 Maple 242 Fifty Fifth 34 N. Adams 420 N. Washington 18 N. Cass 5408 Main 1106 Sixtieth 4725 Linscott 4721 Highland 4031 N. Grant 4906 Edward 5416 Cumnor 6025 Woodward 324 Fifty Fifth 131 N. Hudson 3944 Main 951 Valley View 1424 Sixty Second 301 Fifty Fifth Place 4524 Prince 4417 Highland		5501 Farview Ave 115 S. Grant St			

MANHOLE OVERFLOW AND SEWER BACKUP HISTORY -

DOWNERS GROVE SANITARY DISTRICT - OVERFLOW BACKUP HISTORY

DATE OF EVENT	4/30/2019	4/29/2019	11/1/2018	2/20/2018	1/26/2018	11/27/2017
PRECIP FOR 24 Hrs	1.51	2.2	N/A	2.3	N/A	N/A
PRECIP FOR 3 PREVIOUS DAYS	2.65	0.56	Dry Weather Overflow	0.64	Dry Weather Overflow Liner Installation	Dry Weather Overflow Liner Installation
10- day rainfall	4.37	2.86		3.23		
PEAK WWTC FLOW	88.12	85.59		105.33		
# OF OVERFLOWS	3	1	1	10	1	1
MH LOCATIONS	2D-001 1M-050 1K-049	2D-001	W1-076	1M-050 2D-001 2C-089-1 1H-012 1H-005 1H-004 1K-049 2C-115 G1-011 G1-012	3A-014	3A-030
# OF BACKUPS				21 212 S. Lincoln 4133 Saratoga 5104 DeWitt 4019 N. Washington 4804 Highland 752 Chicago 18 N. Cass 504 N. Washington 4618 Roslyn 1 N. Cumnor 5730 Main 4924 Washington 115 S. Grant 4618 Roslyn 131 N. Hudson 828 Chicago 4904 Puffer 4540 Highland 3928 N. Cass 3924 Forest 326 Gierz		

MANHOLE OVERFLOW AND SEWER BACKUP HISTORY -

DOWNERS GROVE SANITARY DISTRICT - OVERFLOW BACKUP HISTORY

DATE OF EVENT	10/14/2017	5/10/2017	4/29/2017	4/27/2017	3/30/2017	3/17/2017
PRECIP FOR 24 Hrs	6.88	1.3	2.38	N/A	1.83	N/A
PRECIP FOR 3 PREVIOUS DAYS	1.21	0.52	0.54	Dry Weather Overflow	0.73	Dry Weather Overflow
10- day rainfall	9.55	2.49	3		2.88	
PEAK WWTC FLOW	105.91	73.3	69.34		70.78	
# OF OVERFLOWS	15	2	2		2	1
MH LOCATIONS	L1-109 1H-012 1H-004 1H-005 1K-049 2A-011 2A-011-A 2D-001 1M-034 1M-049 G1-012 H1-004 H1-005 H4-004 H4-088	1M-049 1K-049	1M-049 2D-001	2A-072	1M-049 2D-001	B1-038-1
# OF BACKUPS	38 1122 60th 115 S Grant 1450 Palmer 1917 B Curtiss 1928 Curtiss 326 Gierz 3902 S Adams 4014 N Grant 4015 N Washington 4018 N Adams 4023 N Grant 4112 N Adams 4132 Roslyn 4507 Fairview 4825 Pershing 4943 Highland 5143 Grand 5501 Fairview 5713 Main 5740 Plymouth 6941 Lyman 7001 Foster 7020 Foster 733 Chicago 752 Chicago 821 Valley View 831 Valley View 951 Valley View 820 Valley View 4915 Washington 6909 Galway 4939 Wallbank 4618 Roslyn 1418 62nd 4819 Pershing 4611 Fairview 238 Chicago 3926 N. Lincoln	3 112 N. Lincoln 138 N. Lincoln 305 N. Washington			2 1165 Barberry 122 S. Cass	

MANHOLE OVERFLOW AND SEWER BACKUP HISTORY -

DOWNERS GROVE SANITARY DISTRICT - OVERFLOW BACKUP HISTORY

DATE OF EVENT	3/1/2017	8/27/2016	7/29/2016	3/24/2016	8/29/2015	6/15/2015	5/26/2015
PRECIP FOR 24 Hrs	1.69	1.1	1.47	N/A	N/A	1.5	0.57
PRECIP FOR 3 PREVIOUS DAYS	0	0.47	2.27	Dry Weather Overflow	Dry Weather Overflow	1.93	0.31 Dry Weather Overflow
10- day rainfall	2.12	2.68	5.81			4	0.88
PEAK WWTC FLOW	88.54	64.07	68.33			88.4	
# OF OVERFLOWS	2	1	2	1	1	2	1
MH LOCATIONS	1M-049 2D-001	1M-049	1M-049 2D-001	2F-010 2F-011	2G-037	1M-049 2D-001	1A-021
# OF BACKUPS		2 115 S. Grant 130 S. Lincoln		0	0	2 1165 Barberry 3524 Saratoga	

MANHOLE OVERFLOW AND SEWER BACKUP HISTORY -

DOWNERS GROVE SANITARY DISTRICT - OVERFLOW BACKUP HISTORY

DATE OF EVENT	11/28/2014	10/18/2014	8/22/2014	6/30/2014	5/20/2014	11/22/2013	10/31/2013
PRECIP FOR 24 Hrs	N/A	N/A	1.52	2.04	1.47	N/A	2.46
PRECIP FOR 3 PREVIOUS DAYS	Dry Weather Overflow	Dry Weather Overflow	2.15	0.07	0	Dry Weather Overflow	0.65
10- day rainfall			3.81	2.97	3.1		3.2
PEAK WWTC FLOW			85.66	71.9	67.28		75.19
# OF OVERFLOWS	1	1	3	1	2	1	1
MH LOCATIONS	H5-021-90	1H-012	1M-049 1M-050 2D-001	1M-049	1M-049 2D-001	FMCL-001	1M-049
# OF BACKUPS	1 1230 75th	0	8 4129 Washington 115 S. Grant 117 S. Grant 5604 Carpenter 200 S. Lincoln 5436 Cumnor 1928 Curtiss 122 S. Lincoln	1 1129 Barberry	0		

MANHOLE OVERFLOW AND SEWER BACKUP HISTORY -

DOWNERS GROVE SANITARY DISTRICT - OVERFLOW BACKUP HISTORY

DATE OF EVENT	4/18/2013	3/10/2013	8/26/2012	2/21/2012	6/9/2011	5/25/2011
PRECIP FOR 24 Hrs	4.67	1.02	3.4	N/A	2.49	N/A
PRECIP FOR 3 PREVIOUS DAYS	2.59	0.4	0	Dry Weather Overflow	0.27	Dry Weather Overflow
10- day rainfall	8.61	1.52	3.7		2.95	
PEAK WWTC FLOW	116	74.79	73.26	N/A	77.56	N/A
# OF OVERFLOWS	?	1	0	1	6	1
MH LOCATIONS	1M-049 H4-088 2C-089-1 G1-012 1H-005 2D-001 1K-049 2A-011-A 2E-023 unable to verify all locations due to surface flooding	1M-049		1H-012	1M-049 H1-003* H1-004* H1-005* 2D-001 1K-049 * Lift Station Failure	V3-049
# OF BACKUPS	269	1	1	1	3	2
	124 N. Lincoln 5505 Dunham 4717 Main 5505 Fairview 1928 Curtiss 4936 Francisco 17 W. Naperville 6021 Grand 4832 Saratoga 6035 Dunham 3840 Florence 5320 Benton 5300 Blodgett 6941 Lyman 4535 Elm 130 N. Williams 6121 Carpenter 5236 Fairmount 917 Blanchard 301 55th 4915 Washington 3944 Main 1130 Franklin 4823 Prince 3946 Elm 1925 Prairie 3524 Saratoga 123 N. Washington 1141 Valley View 4710 Saratoga 200 S. Grant 4945 Highland 5235 Fairmount 428 S. Cass 5310 Lyman 1424 62nd 6133 Dunham 2045 Prairie 2035 Prairie	117 S. Grant	1129 Barberry	310 Otis	5701 Webster 4111 Roslyn 1165 Barberry	3840 Florence 3831 Florence

MANHOLE OVERFLOW AND SEWER BACKUP HISTORY -

DOWNERS GROVE SANITARY DISTRICT - OVERFLOW BACKUP HISTORY

DATE OF EVENT	3/5/2011	1/31/2011	12/31/2010	12/14/2010	8/3/2010	7/24/2010	6/23/2010
PRECIP FOR 24 Hrs	N/A	N/A	0.89	N/A	1.65	2.86	0.97
PRECIP FOR 3 PREVIOUS DAYS	Dry Weather Overflow	Dry Weather Overflow	0.55	Dry Weather Overflow	1	0.79	0.59
10- day rainfall			1.46		4.65	3.65	2.07
PEAK WWTC FLOW	N/A	N/A	52.38	N/A	73.52	88	71
# OF OVERFLOWS	2	1	0	1	1	6	1
MH LOCATIONS	V-4-112 V-4-060	1H-055		L1-051	1M-049	1M-049 1H-012 1H-005 1H-004 1K-049 G4-004-A	1M-049
# OF BACKUPS		1	1			4	0
		405 Grant	1129 Barberry			4032 N. Grant 4020 Liberty 3941 Main 4031 N. Grant	

MANHOLE OVERFLOW AND SEWER BACKUP HISTORY -

DOWNERS GROVE SANITARY DISTRICT - OVERFLOW BACKUP HISTORY

DATE OF EVENT	6/2/2010	5/10/2010
PRECIP FOR 24 Hrs	1.95	N/A
PRECIP FOR 3 PREVIOUS DAYS	1.26	Dry Weather Overflow
10- day rainfall	3.61	
PEAK WWTC FLOW	92.98	N/A
# OF OVERFLOWS	5	1
MH LOCATIONS	1M-049 2D-001 1K-046 2A-011-A G1-012	1D-062
# OF BACKUPS	4	
	5533 Washington 335 S. Park 115 S. Grant 109 N. Williams	

MANHOLE OVERFLOW AND SEWER BACKUP HISTORY -

DOWNERS GROVE SANITARY DISTRICT - OVERFLOW BACKUP HISTORY

DATE OF EVENT	10/30/2009	8/28/2009	3/8/2009	2/26/2009
PRECIP FOR 24 Hrs	1.32	N/A	2.21	2.46
PRECIP FOR 3 PREVIOUS DAYS	0.78	DRY WEATHER OVERFLOW	1.34	0.13
10- day rainfall	4.81		6.04	3.02
PEAK WWTC FLOW	71.05	N/A	83.04	92.57
# OF OVERFLOWS	2	1	12	6
MH LOCATIONS	1M-049 G1-012	H3-002-2	1M-049 H1-004 H1-005 1H-005 1K-049 G1-012 G1-015 2A-011-A 1M-056-A G4-004-A C1-009 H6-050	1M-049 H1-004 H1-005 1H-005 1K-049 L1-001
# OF BACKUPS	2	0	39	18
	4727 Fairview 4715 Fairview		1922 A Curtiss 1224 Brookside 917 Chicago 100 Chicago 221 Chicago 1924 Curtiss 1926 Curtiss 4132 Elm 5729 Fairmount 1441 Golden Bell 301 Indianapolis 231 James 235 James 5548 Lyman 5536 Lyman 5549 Lyman 5544 Lyman 4009 N. Washington 123N. Washington 420N. Washington 4015N. Washington 310Ogden 4620Pershing 4604Pershing 1725Prairie 4151Roslyn 117S. Grant 335S. Park 1125Sixty Second PL 1020Sixty Second PL 743Sixty Seventh St 34W. Fifty Fifth PL 38W. Fifty Fifth PL 29W. Fifty Fifth St 5701Webster 5704Webster 116West End 4119Williams 4636Wilson	616 Rogers 125 Eight 212 Lincoln 335 S. Park 101 N. Park 430 Rogers 100 Chicago 1240 Gilbert 221 Chicago 521 N. Park 307 N. Washington 420 N. Washington 1125 Barneswood 115 S. Grant 5436 Cumnor 1924 Curtiss 4004 Washington 200 W. Chicago

YEAR	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996	1995	1994	1993	1992	1991	1990	1989	TOTALS	AVERAGES
NUMBER OF EVENTS	1	2	3	1	7	3	6	4	3	8	4	2	4	7	4	9	4	9	5	7	4	11	2	4	11	8	2	3	6	4	5	2	3	4	0	155	5.0
WET WEATHER	0	0	1	1	5	1	5	3	1	6	3	1	1	5	3	6	3	7	3	5	3	3	2	1	8	6	2	3	6	4	5	2	3	4	0	110	3.5
DRY WEATHER	1	2	2	1	2	2	3	1	2	2	1	1	3	2	1	3	1	2	2	2	1	8	0	3	3	2	0	0	0	0	0	0	0	0	0	47	1.5
TOTAL PRECIPITATION		34.91	29.66	39.63	56.22	44.57	42.23	42.28	38.93	39.04	47.21	26.16	43.13	40.11	45.1	47.45	36.06	47.08	26.1	37.31	32.63	29.23	33.98	33.98	31.38	45.05	34.18	37.50	29.87	33.03	40.83	30.34	39.06	43.12	25.19		37.81
MANHOLE OVERFLOWS																																					
1B-050	1																																				
1M-050				1	2	1				1																										5	
1-M-49							5	2	1	3	3		1	4	3	6	3	7	2	5	3	3	2	1	8	6	2	3	5	2	5	2	3	4		94	2.85
2-C-89-1						1					1												1	1			1	3	5	1	5	2	2	2		25	0.83
1-H-5				1	1	1	1				1			1	2	2		1				1	2	1	2	2	1	2			2		1	2		27	0.90
1-K-49				1	3	1	2				1		1	1	2	2		1				1	1	1	3	1	1	3			2		2	1		31	1.03
1-H-4				1	1	1	1							1		1		1				1	1	1	2	1	1	2	2		1			2		21	0.70
H-1-4							1						1		2	5		1	1	1	2	1	1		1	2	1	2	2				1	2		27	0.90
1-H-12						1	1					1		1		1		1		1		1	1	1	4	2	1				2					19	0.63
2-C-115						1										1											1	1	2		2	2	2	2		14	0.47
2-D-1				1	5	1	4	1	1	2	1		1	1		1	2	5	1	5		2	2	1	2	2	1									42	1.40
G-4-4A														1	1	1							2				1	2	1							9	0.30
1-G-14																											1	1			1			2		5	0.17
1-H-36																												1					1	2		4	0.13
2-C-80																										3	1									4	0.13
H-1-3													1					1					1										1	2		6	0.32
H-4-4							1																1			1	1	1								5	0.26
H-4-6																3							1			1	1	1								7	0.37
H-6-1																1										2	1	1								5	0.26
1-A-128																											1	1						1		3	0.16
1-L-19																											1	1						1		3	0.16
1-N-67																											1	2								3	0.16
2-A-11A							1				1			1		2							1				1	1								8	0.42
2-F-28A																											1						1	1		3	0.16
2-G-16																											1							2		3	0.16
B-1-23 (DWO)																						2				1										3	0.16
H-4-5																							1			1	1									3	0.16
H-4-7																1										1	1	1								4	0.21
H-4-88				1			1				1					3										1	1	1								8	0.42
1-B-25 (DWO)																						2														2	0.11
1-B-25B (DWO)																						2														2	0.11
1-B-93																											1							1		2	0.11
2-A-18 (DWO)																								1	1											2	0.11
2-A-19 (DWO)																								1	1											2	0.11
2-A-20 (DWO)																								1	1											2	0.11
2-D-40-1																														1	1					2	0.11
2-F-10								1																	1		1									3	0.16
G-1-12				1		1	1				1			1	1	1											1	1								9	0.30
G-5-5																																		2		2	0.07
H-1-5							1						1		2	5	1		1	1							1	1								14	0.47
H-4-3																									1	1										2	0.11
H-6-2																											1	1								2	0.11
L-1-109							1																					1					1			3	0.16
VENARD PS FM																				1		1		1												3	0.16
COLLEGE PS FM BREAK(DWO)		1																																			
WROBLE PS FM BREAK(DWO)		1																																			
1-A-21 (DWO)									1													1														2	0.11
1-B-63																										1										1	0.05
1-B-65																										1										1	0.05
1-C-65																																	1			1	0.05
1-D-25-1 (DWO)																						1														1	0.05
1-F-3																																1				1	0.05
1-G-17																																	1			1	0.05
1-H-1																												1								1	0.05
1-H-6																																		1		1	0.05
1-K-46 (DWO)					1									1								1														2	0.11
1-L-19-1																																		1		1	0.05
1-M-14																							1													1	0.05
1-N-44 (DWO)																					1															1	0.05
2-A-11				1			1											1																1		3	0.16
2-A-11A													1		1			1																		3	0.16
2-A-56 (DWO)																									1											1	0.05
2-C-106A																							1													1	0.05
2-C-81																					1															1	0.05
2-E-23											1																							1		2	0.11
2-E-39																											1									1	0.05
2-E-40																											1									1	0.05
2-F-11								1																	1											2	0.11
2-F-12																									1											1	0.05
2-G-21																											1									1	0.05
B-1-6 (DWO)																										1										1	0.05
B-1-6A (DWO)																										1										1	0.05
B-1-7 (DWO)																										1										1	0.05
B1-038-1 (DWO)							1																													1	
B-1-24-2 (DWO)																			1																	1	0.05
C1-009															1																					1	0.05
C-1-27 (DWO)																								1												1	0.05
E-1-15																																	1			1	0.05
E-1-24																																	1			1	0.05
E-1-25 (DWO)																		1																		1	0.05
G-1-15															1												1									2	0.11
G-2-35 TO G-2-63																									1											1	0.05
G-4-6																																		1		1	0.05
G-4-007				1																																	
G-5-12																																		1		1	0.05
G-5-51																							1													1	0.05
G-5-6																																		1		1	0.05
G-5-7																											1									1	0.05
G-5-8																											1									1	0.05
G-5-80																										1										1	0.05
G-6-2 (DWO)																			1																	1	0.05
H-3-49																											1									1	0.05
H-4-1																										1										1	0.05
H-4-2																										1										1	0.05
H-7-33-3																												1								1	0.05
L-1-110																											1									1	0.05
L-1-111																											1									1	0.05
L1-051 (DWO)														1																						1	
L-1-50																																	1			1	0.05
L-1-55																							1													1	0.05
L-1-9																												1								1	0.05
N-1-10																																		1		1	0.05
N-1-13																											1									1	0.05
N-1-7																																		1		1	0.05
N-1-9 (DWO)																						1														1	0.05
N-1-25-6 (DWO)			1		1																															2	0.07
V-3-105																											1									1	0.05
V-4-060 (DWO)													1							1																2	0.11
V-4-112 (DWO)													1							1																2	0.11
B-1-023 (DWO)																		1																		1	0.05
3-A-85 (DWO)																	1																			1	0.05
H-1-015																		1																		1	0.05
1A-128																1																				1	0.05
G1-012						1									1	2																				3	0.15
L1-038																1																				1	0.05
B1-001 (DWO)																1																				1	0.05
H5-021-89 (DWO)																1																				1	0.05

YEAR		2023	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996	1995	1994	1993	1992	1991	1990	1989	TOTALS	AVERAGES
	H5-021-90 (DWO)										1																										1	
	L1-001															1																					1	0.05
	H3-002-2 (DWO)															1																					1	0.05
	1M-056-A															1																					1	0.05
	W1-072 (DWO)																1																				1	0.05
	H6-050															1																					1	0.05
	1D-062 (DWO)														1																						1	
	1H-055 (DWO)													1																							1	
	V3-049													1																							1	
	FMCL-001 (DWO)											1																									1	
	1H-012 (DWO)										1																										1	
	2G-037 (DWO)									1																											1	
	2A-072 (DWO)							1																													1	
	1M-034							1																													1	
	3A-030 (DWO)							1																													1	
	3A-014 (DWO)						1																															
	W1-076 (DWO)						1																															
	LA Fitness-InspMH (DWO)			1																																		
	Parker's Restaurant-InspMH	1																																				
	TOTAL		2	2	9	14	12	26	5	4	7	12	1	11	15	21	43	7	23	7	16	7	21	22	12	31	36	41	37	17	4	21	7	20	38	0	549	32.29
SEWER BACKUPS																																						
	234 3RD																														1						1	0.05
	318 4TH																																	1			1	0.05
	317 5th														1																							
	126 7th																		1																		1	0.05
	326 6TH																1																				1	0.05
	341 6TH																																		1		1	0.05
	125 8TH															1																					1	0.05
	327 8TH																											1									1	0.05
	3004 38th																		1																		1	0.05
	3115 38th																		1																		1	0.05
	916 40TH																											1									1	0.05
	29 W 55TH PL															1																					1	0.05
	34 W 55TH PL															1																					1	0.05
	38 W 55TH PL															1	1																				2	0.10
	46 W 55 PL																1																				1	0.05
	118 55TH ST																							1				1	1						1		4	0.20
	113 55TH ST																												1								1	0.05
	122 55TH ST																										1										1	0.05
	830 55TH ST																												1								1	0.05
	201 56TH ST																							1													1	0.05
	300 56TH ST																				1			1					1						1		4	0.20
	221 56TH ST																												1								1	0.05
	246 56TH ST																											1									1	0.05
	1106 60TH PL																1																				1	0.05
	1122 60TH PL							1																														
	1106 60TH ST																											1									1	0.05
	1110 60TH ST																											1									1	0.05
	912 61ST ST																1												1								2	0.10
	913 61ST ST																												1								1	0.05
	931 61ST ST																												1								1	0.05
	1020 62ND PL															1													1					1	1		4	0.20
	1040 62ND PL																												1								1	0.05
	1108 62ND PL																2		1									1	1								5	0.25
	1109 62ND PL																												1								1	0.05
	1112 62ND PL																												1								1	0.05
	1121 62ND PL																											1			1				1		3	0.15
	1125 62ND PL															1																			1		2	0.10
	1129 62nd PL																		1																		1	0.05
	1133 62ND PL																																		1		1	0.05
	1501 62ND ST																																		2		2	0.10
	660 62ND ST																											1									1	0.05
	661 62ND ST																							1				1							1		3	0.15
	740 62ND ST																1																				1	0.05
	1418 62ND ST							1																1													1	0.05
	1424 62ND ST																											1	1						1		3	0.15
	1430 62ND ST																												1								1	0.05
	1513 62ND ST																																		1		1	0.05
	636 63RD ST																							1													1	0.05
	743 67TH ST															1																					1	0.05
	12 N ADAMS																											1									1	0.05
	3902 N Adams							1																														
	4011 N ADAMS																											1	1								2	0.10
	4112 N Adams							1																														
	4013 N ADAMS																		1										2								3	0.15
	4012 N ADAMS																							1													1	0.05
	4018 N ADAMS							1											1					1													2	0.10
	4025 N ADAMS																																		1		1	0.05
	4100 N Adams																1																				1	0.05
	27 S Adams																1																				1	0.05
	113 S Adams																1																				1	0.05
	210 S ADAMS																																		1		1	0.05
	5712 AUBREY																																		1		1	0.05
	407 AUSTIN																											1									1	0.05
	417 AUSTIN																																		1		1	0.05
	1132 BARBERRY CT																														1						1	0.05
	1129 BARBERRY CT										1		1		1																							
	1165 Barberry CT							1		1																												
	1125 Barneswood															1																					1	0.05
	4507 Belmont														1																						0	
	4813 BELMONT																											1									1	0.05
	5213 BELMONT																							1													1	0.05
	5128 BENTON																												1								1	0.05
	5256 BENTON																											1									1	0.05
	917 BLANCHARD																1											1	1						2		5	0.25
	5440 BLODGETT																																		1		1	0.05
	1711 BOLSON																											1	1								2	0.10
	1721 BOLSON																											1									1	0.05
	1740 BOLSON																												1								1	0.05
	5601 BROOKBANK																											1									1	0.05
	5609.5 BROOKBANK																												1								1	0.05
	5943 BROOKBANK																									1		1									2	0.10
	6001 BROOKBANK																1									1											2	0.10
	6005 BROOKBANK																									1											1	0.05
	1224 Brookside															1																					1	0.05
	4925 BRYAN PLACE																										1										1	0.05
	5720 BUCK CT																												1								1	0.05
	5724 BUCK CT																												1								1	0.05
	431 BUNNING																																		1		1	0.05
	26 W BURLINGTON																												1								1	0.05
	6811 CAMDEN																												1								1	0.05
	6843 CAMDEN																												1								1	0.05
	6849 CAMDEN																												1								1	0.05
	1061 Candlewood																		1																		1	0.05
	19W744 CAROL																														1				1		2	0.10
	19W750 CAROL																										1	1	1								3	0.15
	19W758 CAROL																											1	1						1		3	0.15
	19W775 CAROL																																		1		1	0.05
	5226 Carpenter																		1																		1	0.05
	5600 CARPENTER																		1										1								2	0.10
	5604 CARPENTER										1																		1								1	0.05

YEAR	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996	1995	1994	1993	1992	1991	1990	1989	TOTALS	AVERAGES
5944 CARPENTER																											1									1	0.05
6040 CARPENTER																												1								1	0.05
6121 CARPENTER																1												1								2	0.10
8 N CASS																											1									1	0.05
18 N CASS																							1													1	0.05
38 N CASS																												1								1	0.05
118 N CASS																											1									1	0.05
132 S CASS																1											1	1								3	0.15
122 S. Cass							1																														
128 S CASS																													1							1	0.05
250 N CASS																								1		1								1		3	0.15
340 S.Cass														2																							
428 S CASS																1											1									2	0.10
4010 N CASS																							1	1		1	1									4	0.20
100 Chicago															2	1																				3	0.15
200 CHICAGO																																		1		1	0.05
221 Chicago															2																					2	0.10
238 Chicago							1																														
300 CHICAGO																												1			1		1			3	0.15
301 CHICAGO																1								1												2	0.10
307 CHICAGO																							2													2	0.10
321 CHICAGO																											1									1	0.05
327 CHICAGO																												1								1	0.05
645 CHICAGO																												1								1	0.05
721 CHICAGO																											1									1	0.05
733 Chicago							1																														
737 CHICAGO																							1													1	0.05
752 Chicago							1											1																		1	0.05
832 CHICAGO																							1													1	0.05
904 CHICAGO																											1									1	0.05
917 Chicago															1																					1	0.05
926 CHICAGO																																		1		1	0.05
2033 CHICAGO																1																		1		2	0.10
136 W CHICAGO																																	1			1	0.05
200 W CHICAGO															1	1										1		1					1			5	0.25
208 W CHICAGO																											1									1	0.05
912 CLAREMONT																												1								1	0.05
4834 Cornell														1																						1	
630 CRESCENT																												1								1	0.05
11 N CUMNOR																		1										1								2	0.10
4637 CUMNOR																												1								1	0.05
5140 Cumnor																1																				1	0.05
5201 CUMNOR																							1													1	0.05
5335 Cumnor																		1																		1	0.05
5340 CUMNOR																																		1		1	0.05
5400 CUMNOR																							1													1	0.05
5436 CUMNOR										1					1											1										2	0.10
5507 CUMNOR																							1					1								2	0.10
5510 CUMNOR																												1								1	0.05
5525 CUMNOR																																		1		1	0.05
5600 CUMNOR																										1	1							1		3	0.15
1 N CUMNOR																																		1		1	0.05
805 CURTISS																											1									1	0.05
1008 CURTISS																											1									1	0.05
1900 CURTISS																											1									1	0.05
1917 B Curtiss							1																														
1922 A Curtiss															1																					1	0.05
1924 Curtiss															2																					2	0.10
1926 Curtiss															1	1																				2	0.10
1928 Curtiss							1			1																											
5525 Dunham																1		1																		2	0.10
5445 DUNHAM																																		2		2	0.10
5513 DUNHAM																															1					1	0.05
5525 DUNHAM																																		1		1	0.05
4107 EARLSTON																																	1			1	0.05
4008 ELM																											1									1	0.05
4132 ELM															1								1													2	0.10
4505 ELM																							1										1			2	0.10
4516 ELM																																	1			1	0.05
4525 ELM																								1												1	0.05
4601 ELM																							1											1		2	0.10
4605 Elm																		1																		1	0.05
4613 ELM																											1									1	0.05
4625 ELM																											1									1	0.05
5325 FAIRMOUNT																											1							1		2	0.10
5729 Fairmount															1																					1	0.05
6201 FAIRMOUNT																		1																1		2	0.10
6204 Fairmount																1																				1	0.05
6213 Fairmount																1																				1	0.05
6561 FAIRMOUNT																															1					1	0.05
3700 FAIRVIEW																		1					1			1	1									4	0.20
4507 FAIRVIEW							1											1																1		2	0.10
4515 FLORENCE																															1					1	0.05
4611 Fairview							1																														
4621 Fairview																1																				1	0.05
4643 FAIRVIEW																												1			2					3	0.15
4647 FAIRVIEW																								1				1			2			1		5	0.25
4700 FAIRVIEW																																	1			1	0.05
4715 FAIRVIEW															1													1								2	0.10
4727 Fairview															1																					1	0.05
4732 FAIRVIEW																			1							1							2	1		5	0.25
4728 FAIRVIEW																										1		1								2	0.10
5501 Fairview					1		1																														
4737 FLORENCE																							1													1	0.05
4809 FLORENCE																							1											2		3	0.15
5021 FLORENCE																																		1		1	0.05
5325 FLORENCE																																	1			1	0.05
3937 FOREST																							1											1		2	0.10
4820 FOREST																											1	1								2	0.10
4811 FOREST																																		1		1	0.05
4820 Forest																1		1																		2	0.10
4929 FOREST																							1													1	0.05
7001 Foster							1									1																				1	0.05
7020 FOSTER							1																					1								1	0.05
419 FRANKLIN																											1	1								2	0.10
813 FRANKLIN																																		1		1	0.05
819 Franklin																1																				1	0.05
831 FRANKLIN																							1													1	0.05
1122 FRANKLIN																							1													1	0.05
1125 FRANKLIN																										1										1	0.05
1115 GILBERT																																		1		1	0.05
326 Gierz							1																														
1240 Gilbert															1	1																				2	0.10
1307 Gilbert																1																				1	0.05
1310 Gilbert																1																				1	0.05
1331 GILBERT																																		1		1	0.05
1441 Golden Bell															1																					1	0.05
5143 Grand							1																														
5929 Grand																		1																		1	0.05
213 GRANT																											1	1						1		3	0.15
229 GRANT																											1									1	0.05
405 Grant													1																								
739 GRANT																											1							1		2	0.10
123 N Grant																1																				1	0.05

YEAR	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996	1995	1994	1993	1992	1991	1990	1989	TOTALS	AVERAGES
504 N GRANT																																		1		1	0.05
513 N GRANT																																		1		1	0.05
520 N GRANT																											1									1	0.05
4008 N GRANT																												1					2			3	0.15
4010 N GRANT							1																		1			1								2	0.10
4017 N Grant																1																				1	0.05
4023 N Grant							1																														
4031 N Grant																1																				1	0.05
105 S GRANT																											1	1								2	0.10
111 S GRANT																															1					1	0.05
115 S GRANT					1		1	1		1					1												1									2	0.10
117 S Grant										1	1																										
123 S GRANT																										1										1	0.05
126 S GRANT																		1									1	1						1		4	0.20
238 S GRANT																							1													1	0.05
1231 GREGORY																												1								1	0.05
3471 Hickory																		1																		1	0.05
3905 HIGHLAND																															1					1	0.05
3928 HIGHLAND																1							1													2	0.10
3932 HIGHLAND																							1			1		1								3	0.15
3940 HIGHLAND																										1										1	0.05
4236 HIGHLAND																											1									1	0.05
4435 HIGHLAND																												1								1	0.05
4943 Highland							1																														
5021 HIGHLAND																												1								1	0.05
420 Hill																1																				1	0.05
1447 HILLCREST																												1								1	0.05
1507 HILLCREST																							1													1	0.05
1519 HILLCREST																																		1		1	0.05
5733 HILLCREST																												1								1	0.05
6540 HILLCREST																										1										1	0.05
6550 HILLCREST																										1	1	1								3	0.15
1160 Hobart																2																				2	0.10
23 N HUDSON																1											1									2	0.10
120 N HUDSON																								1												1	0.05
131 N HUDSON																1												1								2	0.10
135 N HUDSON																											1									1	0.05
145 N HUDSON																											1									1	0.05
31 S HUDSON																										1										1	0.05
215 S HUDSON																							1													1	0.05
317 S HUDSON																											1							1		2	0.10
318 S HUDSON																										1										1	0.05
324 S HUDSON																										1										1	0.05
330 S HUDSON																																		1		1	0.05
336 S HUDSON																										1	1	1								3	0.15
337 S HUDSON																											1									1	0.05
340 S HUDSON																										1										1	0.05
301 Indianapolis															1																						0.00
231 James															1																					1	0.05
235 James															1																					1	0.05
244 JAMES																1							1													2	0.10
248 JAMES DR																												1								1	0.05
256 JAMES DR																												1								1	0.05
821 Jay																1																				1	0.05
901 JAY																												1								1	0.05
1208 Jefferson																1																				1	0.05
1320 JEFFERSON																							1													1	0.05
1508 JEFFERSON																												1								1	0.05
835 KENYON																												1								1	0.05
5316 LANE PL																												1								1	0.05
4607 LEE																											1									1	0.05
3911 N LIBERTY																																		1		1	0.05
3915 N LIBERTY																																		1		1	0.05
4020 N Liberty																1																				1	0.05
212 LINCOLN															1												1									2	0.10
29 N LINCOLN																												1								1	0.05
101 N Lincoln																		1																		1	0.05
107 N LINCOLN																											1									1	0.05
112 N LINCOLN							1																			1										1	0.05
138 N LINCOLN							1																				1									1	0.05
139 N LINCOLN																											1									1	0.05
208 N LINCOLN																			1																	1	0.05
216 N LINCOLN																			1																	1	0.05
235 N LINCOLN																																		1		1	0.05
241 N LINCOLN																																		1		1	0.05
245 N Lincoln																		1																		1	0.05
3926 N Lincoln							1																														
3928 N LINCOLN																							1				1									2	0.10
3930 N LINCOLN																											1							1		2	0.10
4001 N LINCOLN																											1									1	0.05
4002 N LINCOLN																											1									1	0.05
4003 N. Lincoln																		1																		1	0.05
4021 N LINCOLN																																		1		1	0.05
4031 N LINCOLN																											1									1	0.05
122 S Lincoln										1																											
130 S Lincoln								1																													
133 S LINCOLN																2		1																		3	0.15
136 S LINCOLN																										1	1									2	0.10
140 S LINCOLN																											1							1		2	0.10
200 S Lincoln										1																											
214 S LINCOLN																																		2		2	0.10
311 S LINCOLN																										1										1	0.05
4145 LINDLEY																											1									1	0.05
4720 LINSCOTT																												1								1	0.05
4920 LINSCOTT																												1								1	0.05
4924 Linscott														1																							
5309 LYMAN																											1									1	0.05
5536 Lyman															1																					1	0.05
5544 Lyman															1																					1	0.05
5548 Lyman															1																					1	0.05
5549 Lyman															1																					1	0.05
5708 Lyman																1																				1	0.05
6127 LYMAN																												1								1	0.05
6130 LYMAN																												1								1	0.05
6135 LYMAN																												1						1		2	0.10
6237 LYMAN																												1								1	0.05
6941 Lyman							1									1																				1	0.05
3937 MAIN																												1						1		2	0.10
3941 Main																1																				1	0.05
4101 MAIN																											1									1	0.05
4125 MAIN																																	1			1	0.05
5522 MAIN																																		1		1	0.05
5713 Main							1																														
5722 MAIN																											1	1						1		3	0.15
631 MAPLE																																		1		1	0.05
643 MAPLE																												1						1		2	0.10
731 MAPLE																																		1		1	0.05
847 MAPLE																							1													1	0.05
1117 MAPLE																												1								1	0.05
1249 MAPLE																																		1		1	0.05
1325 MAPLE																												1								1	0.05
6912 MEADOWCREST														1													1									1	0.05
5513 MIDDAUGH																																	1			1	0.05
2200 MIDHURST																										1										1	0.05

YEAR	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996	1995	1994	1993	1992	1991	1990	1989	TOTALS	AVERAGES
250 W Naperville																		1																		1	0.05
313 W NAPERVILLE																												1						1		2	0.10
1830 NORTHBRIDGE																												1								1	0.05
4705 NORTHCOTT																																		1		1	0.05
4721 NORTHCOTT																																		1		1	0.05
4725 NORTHCOTT																																		1		1	0.05
1231 OAK HILL RD																							1													1	0.05
4510 OAKWOOD																												1								1	0.05
310 Ogden															1																					1	0.05
6017 OSAGE																																		1		1	0.05
310 Otis												1																									
327 OTIS																																	1			1	0.05
944 OXFORD																											1									1	0.05
2230 OXNARD																							1													1	0.05
1450 PALMER							1									2										1	1	1						2		7	0.35
5337 PARK																											1									1	0.05
5423 Park																		1																		1	0.05
6212 PARK																												1								1	0.05
101 N Park															1																					1	0.05
124 N PARK																		1					1				1							1		4	0.20
243 N Park																2																				2	0.10
411 N PARK																											1									1	0.05
521 N. Park															1																					1	0.05
526 N PARK																			1																	1	0.05
4019 N Park														1																							
4117 N PARK																												1								1	0.05
4118 N PARK																		1					1			1										3	0.15
4119 N PARK																												1								1	0.05
4121 N PARK																												1								1	0.05
4123 N PARK																										1										1	0.05
316 S PARK																												2								2	0.10
325 S PARK																											1						1	2		4	0.20
331 S PARK																										1										1	0.05
335 S PARK															2	1												1								4	0.20
339 S Park																1																				1	0.05
6800 PENNER																												1								1	0.05
4450 PERSHING																											1									1	0.05
4604 PERSHING															1												1									2	0.10
4616 PERSHING																1							1					1						1		4	0.20
4620 Pershing															1																					1	0.05
4624 PERSHING																																		1		1	0.05
4709 PERSHING																											1							1		2	0.10
4712 PERSHING																											1							1		2	0.10
4725 PERSHING																										1										1	0.05
4819 Pershing							1																														
4825 Pershing							1																														
5732 PLYMOUTH																										1										1	0.05
5736 Plymouth																		1																		1	0.05
5740 Plymouth							1																														
7212 Powell																1																				1	0.05
1400 PRAIRIE																																		1		1	0.05
1725 Prairie															1																					1	0.05
2045 PRAIRIE																												1	1	1						3	0.15
4500 PRINCE																												1								1	0.05
4819 PRINCE																											1	1								2	0.10
4823 PRINCE																																		1		1	0.05
4824 PRINCE																																		1		1	0.05
2110 Prentiss																1																				1	0.05
4621 PROSPECT																							1													1	0.05
426 ROGERS																							1													1	0.05
430 Rogers															1	1																				2	0.10
548 ROGERS																1												1								2	0.10
616 ROGERS															1																					1	0.05
603 ROGERS																							1													1	0.05
620 ROGERS																							1													1	0.05
4042 ROSLYN																							1													1	0.05
4052 ROSLYN																																		1		1	0.05
4062 Roslyn																		1																		1	0.05
4111 Roslyn													1																								
4122 ROSLYN																												1								1	0.05
4132 Roslyn							1																														
4151 Roslyn															1	2																				3	0.15
4152 ROSLYN																												1								1	0.05
4162 ROSLYN																							1					1						1		3	0.15
4618 Roslyn							1																														
3512 SARATOGA																1		1																1		3	0.15
3524 SARATOGA									1							1		1																1		4	0.20
3536 SARATOGA																			1																	1	0.05
4533 SARATOGA																											1									1	0.05
4710 SARATOGA																																		1		1	0.05
4836 SARATOGA																							1													1	0.05
4919 SARATOGA																							1				1									2	0.10
4921 SARATOGA																							1			1										2	0.10
4922 SARATOGA																							1													1	0.05
4925 SARATOGA																										1										1	0.05
4425 SEELEY																												1								1	0.05
4641 SEELEY																																		1		1	0.05
300 Sheldon																1																				1	0.05
329 SHELDON																																		2		2	0.10
333 SHELDON																																		2		2	0.10
337 SHELDON																											1	1						1		3	0.15
341 SHELDON																																		2		2	0.10
345 SHELDON																																		2		2	0.10
6640 SPRINGSIDE																1										1										2	0.10
6501 STAIR																												1								1	0.05
6505 STAIR																1												1								2	0.10
6509 STAIR																1											1	1								3	0.15
4339 STANLEY																											1									1	0.05
4417 STONEWALL																												1								1	0.05
4431 STONEWALL																											1									1	0.05
4905 STONEWALL																																		1		1	0.05
4927 STONEWALL																																	1			1	0.05
4930 STONEWALL																												1								1	0.05
4937 STONEWALL																															1		1			2	0.10
22 Tower					1																																
220 W TRAUBE																											1									1	0.05
240 W TRAUBE																												1								1	0.05
801 VALLEY VIEW																												1								1	0.05
810 VALLEY VIEW																							1													1	0.05
820 Valley View							1																														
821 Valley View							1																														
830 Valley View																1																				1	0.05
831 Valley View							1																														
840 VALLEY VIEW																2											1									3	0.15
841 VALLEY VIEW																											1									1	0.05
850 VALLEY VIEW																											1	1								2	0.10
901 VALLEY VIEW																										1	1	1								3	0.15
910 VALLEY VIEW																1				1								1								3	0.15
931 VALLEY VIEW																											1	1								2	0.10
940 VALLEY VIEW																											1	1						1		3	0.15
951 Valley View							1									2																				2	0.10
1101 VALLEY VIEW																												1								1	0.05
1131 VALLEY VIEW																												1								1	0.05
1150 Valley View																1																				1	0.05

YEAR		2023	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996	1995	1994	1993	1992	1991	1990	1989	TOTALS	AVERAGES
	3421 Venard																		1																		1	0.05
	4935 WALLBANK																							1													1	0.05
	4939 Wallbank							1																														
	932-40 WARREN																												1								1	0.05
	3925 WASHINGTON																											1	1								2	0.10
	4004 WASHINGTON															1																			1		2	0.10
	4043 WASHINGTON																											1									1	0.05
	4129 Washington										1																											
	4236 Washington																		1																		1	0.05
	4620 WASHINGTON																												1						1		2	0.10
	4436 Washington																		1																		1	0.05
	4533 WASHINGTON																																		1		1	0.05
	4537 WASHINGTON																																		1		1	0.05
	4822 WASHINGTON																																		1		1	0.05
	4915 Washington							1																														
	4925 WASHINGTON																											1									1	0.05
	5516 WASHINGTON																2																		1		3	0.15
	5521 Washington																1																				1	0.05
	5525 Washington																		1																		1	0.05
	5529 WASHINGTON																											1	1								2	0.10
	5533 Washington																1																				1	0.05
	5537 WASHINGTON																							1													1	0.05
	5541 WASHINGTON																1												1								2	0.10
	15 N Washington																		1																		1	0.05
	28 N WASHINGTON																							1													1	0.05
	24 N WASHINGTON																							1	1												2	0.10
	123 N WASHINGTON															1	2		1									1	1								6	0.30
	128 N WASHINGTON																												1								1	0.05
	302 N Washington																2																				2	0.10
	305 N Washington																																					
	307 N Washington																		1																		1	0.05
	307 N WASHINGTON															1	4										1								1		7	0.35
	309 N WASHINGTON																										1								1		2	0.10
	418 N WASHINGTON																																		2		2	0.10
	420 N WASHINGTON															2	1																	2	1		6	0.30
	516 N WASHINGTON																							1													1	0.05
	524 N WASHINGTON																							1													1	0.05
	3911 N WASHINGTON																2												1					1	1		5	0.25
	4009 N Washington															1																					1	0.05
	4015 N WASHINGTON							1								1	1			1						1								1	1		6	0.30
	4016 N WASHINGTON																1																		1		2	0.10
	4017 N WASHINGTON																												1								1	0.05
	4121 N WASHINGTON																												1								1	0.05
	332 S WASHINGTON																																		2		2	0.10
	5630 WEBSTER																												1								1	0.05
	5701 WEBSTER													1		1	1			1									1								4	0.20
	5704 WEBSTER															1												1									2	0.10
	5708 WEBSTER																											1	1						1		3	0.15
	5718 WEBSTER																							1													1	0.05
	5732 WEBSTER																																		1		1	0.05
	5700 WEBSTER																											1							1		2	0.10
	5705 WEBSTER																							1					1								2	0.10
	5717 WEBSTER																1											1	1								3	0.15
	5804 WEBSTER																											1							1		2	0.10
	6910 WEBSTER																										1		1								2	0.10
	5820 WEBSTER																											1									1	0.05
	6911 WEBSTER																											1									1	0.05
	6920 WEBSTER																												1								1	0.05
	6930 WEBSTER																										1	1	1						1		4	0.20
	7232 WEBSTER																												1								1	0.05
	4063 WEST END																											1									1	0.05
	4113 WEST END																											1									1	0.05
	4123 WEST END																											1	1								2	0.10
	4133 WEST END																											1									1	0.05
	116 N West End															1			1																		2	0.10
	120 N West End																		1																		1	0.05
	124 N WEST END																												1								1	0.05
	428 WHIPPLE LN																												1								1	0.05
	207 WHITE FAWN																												1								1	0.05
	3800 Wilcox																		1																		1	0.05
	1408 WILLARD																												1								1	0.05
	4022 Williams																1		1																		2	0.10
	4119 WILLIAMS															1	3											1							1		6	0.30
	101 S WILLIAMS																																		1		1	0.05
	205 S WILLIAMS																												2								2	0.10
	4636 WILSON															1	1											1	1						1		5	0.25
	TOTAL					3		41	2		9	1	2	3	9	58	101	0	45	7	2	0	0	61	7	5	40	119	149	2	5	11	0	24	131	0	767	38.35

Copy of 2023 Mainline Blockages

Friday, January 5, 2024

9:19:20 AM

Date of Backup	Name of Caller	Address	Street
4/4/2023	VODG Message	4221	Saratoga
4/21/2023	Matsunaga, Terri	5401	Blodgett
2/24/2023	DGSD Fire	6701	Main
2/28/2023	Peter/ARCO Plumbing#3	2220	Haddow
2/6/2023	Kaminski, Robert	720	Sixty Fifth
2/8/2023	Peter/ARCO Plumbing#2	206	S. Grant
7/17/2023	DeMeo, Lynn	30	Prairie
9/11/2023	Kirk, Stephanie#2	2045	Prentiss
11/20/2023	Sievert, Kevin	1507	Hillcrest
11/27/2023	Weiner, Janet	6531	Briargate

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Copy of 2023 Service Line Backups

Monday, January 1, 2024

3:35:41 PM

Date of Backup	Address	Street
1/3/2023	330	N. Park
1/3/2023	5401	Blodgett
1/3/2023	5120	Forest
1/4/2023	6771	Powell
1/4/2023	1514	Thornwood
1/4/2023	1510	Snowberry
1/6/2023	1231	Brookside
1/8/2023	5256	Carpenter
1/9/2023	5515	Glenview
1/13/2023	5841	Fairmount
1/13/2023	2106	Oxnard
1/13/2023	1231	Brookside
1/13/2023	2130	Oxnard
1/14/2023	215	W. Quincy
1/16/2023	450	S. Adams
1/20/2023	236	White Fawn
1/21/2023	506	Sixty Eighth
1/23/2023	1439	Maple
1/23/2023	15	N. Grant
1/26/2023	5900	Dunham
1/27/2023	233	S. Lincoln
1/30/2023	542	Fifty Seventh
2/1/2023	5741	Doe
2/1/2023	410	Morning Glory
2/2/2023	6836	Valley View
2/6/2023	4804	Prospect
2/6/2023	5922	Grand
2/8/2023	5713	Hillcrest
2/9/2023	441	Franklin
2/10/2023	4109	Williams
2/10/2023	1144	Sixty Third

Date of Backup	Address	Street
2/14/2023	203	Robinson
2/15/2023	424	Hill
2/15/2023	2306	Maple
2/16/2023	6124	Blodgett
2/20/2023	728	Fifty Ninth
2/23/2023	4132	Lindley
2/23/2023	2700	Ogden
2/24/2023	5517	Washington
2/24/2023	149	N. Hudson
2/25/2023	5925	Webster Pl
2/25/2023	305	S. Hudson
2/27/2023	1310	Seventy Fifth
3/1/2023	1932	Curtiss
3/1/2023	3717	Sterling
3/1/2023	305	S. Hudson
3/2/2023	1921	Bolson
3/3/2023	5000	Wilcox
3/8/2023	6729	Plymouth
3/8/2023	5644	Dunham
3/8/2023	4942	Lee
3/8/2023	2148	Oxnard
3/8/2023	825	Oxford
3/9/2023	4628	Wilson
3/11/2023	3421	Hickory
3/13/2023	3927	School
3/13/2023	5626	Lyman
3/14/2023	241	W. Quincy
3/17/2023	3931	Williams
3/17/2023	3173	Venard
3/23/2023	3909	Earlston
3/26/2023	4641	Linscott
3/27/2023	1838	Windsor
3/27/2023	1318	Turvey

Date of Backup	Address	Street
3/27/2023	208	W. Burlington
3/27/2023	3600	Quince
3/28/2023	438	Grant
3/29/2023	139	S. Park
3/29/2023	6950	Springside
3/31/2023	6803	Penner
4/1/2023	6551	Hillcrest
4/1/2023	3613	Creekwood
4/2/2023	29	S. Washington
4/4/2023	101	W. Quincy
4/5/2023	18W140	Suffield
4/6/2023	6110	Fairview
4/8/2023	5808	Plymouth
4/9/2023	4128	Highland
4/10/2023	6009	Brookbank
4/10/2023	1838	Windsor
4/11/2023	636	Sixty Seventh
4/12/2023	2311	Ogden
4/13/2023	5002	Main
4/15/2023	336	S. Hudson
4/16/2023	5720	Carpenter
4/17/2023	3760	Downers
4/17/2023	3671	Red Bud
4/20/2023	1931	Bolson
4/20/2023	7212	Kidwell
4/24/2023	733	Chicago
4/24/2023	4018	N. Grant
4/24/2023	4640	Lee
4/27/2023	4338	Saratoga
5/1/2023	1321	Saylor
5/1/2023	7213	Bateman
5/1/2023	1321	Saylor
5/2/2023	4517	Roslyn

Date of Backup	Address	Street
5/3/2023	749	Farley
5/4/2023	5141	Grand
5/8/2023	5511	Woodward
5/8/2023	421	Burlington
5/11/2023	427	Fifty Ninth
5/13/2023	5431	Park
5/15/2023	749	Claremont
5/16/2023	101	Indian Trail
5/16/2023	2221	Sixty Fourth
5/18/2023	830	Valley View
5/22/2023	4238	Lindley
5/23/2023	4504	Saratoga
5/27/2023	4952	Cumnor
5/27/2023	6003	Carpenter
5/30/2023	4034	N. Grant
5/31/2023	405	W. Naperville
5/31/2023	4060	Fairview
6/1/2023	5648	Dunham
6/5/2023	913	Claremont
6/7/2023	836	Sixty Seventh
6/13/2023	6931	Penner
6/13/2023	635	Sherman
6/16/2023	1801	Butterfield
6/19/2023	316	W. Quincy
6/20/2023	2106	Oxnard
6/21/2023	309	Fourth
6/21/2023	3929	N. Williams
6/22/2023	5449	Bending Oaks
6/26/2023	5643	Hillcrest
7/1/2023	310	Lincoln
7/5/2023	1944	Wellington
7/7/2023	1400	Sixty Second
7/10/2023	2020	Ogden

Date of Backup	Address	Street
7/13/2023	4901	Edward
7/13/2023	5300	Main
7/14/2023	5808	Bunning
7/14/2023	1530	Snowberry
7/15/2023	4725	Highland
7/16/2023	5236	Carpenter
7/17/2023	5524	Washington
7/17/2023	211	White Fawn
7/18/2023	5129	Florence
7/18/2023	6504	Barclay
7/19/2023	613	Sixty First
7/24/2023	113	N. Lincoln
7/24/2023	4618	Middaugh
7/26/2023	4839	Bryan
7/27/2023	4152	Roslyn
7/29/2023	3911	Williams
7/29/2023	4008	Liberty
7/29/2023	4726	Washington
8/1/2023	441	S. Park
8/2/2023	644	S. Cass
8/3/2023	7S040	Suffield
8/5/2023	7021	Hillcrest
8/7/2023	6919	Parkview
8/9/2023	2150	Prentiss
8/11/2023	1401	Willard
8/11/2023	921	Chicago
8/14/2023	532	Bunning
8/15/2023	5834	Carpenter
8/16/2023	2606	Burlington
8/16/2023	850	N. Cass
8/22/2023	5539	Dunham
8/22/2023	6700	Meadowcrest
8/23/2023	1840	Grant

Date of Backup	Address	Street
8/23/2023	6525	Main
8/28/2023	6531	Midhurst
8/29/2023	628	Chicago
9/1/2023	1910	Curtiss
9/1/2023	5927	Brookbank
9/2/2023	537	Franklin
9/2/2023	45	W. 56th
9/5/2023	5700	Fairmount
9/7/2023	1933	Curtiss
9/8/2023	1807	Prairie
9/8/2023	4731	Elm
9/16/2023	5812	Plymouth
9/16/2023	823	Claremont
9/16/2023	507	Buckingham
9/17/2023	519	Fifty Seventh
9/17/2023	7213	Camden
9/19/2023	4714	Washington
9/19/2023	224	Robinson
9/21/2023	5808	Bunning
9/22/2023	4033	N. Washington
9/26/2023	5820	Bunning
9/26/2023	307	N. Lincoln
9/27/2023	6919	Parkview
9/27/2023	5732	Washington
9/27/2023	249	Fifty Fifth
9/27/2023	6748	Valley View
9/28/2023	1000	Thirty First
10/2/2023	4613	Wilson
10/5/2023	17	Second
10/6/2023	5909	Grand
10/6/2023	4401	Florence
10/8/2023	4107	Washington
10/9/2023	4833	Stanley

Date of Backup	Address	Street
10/13/2023	68	W. Sixty Fourth
10/16/2023	321	Sheldon
10/18/2023	7248	Kelly
10/18/2023	636	Sixty Seventh
10/23/2023	2531	Hobson
10/26/2023	51	Thirty Ninth
10/31/2023	6527	Briargate
11/3/2023	121	N. Adams
11/6/2023	5524	Wilcox
11/6/2023	408	Lake
11/13/2023	6450	Wells
11/14/2023	4737	Florence
11/14/2023	4716	Douglas
11/15/2023	4322	Fairview
11/16/2023	25	W 55th Pl
11/17/2023	104	Williams
11/17/2023	6034	Osage
11/21/2023	434	S. Park
11/21/2023	3936	Highland
11/25/2023	4112	Lindley
11/25/2023	5610	Springside
11/27/2023	1644	Warren
11/27/2023	5245	Fairmount
11/27/2023	6317	Fairview
11/28/2023	6508	Wells
11/29/2023	1207	Butterfield
11/30/2023	2401	Warrenville
11/30/2023	6512	Lyman
11/30/2023	4703	Highland
12/1/2023	249	Fifty Fifth St
12/3/2023	5612	Fairview
12/3/2023		
12/3/2023	21	Second

Date of Backup	Address	Street
12/4/2023	5708	Lyman
12/4/2023	1125	Franklin
12/4/2023	3924	Washington ST
12/7/2023	340	Brentwood
12/12/2023	338	Naperville
12/15/2023	150	Sixty-Third
12/15/2023	609	Ridgewood
12/19/2023	4701	Cumnor
12/26/2023	607	Seventy Second
12/27/2023	2940	Finley
12/27/2023	514	N Grant
12/27/2023	6111	Washington
12/27/2023	309	S Adams
12/28/2023	4446	Stonewall
12/28/2023	321	S Adams
244		

Downers Grove Sanitary District
Flow Monitoring Program

I/I Ranking Summary - Highest I/I to Lowest I/I

			Through December 2023	
Manhole Number	***Group***	***Region***	***Average I/I Number***	***Rank 1 = Highest I/I***
2-D-16	**C**	**Central**	32.78	1
W-1-4	**M**	**Hobson**	27.67	2
1-G-18	**I**	**Central**	23.34	3
W-1-12	**M**	**Hobson**	22.56	4
W-2-3	**M**	**Hobson**	22.12	5
1-L-19-1	**H**	**Central**	21.27	6
2-C-25	**C**	**Central**	19.34	7
1-K-28	**A**	**Central**	19.10	8
1-J-9	**A**	**Central**	19.07	9
1-M-8	**H**	**Central**	18.95	10
1-F-9	**I**	**Central**	18.78	11
H-4-12	**F**	**Hobson**	18.02	12
G-1-15	**B**	**Central**	17.65	13
1-K-10	**A**	**Central**	17.28	14
V-2-31	**O**	**Northwest**	17.07	15
1-M-15	**H**	**Central**	16.67	16
W-2-15	**M**	**Hobson**	16.44	17
N-1-38	**E**	**Northwest**	16.30	18
1-A-3	**K**	**Central**	16.11	19
1-G-35	**H**	**Central**	16.04	20
2-D-4	**C**	**Central**	15.29	21
2-A-42	**K**	**Central**	15.25	22
E-1-14	**O**	**Central**	14.51	23
G-2-1	**B**	**Central**	14.27	24
1-L-12R	**B**	**Central**	14.19	25
G-6-2	**B**	**Central**	14.11	26
1-H-4	**H**	**Central**	14.04	27
V-1-15	**O**	**Northwest**	13.90	28
1-B-10	**J**	**Central**	13.80	29
N-1-25	**E**	**Northwest**	13.71	30
E-1-26	**O**	**Central**	13.51	31
2-G-5	**C**	**Central**	13.27	32
N-1-3	**E**	**Northwest**	12.80	33
B-1-000	**E**	**Northwest**	12.52	34
C-1-000	**L**	**Hobson**	12.41	35
V-4-2	**N**	**Central**	12.27	36
1-D-8	**J**	**Central**	12.26	37
1-G-5	**A**	**Central**	12.18	38
G-5-15	**B**	**Central**	12.16	39
L-1-111	**N**	**Central**	12.09	40
H-1-3	**F**	**Hobson**	12.01	41
2-F-1	**C**	**Central**	11.60	42
1-N-11	**A**	**Central**	11.51	43
1-E-38	**I**	**Central**	10.96	44

Downers Grove Sanitary District
Flow Monitoring Program

I/I Ranking Summary - Highest I/I to Lowest I/I

Manhole Number	Group	Region	Through December 2023 Average I/I Number	Rank 1 = Highest I/I
H-1-17	**F**	**Hobson**	10.94	45
L-1-000	**N**	**Central**	10.53	46
V-3-13	**N**	**Central**	10.46	47
1-A-128	**K**	**Central**	10.31	48
L-1-33	**N**	**Central**	10.22	49
1-G-14S	**I**	**Central**	10.14	50
L-1-13	**N**	**Central**	10.12	51
H-3-48	**D**	**Hobson**	10.08	52
W-2-7	**M**	**Hobson**	10.02	53
1-G-46	**A**	**Central**	9.94	54
V-3-82	**N**	**Central**	9.88	55
W-1-30	**M**	**Hobson**	9.81	56
2-F-2	**C**	**Central**	9.79	57
H-1-22	**F**	**Hobson**	9.71	58
G-3-11	**B**	**Central**	9.67	59
1-B-2	**J**	**Central**	9.57	60
3-A-2	**E**	**WWTC**	9.44	61
1-J-16	**A**	**Central**	9.30	62
H-4-75	**F**	**Hobson**	9.22	63
1-F-31	**I**	**Central**	9.03	64
1-N-1A	**A**	**Central**	9.01	65
H-3-18	**D**	**Hobson**	8.98	66
L-1-17	**N**	**Central**	8.66	67
1-C-6	**J**	**Central**	8.55	68
1-C-50	**K**	**Central**	8.53	69
W-1-65	**M**	**Hobson**	8.34	70
1-J-3-1	**A**	**Central**	8.15	71
1-M-12A	**H**	**Central**	8.08	72
1-A-10	**K**	**Central**	8.07	73
2-C-1	**C**	**Central**	8.03	74
2-E-5	**C**	**Central**	7.88	75
1-J-14	**A**	**Central**	7.75	76
G-4-4A	**B**	**Central**	7.61	77
1-D-4	**J**	**Central**	7.59	78
V-4-14	**N**	**Central**	7.47	79
1-K-2	**A**	**Central**	7.47	80
1-F-21S	**I**	**Central**	7.18	81
2-G-12	**C**	**Central**	7.15	82
2-A-8	**L**	**Central**	7.14	83
W-1-2	**M**	**Hobson**	7.12	84
1-E-7	**I**	**Central**	7.12	85
H-7-9-7	**G**	**Hobson**	7.01	86
1-C-6S	**J**	**Central**	7.01	87
2-B-7	**L**	**Central**	6.94	88

Downners Grove Sanitary District
Flow Monitoring Program

I/I Ranking Summary - Highest I/I to Lowest I/I

			Through December 2023	
Manhole Number	***Group***	***Region***	***Average I/I Number***	***Rank 1 = Highest I/I***
H-3-15	**D**	**Hobson**	6.85	89
C-1-5	**L**	**Hobson**	6.77	90
1-H-9	**H**	**Central**	6.64	91
1-B-18	**J**	**Central**	6.60	92
G-2-4	**B**	**Central**	6.48	93
3-B-1A	**E**	**WWTC**	6.36	94
G-3-3	**B**	**Central**	6.29	95
2-A-10S	**K**	**Central**	6.27	96
2-C-54	**C**	**Central**	6.26	97
W-1-39	**M**	**Hobson**	6.25	98
3-A-8	**E**	**Hobson**	6.09	99
G-5-28	**B**	**Central**	6.06	100
H-3-12	**D**	**Hobson**	5.96	101
1-G-22S	**I**	**Central**	5.95	102
H-5-21-1	**G**	**Hobson**	5.93	103
G-5-2	**B**	**Central**	5.91	104
V-1-9	**O**	**Northwest**	5.90	105
H-2-15	**D**	**Hobson**	5.89	106
1-E-6S	**I**	**Central**	5.89	107
H-2-6	**F**	**Hobson**	5.83	108
1-E-80	**J**	**Central**	5.80	109
H-2-29	**D**	**Hobson**	5.73	110
W-2-42	**M**	**Hobson**	5.66	111
H-7-26	**G**	**Hobson**	5.65	112
G-4-12	**B**	**Central**	5.63	113
V-3-8R	**N**	**Central**	5.61	114
1-E-4S	**J**	**Central**	5.58	115
2-A-10	**K**	**Central**	5.42	116
2-A-1	**L**	**Central**	5.41	117
V-4-34	**N**	**Central**	5.39	118
H-6-5	**D**	**Hobson**	5.35	119
2-A-1S	**L**	**Central**	5.25	120
H-5-17	**G**	**Hobson**	5.21	121
1-C-2	**K**	**Central**	5.13	122
V-1-6	**O**	**Northwest**	4.95	123
H-4-46	**F**	**Hobson**	4.70	124
V-1-000	**O**	**Northwest**	4.62	125
H-6-28C	**D**	**Hobson**	4.61	126
N-1-76	**E**	**Northwest**	4.49	127
B-1-17	**E**	**Northwest**	4.37	128
V-2-7	**O**	**Northwest**	4.33	129
2-C-10	**C**	**Central**	4.19	130
V-3-000	**I**	**Central**	4.13	131
B-1-35	**E**	**Northwest**	3.97	132

Downners Grove Sanitary District
Flow Monitoring Program

I/I Ranking Summary - Highest I/I to Lowest I/I

			Through December 2023	
Manhole Number	***Group***	***Region***	***Average I/I Number***	***Rank 1 = Highest I/I***
H-3-2-2	**D**	**Hobson**	3.96	133
C-1-11	**L**	**Hobson**	3.71	134
H-7-17	**G**	**Hobson**	3.57	135
H-4-29	**F**	**Hobson**	3.56	136
H-7-6	**G**	**Hobson**	3.55	137
H-5-12	**G**	**Hobson**	3.40	138
H-5-21-9	**G**	**Hobson**	2.94	139
V-1-17	**O**	**Northwest**	2.90	140
1-G-28R	**H**	**Central**	2.73	141
H-2-99	**F**	**Hobson**	2.50	142
H-7-9-47	**G**	**Hobson**	2.39	143
H-5-21-17	**G**	**Hobson**	2.29	144
2-A-49	**L**	**Central**	2.12	145
H-5-2	**G**	**Hobson**	1.95	146
H-7-30A	**G**	**Hobson**	1.87	147
V-3-21	**N**	**Central**	1.67	148
H-8-1	**F**	**Hobson**	1.31	149
E-1-000	**O**	**Central**	1.07	150

DOWNERS GROVE SANITARY DISTRICT
M E M O

DATE: January 5, 2024

TO: Amy Underwood
General Manager

FROM: Todd Freer
Sewer System Maintenance Supervisor

RE: 2024 Collection System Work Plan

Proposed work on the collection system for 2024

1. Regular cleaning of 299,655 feet of sewers with diameter 21 inches or smaller (4-year cycle). Sewer areas 1A, 1B, 1C, 1D, 1E, 2A, 2B, 3A, 3B, B1, N1, V1, V2, and annual cleaning of all siphons.

2. Continue to heavy clean main sewers on the PM. List every 6 months (40,114 feet), and every 3 months (5,945 feet).

3. Continue annual monitoring and heavy cleaning if needed of 3,974’ of 18” and 30” main sewer in the Denburn Woods and Gilbert Park area.

4. Televise 98,395 feet of main sewers (13-year cycle).

5. Continue the regular metering of the 50 basins for 9 weeks per basin (3-year cycle).

6. Continue the inspections of private property under the Private Property Infiltration and Inflow (I&I) Removal Program in the targeted basins.

7. Continue the Building Sanitary Service Repair Assistance Program including the removal of identified I/I sources within these buildings.

8. Televise and locate as needed the building services for the Private Property I/I Removal Program, Building Sanitary Service Repair Assistance Program and the Cost Reimbursement Program for the installation of Overhead Sewers or Backflow Prevention Devices.

9. Inspect buildings for I/I sources for the above programs.

10. Inspect 300 district manholes (20-year cycle)

11. Utilize flow meter data and other district records to prioritize main sewers for repair or rehabilitation in accordance with the I/I Removal and Sewer System Rehabilitation Policy.

12. Utilize the Lucity software and other district records to prioritize main sewers for repair or rehabilitation in accordance with the I/I removal and Sewer System Rehabilitation Policy.

13. Continue updating records and correcting errors in GIS and Lucity.

14. Continue to assist at the treatment plant and lift stations with maintenance and other tasks where the use of the Vac-Con is beneficial.

CC: AES, JMW, RTJ, KJR, MS, CSS, DM

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DOWNERS GROVE SANITARY DISTRICT

M E M O

TO: Amy R. Underwood
General Manager

FROM: Carly Shaw
Administrative Supervisor

DATE: January 8, 2024

RE: Administrative Services Progress Report – December 2023

ADMINISTRATIVE

Personnel

An offer of employment was accepted by a candidate for the Maintenance Mechanic position. He will complete the post offer drug screening and physical exam then we will schedule a start date.

Employee Retirement

Frank Furtak is retiring on January 19, 2024. A dinner is being held at Zazzo's in Westmont to celebrate his long-time employment and retirement.

Reimbursement Program for Sanitary Sewer Backups Caused by Public Sanitary Sewer Blockages

There have been no new backups resulting from a mainline blockage since the last update, and as a result, I have not included a new summary.

Technology Update

We have not yet signed with BS&A as we are working on the budget and projections to ensure funds are available to implement the agreement in the current fiscal year. Once we sign there is a 12-16 month timeframe for implementation of the software. The timekeeping software can be updated at any time as it is separate from BS&A, but I do need to evaluate the pros and cons of an early implementation.

FINANCIAL

W-2s and 1099s

Michelle Jasso, Accounting Assistant for the District, and I completed the 2023 W-2 forms for employees during the last week of December. These have been distributed during the first week of January. We will be preparing the 2023 1099 forms for vendors by the end of January to follow IRS regulations.

Treasurer's Report and Investment Activity

The monthly Treasurer’s Report is included separately in the packet each month and detailed investment information (financial institution name, current rate, and dollar amount) is provided on the District’s Investment Schedule also provided separately in the packet each month.

Annual Audit

I will begin reaching out to several auditing firms for proposals for a three-year engagement in auditing services. I anticipate presenting these to the Board at the regular February meeting.

cc: WDVB, AES, JMW, KJR, RTJ, MJS, DM

USER BILLING SUMMARY

User Charge System

Billings for December 2023 were as follows:

User	$327,915.16
Surcharge	42,668.68
Monthly fees	417,524.95
Total	$788,108.79
Summer Usage Adjustment	$677.25
Billable Flow	145,439,071
Budgeted Billable Flow	142,350,285
% Actual/Budgeted Billable Flow	102.17%
YTD Billable Flow	1,374,275,739
YTD Budgeted Billable Flow	1,371,349,595
% Actual/Budgeted Billable Flow	100.21%

The user accounts receivable balance on 12/31/2023 is $851,914.39 and consists of:

Current charges due 1/15/2024	$627,054.84
Past due charges and penalty	224,859.55
Total	$851,914.39

The past due charges represent:

Age	User Charges	Penalty	Totals
30 days past due	$53,507.98	$7,795.48	$61,303.46
60 days past due	44,316.86	9,986.75	54,303.61
90 days & greater past due	95,040.68	14,211.80	109,252.48
Totals	$192,865.52	$31,994.03	$224,859.55

Summary of
Past Due Charges
(90 Days and Over)

Five Year Comparison

December

Year	User Charges	Penalty	Total
2023	$95,040.68	$14,211.80	$109,252.48
2022	38,839.46	7,034.95	45,874.41
2021	75,563.02	14,423.46	89,986.48 *
2020	104,927.73	15,924.29	120,852.02 *
2019	42,249.41	5,454.98	47,704.39 **

*Includes $10,462.28 in sewer disconnection costs on 2 accounts plus late fees
**Includes $13,020.74 I sewer disconnection costs on 4 accounts plus late fees

Twelve Months Ending December 2023

Month	User Charges	Penalty	Total
12/31/23	$95,040.68	$14,211.80	$109,252.48
11/30/23	96,576.55	14,657.14	111,233.69
10/31/23	69,307.87	11,140.92	80,448.79
9/30/23	57,856.34	10,171.88	68,028.22
8/30/23	56,820.77	9,871.97	66,692.74
7/31/23	42,973.75	7,253.99	50,227.74
6/30/23	48,202.48	8,745.13	56,947.61
5/31/23	62,672.35	11,351.97	74,024.32
4/30/23	43,089.56	8,905.52	51,995.08
3/31/23	44,200.55	8,970.57	53,171.12
2/28/23	43,221.84	7,436.11	50,657.95
1/31/23	40,007.16	6,499.14	46,506.30

There were 28 accounts scheduled for Pre-Enforcement on December 15, 2023 of which 23 accounts have paid in full. There are 71 accounts scheduled for Pre-Enforcement for January 15, 2024 and 2 have paid in full. We are attempting to schedule water shut off and Show Cause when possible.

To: Amy Underwood, General Manager
From: Marc Majewski, Operations Supervisor
Re: Month of December 2023, WWTC Operations Report.
Date: January 10, 2024

Attached please find detailed operating data and our monthly report to Illinois EPA for December.

Certain highlights of operational activities included:

- Monthly flow: Average daily flows to the plant were 11.45 MGD. Total precipitation at the WWTC was 3.20". There were no days of excess flow during the month of December. There was 16 day of discharge over 11 MGD.

- Activated sludge: Good operating performance was observed throughout the month of December. Floc formers are still predominating leading to good solids settling.

- Anaerobic Digesters: Pumped a total of 1,271,416 gallons of primary sludge, 239,120 gallons of TWAS, 635,380 of WAS, and 232,477 gallons of waste grease for a total of 2,378,393 gallons pumped to digesters. Total Volatile Solids destruction was calculated at 59 % for December.

- Digester gas: Total digester gas production was 5,254,645 cubic feet. 85,827 cubic feet of gas was used for anaerobic digestion heat, and 4,641,039 cubic feet was used in the CHP facilities. 15,115 cubic feet of flared gas was recorded during the month. The Munters dehumidifier used 512,664 cubic feet of gas.

- Biosolids: Bio-solids drying and delivery season has come to a close for the season. We delivered a total of 67 dry tons of Class A in December. Total Class A delivered for the year is 892 Dry Tons, and total Class B hauled out for the year is 426 Dry Tons

- Electricity: Overall net energy from ComEd was: 1,508 KW-Hrs. Electricity Generated by the CHP system was 377,035 KW-Hrs. Monthly net energy (including natural gas usage) was 34 MW-Hrs for the month of December.

C: WDVB, AES, JMW, KJR, RTJ, MJS, CS, DM

Monthly Operations Report Page 1

Date	WWTC Rainfall inches	B01 Parshall Flume Flow Max MGD	B01 Parshall Flume Flow Min MGD	B01 Parshall Flume Flow Avg (Daily Total) MGD	A01 Parshall Flume Flow Max MGD	A01 Parshall Flume Flow Avg (Daily Total) MGD	C01 Int Clar #1 Flow Max MGD	C01 Int Clar #1 Flow Avg (Daily Total) MGD	Outfall 003 Flow Max MGD	Outfall 003 Flow Avg (Daily Total) MGD	Total Flow Leaving WWTC Avg (Daily Total) MGD	Total Flow Leaving WWTC Max MGD	002 Outfall Flow Avg (Daily Total) MGD
12/1/2023	0.70	25.41	3.92	14.34	0.00	0.00	0.00	0.00	0.00	0.00	14.34	25.41	0.00
12/2/2023	0.00	18.65	10.59	12.64	0.00	0.00	0.00	0.00	0.00	0.00	12.64	18.65	0.00
12/3/2023	0.32	20.60	10.29	15.46	0.00	0.00	0.00	0.00	0.00	0.00	15.46	20.60	0.00
12/4/2023	0.00	18.20	9.38	11.82	0.00	0.00	0.00	0.00	0.00	0.00	11.82	18.20	0.00
12/5/2023	0.13	17.53	7.56	10.97	0.00	0.00	0.00	0.00	0.00	0.00	10.97	17.53	0.00
12/6/2023	0.00	15.50	7.43	10.08	0.00	0.00	0.00	0.00	0.00	0.00	10.08	15.50	0.00
12/7/2023	0.00	15.04	6.66	9.44	0.00	0.00	0.00	0.00	0.00	0.00	9.44	15.04	0.00
12/8/2023	0.00	12.04	6.05	8.83	0.00	0.00	0.00	0.00	0.00	0.00	8.83	12.04	0.00
12/9/2023	0.32	19.57	6.36	11.85	0.00	0.00	0.00	0.00	0.00	0.00	11.85	19.57	0.00
12/10/2023	0.00	18.16	7.55	10.17	0.00	0.00	0.00	0.00	0.00	0.00	10.17	18.16	0.00
12/11/2023	0.00	15.30	6.19	9.41	0.00	0.00	0.00	0.00	0.00	0.00	9.41	15.30	0.00
12/12/2023	0.00	11.78	5.92	8.75	0.00	0.00	0.00	0.00	0.00	0.00	8.75	11.78	0.00
12/13/2023	0.00	12.64	5.33	8.49	0.00	0.00	0.00	0.00	0.00	0.00	8.49	12.64	0.00
12/14/2023	0.00	11.68	5.17	8.22	0.00	0.00	0.00	0.00	0.00	0.00	8.22	11.68	0.00
12/15/2023	0.00	11.96	5.12	8.03	0.00	0.00	0.00	0.00	0.00	0.00	8.03	11.96	0.00
12/16/2023	0.51	21.38	4.89	11.94	0.00	0.00	0.00	0.00	0.00	0.00	11.94	21.38	0.00
12/17/2023	0.00	16.92	10.72	13.10	0.00	0.00	0.00	0.00	0.00	0.00	13.10	16.92	0.00
12/18/2023	0.00	15.08	8.08	10.82	0.00	0.00	0.00	0.00	0.00	0.00	10.82	15.08	0.00
12/19/2023	0.00	15.21	6.77	9.93	0.00	0.00	0.00	0.00	0.00	0.00	9.93	15.21	0.00
12/20/2023	0.00	12.65	6.56	9.25	0.00	0.00	0.00	0.00	0.00	0.00	9.25	12.65	0.00
12/21/2023	0.00	11.96	5.16	8.77	0.00	0.00	0.00	0.00	0.00	0.00	8.77	11.96	0.00
12/22/2023	0.50	23.00	5.78	10.82	0.00	0.00	0.00	0.00	0.00	0.00	10.82	23.00	0.00
12/23/2023	0.03	21.87	12.94	15.17	0.00	0.00	0.00	0.00	0.00	0.00	15.17	21.87	0.00
12/24/2023	0.00	16.31	9.38	11.87	0.00	0.00	0.00	0.00	0.00	0.00	11.87	16.31	0.00
12/25/2023	0.53	23.65	7.57	12.43	0.00	0.00	0.00	0.00	0.00	0.00	12.43	23.65	0.00
12/26/2023	0.01	24.57	15.09	19.73	0.00	0.00	0.00	0.00	0.00	0.00	19.73	24.57	0.00
12/27/2023	0.01	18.00	11.62	13.86	0.00	0.00	0.00	0.00	0.00	0.00	13.86	18.00	0.00
12/28/2023	0.06	15.66	9.70	12.27	0.00	0.00	0.00	0.00	0.00	0.00	12.27	15.66	0.00
12/29/2023	0.05	18.36	11.18	13.51	0.00	0.00	0.00	0.00	0.00	0.00	13.51	18.36	0.00
12/30/2023	0.00	15.69	9.52	11.84	0.00	0.00	0.00	0.00	0.00	0.00	11.84	15.69	0.00
12/31/2023	0.03	15.43	8.14	11.14	0.00	0.00	0.00	0.00	0.00	0.00	11.14	15.43	0.00
Minimum	0.00	11.68	3.92	8.03	0.00	0.00	0.00	0.00	0.00	0.00	8.03	11.68	0.00
Maximum	0.70	25.41	15.09	19.73	0.00	0.00	0.00	0.00	0.00	0.00	19.73	25.41	0.00
Total	3.20	529.82	246.61	354.93	0.00	0.00	0.00	0.00	0.00	0.00	354.93	529.82	0.00
Average	0.10	17.09	7.96	11.45	0.00	0.00	0.00	0.00	0.00	0.00	11.45	17.09	0.00

Monthly Operations Report Page 2

Date	Tertiary Flow MGD	MLSS Avg	Activated Sludge Inventory Lbs MLSS LBS	Activated Sludge SRT Days DAYS	15 Minutes Aeration Settling % mL/L	30 Minutes Aeration Settling % mL/L	60 Minutes Aeration Settling % mL/L	Sludge Volume Index mL/g	System 1 RAS TSS mg/l	System 2 RAS TSS mg/l	Dupage River Outfall DO mg/l
12/1/2023	14.34	2,839	88,067	6.15	45	34	29	118		6,364	
12/2/2023	12.64		88,067	6.13							
12/3/2023	15.46		88,067	6.13							
12/4/2023	11.82	2,130	66,073	5.72	36	27	25	129		5,328	8.5
12/5/2023	10.97	2,779	86,201	7.44	67	48	36	172	4,843		8.4
12/6/2023	10.08	3,062	95,008	6.57	62	44	33	143		6,149	8.8
12/7/2023	9.44	2,845	88,254	5.92	47	35	29	121	5,585		
12/8/2023	8.83	2,707	83,990	6.22	55	39	30	146		5,577	
12/9/2023	11.85		83,990	6.20							
12/10/2023	10.17		83,990	6.21							
12/11/2023	9.41	2,596	80,549	6.62	41	29	24	113		5,072	8.8
12/12/2023	8.75	2,620	81,282	7.11	53	38	28	146	4,920		8.7
12/13/2023	8.49	2,548	79,044	8.74	48	34	27	134		4,393	9.1
12/14/2023	8.22	2,415	74,917	9.16	48	33	25	135	5,114		
12/15/2023	8.03	2,452	76,064	9.17	47	33	27	134		4,774	
12/16/2023	11.94		76,064	9.23							
12/17/2023	13.10		76,064	9.20							
12/18/2023	10.82	2,539	101,236	7.29	49	35	27	138		6,233	8.7
12/19/2023	9.93	2,553	79,200	7.34	49	34	26	134	5,158		8.9
12/20/2023	9.25	2,527	78,391	10.58	53	35	26	139		4,271	8.7
12/21/2023	8.77	2,433	75,477	10.24	38	27	22	112	4,114		
12/22/2023	10.82	2,602	80,728	9.81	40	29	24	110		4,724	
12/23/2023	15.17		80,728	9.85							
12/24/2023	11.87		80,728	9.86							
12/25/2023	12.43		80,728	9.82							
12/26/2023	19.73	1,894	58,743	7.35	28	21	18	110	3,229		7.5
12/27/2023	13.86	2,634	81,713	7.12	55	38	30	143		6,908	8.6
12/28/2023	12.27	2,502	77,616	6.46	46	34	27	137	4,716		
12/29/2023	13.51	2,296	71,232	6.56	41	30	23	129		6,419	8.5
12/30/2023	11.84		71,232	6.84							
12/31/2023	11.14		71,232	6.88							
Minimum	8.03	1,894	58,742.98	5.72	28.02	20.76	18.03	109.58	3,229	4,271	7.5
Maximum	19.73	3,062	101,235.78	10.58	66.60	48.44	36.02	172.04	5,585	6,908	9.1
Total	354.93	50,971	2,484,674.71	237.93	948.80	677.68	534.78	2,643.10	37,679	66,212	103.2
Average	11.45	2,549	80,150.81	7.67	47.40	33.85	26.80	132.15	4,710	5,518	8.6

Monthly Operations Report Page 3

Date	Tertiary Flow MGD	Influent BOD 5 mg/l	Primary Clarifier BOD 5 mg/l	Intermediate Clarifier CBOD 5 mg/l	Tertiary Effluent CBOD 5 mg/l	Tertiary Effluent CBOD 5 Load	BOD 5 Removal % %	Ambient Air Temp Min Deg F	Ambient Air Temp Max Deg F	Influent Flow Temp Deg F
12/1/2023	14.34							41	46	
12/2/2023	12.64							39	46	
12/3/2023	15.46							38	41	
12/4/2023	11.82	285	177		1.2	118	99.2	33	43	60.3
12/5/2023	10.97	243	133	2.0	1.0	91	99.2	31	42	60.2
12/6/2023	10.08	275	96		0.7	59	99.5	32	41	60.4
12/7/2023	9.44	327	142	2.1	0.6	47	99.6	36	55	60.1
12/8/2023	8.83							46	58	
12/9/2023	11.85							35	55	
12/10/2023	10.17							30	36	
12/11/2023	9.41	320	147		1.0	78	99.5	29	38	60.2
12/12/2023	8.75	300	156	2.1	1.2	88	99.3	28	41	59.5
12/13/2023	8.49	340	143		1.0	71	99.4	21	44	59.5
12/14/2023	8.22	313	166	1.6	1.2	82	99.3	29	54	59.6
12/15/2023	8.03							30	55	
12/16/2023	11.94							41	48	
12/17/2023	13.10							37	45	
12/18/2023	10.82	256	118		1.0	90	99.2	20	38	58.5
12/19/2023	9.93	270	124	2.8	1.0	83	99.3	17	34	58.3
12/20/2023	9.25	280	121		1.0	77	99.5	31	48	58.4
12/21/2023	8.77	320	153	2.8	0.8	59	99.6	32	50	58.5
12/22/2023	10.82							44	47	
12/23/2023	15.17							45	52	
12/24/2023	11.87							51	55	57.7
12/25/2023	12.43	196			0.8	83	99.3	48	61	
12/26/2023	19.73	178	94	3.5	1.0	165	98.7	29	48	56.3
12/27/2023	13.86	184	83		0.9	104	99.0	29	44	57.0
12/28/2023	12.27	250	130	2.5	0.5	51	99.4	34	44	56.8
12/29/2023	13.51							31	42	
12/30/2023	11.84							28	38	
12/31/2023	11.14							32	38	
Minimum	8.03	178	83	1.6	0.50	47	98.7	17	34	56.3
Maximum	19.73	340	177	3.5	1.20	165	99.6	51	61	60.4
Total	354.93	4,337	1,983	19.4	14.90	1,346	1,588.8	941	1,428	941.3
Average	11.45	271	132	2.4	0.93	84	99.3	34	46	58.8

Monthly Operations Report Page 4

Date	Tertiary Flow MGD	Influent TSS mg/l	Primary Clarifier TSS mg/l	Intermediate Clarifier TSS mg/l	Tertiary Effluent TSS mg/l	Tertiary Effluent TSS Load lbs/day	TSS Removal % %	Influent pH SU	Primary Clarifier pH SU	Tertiary Effluent pH SU	Intermediate pH SU
12/1/2023	14.34	300			1.4	167	99.5	7.7	7.5	7.2	7.2
12/2/2023	12.64	204			0.8	84	99.6				
12/3/2023	15.46	220			0.8	103	99.6				
12/4/2023	11.82	316	116		0.5	49	99.8	7.7	7.9	7.4	7.7
12/5/2023	10.97	227	89	4.4	0.5	46	99.8	7.8	7.8	7.4	7.5
12/6/2023	10.08	253	53		0.1	8	100.0	7.7	7.7	7.3	7.4
12/7/2023	9.44	273	58	4.1	0.4	32	99.9	7.7	7.8	7.3	7.4
12/8/2023	8.83	305			0.1	7	100.0	7.7	7.7	7.3	7.4
12/9/2023	11.85	290			0.4	40	99.9				
12/10/2023	10.17	236			0.3	25	99.9				
12/11/2023	9.41	320	73		0.4	31	99.9	7.7	7.8	7.4	7.7
12/12/2023	8.75	260	86	4.2	0.4	29	99.8	7.8	7.8	7.2	7.3
12/13/2023	8.49	260	85		0.2	14	99.9	7.8	7.7	7.2	7.3
12/14/2023	8.22	270	92	1.2	0.5	34	99.8	7.7	7.7	7.2	7.2
12/15/2023	8.03	207			0.4	27	99.8	7.7	7.6	7.2	7.3
12/16/2023	11.94	227			0.9	90	99.6				
12/17/2023	13.10	166			1.0	109	99.4				
12/18/2023	10.82	224	68		0.7	63	99.7	7.4	7.8	7.8	7.4
12/19/2023	9.93	226	64	5.0	0.6	50	99.7	7.8	7.7	7.4	7.4
12/20/2023	9.25	273	86		0.3	23	99.9	7.7	7.6	7.2	7.3
12/21/2023	8.77	263	102	5.2	0.5	37	99.8	7.8	7.6	7.2	7.2
12/22/2023	10.82	268			0.4	36	99.9	7.7	7.5	7.2	7.6
12/23/2023	15.17	148			0.9	114	99.4				
12/24/2023	11.87	166			0.4	40	99.8				
12/25/2023	12.43	192			0.3	31	99.8	7.7		7.4	
12/26/2023	19.73	172	80	7.2	1.0	165	99.4	7.8	7.5	7.3	7.3
12/27/2023	13.86	176	52		0.7	81	99.6	7.8	7.7	7.4	7.5
12/28/2023	12.27	196	171	5.4	0.6	61	99.7	7.8	7.8	7.5	7.5
12/29/2023	13.51	164			0.8	90	99.5	7.7	7.5	7.0	7.4
12/30/2023	11.84	144			0.5	49	99.7				
12/31/2023	11.14	144			0.2	19	99.9				
Minimum	8.03	144	52	1.2	0.1	7	99.4	7.4	7.5	7.0	7.2
Maximum	19.73	320	171	7.2	1.4	167	100.0	7.8	7.9	7.8	7.7
Total	354.93	7,090	1,275	36.7	17.0	1,755	3,091.9	162.2	153.7	153.5	148.0
Average	11.45	229	85	4.6	0.5	57	99.7	7.7	7.7	7.3	7.4

MONTHLY OPERATIONS REPORT PAGE 5

Date	Tertiary Flow MGD	Influent Ammonia-N mg/l	Tertiary Effluent Ammonia-N mg/l	Tertiary Effluent Ammonia-N Load lbs/day	Chlorine Residual mg/l	Fecal Coliform col/100ml
12/1/2023	14.34				0.015	
12/2/2023	12.64					
12/3/2023	15.46	6.70				
12/4/2023	11.82	12.76	0.26	25.6		
12/5/2023	10.97	14.32	0.31	28.4		
12/6/2023	10.08	15.34	0.10	8.4		
12/7/2023	9.44	17.63	0.10	7.9		
12/8/2023	8.83					
12/9/2023	11.85					
12/10/2023	10.17	13.41	0.10	8.5		
12/11/2023	9.41	16.23	0.10	7.8		
12/12/2023	8.75	17.71	0.10	7.3		
12/13/2023	8.49	18.99	0.10	7.1		
12/14/2023	8.22	18.46	0.10	6.9		
12/15/2023	8.03					
12/16/2023	11.94					
12/17/2023	13.10	9.10	0.10	10.9		
12/18/2023	10.82	13.86	0.10	9.0		
12/19/2023	9.93	17.63	0.10	8.3		
12/20/2023	9.25	19.75	0.10	7.7		
12/21/2023	8.77	17.12	0.10	7.3		
12/22/2023	10.82					
12/23/2023	15.17					
12/24/2023	11.87	10.96	0.10	9.9		
12/25/2023	12.43	9.22	0.10	10.4		
12/26/2023	19.73	6.67	0.39	64.2		
12/27/2023	13.86	11.15	0.17	19.6		
12/28/2023	12.27	13.74	0.12	12.3		
12/29/2023	13.51					
12/30/2023	11.84					
12/31/2023	11.14	12.96	0.10	9.3		
Minimum	8.03	6.67	0.10	6.9	0.015	
Maximum	19.73	19.75	0.39	64.2	0.015	
Total	354.93	293.71	2.75	276.7	0.015	
Average	11.45	13.99	0.14	13.8	0.015	

SLUDGE DATA

Primary Sludge	TS	2.53 %	1,271,416	Gallons
WAS to Thickener	TS	2.38 %	635,380	Gallons
TWAS to Digester 4	TS	5.68 %	239,120	Gallons
Hauled Grease to Digs	TS	7.70 %	232,477	Gallons

Anaerobically Digested Sludge Pumping

to Drying Beds	TS	2.87 %	196,980	Gallons
to BFP	TS	2.39 %	1,037,712	Gallons
to Lagoons	TS	%		Gallons
Total			1,234,692	Gallons

VS Destruction 59.0 %

Biosolids Disposal

Class A Distribution	Dec	67	Dry Tons
Class B Hauling	Dec		Dry Tons
Total	Dec	67	Dry Tons
Class A Distribution	YTD	892	Dry Tons
Class B Hauling	YTD	426	Dry Tons
Total	YTD	1,318	Dry Tons

ENERGY DATA

Total Digester Gas Production	5,254,645	SCF
Gas Volume per Volatile Solids Load	11.0	Cu.Ft./Lb.

Digester Gas Utilization

Heat Exchangers	85,827	SCF
Dehumidification	512,664	SCF
CHP	4,641,039	SCF
Total	5,239,530	SCF

Digester Gas Flared 15,115 SCF

Natural Gas Consumed

WWTC	28,367	SCF
MSB	45,500	SCF
Chemical Feed	30,300	SCF
5006 Walnut	10,433	SCF

Kilowatt-hours Generated CHP	377,035	KWH
Net energy from Comed	1,508	KWH
Monthly net energy	34	MWH

MISCELLANEOUS

Grit Removal	Dec	20	Cu. Yds
Grit Removal	YTD	240	Cu. Yds
Anaerobic Supernate		560,855	Gallons
Waste Activated Sludge		235,246	Gals/Day
City Water Consumed		16,581	Gallons

Monthly Operations Report Page 6

Date	Tertiary Flow MGD	Influent Phosphorus mg/l	Tertiary Effluent Phosphorus mg/l	Influent Phosphorus Load lbs/day	Tertiary Effluent Phosphorus Load lbs/day	Phosphorus Removal % %	Influent Nitrogen mg/l	Tertiary Effluent Nitrogen mg/l	Influent Nitrogen Load lbs/day	Tertiary Effluent Nitrogen Load lbs/day	Nitrogen Removal % %	Tertiary Effluent Nitrate Grab mg/l
12/1/2023	14.34											
12/2/2023	12.64											
12/3/2023	15.46											
12/4/2023	11.82											
12/5/2023	10.97											
12/6/2023	10.08	5.56	2.02	460.7	169.8	63.7						
12/7/2023	9.44											19.14
12/8/2023	8.83											
12/9/2023	11.85											
12/10/2023	10.17											
12/11/2023	9.41	5.32	2.35	413.6	184.3	55.8						
12/12/2023	8.75						55.0	16.4	3,961.0	1,197.0	69.8	
12/13/2023	8.49											
12/14/2023	8.22											24.32
12/15/2023	8.03											
12/16/2023	11.94											
12/17/2023	13.10											
12/18/2023	10.82	4.38	1.68	391.3	151.6	61.6						
12/19/2023	9.93											
12/20/2023	9.25											
12/21/2023	8.77											22.72
12/22/2023	10.82											
12/23/2023	15.17											
12/24/2023	11.87											
12/25/2023	12.43	2.88	1.66	300.7	172.1	42.4						
12/26/2023	19.73											
12/27/2023	13.86											
12/28/2023	12.27											15.12
12/29/2023	13.51											
12/30/2023	11.84											
12/31/2023	11.14											
Minimum	8.03	2.88	1.66	300.7	151.6	42.4	55.0	16.4	3,961.0	1,197.0	69.8	15.12
Maximum	19.73	5.56	2.35	460.7	184.3	63.7	55.0	16.4	3,961.0	1,197.0	69.8	24.32
Total	354.93	18.14	7.71	1,566.2	677.8	223.5	55.0	16.4	3,961.0	1,197.0	69.8	81.30
Average	11.45	4.54	1.93	391.6	169.5	55.9	55.0	16.4	3,961.0	1,197.0	69.8	20.33

DMR Copy of Record

Permit

Permit #:	**IL0028380**	**Permittee:**	DOWNERS GROVE SANITARY DISTRICT	**Facility:**	DOWNERS GROVE S.D. - WASTEWATER TREATMENT CENTER
Major:	Yes	**Permittee Address:**	2710 CURTISS STREET PO BOX 1412 DOWNERS GROVE, IL 60515	**Facility Location:**	5003 WALNUT AVENUE DOWNERS GROVE, IL 60515
Permitted Feature:	001 External Outfall	**Discharge:**	**001-0** COMBINED DISCHARGE FROM A01, B01, & C01		

Report Dates & Status

Monitoring Period:	**From 12/01/23 to 12/31/23**	**DMR Due Date:**	**01/25/24**	**Status:**	**NetDMR Validated**

Considerations for Form Completion

W0430300002 ; NUMBER OF DAYS OF DISCHARGE.COMBINED OUTFALLS: A01-MIXING CHAMBER DISCHARGE TO E BR OF DUPAGE RIVER-EFFECTIVE WHEN FLOWS TO TRT PLT ARE GREATER THAN 22 MGD & EXCESS FLOW FAC IS IN OPERATION. 002 BECOMES OPERATIONAL WHEN 001, A01,& B01 EXCEED 30 MGD.

Principal Executive Officer

First Name:	Amy	**Title:**	General Manager	**Telephone:**	630-969-0664
Last Name:	Underwood				

No Data Indicator (NODI)

Form NODI: --

Parameter		Monitoring Location	Season #	Param. NODI		Quantity or Loading					Quality or Concentration							# of Ex.	Frequency of Analysis	Sample Type
Code	Name					Qualifier 1	Value 1	Qualifier 2	Value 2	Units	Qualifier 1	Value 1	Qualifier 2	Value 2	Qualifier 3	Value 3	Units			
00300	**Oxygen, dissolved [DO]**	1 - Effluent Gross	0	--	Sample						=	8.6	=	8.2	=	7.5	19 - mg/L	0	03/DW - 3 Days Every Week	GR - GRAB
					Permit Req.							Req Mon MO AV MN		Req Mon MN WK AV		Req Mon DAILY MN	19 - mg/L		DL/DS - Daily When Discharging	GR - GRAB
					Value NODI															
00310	**BOD, 5-day, 20 deg. C**	1 - Effluent Gross	0	--	Sample								=	1.8	=	2.0	19 - mg/L	0	04/07 - Four Per Week	GR - GRAB
					Permit Req.								<=	30.0 MO AVG	<=	45.0 WKLY AVG	19 - mg/L		DL/DS - Daily When Discharging	GR - GRAB
					Value NODI															
00400	**pH**	1 - Effluent Gross	0	--	Sample						=	7.0			=	7.8	12 - SU	0	05/DW - 5 Days Every Week	GR - GRAB
					Permit Req.						>=	6.0 MINIMUM			<=	9.0 MAXIMUM	12 - SU		DL/DS - Daily When Discharging	GR - GRAB
					Value NODI															
00530	**Solids, total suspended**	1 - Effluent Gross	0	--	Sample								=	0.5	=	0.6	19 - mg/L	0	05/DW - 5 Days Every Week	CP - COMPOS
					Permit Req.								<=	30.0 MO AVG	<=	45.0 WKLY AVG	19 - mg/L		DL/DS - Daily When Discharging	GR - GRAB
					Value NODI															
00610	**Nitrogen, ammonia total [as N]**	1 - Effluent Gross	0	--	Sample								=	0.14	=	0.39	19 - mg/L	0	05/DW - 5 Days Every Week	CP - COMPOS
					Permit Req.									Req Mon MO AVG		Req Mon DAILY MX	19 - mg/L		DL/DS - Daily When Discharging	GR - GRAB
					Value NODI															
00665	**Phosphorus, total [as P]**	1 - Effluent Gross	0	--	Sample								=	1.93	=	2.35	19 - mg/L	0	04/30 - Four Per Month	CP - COMPOS
					Permit Req.									Req Mon MO AVG		Req Mon DAILY MX	19 - mg/L		DL/DS - Daily When Discharging	GR - GRAB
					Value NODI															
50060	**Chlorine, total residual**	1 - Effluent Gross	0	--	Sample								=	0.02			19 - mg/L	0	01/30 - Monthly	GR - GRAB
					Permit Req.								<=	0.75 MO AVG			19 - mg/L		DL/DS - Daily When Discharging	GR - GRAB
					Value NODI															
74055	**Coliform, fecal general**	1 - Effluent Gross	0	--	Sample															
					Permit Req.										<=	400.0 DAILY MX	13 - #/100mL		DL/DS - Daily When Discharging	GR - GRAB
					Value NODI											9 - Conditional Monitoring - Not Required This Period				
82220	**Flow, total**	1 - Effluent Gross	0	--	Sample			=	354.93	80 - Mgal/mo								0	99/99 - Continuous	
					Permit Req.				Req Mon MO TOTAL	80 - Mgal/mo									99/99 - Continuous	
					Value NODI															

Submission Note

If a parameter row does not contain any values for the Sample nor Effluent Trading, then none of the following fields will be submitted for that row: Units, Number of Excursions, Frequency of Analysis, and Sample Type.

Edit Check Errors

No errors.

Comments

31 days of discharge. Zero days combined with A01 and zero days combined with C01.

Attachments

No attachments.

Report Last Saved By

DOWNERS GROVE SANITARY DISTRICT

User:	reeseberry
Name:	Dorrance Berry
E-Mail:	rberry@dgsd.org
Date/Time:	2024-01-09 14:23 (Time Zone: -06:00)

Report Last Signed By

User:	reeseberry
Name:	Dorrance Berry
E-Mail:	rberry@dgsd.org
Date/Time:	2024-01-09 14:42 (Time Zone: -06:00)

DMR Copy of Record

Permit					
Permit #:	**IL0028380**	**Permittee:**	DOWNERS GROVE SANITARY DISTRICT	**Facility:**	DOWNERS GROVE S.D. - WASTEWATER TREATMENT CENTER
Major:	Yes	**Permittee Address:**	2710 CURTISS STREET PO BOX 1412 DOWNERS GROVE, IL 60515	**Facility Location:**	5003 WALNUT AVENUE DOWNERS GROVE, IL 60515
Permitted Feature:	002 External Outfall	**Discharge:**	**002-0** MIXING CHAMBER OVERFLOW TO ST JOSEPH CRK		
Report Dates & Status					
Monitoring Period:	**From 12/01/23 to 12/31/23**	**DMR Due Date:**	**01/25/24**	**Status:**	**NetDMR Validated**
Considerations for Form Completion					
W0430300002 ; NUMBER OF DAYS OF DISCHARGE:CS					
Principal Executive Officer					
First Name:	Amy	**Title:**	General Manager	**Telephone:**	630-969-0664
Last Name:	Underwood				
No Data Indicator (NODI)					
Form NODI:	--				

Parameter		Monitoring Location	Season #	Param. NODI		Quantity or Loading					Quality or Concentration							# of Ex.	Frequency of Analysis	Sample Type
Code	Name					Qualifier 1	Value 1	Qualifier 2	Value 2	Units	Qualifier 1	Value 1	Qualifier 2	Value 2	Qualifier 3	Value 3	Units			
00300	**Oxygen, dissolved [DO]**	1 - Effluent Gross	0	--	Sample															
					Permit Req.											Req Mon DAILY MN	19 - mg/L		DL/DS - Daily When Discharging	GR - GRAB
					Value NODI											C - No Discharge				
00310	**BOD, 5-day, 20 deg. C**	1 - Effluent Gross	0	--	Sample															
					Permit Req.								<=	30.0 MO AVG	<=	45.0 WKLY AVG	19 - mg/L		DL/DS - Daily When Discharging	GR - GRAB
					Value NODI									C - No Discharge		C - No Discharge				
00400	**pH**	1 - Effluent Gross	0	--	Sample															
					Permit Req.						>=	6.0 MINIMUM			<=	9.0 MAXIMUM	12 - SU		DL/DS - Daily When Discharging	GR - GRAB
					Value NODI							C - No Discharge				C - No Discharge				
00530	**Solids, total suspended**	1 - Effluent Gross	0	--	Sample															
					Permit Req.								<=	30.0 MO AVG	<=	45.0 WKLY AVG	19 - mg/L		DL/DS - Daily When Discharging	GR - GRAB
					Value NODI									C - No Discharge		C - No Discharge				
00610	**Nitrogen, ammonia total [as N]**	1 - Effluent Gross	0	--	Sample															
					Permit Req.											Req Mon DAILY MX	19 - mg/L		DL/DS - Daily When Discharging	GR - GRAB
					Value NODI											C - No Discharge				
00665	**Phosphorus, total [as P]**	1 - Effluent Gross	0	--	Sample															
					Permit Req.									Req Mon MO AVG		Req Mon DAILY MX	19 - mg/L		DL/DS - Daily When Discharging	GR - GRAB
					Value NODI									C - No Discharge		C - No Discharge				
50060	**Chlorine, total residual**	1 - Effluent Gross	0	--	Sample															
					Permit Req.								<=	0.75 MO AVG			19 - mg/L		DL/DS - Daily When Discharging	GR - GRAB
					Value NODI									C - No Discharge						
74055	**Coliform, fecal general**	1 - Effluent Gross	0	--	Sample															
					Permit Req.										<=	400.0 DAILY MX	13 - #/100mL		DL/DS - Daily When Discharging	GR - GRAB
					Value NODI											C - No Discharge				
82220	**Flow, total**	1 - Effluent Gross	0	--	Sample															
					Permit Req.				Req Mon MO TOTAL	80 - Mgal/mo									DL/DS - Daily When Discharging	
					Value NODI				C - No Discharge											

Submission Note

If a parameter row does not contain any values for the Sample nor Effluent Trading, then none of the following fields will be submitted for that row: Units, Number of Excursions, Frequency of Analysis, and Sample Type.

Edit Check Errors

No errors.

Comments

Attachments

No attachments.

Report Last Saved By

DOWNERS GROVE SANITARY DISTRICT

User: reeseberry

Name:	Dorrance Berry
E-Mail:	rberry@dgsd.org
Date/Time:	2024-01-09 14:24 (Time Zone: -06:00)
Report Last Signed By	
User:	reeseberry
Name:	Dorrance Berry
E-Mail:	rberry@dgsd.org
Date/Time:	2024-01-09 14:42 (Time Zone: -06:00)

DMR Copy of Record

Permit					
Permit #:	**IL0028380**	**Permittee:**	DOWNERS GROVE SANITARY DISTRICT	**Facility:**	DOWNERS GROVE S.D. - WASTEWATER TREATMENT CENTER
Major:	Yes	**Permittee Address:**	2710 CURTISS STREET PO BOX 1412 DOWNERS GROVE, IL 60515	**Facility Location:**	5003 WALNUT AVENUE DOWNERS GROVE, IL 60515
Permitted Feature:	003 External Outfall	**Discharge:**	**003-0** EXCESS FLOW TO ST JOSEPH CREEK		
Report Dates & Status					
Monitoring Period:	**From 12/01/23 to 12/31/23**	**DMR Due Date:**	**01/25/24**	**Status:**	**NetDMR Validated**
Considerations for Form Completion					
W0430300002 ; NUMBER OF DAYS OF DISCHARGE:CS					
Principal Executive Officer					
First Name:	Amy	**Title:**	General Manager	**Telephone:**	630-969-0664
Last Name:	Underwood				
No Data Indicator (NODI)					
Form NODI:	--				

Parameter		Monitoring Location	Season #	Param. NODI		Quantity or Loading					Quality or Concentration							# of Ex.	Frequency of Analysis	Sample Type
Code	Name					Qualifier 1	Value 1	Qualifier 2	Value 2	Units	Qualifier 1	Value 1	Qualifier 2	Value 2	Qualifier 3	Value 3	Units			
00300	**Oxygen, dissolved [DO]**	1 - Effluent Gross	0	--	Sample															
					Permit Req.											Req Mon DAILY MN	19 - mg/L		DL/DS - Daily When Discharging	GR - GRAB
					Value NODI											C - No Discharge				
00310	**BOD, 5-day, 20 deg. C**	1 - Effluent Gross	0	--	Sample															
					Permit Req.								<=	30.0 MO AVG	<=	45.0 WKLY AVG	19 - mg/L		DL/DS - Daily When Discharging	GR - GRAB
					Value NODI									C - No Discharge		C - No Discharge				
00400	**pH**	1 - Effluent Gross	0	--	Sample															
					Permit Req.						>=	6.0 MINIMUM			<=	9.0 MAXIMUM	12 - SU		DL/DS - Daily When Discharging	GR - GRAB
					Value NODI							C - No Discharge				C - No Discharge				
00530	**Solids, total suspended**	1 - Effluent Gross	0	--	Sample															
					Permit Req.								<=	30.0 MO AVG	<=	45.0 WKLY AVG	19 - mg/L		DL/DS - Daily When Discharging	GR - GRAB
					Value NODI									C - No Discharge		C - No Discharge				
00610	**Nitrogen, ammonia total [as N]**	1 - Effluent Gross	0	--	Sample															
					Permit Req.											Req Mon DAILY MX	19 - mg/L		DL/DS - Daily When Discharging	GR - GRAB
					Value NODI											C - No Discharge				
00665	**Phosphorus, total [as P]**	1 - Effluent Gross	0	--	Sample															
					Permit Req.									Req Mon MO AVG		Req Mon DAILY MX	19 - mg/L		DL/DS - Daily When Discharging	GR - GRAB
					Value NODI									C - No Discharge		C - No Discharge				
50060	**Chlorine, total residual**	1 - Effluent Gross	0	--	Sample															
					Permit Req.								<=	0.75 MO AVG			19 - mg/L		DL/DS - Daily When Discharging	GR - GRAB
					Value NODI									C - No Discharge						
74055	**Coliform, fecal general**	1 - Effluent Gross	0	--	Sample															
					Permit Req.										<=	400.0 DAILY MX	13 - #/100mL		DL/DS - Daily When Discharging	GR - GRAB
					Value NODI											C - No Discharge				
82220	**Flow, total**	1 - Effluent Gross	0	--	Sample															
					Permit Req.				Req Mon MO TOTAL	80 - Mgal/mo									DL/DS - Daily When Discharging	
					Value NODI				C - No Discharge											

Submission Note

If a parameter row does not contain any values for the Sample nor Effluent Trading, then none of the following fields will be submitted for that row: Units, Number of Excursions, Frequency of Analysis, and Sample Type.

Edit Check Errors

No errors.

Comments

Attachments

No attachments.

Report Last Saved By

DOWNERS GROVE SANITARY DISTRICT

User:	reeseberry

Name:	Dorrance Berry
E-Mail:	rberry@dgsd.org
Date/Time:	2024-01-09 14:24 (Time Zone: -06:00)
Report Last Signed By	
User:	reeseberry
Name:	Dorrance Berry
E-Mail:	rberry@dgsd.org
Date/Time:	2024-01-09 14:42 (Time Zone: -06:00)

DMR Copy of Record

Permit

Permit #:	**IL0028380**	**Permittee:**	DOWNERS GROVE SANITARY DISTRICT	**Facility:**	DOWNERS GROVE S.D. - WASTEWATER TREATMENT CENTER
Major:	Yes	**Permittee Address:**	2710 CURTISS STREET PO BOX 1412 DOWNERS GROVE, IL 60515	**Facility Location:**	5003 WALNUT AVENUE DOWNERS GROVE, IL 60515
Permitted Feature:	A01 External Outfall	**Discharge:**	**A01-0** EXCESS FLOW FROM EXCESS FLOW CLARIFIERS		

Report Dates & Status

Monitoring Period:	**From 12/01/23 to 12/31/23**	**DMR Due Date:**	**01/25/24**	**Status:**	**NetDMR Validated**

Considerations for Form Completion

W0430300002 ; NUMBER OF DAYS OF DISCHARGE:CS

Principal Executive Officer

First Name:	Amy	**Title:**	General Manager	**Telephone:**	630-969-0664
Last Name:	Underwood				

No Data Indicator (NODI)

Form NODI: --

Parameter		Monitoring Location	Season #	Param. NODI		Quantity or Loading					Quality or Concentration							# of Ex.	Frequency of Analysis	Sample Type
Code	Name					Qualifier 1	Value 1	Qualifier 2	Value 2	Units	Qualifier 1	Value 1	Qualifier 2	Value 2	Qualifier 3	Value 3	Units			
00310	**BOD, 5-day, 20 deg. C**	1 - Effluent Gross	0	--	Sample															
					Permit Req.											Req Mon DAILY MX	19 - mg/L		DL/DS - Daily When Discharging	GR - GRAB
					Value NODI											C - No Discharge				
00530	**Solids, total suspended**	1 - Effluent Gross	0	--	Sample															
					Permit Req.											Req Mon DAILY MX	19 - mg/L		DL/DS - Daily When Discharging	GR - GRAB
					Value NODI											C - No Discharge				
00610	**Nitrogen, ammonia total [as N]**	1 - Effluent Gross	0	--	Sample															
					Permit Req.											Req Mon DAILY MX	19 - mg/L		DL/DS - Daily When Discharging	GR - GRAB
					Value NODI											C - No Discharge				
00665	**Phosphorus, total [as P]**	1 - Effluent Gross	0	--	Sample															
					Permit Req.									Req Mon MO AVG		Req Mon DAILY MX	19 - mg/L		DL/DS - Daily When Discharging	GR - GRAB
					Value NODI									C - No Discharge		C - No Discharge				
82220	**Flow, total**	1 - Effluent Gross	0	--	Sample															
					Permit Req.				Req Mon MO TOTAL	80 - Mgal/mo									DL/DS - Daily When Discharging	CN - CONTIN
					Value NODI				C - No Discharge											

Submission Note

If a parameter row does not contain any values for the Sample nor Effluent Trading, then none of the following fields will be submitted for that row: Units, Number of Excursions, Frequency of Analysis, and Sample Type.

Edit Check Errors

No errors.

Comments

Attachments

No attachments.

Report Last Saved By

DOWNERS GROVE SANITARY DISTRICT

User:	reeseberry
Name:	Dorrance Berry
E-Mail:	rberry@dgsd.org
Date/Time:	2024-01-09 14:25 (Time Zone: -06:00)

Report Last Signed By

User:	reeseberry
Name:	Dorrance Berry
E-Mail:	rberry@dgsd.org
Date/Time:	2024-01-09 14:42 (Time Zone: -06:00)

DMR Copy of Record

Permit

Permit #:	**IL0028380**	**Permittee:**	DOWNERS GROVE SANITARY DISTRICT	**Facility:**	DOWNERS GROVE S.D. - WASTEWATER TREATMENT CENTER
Major:	Yes	**Permittee Address:**	2710 CURTISS STREET PO BOX 1412 DOWNERS GROVE, IL 60515	**Facility Location:**	5003 WALNUT AVENUE DOWNERS GROVE, IL 60515
Permitted Feature:	B01 External Outfall	**Discharge:**	**B01-0** MIXING CHAMBER DISCHARGE TO THE E BRANCH DUPAGE RVR		

Report Dates & Status

Monitoring Period:	**From 12/01/23 to 12/31/23**	**DMR Due Date:**	**01/25/24**	**Status:**	**NetDMR Validated**

Considerations for Form Completion

W0430300002 ; DMF LOAD LIMITS DISPLAYED.

Principal Executive Officer

First Name:	Amy	**Title:**	General Manager	**Telephone:**	630-969-0664
Last Name:	Underwood				

No Data Indicator (NODI)

Form NODI: --

Parameter		Monitoring Location	Season #	Param. NODI		Quantity or Loading					Quality or Concentration							# of Ex.	Frequency of Analysis	Sample Type
Code	Name					Qualifier 1	Value 1	Qualifier 2	Value 2	Units	Qualifier 1	Value 1	Qualifier 2	Value 2	Qualifier 3	Value 3	Units			
00011	**Temperature, water deg. fahrenheit**	1 - Effluent Gross	0	--	Sample										=	57.2	15 - deg F		01/30 - Monthly	GR - GRAB
					Permit Req.											Req Mon MO MAX	15 - deg F	0	01/30 - Monthly	GR - GRAB
					Value NODI															
00300	**Oxygen, dissolved [DO]**	1 - Effluent Gross	1	--	Sample						=	8.6	=	8.2	=	7.5	19 - mg/L		03/DW - 3 Days Every Week	GR - GRAB
					Permit Req.						>=	5.5 MO AV MN	>=	4.0 MN WK AV	>=	3.5 DAILY MN	19 - mg/L	0	02/DA - 2 Days Every Week	GR - GRAB
					Value NODI															
00400	**pH**	1 - Effluent Gross	0	--	Sample						=	7.0			=	7.8	12 - SU		05/DW - 5 Days Every Week	GR - GRAB
					Permit Req.						>=	6.0 MINIMUM			<=	9.0 MAXIMUM	12 - SU	0	02/DA - 2 Days Every Week	GR - GRAB
					Value NODI															
00410	**Alkalinity, total [as CaCO3]**	1 - Effluent Gross	0	--	Sample										=	176.0	19 - mg/L		01/30 - Monthly	CP - COMPOS
					Permit Req.											Req Mon DAILY MX	19 - mg/L	0	01/30 - Monthly	CP - COMPOS
					Value NODI															
00530	**Solids, total suspended**	1 - Effluent Gross	0	--	Sample	=	56.61	=	167.4	26 - lb/d			=	0.5	=	1.4	19 - mg/L		05/DW - 5 Days Every Week	CP - COMPOS
					Permit Req.	<=	2202.0 MO AVG	<=	4404.0 DAILY MX	26 - lb/d			<=	12.0 MO AVG	<=	24.0 DAILY MX	19 - mg/L	0	02/DA - 2 Days Every Week	CP - COMPOS
					Value NODI															
00600	**Nitrogen, total [as N]**	1 - Effluent Gross	0	--	Sample										=	16.4	19 - mg/L		01/30 - Monthly	CP - COMPOS
					Permit Req.											Req Mon DAILY MX	19 - mg/L	0	01/30 - Monthly	CP - COMPOS
					Value NODI															
00610	**Nitrogen, ammonia total [as N]**	1 - Effluent Gross	11	--	Sample	=	13.84	=	64.16	26 - lb/d			=	0.14	=	0.39	19 - mg/L		05/DW - 5 Days Every Week	CP - COMPOS
					Permit Req.	<=	734.0 MO AVG	<=	1376.0 DAILY MX	26 - lb/d			<=	4.0 MO AVG	<=	7.5 DAILY MX	19 - mg/L	0	02/DA - 2 Days Every Week	CP - COMPOS
					Value NODI															
00625	**Nitrogen, Kjeldahl, total [as N]**	1 - Effluent Gross	0	--	Sample										<	1.0	19 - mg/L		01/30 - Monthly	CP - COMPOS
					Permit Req.											Req Mon DAILY MX	19 - mg/L	0	01/30 - Monthly	CP - COMPOS
					Value NODI															
00630	**Nitrite + Nitrate total [as N]**	1 - Effluent Gross	0	--	Sample										=	16.4	19 - mg/L		01/30 - Monthly	CA - CALCTD
					Permit Req.											Req Mon DAILY MX	19 - mg/L	0	01/30 - Monthly	CA - CALCTD
					Value NODI															
																				CP -

					Sample								=	1.93	=	2.35	19 - mg/L		04/30 - Four Per Month	COMPOS
00665	**Phosphorus, total [as P]**	1 - Effluent Gross	0	--	Permit Req.									Req Mon MO AVG		Req Mon DAILY MX	19 - mg/L	0	01/30 - Monthly	CP - COMPOS
					Value NODI															
					Sample								=	2.0	=	2.0	19 - mg/L		01/30 - Monthly	CP - COMPOS
00666	**Phosphorus, dissolved**	1 - Effluent Gross	0	--	Permit Req.									Req Mon MO AVG		Req Mon DAILY MX	19 - mg/L	0	01/30 - Monthly	CP - COMPOS
					Value NODI															
					Sample										=	149.0	19 - mg/L		01/30 - Monthly	GR - GRAB
00940	**Chloride [as Cl]**	1 - Effluent Gross	0	--	Permit Req.											Req Mon DAILY MX	19 - mg/L	0	01/30 - Monthly	GR - GRAB
					Value NODI															
					Sample															
30500	**Coliform, fecal - % samples exceeding limit**	1 - Effluent Gross	0	--	Permit Req.										<=	10.0 MAXIMUM	23 - %			
					Value NODI											9 - Conditional Monitoring - Not Required This Period				
					Sample	=	11.45	=	19.73	03 - MGD									99/99 - Continuous	
50050	**Flow, in conduit or thru treatment plant**	1 - Effluent Gross	0	--	Permit Req.		Req Mon MO AVG		Req Mon DAILY MX	03 - MGD								0	99/99 - Continuous	
					Value NODI															
					Sample										=	0.015	19 - mg/L		CL/OC - Chlorination/Occurances	GR - GRAB
50060	**Chlorine, total residual**	1 - Effluent Gross	1	--	Permit Req.										<=	0.05 DAILY MX	19 - mg/L	0	CL/OC - Chlorination/Occurances	GR - GRAB
					Value NODI															
					Sample	=	84.14	=	164.51	26 - lb/d			=	0.9	=	1.2	19 - mg/L		04/07 - Four Per Week	CP - COMPOS
80082	**BOD, carbonaceous [5 day, 20 C]**	1 - Effluent Gross	0	--	Permit Req.	<=	1835.0 MO AVG	<=	3670.0 DAILY MX	26 - lb/d			<=	10.0 MO AVG	<=	20.0 DAILY MX	19 - mg/L	0	02/DA - 2 Days Every Week	CP - COMPOS
					Value NODI															

Submission Note

If a parameter row does not contain any values for the Sample nor Effluent Trading, then none of the following fields will be submitted for that row: Units, Number of Excursions, Frequency of Analysis, and Sample Type.

Edit Check Errors

No errors.

Comments

Attachments

No attachments.

Report Last Saved By

DOWNERS GROVE SANITARY DISTRICT

User:	reeseberry
Name:	Dorrance Berry
E-Mail:	rberry@dgsd.org
Date/Time:	2024-01-09 14:30 (Time Zone: -06:00)

Report Last Signed By

User:	reeseberry
Name:	Dorrance Berry
E-Mail:	rberry@dgsd.org
Date/Time:	2024-01-09 14:42 (Time Zone: -06:00)

DMR Copy of Record

Permit					
Permit #:	**IL0028380**	**Permittee:**	DOWNERS GROVE SANITARY DISTRICT	**Facility:**	DOWNERS GROVE S.D. - WASTEWATER TREATMENT CENTER
Major:	Yes	**Permittee Address:**	2710 CURTISS STREET PO BOX 1412 DOWNERS GROVE, IL 60515	**Facility Location:**	5003 WALNUT AVENUE DOWNERS GROVE, IL 60515
Permitted Feature:	C01 External Outfall	**Discharge:**	**C01-0** EXCESS FLOW FROM INTERMEDIATE CLARIFIER #1		
Report Dates & Status					
Monitoring Period:	**From 12/01/23 to 12/31/23**	**DMR Due Date:**	**01/25/24**	**Status:**	**NetDMR Validated**
Considerations for Form Completion					
W0430300002 ; NUMBER OF DAYS OF DISCHARGE:CS					
Principal Executive Officer					
First Name:	Amy	**Title:**	General Manager	**Telephone:**	630-969-0664
Last Name:	Underwood				
No Data Indicator (NODI)					
Form NODI:	--				

Parameter		Monitoring Location	Season #	Param. NODI		Quantity or Loading					Quality or Concentration							# of Ex.	Frequency of Analysis	Sample Type
Code	Name					Qualifier 1	Value 1	Qualifier 2	Value 2	Units	Qualifier 1	Value 1	Qualifier 2	Value 2	Qualifier 3	Value 3	Units			
00310	**BOD, 5-day, 20 deg. C**	1 - Effluent Gross	0	--	Sample															
					Permit Req.											Req Mon DAILY MX	19 - mg/L		DL/DS - Daily When Discharging	GR - GRAB
					Value NODI											C - No Discharge				
00530	**Solids, total suspended**	1 - Effluent Gross	0	--	Sample															
					Permit Req.											Req Mon DAILY MX	19 - mg/L		DL/DS - Daily When Discharging	GR - GRAB
					Value NODI											C - No Discharge				
00610	**Nitrogen, ammonia total [as N]**	1 - Effluent Gross	0	--	Sample															
					Permit Req.											Req Mon DAILY MX	19 - mg/L		DL/DS - Daily When Discharging	GR - GRAB
					Value NODI											C - No Discharge				
00665	**Phosphorus, total [as P]**	1 - Effluent Gross	0	--	Sample															
					Permit Req.									Req Mon MO AVG		Req Mon DAILY MX	19 - mg/L		DL/DS - Daily When Discharging	GR - GRAB
					Value NODI									C - No Discharge		C - No Discharge				
82220	**Flow, total**	1 - Effluent Gross	0	--	Sample															
					Permit Req.				Req Mon MO TOTAL	80 - Mgal/mo									DL/DS - Daily When Discharging	CN - CONTIN
					Value NODI				C - No Discharge											

Submission Note

If a parameter row does not contain any values for the Sample nor Effluent Trading, then none of the following fields will be submitted for that row: Units, Number of Excursions, Frequency of Analysis, and Sample Type.

Edit Check Errors

No errors.

Comments

Attachments

No attachments.

Report Last Saved By

DOWNERS GROVE SANITARY DISTRICT

User:	reeseberry
Name:	Dorrance Berry
E-Mail:	rberry@dgsd.org
Date/Time:	2024-01-09 14:30 (Time Zone: -06:00)

Report Last Signed By

User:	reeseberry
Name:	Dorrance Berry
E-Mail:	rberry@dgsd.org
Date/Time:	2024-01-09 14:42 (Time Zone: -06:00)

DMR Copy of Record

Permit

Permit #:	**IL0028380**	**Permittee:**	DOWNERS GROVE SANITARY DISTRICT	**Facility:**	DOWNERS GROVE S.D. - WASTEWATER TREATMENT CENTER
Major:	Yes	**Permittee Address:**	2710 CURTISS STREET PO BOX 1412 DOWNERS GROVE, IL 60515	**Facility Location:**	5003 WALNUT AVENUE DOWNERS GROVE, IL 60515
Permitted Feature:	INF Influent Structure	**Discharge:**	**INF-L** INFLUENT MONITORING		

Report Dates & Status

Monitoring Period:	**From 12/01/23 to 12/31/23**	**DMR Due Date:**	**01/25/24**	**Status:**	**NetDMR Validated**

Considerations for Form Completion

W0430300002

Principal Executive Officer

First Name:	Amy	**Title:**	General Manager	**Telephone:**	630-969-0664
Last Name:	Underwood				

No Data Indicator (NODI)

Form NODI: --

Parameter		Monitoring Location	Season #	Param. NODI		Quantity or Loading					Quality or Concentration							# of Ex.	Frequency of Analysis	Sample Type
Code	Name					Qualifier 1	Value 1	Qualifier 2	Value 2	Units	Qualifier 1	Value 1	Qualifier 2	Value 2	Qualifier 3	Value 3	Units			
00310	**BOD, 5-day, 20 deg. C**	G - Raw Sewage Influent	0	--	Sample								=	271.0			19 - mg/L	0	09/99 - See Permit	CP - COMPOS
					Permit Req.									Req Mon MO AVG			19 - mg/L		09/99 - See Permit	CP - COMPOS
					Value NODI															
00530	**Solids, total suspended**	G - Raw Sewage Influent	0	--	Sample								=	229.0			19 - mg/L	0	09/99 - See Permit	CP - COMPOS
					Permit Req.									Req Mon MO AVG			19 - mg/L		09/99 - See Permit	CP - COMPOS
					Value NODI															
00600	**Nitrogen, total [as N]**	G - Raw Sewage Influent	0	--	Sample										=	55.0	19 - mg/L	0	01/30 - Monthly	CP - COMPOS
					Permit Req.											Req Mon DAILY MX	19 - mg/L		01/30 - Monthly	CP - COMPOS
					Value NODI															
00665	**Phosphorus, total [as P]**	G - Raw Sewage Influent	0	--	Sample										=	5.56	19 - mg/L	0	04/30 - Four Per Month	CP - COMPOS
					Permit Req.											Req Mon DAILY MX	19 - mg/L		01/30 - Monthly	CP - COMPOS
					Value NODI															
50050	**Flow, in conduit or thru treatment plant**	G - Raw Sewage Influent	0	--	Sample	=	11.35	=	19.91	03 - MGD								0	99/99 - Continuous	
					Permit Req.		Req Mon MO AVG		Req Mon DAILY MX	03 - MGD									99/99 - Continuous	
					Value NODI															

Submission Note

If a parameter row does not contain any values for the Sample nor Effluent Trading, then none of the following fields will be submitted for that row: Units, Number of Excursions, Frequency of Analysis, and Sample Type.

Edit Check Errors

No errors.

Comments

Attachments

No attachments.

Report Last Saved By

DOWNERS GROVE SANITARY DISTRICT

User:	reeseberry
Name:	Dorrance Berry
E-Mail:	rberry@dgsd.org
Date/Time:	2024-01-09 14:31 (Time Zone: -06:00)

Report Last Signed By

User:	reeseberry
Name:	Dorrance Berry
E-Mail:	rberry@dgsd.org
Date/Time:	2024-01-09 14:42 (Time Zone: -06:00)

DMR Copy of Record

Permit

Permit #: **IL0028380** | **Permittee:** DOWNERS GROVE SANITARY DISTRICT | **Facility:** DOWNERS GROVE S.D. - WASTEWATER TREATMENT CENTER

Major: Yes | **Permittee Address:** 2710 CURTISS STREET PO BOX 1412, DOWNERS GROVE, IL 60515 | **Facility Location:** 5003 WALNUT AVENUE, DOWNERS GROVE, IL 60515

Permitted Feature: B01 External Outfall | **Discharge:** **B01-S** SEMI ANNUAL SAMPLING AT B01

Report Dates & Status

Monitoring Period: **From 07/01/23 to 12/31/23** | **DMR Due Date:** **01/25/24** | **Status:** **NetDMR Validated**

Considerations for Form Completion

W0430300002

Principal Executive Officer

First Name: Amy | **Title:** General Manager | **Telephone:** 630-969-0664

Last Name: Underwood

No Data Indicator (NODI)

Form NODI: --

Parameter		Monitoring Location	Season #	Param. NODI		Quantity or Loading					Quality or Concentration							# of Ex.	Frequency of Analysis	Sample Type
Code	Name					Qualifier 1	Value 1	Qualifier 2	Value 2	Units	Qualifier 1	Value 1	Qualifier 2	Value 2	Qualifier 3	Value 3	Units			
00556	**Oil & Grease**	1 - Effluent Gross	0	--	Sample										<	5.0	19 - mg/L		09/99 - See Permit	GR - GRAB
					Permit Req.											Req Mon DAILY MX	19 - mg/L	0	09/99 - See Permit	GR - GRAB
					Value NODI															
00720	**Cyanide, total [as CN]**	1 - Effluent Gross	0	--	Sample										<	5.0	28 - ug/L		09/99 - See Permit	GR - GRAB
					Permit Req.											Req Mon DAILY MX	28 - ug/L	0	09/99 - See Permit	GR - GRAB
					Value NODI															
00722	**Cyanide, free [amenable to chlorination]**	1 - Effluent Gross	0	--	Sample										<	5.0	28 - ug/L		09/99 - See Permit	GR - GRAB
					Permit Req.											Req Mon DAILY MX	28 - ug/L	0	09/99 - See Permit	GR - GRAB
					Value NODI															
00951	**Fluoride, total [as F]**	1 - Effluent Gross	0	--	Sample										=	0.56	19 - mg/L		09/99 - See Permit	24 - COMP24
					Permit Req.											Req Mon DAILY MX	19 - mg/L	0	09/99 - See Permit	24 - COMP24
					Value NODI															
01002	**Arsenic, total [as As]**	1 - Effluent Gross	0	--	Sample										<	0.01	19 - mg/L		09/99 - See Permit	24 - COMP24
					Permit Req.											Req Mon DAILY MX	19 - mg/L	0	09/99 - See Permit	24 - COMP24
					Value NODI															
01007	**Barium, total [as Ba]**	1 - Effluent Gross	0	--	Sample										=	0.018	19 - mg/L		09/99 - See Permit	24 - COMP24
					Permit Req.											Req Mon DAILY MX	19 - mg/L	0	09/99 - See Permit	24 - COMP24
					Value NODI															
01012	**Beryllium, total [as Be]**	1 - Effluent Gross	0	--	Sample										<	0.004	19 - mg/L		09/99 - See Permit	24 - COMP24
					Permit Req.											Req Mon DAILY MX	19 - mg/L	0	09/99 - See Permit	24 - COMP24
					Value NODI															
01027	**Cadmium, total [as Cd]**	1 - Effluent Gross	0	--	Sample										<	0.001	19 - mg/L		09/99 - See Permit	24 - COMP24
					Permit Req.											Req Mon DAILY MX	19 - mg/L	0	09/99 - See Permit	24 - COMP24
					Value NODI															
01032	**Chromium, hexavalent [as Cr]**	1 - Effluent Gross	0	--	Sample										<	0.005	19 - mg/L		09/99 - See Permit	GR - GRAB
					Permit Req.											Req Mon DAILY MX	19 - mg/L	0	09/99 - See Permit	GR - GRAB
					Value NODI															
01034	**Chromium, total [as Cr]**	1 - Effluent Gross	0	--	Sample										<	0.005	19 - mg/L		09/99 - See Permit	24 - COMP24
					Permit Req.											Req Mon DAILY MX	19 - mg/L	0	09/99 - See Permit	24 - COMP24
					Value NODI															
01042	**Copper, total [as Cu]**	1 - Effluent Gross	0	--	Sample										<	0.005	19 - mg/L		09/99 - See Permit	24 - COMP24
					Permit Req.											Req Mon DAILY MX	19 - mg/L	0	09/99 - See Permit	24 - COMP24
					Value NODI															
01045	**Iron, total [as Fe]**	1 - Effluent Gross	0	--	Sample										=	0.06	19 - mg/L		09/99 - See Permit	24 - COMP24
					Permit Req.											Req Mon DAILY MX	19 - mg/L	0	09/99 - See Permit	24 - COMP24
					Value NODI															
01046	**Iron, dissolved [as Fe]**	1 - Effluent Gross	0	--	Sample										=	0.05	19 - mg/L		09/99 - See Permit	24 - COMP24
					Permit Req.											Req Mon DAILY MX	19 - mg/L	0	09/99 - See Permit	24 - COMP24
					Value NODI															

01051	**Lead, total [as Pb]**	1 - Effluent Gross	0	--	Sample										<	0.005	19 - mg/L		09/99 - See Permit	24 - COMP24
					Permit Req.											Req Mon DAILY MX	19 - mg/L	0	09/99 - See Permit	24 - COMP24
					Value NODI															
01055	**Manganese, total [as Mn]**	1 - Effluent Gross	0	--	Sample										=	0.034	19 - mg/L		09/99 - See Permit	24 - COMP24
					Permit Req.											Req Mon DAILY MX	19 - mg/L	0	09/99 - See Permit	24 - COMP24
					Value NODI															
01059	**Thallium, total [as Tl]**	1 - Effluent Gross	0	--	Sample										<	0.01	19 - mg/L		09/99 - See Permit	24 - COMP24
					Permit Req.											Req Mon DAILY MX	19 - mg/L	0	09/99 - See Permit	24 - COMP24
					Value NODI															
01067	**Nickel, total [as Ni]**	1 - Effluent Gross	0	--	Sample										<	0.005	19 - mg/L		09/99 - See Permit	24 - COMP24
					Permit Req.											Req Mon DAILY MX	19 - mg/L	0	09/99 - See Permit	24 - COMP24
					Value NODI															
01077	**Silver, total [as Ag]**	1 - Effluent Gross	0	--	Sample										<	0.003	19 - mg/L		09/99 - See Permit	24 - COMP24
					Permit Req.											Req Mon DAILY MX	19 - mg/L	0	09/99 - See Permit	24 - COMP24
					Value NODI															
01092	**Zinc, total [as Zn]**	1 - Effluent Gross	0	--	Sample										=	0.036	19 - mg/L		09/99 - See Permit	24 - COMP24
					Permit Req.											Req Mon DAILY MX	19 - mg/L	0	09/99 - See Permit	24 - COMP24
					Value NODI															
01097	**Antimony, total [as Sb]**	1 - Effluent Gross	0	--	Sample										<	0.006	19 - mg/L		09/99 - See Permit	24 - COMP24
					Permit Req.											Req Mon DAILY MX	19 - mg/L	0	09/99 - See Permit	24 - COMP24
					Value NODI															
01147	**Selenium, total [as Se]**	1 - Effluent Gross	0	--	Sample										<	0.005	19 - mg/L		09/99 - See Permit	24 - COMP24
					Permit Req.											Req Mon DAILY MX	19 - mg/L	0	09/99 - See Permit	24 - COMP24
					Value NODI															
32730	**Phenolics, total recoverable**	1 - Effluent Gross	0	--	Sample										<	0.005	19 - mg/L		09/99 - See Permit	GR - GRAB
					Permit Req.											Req Mon DAILY MX	19 - mg/L	0	09/99 - See Permit	GR - GRAB
					Value NODI															
71900	**Mercury, total [as Hg]**	1 - Effluent Gross	0	--	Sample										<	0.8	3M - ng/L		09/99 - See Permit	GR - GRAB
					Permit Req.											Req Mon DAILY MX	3M - ng/L	0	09/99 - See Permit	GR - GRAB
					Value NODI															

Submission Note

If a parameter row does not contain any values for the Sample nor Effluent Trading, then none of the following fields will be submitted for that row: Units, Number of Excursions, Frequency of Analysis, and Sample Type.

Edit Check Errors

No errors.

Comments

Attachments

No attachments.

Report Last Saved By

DOWNERS GROVE SANITARY DISTRICT

User:	reeseberry
Name:	Dorrance Berry
E-Mail:	rberry@dgsd.org
Date/Time:	2024-01-09 14:37 (Time Zone: -06:00)

Report Last Signed By

User:	reeseberry
Name:	Dorrance Berry
E-Mail:	rberry@dgsd.org
Date/Time:	2024-01-09 14:42 (Time Zone: -06:00)

DMR Copy of Record

Permit					
Permit #:	**IL0028380**	**Permittee:**	DOWNERS GROVE SANITARY DISTRICT	**Facility:**	DOWNERS GROVE S.D. - WASTEWATER TREATMENT CENTER
Major:	Yes	**Permittee Address:**	2710 CURTISS STREET PO BOX 1412 DOWNERS GROVE, IL 60515	**Facility Location:**	5003 WALNUT AVENUE DOWNERS GROVE, IL 60515
Permitted Feature:	INFL Influent Structure	**Discharge:**	**INFL-S** SEMI ANNUAL SAMPLING AT INFL		
Report Dates & Status					
Monitoring Period:	**From 07/01/23 to 12/31/23**	**DMR Due Date:**	**01/25/24**	**Status:**	**NetDMR Validated**
Considerations for Form Completion					
W0430300002					
Principal Executive Officer					
First Name:	Amy	**Title:**	General Manager	**Telephone:**	630-969-0664
Last Name:	Underwood				
No Data Indicator (NODI)					
Form NODI:	--				

Parameter		Monitoring Location	Season #	Param. NODI		Quantity or Loading					Quality or Concentration							# of Ex.	Frequency of Analysis	Sample Type
Code	Name					Qualifier 1	Value 1	Qualifier 2	Value 2	Units	Qualifier 1	Value 1	Qualifier 2	Value 2	Qualifier 3	Value 3	Units			
00556	**Oil & Grease**	1 - Effluent Gross	0	--	Sample										<	5.0	19 - mg/L	0	09/99 - See Permit	GR - GRAB
					Permit Req.											Req Mon DAILY MX	19 - mg/L		09/99 - See Permit	GR - GRAB
					Value NODI															
00718	**Cyanide, weak acid, dissociable**	1 - Effluent Gross	0	--	Sample										<	5.0	28 - ug/L	0	09/99 - See Permit	GR - GRAB
					Permit Req.											Req Mon DAILY MX	28 - ug/L		09/99 - See Permit	GR - GRAB
					Value NODI															
00720	**Cyanide, total [as CN]**	1 - Effluent Gross	0	--	Sample										<	5.0	28 - ug/L	0	09/99 - See Permit	GR - GRAB
					Permit Req.											Req Mon DAILY MX	28 - ug/L		09/99 - See Permit	GR - GRAB
					Value NODI															
00951	**Fluoride, total [as F]**	1 - Effluent Gross	0	--	Sample										=	0.59	19 - mg/L	0	09/99 - See Permit	24 - COMP24
					Permit Req.											Req Mon DAILY MX	19 - mg/L		09/99 - See Permit	24 - COMP24
					Value NODI															
01002	**Arsenic, total [as As]**	1 - Effluent Gross	0	--	Sample										<	0.01	19 - mg/L	0	09/99 - See Permit	24 - COMP24
					Permit Req.											Req Mon DAILY MX	19 - mg/L		09/99 - See Permit	24 - COMP24
					Value NODI															
01007	**Barium, total [as Ba]**	1 - Effluent Gross	0	--	Sample										=	0.107	19 - mg/L	0	09/99 - See Permit	24 - COMP24
					Permit Req.											Req Mon DAILY MX	19 - mg/L		09/99 - See Permit	24 - COMP24
					Value NODI															
01012	**Beryllium, total [as Be]**	1 - Effluent Gross	0	--	Sample										<	0.004	19 - mg/L	0	09/99 - See Permit	24 - COMP24
					Permit Req.											Req Mon DAILY MX	19 - mg/L		09/99 - See Permit	24 - COMP24
					Value NODI															
01027	**Cadmium, total [as Cd]**	1 - Effluent Gross	0	--	Sample										<	0.001	19 - mg/L	0	09/99 - See Permit	24 - COMP24
					Permit Req.											Req Mon DAILY MX	19 - mg/L		09/99 - See Permit	24 - COMP24
					Value NODI															
01032	**Chromium, hexavalent [as Cr]**	1 - Effluent Gross	0	--	Sample										<	0.005	19 - mg/L	0	09/99 - See Permit	GR - GRAB
					Permit Req.											Req Mon DAILY MX	19 - mg/L		09/99 - See Permit	GR - GRAB
					Value NODI															
01034	**Chromium, total [as Cr]**	1 - Effluent Gross	0	--	Sample										=	0.005	19 - mg/L	0	09/99 - See Permit	24 - COMP24
					Permit Req.											Req Mon DAILY MX	19 - mg/L		09/99 - See Permit	24 - COMP24
					Value NODI															
01042	**Copper, total [as Cu]**	1 - Effluent Gross	0	--	Sample										=	0.179	19 - mg/L	0	09/99 - See Permit	24 - COMP24
					Permit Req.											Req Mon DAILY MX	19 - mg/L		09/99 - See Permit	24 - COMP24
					Value NODI															
01045	**Iron, total [as Fe]**	1 - Effluent Gross	0	--	Sample										=	3.38	19 - mg/L	0	09/99 - See Permit	24 - COMP24
					Permit Req.											Req Mon DAILY MX	19 - mg/L		09/99 - See Permit	24 - COMP24
					Value NODI															
01046	**Iron, dissolved [as Fe]**	1 - Effluent Gross	0	--	Sample										=	0.34	19 - mg/L	0	09/99 - See Permit	24 - COMP24
					Permit Req.											Req Mon DAILY MX	19 - mg/L		09/99 - See Permit	24 - COMP24
					Value NODI															

01051	**Lead, total [as Pb]**	1 - Effluent Gross	0	--	Sample										<	0.005	19 - mg/L		09/99 - See Permit	24 - COMP24
					Permit Req.											Req Mon DAILY MX	19 - mg/L	0	09/99 - See Permit	24 - COMP24
					Value NODI															
01055	**Manganese, total [as Mn]**	1 - Effluent Gross	0	--	Sample										=	0.156	19 - mg/L		09/99 - See Permit	24 - COMP24
					Permit Req.											Req Mon DAILY MX	19 - mg/L	0	09/99 - See Permit	24 - COMP24
					Value NODI															
01059	**Thallium, total [as Tl]**	1 - Effluent Gross	0	--	Sample										<	0.01	19 - mg/L		09/99 - See Permit	24 - COMP24
					Permit Req.											Req Mon DAILY MX	19 - mg/L	0	09/99 - See Permit	24 - COMP24
					Value NODI															
01067	**Nickel, total [as Ni]**	1 - Effluent Gross	0	--	Sample										=	0.006	19 - mg/L		09/99 - See Permit	24 - COMP24
					Permit Req.											Req Mon DAILY MX	19 - mg/L	0	09/99 - See Permit	24 - COMP24
					Value NODI															
01077	**Silver, total [as Ag]**	1 - Effluent Gross	0	--	Sample										<	0.003	19 - mg/L		09/99 - See Permit	24 - COMP24
					Permit Req.											Req Mon DAILY MX	19 - mg/L	0	09/99 - See Permit	24 - COMP24
					Value NODI															
01092	**Zinc, total [as Zn]**	1 - Effluent Gross	0	--	Sample										=	0.237	19 - mg/L		09/99 - See Permit	24 - COMP24
					Permit Req.											Req Mon DAILY MX	19 - mg/L	0	09/99 - See Permit	24 - COMP24
					Value NODI															
01097	**Antimony, total [as Sb]**	1 - Effluent Gross	0	--	Sample										<	0.006	19 - mg/L		09/99 - See Permit	24 - COMP24
					Permit Req.											Req Mon DAILY MX	19 - mg/L	0	09/99 - See Permit	24 - COMP24
					Value NODI															
01147	**Selenium, total [as Se]**	1 - Effluent Gross	0	--	Sample										<	0.005	19 - mg/L		09/99 - See Permit	24 - COMP24
					Permit Req.											Req Mon DAILY MX	19 - mg/L	0	09/99 - See Permit	24 - COMP24
					Value NODI															
32730	**Phenolics, total recoverable**	1 - Effluent Gross	0	--	Sample										=	0.034	19 - mg/L		09/99 - See Permit	GR - GRAB
					Permit Req.											Req Mon DAILY MX	19 - mg/L	0	09/99 - See Permit	GR - GRAB
					Value NODI															
71900	**Mercury, total [as Hg]**	1 - Effluent Gross	0	--	Sample										<	500.0	3M - ng/L		09/99 - See Permit	GR - GRAB
					Permit Req.											Req Mon DAILY MX	3M - ng/L	0	09/99 - See Permit	GR - GRAB
					Value NODI															

Submission Note

If a parameter row does not contain any values for the Sample nor Effluent Trading, then none of the following fields will be submitted for that row: Units, Number of Excursions, Frequency of Analysis, and Sample Type.

Edit Check Errors

No errors.

Comments

Attachments

No attachments.

Report Last Saved By

DOWNERS GROVE SANITARY DISTRICT

User:	reeseberry
Name:	Dorrance Berry
E-Mail:	rberry@dgsd.org
Date/Time:	2024-01-09 14:42 (Time Zone: -06:00)

Report Last Signed By

User:	reeseberry
Name:	Dorrance Berry
E-Mail:	rberry@dgsd.org
Date/Time:	2024-01-09 14:42 (Time Zone: -06:00)

DOWNERS GROVE SANITARY DISTRICT

M E M O

TO: Amy Underwood, General Manager

FROM: Nick Whitefleet, Maintenance Supervisor

DATE: January 12, 2023

SUBJECT: December 2023 Maintenance Report

Attached is a work order summary detailing equipment repair and preventive maintenance activities conducted by the maintenance/electrical department during December 2023.

Special projects in December included:

Bar Screen Compactor System (Unit 1 – North) Overhaul

The compactor / conveyor system for bar screen 1 failed unexpectedly in December and required repair. Fortunately, the District had planned on and budgeted for performing a conveyor overhaul during FY23-24 so the materials for the overhaul were on hand. Bar screen 1 compactor was overhauled by District mechanics and put back into service after only three (3) days of downtime. The District is still awaiting a proposal for the replacement parts to replenish our stock, but it is anticipated to cost close to the budgeted amount of $8,850. An update regarding this purchase will be included in a future report.

Grease Receiving Tank & Grease Receiving Tank West Mixer PM

Both the East and West grease receiving tank mixers had planned preventive maintenance performed on them. The work was performed by Xylem with assistance from District staff as we typically have done in the past. The mixers were removed from the tank and received oil changes and thorough inspections from their control panels down to their mixing impellers. No issues were reported on either mixer. I'm happy to report the power cable insulation continues to perform well after the material was changed out several years ago. The total cost charged by Xylem for both mixers was $675.

CHP System – Units 1&2 Operation Update

CHP 1: CHP 1 has been operating as expected through the month of December. CHP 1 will be due for a planned R2 maintenance.

CHP 2: CHP 2 has been operating as expected throughout the month of December.

Lift Station Submersible Pump maintenance, Venard & Libert Park

Planned preventative maintenance was performed by Xylem at Venard and Liberty Park lift stations on the six (6) total submersible Flygt pumps with the assistance from District staff. As with the grease mixers the pumps were pulled, the oil was changed, and a thorough inspection was performed. No issues were found at either station during this preventative maintenance cycle. The total cost charged by Xylem for maintenance performed on all six (6) pumps was $2800.

Primary Clarifier 6 & 9 Cross Collector Motor Replacement

Coincidentally both primary clarifier cross collector gear motors failed and required replacement this month. Primary 9 cross collector motor failed early in the month and was replaced with a spare motor we had on hand. A new motor has been ordered from Motion Industries, but we are awaiting its arrival (estimated cost $460). The Primary 6 cross collector motor failed later in the month and due to its more unique design required a replacement motor to be ordered. The motor was purchased through Northwest Electric Motor at the cost of $476.63. Both cross collectors are operating as expected.

Procurements:

CHP Engine Gensets 1 & 2, filters, spark plugs, gaskets, and 4 – 55gallon drums of motor oil, $6,647 Purchased from Nissen.

cc: WDVB, AES, JMW, KJR, RTJ, MJS, CS, DM

Work Order Summary

Work Order Completion Dates from 12/1/2023 to 12/29/2023

Work Assignment	Completion Date	Equipment	NOTATIONS
Auger #1 Annual PM service work	01-Dec-23	2014 AUGER-DAWG G-30 4D091	Found hydraulic motor vibrates under load, rebuilt support hub with fresh grease, new hydraulic motor.
Grease fittings on each moyno 1 and 2		Belt Press Sludge Feed Pump 1	
		Belt Press Sludge Feed Pump 2	
6 Month Elevator Inspection Service		Excess Flow Pump Station	6 Month elevator inspection service performed by Colley Elevator.
Replace leaking Seal on ACC		Grease Grinder - West	Replaced mechanical seal for ACC at drive end. Replaced seals in ACC assy. bottom end.
6 Month Elevator Inspection Service		Raw Sewage Pump Station	6 Month elevator inspection service performed by Colley Elevator.
Bumper Crane inoperable	04-Dec-23	2013 FORD F-150 Reg Cab	Replaced bumper crane winch motor with new.
Annual Oil Change Gear Reducer, North Bridge		Excess Flow Clarifier 3	
		Excess Flow Clarifier 4	
Repair Northeast bollard from damage		WWTC Main Gate	Replaced fixture mounted on bollard that contained reflector for gate sensor.
3 Months Inspection on Electric Carts and Front End Loader	05-Dec-23	2015 Wheel Loader #332	
		2016 Club Car Carryall 300	
		2017 Deere 544K Wheel Loader	
		2019 Yamaha UMAX 2 AC (#3)	
		2022 Club Car Carryall 500	
		2022 Deere 244L Wheel Loader	
Install new Aluminum Railing at South Entrance		Blower Building	Removed existing steel railing and replaced with new aluminum railing.
Purchase and install 2 additional cameras for admin exterior		IT System	Purchased and installed two (2) cameras at administration center. One at building South elevation just east of front entrance and the second on North building elevation on the West end of building.
Block heater not working		Northwest Stationary Generator	Replaced Hotstart thermostat with new. Previously had purchased 2 Hotstart thermostats from Davidson Sales. Used 1, still have 1 in stock.
Annual service on #5 Auger	06-Dec-23	2019 AUGER DAWG G-30 3F052	Auger #5, replaced hydraulic motor with new, support bearings with new.
Traveling bridge out of alignment while in operation		Filter 4	Bridge off rail on North side. Made repairs to rail, corrected bridge alignment and verified operation.
4 MONTH GREASING FITTINGS ON GRIT CONVEYORS		Grit Conveyor System	
West bathroom vanity drain leak		Laboratory	Replaced pop-up drain with new. Verified operation.
Exercising of all valves for secondaries 1 and 2 U-tubes		Secondary Clarifier 1	
		Secondary Clarifier 2	

Work Assignment	Completion Date	Equipment	NOTATIONS
		Secondary Clarifier 3	
		Secondary Clarifier 4	
		Secondary Clarifier 5	
Annual inspection and service Auger #3	07-Dec-23	2004 AUGER-DAWG G-30 4D088	Auger #3, replaced wear plate with new, replaced support hub with new.
Replace Discharge Force Main Air Relief Valve (1)		Centex Discharge Force Main	Replaced air relief valve with overhauled valve. Cleaned and overhauled existing valve.
Replace Discharge Force Main Air Relief Valves (2)		Hobson Discharge Force Main	Replaced air relief valves with overhauled valves. Cleaned and overhauled existing/removed valves.
		Venard Discharge Force Main	Replaced air relief valves with overhauled valves. Cleaned and overhauled exisitng/removed valves.
		Wroble Discharge Force Main	Replaced air relief valves with overhauled valves. Cleaned and overhauled existing/removed valves. Jessie assisted.
Munters Failure, faults on restart	08-Dec-23	Filter Building	Replaced pressure switch(Neuco) and selector switch, contactor, and terminal strip (Grainger). Tested/verified operation.
Annual Grease mixer PM - Xylem		Grease Receiving Tank	Xylem performed the annual grease mixer PMs, no issues were discovered.
		Grease Receiving Tank - West	
Replace Discharge Force Main Air Relief Valves (4)		Liberty Park Dschrg Force Main	Checked all four valves and found all were operational.
Annual Xylem Pump PM		Liberty Park LS Pump 1	Annual pump PMs performed by Xylem. No issues found.
		Liberty Park LS Pump 2	
		Liberty Park LS Pump 3	
Men's locker lighting non functional		Maintenance Services Building	Replaced East motion sensor with new old stock. Replaced power supply with new and reprogrammed motion sensor.
Replace Discharge Force Main Air Relief Valves (3)		Northwest Discharge Force Main	Replaced air relief valves with overhauled valves. Cleaned and overhauled existing/removed valves.
Annual Xylem Pump PM		Venard Pump #1	Annual pump PMs performed by Xylem. No issues found.
		Venard Pump #2	
		Venard Pump #3	
Replace dry rotted tires with new	11-Dec-23	4 inch EBARA Pump (Old Jaeger)	Removed wheel assemblies (2) and brought to Cassidy tire for installation of new tires. Remounted wheels on pump trailer.
3 Month Oil Change Blower #4		Aeration Blower 04	
6 Month Megger Of Submersible Pumps		College Pump 1	All pump readings "Infinity" except College pump 2 (3 million ohms) and College pump 3 (10 million ohms).
		College Pump 2	
		College Pump 3	
		Earlston Pump 3	
EXCESS 003- Exercise 30" and 24" DEZURIK Valves		Excess Flow 003 Valves	
Grease Raw Sewage And Excess Flow Pumps		Excess Flow Pump 06	
		Excess Flow Pump 07	
		Excess Flow Pump 08	
		Excess Flow Pump 09	
Annual Crane inspection		Hobson Lift Station	Performed crane inspections at MSB,Microstrainer,Hobson LS,NorthwestLS,& Wroble LS.
6 Month Megger Of Submersible		Liberty Park LS Pump 1	All pump readings "Infinity" except College pump 2 (3

Work Assignment	Completion Date	Equipment	NOTATIONS
Pumps			million ohms) and College pump 3 (10 million ohms).
		Liberty Park LS Pump 2	
		Liberty Park LS Pump 3	
Annual Crane inspection		Maintenance Services Building	Performed crane inspections at MSB,Microstrainer,Hobson LS,NorthwestLS,& Wroble LS.
		Microstrainer Building	
		Northwest Lift Station	
Grease Raw Sewage And Excess Flow Pumps		Raw Sewage Pump 1	
		Raw Sewage Pump 2	
		Raw Sewage Pump 3	
		Raw Sewage Pump 4	
		Raw Sewage Pump 5	
6 Month Megger Of Submersible Pumps		Venard Pump #1	All pump readings "Infinity" except College pump 2 (3 million ohms) and College pump 3 (10 million ohms).
		Venard Pump #2	
		Venard Pump #3	
Annual Crane inspection		Wroble Lift Station	Performed crane inspections at MSB,Microstrainer,Hobson LS,NorthwestLS,& Wroble LS.
Hard vehicle start, Investigate battery discharge condition	12-Dec-23	2015 Ford Transit Connect XL	Found parasitic draw on battery from vehicle camera system. Relocated wiring in the circuit have a relay isolating the camera supply power.
Replace actuators with new Rotork actuators (2)		Excess Flow 003 Valves	Removed and replaced existing actuators with new Rotork actuators from LAI. Tested and verified operation.
3 MONTH OIL CHANGE-GRIT BLOWER #3- KAESER		Grit Blower 3 Kaeser	
Test for H2S at Unison Gas skid	13-Dec-23	CHP Gas Cleaning System	
Operate Relief Valves On Heat Exchangers And Boilers		Digester 1 Heat Exchanger	
		Digester 2 Heat Exchanger	
		Digester 3 Heat Exchanger	
		Digester 4 Heat Exchanger	
		Digester 5 Heat Exchanger	
Monthly Liquid Status of Under Ground Diesel Tank		Emerg Gen Diesel Storage Tank	
Run And Inspect Generators With The Load Of The Plant		Emergency Generator 1	
		Emergency Generator 2	
		Emergency Generator 3	
Operate Relief Valves On Heat Exchangers And Boilers		Excess Flow Pump Station	
Grease fittings on munters unit		Filter Building	
3 Month Oil Change On Int. Draw-off Valves compressor		Interm Clarifier Sludge Bldg	
2000 Hour Grease of Plant Effluent Pumps		Plant Effluent Water Pump #2	
Exercise both 24" primary influent		Tunnel From PS to Grit	

Work Assignment	Completion Date	Equipment	NOTATIONS
ratio valves			
		Tunnel/Chan Primary Clarifiers	
Install additional lockers in men's locker room	14-Dec-23	Maintenance Services Building	Removed mirror from installation location and relocated. Installed new lockers on wooden base. Painted base and installed covebase where applicable.
Ground fault at cross collector motor		Primary Clarifier 9	Removed and replaced gear motor with new from stock. Ordered replacement motor for stock from Motion Industries.
EXERCISE RAW SEWAGE PUMP INTAKE AND DISCHARGE		Raw Sewage Pump 1	
		Raw Sewage Pump 2	
		Raw Sewage Pump 3	
		Raw Sewage Pump 4	
		Raw Sewage Pump 5	
CLEAN TWAS POLYMER EFFLUENT STRAINER		WAS Thickener Polymer System	
12 Month/10,000 Mile Synthetic Oil Change (2014 F-250) # 348 MAINTENANCE	15-Dec-23	2014 Ford F-250 Plow Truck	38,374 Miles. Changed oil and oil filter, rotated tires. 6 of 7 quarts of oil used were from stock.
Install new aluminum railing on North tank		Aeration Tank 09n	Removed existing steel railing and replaced with new Aluminum railing around aeration tank 9 North.
Test and replace all burned out indication bulbs on plant equipment		Bar Screen Building	
		Belt Filter Press Building	
		Bisulfite Building	
		Blower Building	
		Digester 1 and 2 Control Bldg	
		Digester 3 Control Building	
		Digester 4 - 5 Control Buildg	
		Emergency Generator Building	
		Excess Flow Pump Station	
		Excess Flow Sludge Pump House	
		Filter Building	
		Grit Building	
		Hypochlorite Feed Blg	
		Interm Clarifier Sludge Bldg	
Install blinds on West facing office windows (Supervisor/Safety)		Laboratory	Caulked gap at window frame and drywall. Installed new blinds on the four West facing windows in Reese & Jessie's offices.
Test and replace all burned out indication bulbs on plant equipment		Microstrainer Building	
Replace Air Filter On Operations Center Furnace		Operations Center	

Work Assignment	Completion Date	Equipment	NOTATIONS
Cross Collector Motor Fail		Primary Clarifier 6	Replaced cross collector motor with new purchased from Northwest Electric Motor. Drip cap installed to increase motor lifespan.
Replace Air Filters In Geothermal unit.		Raw Sewage Pump Station	
Remove rear tail light and replace	18-Dec-23	2009 Sterling LT 7500	Replaced left rear broken tail light with new.
Monthly Fire Extinguishers Inspection		5006 Walnut Eqpmnt Strge Bldg	
		Administration Center	
Replace small cooling filters for ABS #2		Aeration Blower ABS #2	
Monthly Fire Extinguishers Inspection		Bar Screen Building	
		Belt Filter Press Building	
		Bisulfite Building	
		Blower Building	
2 Month grease of new WAS pump #2		Conc. Tank Thickener Pump 2	
Monthly Fire Extinguishers Inspection		Digester 1 and 2 Control Bldg	
		Digester 3 Control Building	
		Digester 4 - 5 Control Buildg	
		Emergency Generator Building	
		Excess Flow Pump Station	
		Excess Flow Sludge Pump House	
		Filter Building	
		Grit Building	
		Hypochlorite Feed Blg	
		Interm Clarifier Sludge Bldg	
		Laboratory	
		Maintenance Services Building	
		Microstrainer Building	
		Operations Center	
Grease Pump Bearings on 1-6 RAS pumps		RAS Pump 1	
		RAS Pump 2	
		RAS Pump 3	
		RAS Pump 4	
		RAS Pump 5	
		RAS Pump 6	
Monthly Fire Extinguishers Inspection		Raw Sewage Pump Station	
		System Garage	
Polymer / water feed solenoid		WAS Thickener Polymer	Removed and replaced solenoid with new purchased from

Work Assignment	Completion Date	Equipment	NOTATIONS
failure.		System	Neuco.
Check All Fluids In The Equipment Listed Below	19-Dec-23	2009 Sterling LT 7500	
		2014 Freightliner M2106 6 yd d	
		2015 Wheel Loader #332	
		2017 Deere 544K Wheel Loader	
		2019 Skid Steer	
		2022 Deere 244L Wheel Loader	
		4 inch EBARA Pump (Old Jaeger)	
		6 in CH&E DSL TRSH PMP PERKIN	
		6 in CHE Diesel Trash Pump C/P	
		6 in JAEGER PUMP (FORD)	
Check STR 700, 721, 741, clean as needed.		CHP Gas Cleaning System	
Oil Bell & Gosset Pumps		Digester 1 Heat Exchanger	
		Digester 2 Heat Exchanger	
		Digester 3 Heat Exchanger	
		Digester 4 Heat Exchanger	
		Digester 5 Heat Exchanger	
		Excess Flow Pump Station	
Check All Fluids In The Equipment Listed Below		Portable Generator 150	
		Portable Generator 200	
		Portable Generator 350	
		WWTC ODS Pump Air Compressor	
Check Sump Pumps at The WWTC and Administration Bldg.	20-Dec-23	Administration Center	
		Blower Building	
		Digester 1 and 2 Control Bldg	
		Digester 3 Control Building	
		Digester 4 - 5 Control Buildg	
500 Hour Oil Change on Pearth 4		Digester 4 Mixing System	
Check Sump Pumps at The WWTC and Administration Bldg.		Excess Flow Pump Station	
		Excess Flow Sludge Pump House	
		Grit Building	

Work Assignment	Completion Date	Equipment	NOTATIONS
		Hypochlorite Feed Blg	
		Interm Clarifier Sludge Bldg	
		Maintenance Services Building	
		Microstrainer Building	
		Operations Center	
		Raw Sewage Pump Station	
		Tunnel/Chan Aeration Tank 1-11	
Lubricate skid steer and attachment mechanisim	21-Dec-23	2019 Skid Steer	
Grease Tracks, Check Lube Sites On Bar Screens #1 & #2		Bar Screen 1 - North	
		Bar Screen 2 -South	
		Bar Screen Rag Compactor	
20,105 hours. Change Oil & Filters		CHP Engine Genset #1	Changed oil and oil filters. Took oil sample and sent for laboratory analysis. Sample ID # IND-72003.
2 MONTH EXERCISE OF W.A.S. MOYNO PUMPS 1 AND 3		Conc Tank Moyno Sludge Pump 1	
		Conc Tank Moyno Sludge Pump 3	
By-Weekly Fluid and Misc. Check of Generators		Emergency Generator 1	
		Emergency Generator 2	
		Emergency Generator 3	
Check, Remove,Clean. Grease-debris from wells		Excess Flow Pump Station	
Six Month Oil Change Primaries 1 & 2 Long Collector		Primary Clarifier 1	
		Primary Clarifier 2	
Pump shaking and noisy in operation.		Primary Sludge Pump 5	Replaced intake and discharge check valve seats with new from stock. Realigned connecting rod on drive shaft. Pump may require replacement in near future as it has become obsolete.
Check, Remove,Clean. Grease-debris from wells		Raw Sewage Pump Station	
Six Month Oil Change Sand Filter's #1 & #2	22-Dec-23	Filter 1	
		Filter 2	
6 Month Oil Change On Bearings on Grit Pumps 1, 2, 3, & 4.		Grit Pump 1	
		Grit Pump 2	
		Grit Pump 3	
		Grit Pump 4	
ANNUAL PM ON AUGER #2	26-Dec-23	2004 AUGER-DAWG G-30 4D087	Annual inspection and PM of Auger #2. Welded rebar in, replaced hydraulic motor. Rebuilt support hub.
Run And Inspect Generators With The Load Of The Plant	27-Dec-23	Emergency Generator 1	
		Emergency Generator 2	

Work Assignment	Completion Date	Equipment	NOTATIONS
		Emergency Generator 3	
Replace Wiper Grit Conveyors 1-2		Grit Conveyor System	
Water leak at North Sink at DI water faucet	28-Dec-23	Laboratory	Replaced supply piping from wall to faucet. Upgraded to combination of sch.80 & poly tube.
Purchase maintenance parts & motor oil for stock	29-Dec-23	CHP Engine Genset #1	Purchased spare maintenance parts including 4- 55 gallon drums of motor oil for both CHP 1 & 2.
		CHP Engine Genset #2	
Replace expansion tank due to base failure		Grit Building Prot Water Sys	Removed existing tank that failed and set up temporary seal water connection. Procured and installed new fiberglass / plastic expansion tank. Verified operation.

DOWNERS GROVE SANITARY DISTRICT
M E M O

DATE: January 6, 2024

TO: Amy Underwood
General Manager

FROM: Todd Freer
Sewer System Maintenance Supervisor

RE: Monthly Report – December 2023

1.

JULIE Line Markings:	**Current**	**Year to Date**
Received	406	13,229
In District	397	12,814
Marked	123	3,149
Man Hours	45.5	915

2.

Building Service:	**Current**	**Year to Date**
BSSRAP TV Inspections	17	247
Emergency BSSRAP Repairs	7	136
Total BSSRAP Repairs	11	191
I&I Inspections	3	38
I&I C.O. Inspections	0	2
Replace Broken Cleanout Caps	1	6
OHSP TV Inspections	0	0
Post Rodding TV	3	75

3.

Sewer Back-Ups:	**Current**	**Year to Date**
Public Sewer	2	7
Private Sewer	22	218
Surcharged Main	0	0
Pump Station	0	0
Total	25	191

4.

	Current	**Year to Date**
Sewer Cleaning (DGSD Personnel):	27,868	330,801 Ft.
a. Sewer Cleaning (Outside Contractors)	0	354 Ft.

5.

Main Sewer Televising (DGSD personnel)	329	3,888 Ft.
a. Sewer Televising (Outside Contractors)	0	0 Ft.

6.

	Current	Year to Date
LETS TV	0	0

7.

Manhole Inspections	250	282

8. Lining of the pipe at 2223 Ogden Avenue has been completed, reviewed and accepted. Grated manhole covers have been replaced with solid covers and periodic monitoring of combustible gases will be performed by DGSD sewer technicians.

CC: AES, JMW, KJR, RTJ, MJS, DM, CS, KWS

DOWNERS GROVE SANITARY DISTRICT
M E M O

DATE: January 5, 2024

TO: Amy R. Underwood
General Manager

FROM: Keith Shaffner
Sewer Construction Supervisor

RE: Monthly Report: Sewer Construction \ Code Enforcement – December 2023

1. Permits issued:

		Current	Year to Date
a.	Single family	4	50
b.	Multiple family	0	0
c.	Commercial	1	11
d.	Repair	2	11
e.	Disconnection	2	19
	Total	9	91

2. Inspections made:

		Current	Year to Date
a.	Connections	6	83
b.	Finals	9	54
c.	Repairs	2	11
d.	Disconnects	5	31
e.	Groundwork	0	0
f.	Walk-Thru	0	0
g.	Pre-connections	0	5
h.	Overhead Sewer Program	0	0
i.	Code Enforcement	0	8
j.	Lateral testing	4	62
	Total	26	254

3. New Sewer Extension Construction:

None

4. New Sewer Extension Testing - air, deflection, manhole, and televising:

None

5. Code Enforcement:

None

6. Plan & Permit Reviews:

   a. 4327 Elm Street – Single Family Home Review
   b. 1029 Oxford – Single Family Home Review
   c. 1027 Oxford – Single Family Home Review

a. Building Sanitary Service Access Agreements:

   None

b. Illinois EPA Permits:

   None

c. Miscellaneous:

d. Inspectors Danny Jasso, Oscar Avila and I have completed training and been certified in CPR/First Aid.
e. The Curtiss Street Trunk Line Sewer Rehabilitation project has started. The contractor has been placing matting for the machines to move on. They will be cleaning and televising to prepare for the lining in the next week.

CC: WDVB, AES, JMW, KJR, RTJ, MJS, TF, CS & DM

Permits Issued: DECEMBER 2023

YEAR	PERMIT #	ADDRESS		STREET	CITY	ISSUE	TYPE	TAP FEE	INSP FEE
2023	86	15	W	OGDEN	W	12/1/2023	COM		$431.00
2023	89	5615		BROOKBANK	DG	12/7/2023	REPAIR		
2023	88	3835		GLENDENNING	DG	12/11/2023	DISCON		
2023	83	5428		FAIRMOUNT	DG	12/11/2023	SF-RB		$260.00
2023	74	7124		MATTHIAS	DG	12/13/2023	SF	$3,762.50	$260.00
2023	75	7128		MATTHIAS	DG	12/13/2023	SF	$3,762.50	$260.00
2023	87	6022		FAIRVIEW	DG	12/14/2023	SF	$3,762.50	$260.00
2023	93	4645		LINSCOTT	DG	12/18/2023	DISCON		
2023	94	747		ROGERS	DG	12/27/2023	REPAIR		
						TOTAL:		$11,287.50	$1,471.00

Permit Type Index: SF=Single Family, RB=Rebuild, SC=Septic Conversion, ADD=Addition, Discon=Disconnect for Demolition, Comm=Commercial, MF=Multiple Family

Permit Final Inspections: DECEMBER 2023

YEAR	PERMIT #	ADDRESS	STREET	CITY	FINAL
2023	27	4817	SEELEY	DG	12/1/2023
2022	21	4805	SEELEY	DG	12/5/2023
2022	83	4525	BELMONT	DG	12/8/2023
2023	37	4812	LEE	DG	12/12/2023
2022	103	3402	ACORN	DG	12/13/2023
2022	76	2751	OGDEN	DG	12/18/2023
2022	112	6014	FAIRVIEW	DG	12/22/2023
2022	123	4432	DOWNERS	DG	12/22/2023
2023	20	621	OGDEN	DG	12/27/2023

Progress Report

To: Amy Underwood, General Manager
From: Reese Berry, Laboratory Supervisor
Date: January 9, 2024
Re: December 2023 Laboratory Report

DGSD had zero excess flow sampling events during December 2023. We had no permit excursions in December.

Pretreatment:

We are currently evaluating a permit application from Lovejoy, Inc. Lovejoy installed a new process at their facility, which will require a pretreatment permit to be in place. They are aware, if they use this process prior to a permit being issued, they will haul away the waste and will not discharge to the sanitary sewer.

As discussed during the PCI (Pretreatment Compliance Inspection) back in June with US EPA, we needed to update the categorical classification for Bales Mold Service Inc. and re-issue their permit. We issued Bales Mold Service Inc. their updated permit during December 2023.

All annual inspections were completed at the current permitted user locations. All facilities are in compliance and nothing outside of their permitted processes were located at this time.

Mar Cor Purification submitted, via email, their permit termination request for their facility at 2850 Hitchcock Ave. Downers Grove, IL.

US EPA Pretreatment Training:

Reese Berry attended a 3 day Pretreatment 101 Training Course offered by the US EPA during December. There were basic pretreatment topics discussed and taught, but there were also situational discussions based on real world experiences. It was a very in depth 3 days of training, which is valuable coming on the heals of the PCI back in June.

Biosolids:

We are currently compiling all the data, reports and working on the annual report due to US EPA by February 19, 2024.

C: WDVB, AES, JMW, KJR, RTJ, MJS, CSS, DM

To: Board of Trustees
From: Amy Underwood
Re: Engineering Report for December 2023
Date: January 12, 2024

A summary of the status of several projects is provided below.

I. Planning Projects & Studies

A. Biosolids Processing Improvements

Baxter & Woodman (B&W) evaluated the District's existing solids processing and met with District staff on December 21 to discuss their findings. B&W suspects that the District may be overloading Digester 4 with grease. The District intends to sample the digester to determine whether B&W's suspicion is correct.

B. WWTC & Lift Station Code Walk-Through

The District is in the process of doing a final review of the report.

C. Butterfield Lift Station Study

District staff are reviewing the draft report prepared by B&W analyzing full replacement of the Butterfield Lift Station, which is nearing its useful life.

II. Design Projects

A. Venard Forcemain Replacement

B&W has provided plans and specifications for the District's review.

B. Underground Diesel Storage Tank Replacement

Bids will be opened on January 17.

III. Construction Projects

A. Centex Lift Station Replacement

No pay request was submitted this month. The new lift station was started up and staff trained on January 4th. The new system operated successfully for several days. The lift station was connected to the old (backup) force main using temporary bypass hose. The intent was to make sure everything was operating properly before making the final connection to the force main. Unfortunately, with the change in weather conditions, the permanent force main connection, demolition of the old lift station and restoration have been delayed. Due to concerns of potential freezing, the new lift station was removed from service and the old lift station placed back into service. The contractor will return to complete the work as soon as the weather allows it.

B. Outfall 001 Sanitary Sewer Repair

No pay request was submitted this month. The televised inspection of the new section of pipe has not been received yet.

C. Basin 2D Sewer Lining

The first and final pay request from Visu-Sewer is included in the January Claim Ordinance. Change Order No. 1, which is a credit, is included in the payment request.

D. Curtiss Street Sewer Lining

Work has started. Please refer to the Sewer Construction monthly report for more information.

E. SCADA Platform Replacement (Ignition)

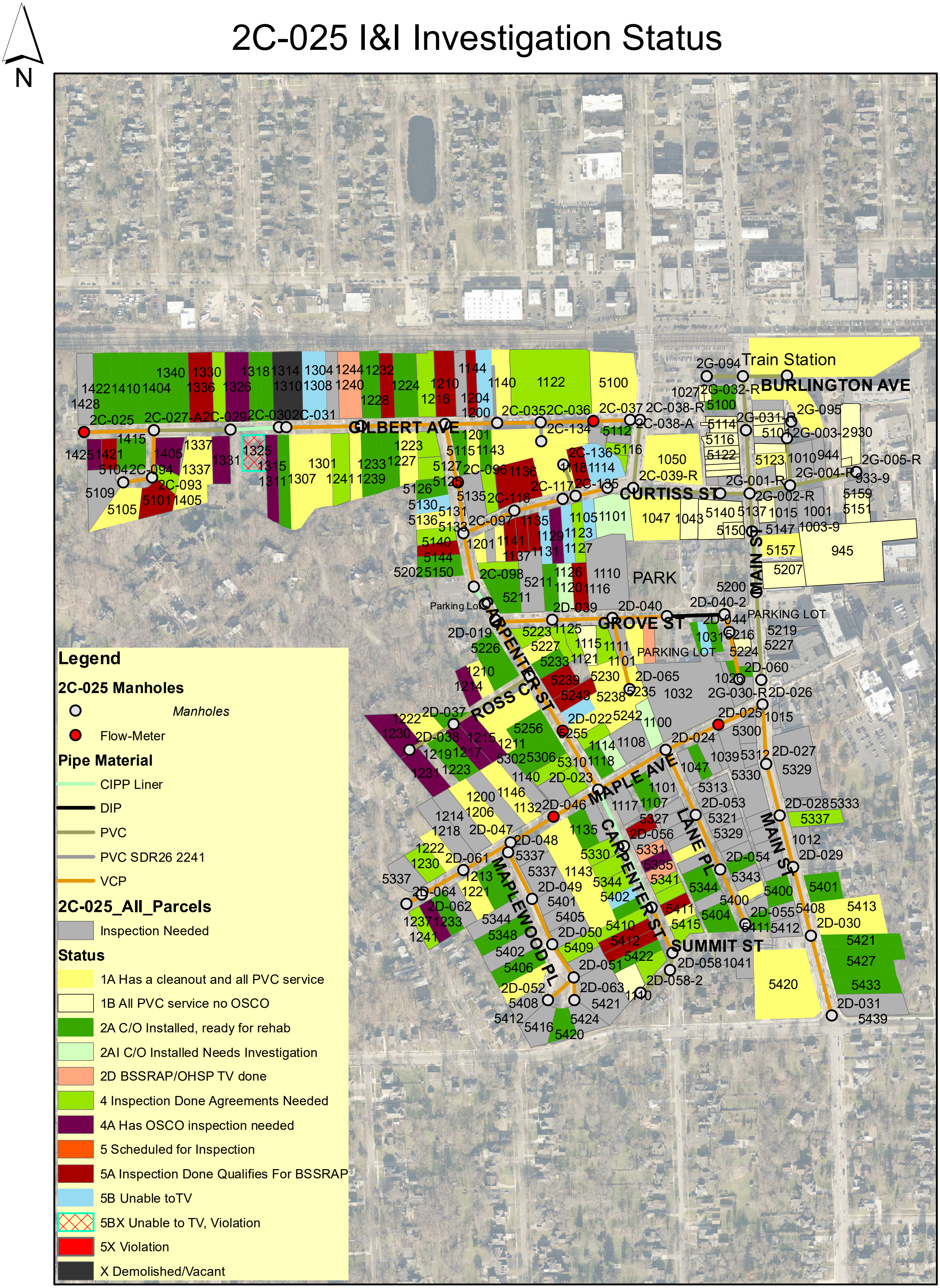
A payment request from Concentric for this project is included in the January Claim Ordinance.

	FYE 24	Total (FYE24 & 25)
Engineer's Fee	$160,000.00	$236,300.00
Total Completed to Date	$105,666.02	$105,666.02
Less Previous Payments	-$94,058.52	-$94,058.52
Current Payment Due	$ 11,607.50	$ 11,607.50
Remaining	$54,333.98	$130,633.98

Concentric continues to work on screens for the WWTC and the entry sheets for lab data.

C: BOLI, CS, DM

2C-025 I&I Investigation Status



STATUS OF PARCELS 2C-025 I&I INVESTIGATION

Category	Inspections Scheduled	Inspections Completed	Application Received	Agreements Signed	Cleanout Installed	Service Rehab Done	**Totals**	**Total as Percentage**
1A	Y	Y	N	Y	Y	N/A	48	16%
1B	Y	Y	N	N	N	N/A	28	9%
2A	Y	Y	Y	Y	Y	N	45	14%
2AI	Y	Y	Y	Y	Y	N	4	1%
2B	Y	Y	Y	Y	Y	N	0	0%
2D	Y	Y	Y	N	N	N	4	1%
4	Y	Y	N	N	N	N	32	10%
4A	N	N	N	N	N/A	N	12	4%
5	Y	N	N	N	N	N	0	1%
5A	Y	Y	N	N	N	N	22	7%
5AX	Y	Y	N	N	N	N	0	0%
5B	Y	N	N	N	N	N	10	3%
5BX	Y	N	N	N	N	N	1	0%
0	N	N	N	N	N	N	99	32%
X	-	-	-	-	-	-	2	1%
5X	-	-	-	-	-	-	1	0%
							309	100%

Category Description:

1A - PVC service with cleanout
1B - All PVC no Cleanout
2A - Cleanout installed, ready for rehab
2AI C/O Installed Needs Investigation
2B - Ready for rehab
3 - Program application received (executed agreements needed)
3A - Released to contractor for cleanout installation
4 - Inspection completed (Program application needed)
4A - Has an existing cleanout
5 - Inspections scheduled
5A - Inspection done - BSSRAP needed (qualifying defects or obstructions seen during TV)
5AX - Violation, BSSRAP needed
5B - Unable to TV
5BX - Unable to TV Violation
0 - Inspection Needed
X2 - Vacant not Disconnected

26% Complete

2022 Basin I&I Ranking = 9

1/4/2023

DOWNERS GROVE SANITARY DISTRICT CASH BALANCES AND INVESTMENT SCHEDULE

DATE 12/31/2023

CASH BALANCES

ACCOUNT NAME	ACCOUNT NUMBER	BALANCE PER BANK STATEMENT	PREVIOUS MONTH: TOTAL BALANCE PER BANK STATEMENTS	PREVIOUS MONTH: MONTHLY EARNINGS CREDIT	PREVIOUS MONTH: EARNINGS CREDIT PERCENTAGE
DEPOSIT	XXXXXXXXX1116	$1,694,409.83			
DISBURSEMENT	XXXXXXXXX1111	253,539.28			
FLEXIBLE BENEFITS	XXXXXXXXX6025	10,392.85			
PAYROLL	XXXXXXXXX1117	223,925.49			
PETTY CASH	XXXXXXXXX1112	4,485.40			
USER REFUNDS	XXXXXXXXX1114	4,619.33			
TOTAL - CASH AT BANK		$2,191,372.18	$2,152,157.81	$2,471.38	0.1148%

INVESTMENTS

TYPE	FINANCIAL INSTITUTION	TERM	MATURITY	AMOUNT	ANNUAL INT. RATE	GENERAL CORPORATE FUND (01)	IMPROVEMENT FUND (02)	CONSTRUCTION FUND (03)	PUBLIC BENEFIT FUND (05)	SEWER EXTENSION FUND (71)	INTEREST EARNED AT MATURITY
CD	EVERGREEN BANK GROUP	ONGOING	2/24/2024	$258,803.41	4.700%	$258,803.41					$12,163.76
CD	STEARNS BANK	ONGOING	4/12/2024	$250,000.00	5.000%	$250,000.00					$12,500.00
CD	LISLE SAVINGS BANK	ONGOING	5/18/2024	$249,000.00	5.260%	$249,000.00					$13,097.40
CD	TRISTATE CAPITAL BANK	ONGOING	8/9/2024	$250,000.00	5.470%			$250,000.00			$13,675.00
TOTAL CDs				$1,007,803.41	5.104%	$757,803.41	$0.00	$250,000.00	$0.00	$0.00	$51,436.16

TYPE	FINANCIAL INSTITUTION	TERM	LAST ACTION DATE	AMOUNT*	CURRENT RATE OF RETURN	GENERAL CORPORATE FUND (01)	IMPROVEMENT FUND (02)	CONSTRUCTION FUND (03)	PUBLIC BENEFIT FUND (05)	SEWER EXTENSION FUND (71)	ESTIMATED ANNUAL RETURN
MM	BANKFINANCIAL	ONGOING	6/21/2023	$252,992.49	5.250%	$252,992.49					$13,282.11
MM	LISLE SAVINGS BANK	ONGOING	11/10/2020	$1,009.92	0.600%	$1,009.92					$6.06
MM	PEOPLES BANK	ONGOING	12/4/2012	$372.78	0.000%	$372.78					$0.00
MM	TRISTATE CAPITAL BANK	ONGOING	4/16/2021	$11.91	3.000%			$11.91			$0.36
MM	OLD SECOND NATIONAL BANK	ONGOING	11/20/2012	$5,149.58	0.100%			$5,149.58			$5.15
TOTAL MM ACCOUNTS				$259,536.68	5.122%	$254,375.19	$0.00	$5,161.49	$0.00	$0.00	$13,293.67
ILLINOIS FUNDS - MONEY MARKET				$7,715,002.45	5.462%	$5,739,729.65	$891,580.47	$1,083,692.33	$0.00	$0.00	$421,393.43
TOTAL - ALL INVESTMENTS				$8,982,342.54	5.412%	$6,751,908.25	$891,580.47	$1,338,853.82	$0.00	$0.00	$486,123.27

TOTAL CASH AND INVESTMENTS $11,173,714.72

*INVESTMENT ACCOUNT BALANCES ARE UPDATED QUARTERLY FOR THESE MONEY MARKET ACCOUNTS TO REFLECT NOMINAL INTEREST AMOUNTS EARNED EACH MONTH AND POSTED DIRECTLY TO THE INVESTMENT.

Downers Grove Sanitary District

2710 Curtiss Street
P.O. Box 1412
Downers Grove, IL 60515-0703
Phone: 630-969-0664
Fax: 630-969-0827
www.dgsd.org

Providing a Better Environment for South Central DuPage County

MEMORANDUM

To: Board of Trustees
From: Amy R. Underwood, General Manager
Date: January 12, 2024
Subject: Treasurer's Report for December 2023

Attached please find the subject report that tracks income and expenses for the first eight months of Fiscal Year 23-24.

Totals of expenses and income are shown on the following table:

Year-to-date	Income	Expenses
General Fund	$ 8,024,432.08 (page 1)	$ 6,933,954.62 (page 6)
Improvement Fund	$ 424,800.72 (page 7)	$ 685,411.77 (page 7)
Construction Fund	$ 107,590.29 (page 8)	$ 33,497.09 (page 9)
Public Benefit Fund	$ 0.00 (page 10)	$ 0.00 (page 10)
TOTAL	$ 8,556,823.09	$ 7,652,863.48

A $2,249.00 payment appears under the Grants and Incentives revenue in Fund 01. This was awarded to the District from our worker compensation insurer, IPRF, to help fund specific safety improvements.

C: BOLI, DM, CS

Fund number & Description	Ending Fund Balance
Fund 01 : GENERAL FUND	$8,191,271.41
Fund 02 : IMPROVEMENT FUND	$1,144,149.93
Fund 03 : CONSTRUCTION FUND	$1,866,326.35
Fund 05 : PUBLIC BENEFIT FUND	$37,817.83
Recap Totals	$11,239,565.52

TREASURER'S REPORT

DATE 01/09/24 MONTH ENDED 12/31/23 PAGE 1

FUND 01 GENERAL FUND

COST NUMBER	DESCRIPTION	ACTUAL CURRENT MONTH	BUDGET CURRENT MONTH	ACTUAL Y-T-D	BUDGET Y-T-D	ACTUAL-BUDGET VARIANCE	VAR %	TOTAL BUDGET
DEPT 05	REVENUES							
3000	PROPERTY TAXES	18,198.22-	0	1,430,717.90-	1,403,700-	27,017.90-	1.9	1,403,700-
3001	USER RECEIPTS	345,882.14-	348,158-	2,776,708.56-	2,712,865-	63,843.56-	2.4	3,959,800-
3002	SURCHARGES	24,405.08-	36,752-	278,477.50-	286,373-	7,895.50	2.8-	418,000-
3004	PLAN REVIEW FEES	.00	0	.00	375-	375.00	100.0-	500-
3005	CONSTRUCTION INSPECTION FEES	.00	0	.00	360-	360.00	100.0-	500-
3006	PERMIT INSPECTION FEES	1,471.00-	1,700-	11,384.00-	13,600-	2,216.00	16.3-	20,000-
3007	INTEREST ON INVESTMENTS	38,650.25-	5,600-	272,825.39-	44,800-	228,025.39-	509.0	67,050-
3013	SAMPLING AND MONITORING	8,792.04-	9,400-	81,633.59-	75,400-	6,233.59-	8.3	113,000-
3014	REPLACEMENT TAXES	11,182.10-	12,000-	151,460.15-	74,400-	77,060.15-	103.6	120,000-
3015	MISCELLANEOUS INCOME	696.23-	400-	2,943.43-	3,400-	456.57	13.4-	5,000-
3016	SALE OF ELECTRICITY	.00	1,000-	.00	8,000-	8,000.00	100.0-	12,000-
3020	SALE OF PROPERTY	.00	3,100-	13,528.00-	25,300-	11,772.00	46.5-	37,700-
3021	TELEVISION INSPECTION	.00	0	.00	150-	150.00	100.0-	150-
3023	PROPERTY LEASE PAYMENTS	3,288.81-	3,275-	25,909.21-	26,200-	290.79	1.1-	39,300-
3024	MONTHLY SERVICE FEES	452,866.81-	425,267-	3,225,924.19-	3,313,699-	87,774.81	2.7-	4,836,800-
3027	GREASE WASTE	10,698.06-	19,000-	127,786.54-	154,000-	26,213.46	17.0-	230,000-
3035	INTERFUND TRANSFER	.00	0	400,000.00	800,000	400,000.00-	50.0-	800,000
3040	RENEWABLE ENERGY CREDITS	.00	0	22,884.62-	12,000-	10,884.62-	90.7	24,000-
3094	GRANTS AND INCENTIVES	2,249.00-	1,080,000-	2,249.00-	1,589,881-	1,587,632.00	99.9-	1,589,881-
	DEPT 05 TOTALS	918,379.74-	1,945,652-	8,024,432.08-	8,944,503-	920,070.92	10.3-	12,077,381-
	FUND REVENUE TOTAL	918,379.74-	1,945,652-	8,024,432.08-	8,944,503-	920,070.92	10.3-	12,077,381-
DEPT 11	O & M EXPENSES - ADMINISTRATION							
SECT A	SALARIES AND WAGES							
A001	TRUSTEES	.00	0	13,500.00	13,500	.00	.0	18,000
A002	BOLI	.00	0	.00	675	675.00-	100.0-	900
A003	GENERAL MANAGEMENT	24,575.31	22,429	171,007.49	184,084	13,076.51-	7.1-	272,250
A004	FINANCIAL RECORDS	25,736.78	19,715	169,291.42	184,525	15,233.58-	8.3-	254,450
A005	ADMINISTRATIVE RECORDS	3,286.21	1,924	21,438.27	18,113	3,325.27	18.4	24,900
A006	ENGINEERING	191.31	328	1,598.40	3,095	1,496.60-	48.4-	4,250
A007	CODE ENFORCEMENT	30,165.12	29,383	252,254.94	321,396	69,141.06-	21.5-	430,700
A008	SAFETY ACTIVITIES	9,984.09	3,811	45,409.81	36,139	9,270.81	25.7	49,500
A030	BUILDING AND GROUNDS	811.65	73	6,409.87	862	5,547.87	643.6	1,150
	SECT A TOTALS	94,750.47	77,663	680,910.20	762,389	81,478.80-	10.7-	1,056,100
SECT B	OPERATIONS AND MAINTENANCE							
B100	ELECTRICITY	.00	325	2,424.40	4,200	1,775.60-	42.3-	5,500
B101	NATURAL GAS	.00	300	1,452.79	1,750	297.21-	17.0-	3,000
B102	WATER, GARBAGE AND OTHER UTILITIES	.00	0	397.06	860	462.94-	53.8-	1,250
B110	BANK CHARGES	26.10	2,100	242.90	16,800	16,557.10-	98.6-	25,200
B112	COMMUNICATION	1,879.45	2,400	18,220.91	19,200	979.09-	5.1-	28,000
B113	EMERGENCY/SAFETY EQUIPMENT	1,041.86	1,100	10,661.75	12,700	2,038.25-	16.1-	20,450
B115	EQUIPMENT/EQUIPMENT REPAIR	12,176.81-	12,200	106,427.03	116,400	9,972.97-	8.6-	165,000

FUND 01 GENERAL FUND

NUMBER	COST DESCRIPTION	ACTUAL CURRENT MONTH	BUDGET CURRENT MONTH	ACTUAL Y-T-D	BUDGET Y-T-D	ACTUAL-BUDGET VARIANCE	VAR %	TOTAL BUDGET
B116	SUPPLIES	743.09	600	4,679.84	4,800	120.16-	2.5-	7,000
B117	EMPLOYEE/DUTY COSTS	1,071.63	1,600	7,997.04	12,800	4,802.96-	37.5-	19,000
B118	BUILDING AND GROUNDS	16,086.09	5,000	198,230.28	62,500	135,730.28	217.2	74,500
B119	POSTAGE	11.30	630	4,200.54	5,040	839.46-	16.7-	7,550
B120	PRINTING/PHOTOGRAPHY	420.58	300	6,570.62	11,500	4,929.38-	42.9-	12,700
B121	USER BILLING MATERIALS	6,759.30	7,000	58,086.68	60,000	1,913.32-	3.2-	88,000
B124	CONTRACT SERVICES	5,334.15	14,000	57,116.74	112,000	54,883.26-	49.0-	167,000
B137	MEMBERSHIPS/SUBSCRIPTIONS	1,625.00	0	8,432.39	7,200	1,232.39	17.1	9,500
	SECT B TOTALS	22,821.74	47,555	485,140.97	447,750	37,390.97	8.4	633,650
	SECT C VEHICLES							
C222	GAS/FUEL	218.66	300	1,363.98	2,250	886.02-	39.4-	3,200
C225	OPERATION/REPAIR	.00	0	208.52	1,950	1,741.48-	89.3-	2,600
	SECT C TOTALS	218.66	300	1,572.50	4,200	2,627.50-	62.6-	5,800
	DEPT 11 TOTALS	117,790.87	125,518	1,167,623.67	1,214,339	46,715.33-	3.9-	1,695,550
	DEPT 12 O & M EXPENSES - WWTC							
	SECT A SALARIES AND WAGES							
A006	ENGINEERING	162.63	4,509	4,441.85	42,432	37,990.15-	89.5-	58,350
A009	OPERATIONS MANAGEMENT	5,603.69	9,492	70,633.81	75,932	5,298.19-	7.0-	113,900
A010	MAINTENANCE - BUDGET	.00	48,632	.00	517,144	15,181.80-	2.9-	689,650
A011	MAINTENANCE - WWTC	39,519.75	0	336,667.54	0	.00	.0	0
A012	MAINTENANCE - VEHICLES	.00	0	471.50	0	.00	.0	0
A013	MAINTENANCE - ENERGY RECOVERY	705.88	0	9,714.17	0	.00	.0	0
A014	MAINTENANCE - ELECTRICAL	24,098.94	0	155,108.99	0	.00	.0	0
A020	WWTC - BUDGET	.00	47,350	.00	448,400	16,132.83-	3.6-	614,600
A021	WWTC - OPERATIONS	46,205.32	0	291,758.31	0	.00	.0	0
A022	WWTC - SLUDGE HANDLING	21,543.53	0	134,503.73	0	.00	.0	0
A023	WWTC - ENERGY RECOVERY	764.40	0	6,005.13	0	.00	.0	0
A030	BUILDING AND GROUNDS	10,538.49	9,089	66,271.43	87,166	20,894.57-	24.0-	119,150
	SECT A TOTALS	149,142.63	119,072	1,075,576.46	1,171,074	95,497.54-	8.2-	1,595,650
	SECT B OPERATIONS AND MAINTENANCE							
B100	ELECTRICITY	189.34	5,500	61,974.27	44,600	17,374.27	39.0	65,000
B101	NATURAL GAS	.00	1,400	2,863.78	6,800	3,936.22-	57.9-	12,500
B102	WATER, GARBAGE AND OTHER UTILITIES	1,433.64	3,000	31,912.54	29,000	2,912.54	10.0	40,550
B103	ODOR CONTROL	.00	200	2,087.06	2,500	412.94-	16.5-	3,400
B104	FUEL - GENERATORS	.00	0	.00	12,375	12,375.00-	100.0-	16,500
B112	COMMUNICATION	1,815.90	2,000	16,181.35	19,600	3,418.65-	17.4-	27,600
B113	EMERGENCY/SAFETY EQUIPMENT	2,146.46	3,000	27,220.56	24,000	3,220.56	13.4	35,350
B116	SUPPLIES	856.54	2,700	17,972.83	21,950	3,977.17-	18.1-	32,750
B117	EMPLOYEE/DUTY COSTS	3,229.31	2,300	20,375.78	20,800	424.22-	2.0-	30,000
B124	CONTRACT SERVICES	.00	0	203,485.00	203,500	15.00-	.0	203,500
B130	NPDES PERMIT FEES	.00	0	53,000.00	53,000	.00	.0	53,000

FUND 01 GENERAL FUND

NUMBER	COST DESCRIPTION	ACTUAL CURRENT MONTH	BUDGET CURRENT MONTH	ACTUAL Y-T-D	BUDGET Y-T-D	ACTUAL-BUDGET VARIANCE	VAR %	TOTAL BUDGET
B131	SLUDGE HAULING/DISPOSAL SERVICES	.00	0	89,937.51	45,000	44,937.51	99.9	90,000
B400	CHEMICALS - BUDGET	.00	10,550	.00	245,750	126,486.16-	51.5-	287,950
B401	CHEMICALS - DISINFECTION	16,502.47	0	55,015.09	0	.00	.0	0
B402	CHEMICALS - SLUDGE DEWATERING	6,266.88	0	36,004.74	0	.00	.0	0
B403	CHEMICALS - TERTIARY TREATMENT	.00	0	6,732.00	0	.00	.0	0
B404	CHEMICALS - OTHER	.00	0	21,512.01	0	.00	.0	0
B501	EQPT/EQPT REPAIR - BIOSOLIDS AGING & DISPOS	2,139.23	7,000	44,237.42	56,000	11,762.58-	21.0-	234,100
B502	EQPT/EQPT REPAIR - DISINFECTION	.00	2,400	2,525.73	21,700	19,174.27-	88.4-	31,300
B503	EQPT/EQPT REPAIR - EXCESS FLOW	.00	2,600	3,536.13	20,800	17,263.87-	83.0-	31,100
B504	EQPT/EQPT REPAIR - GRIT REMOVAL	.00	28,000	7,820.45	39,400	31,579.55-	80.2-	45,800
B505	EQPT/EQPT REPAIR - INFLUENT PUMPING	178.33	1,000	26,288.34	62,000	35,711.66-	57.6-	66,800
B506	EQPT/EQPT REPAIR - PRIMARY TREATMENT	1,173.88	6,000	53,056.10	114,700	61,643.90-	53.7-	138,700
B507	EQPT/EQPT REPAIR - SECONDARY TREATMENT	50,000.00	4,800	55,740.59	88,200	32,459.41-	36.8-	107,400
B508	EQPT/EQPT REPAIR - SLUDGE CONCENTRATION	.00	450	795.74	3,600	2,804.26-	77.9-	5,400
B509	EQPT/EQPT REPAIR - SLUDGE DEWATERING	.00	2,250	31,381.57	18,000	13,381.57	74.3	27,000
B510	EQPT/EQPT REPAIR - SLUDGE DIGESTION	4,406.13	5,550	168,012.71	216,650	48,637.29-	22.5-	241,300
B511	EQPT/EQPT REPAIR - TERTIARY TREATMENT	46,872.98	2,800	96,513.23	113,200	16,686.77-	14.7-	123,700
B512	EQPT/EQPT REPAIR - WWTC GENERAL	445.67	3,700	45,623.94	54,700	9,076.06-	16.6-	68,700
B513	EQPT/EQPT REPAIR - WWTC UTILITIES	16,492.85	28,000	203,312.76	639,000	435,687.24-	68.2-	729,950
B801	BLDG AND GROUNDS - BIOSOLIDS AGING & DISPOS	.00	333	10,231.99	2,668	7,563.99	283.5	4,000
B802	BLDG AND GROUNDS - DISINFECTION	.00	800	285.96	6,400	6,114.04-	95.5-	9,600
B803	BLDG AND GROUNDS - EXCESS FLOW	.00	92	.00	736	736.00-	100.0-	1,100
B804	BLDG AND GROUNDS - GRIT REMOVAL	19,000.00	800	19,126.05	13,700	5,426.05	39.6	31,100
B805	BLDG AND GROUNDS - INFLUENT PUMPING	77.59	600	12,886.32	5,500	7,386.32	134.3	8,100
B806	BLDG AND GROUNDS - PRIMARY TREATMENT	.00	0	215.20	0	215.20	.0	0
B807	BLDG AND GROUNDS - SECONDARY TREATMENT	183.78	175	435.08	1,500	1,064.92-	71.0-	2,200
B809	BLDG AND GROUNDS - SLUDGE DEWATERING	117.78	200	3,701.54	10,800	7,098.46-	65.7-	11,700
B810	BLDG AND GROUNDS - SLUDGE DIGESTION	86.96	400	14,480.63	28,200	13,719.37-	48.7-	29,400
B811	BLDG AND GROUNDS - TERTIARY TREATMENT	399.69	750	5,900.29	12,750	6,849.71-	53.7-	15,700
B812	BLDG AND GROUNDS - WWTC GENERAL	40,041.88	11,750	155,184.83	204,400	49,215.17-	24.1-	247,150
B813	BLDG AND GROUNDS - WWTC UTILITIES	.00	225	432.81	1,800	1,367.19-	76.0-	2,700
	SECT B TOTALS	214,057.29	141,325	1,607,999.93	2,465,279	857,279.07-	34.8-	3,112,100
	SECT C VEHICLES							
C222	GAS/FUEL	2,452.37	3,300	13,521.10	26,800	13,278.90-	49.6-	40,000
C225	OPERATION/REPAIR	25.11	700	2,334.84	5,700	3,365.16-	59.0-	8,500
C226	VEHICLE PURCHASES	.00	0	17,768.00	17,800	32.00-	.2-	93,300
	SECT C TOTALS	2,477.48	4,000	33,623.94	50,300	16,676.06-	33.2-	141,800
	DEPT 12 TOTALS	365,677.40	264,397	2,717,200.33	3,686,653	969,452.67-	26.3-	4,849,550
	DEPT 13 O & M EXPENSES - LABORATORY							
	SECT A SALARIES AND WAGES							
A009	OPERATIONS MANAGEMENT	5,810.17	6,954	42,738.81	55,634	12,895.19-	23.2-	83,450
A040	LABORATORY - BUDGET	.00	14,765	.00	136,383	12,691.84	9.3	189,350
A041	LAB - WWTC	17,017.02	0	111,254.66	0	.00	.0	0

NUMBER	COST DESCRIPTION	ACTUAL CURRENT MONTH	BUDGET CURRENT MONTH	ACTUAL Y-T-D	BUDGET Y-T-D	ACTUAL-BUDGET VARIANCE	VAR %	TOTAL BUDGET
A042	LAB - PRETREATMENT	1,265.75	0	26,912.48	0	.00	.0	0
A043	LAB - SURCHARGE PROGRAM	1,517.76	0	7,116.97	0	.00	.0	0
A048	LAB - ENERGY RECOVERY	903.41	0	3,790.73	0	.00	.0	0
	SECT A TOTALS	26,514.11	21,719	191,813.65	192,017	203.35-	.1-	272,800
SECT B	OPERATIONS AND MAINTENANCE							
B112	COMMUNICATION	227.04	300	2,015.06	2,800	784.94-	28.0-	4,000
B114	CHEMICALS	2,335.04	2,100	13,298.60	17,100	3,801.40-	22.2-	25,500
B115	EQUIPMENT/EQUIPMENT REPAIR	62.24	2,300	13,250.01	18,800	5,549.99-	29.5-	28,000
B116	SUPPLIES	1,363.87	2,100	12,284.20	18,800	6,515.80-	34.7-	25,900
B117	EMPLOYEE/DUTY COSTS	528.08	500	3,908.42	4,100	191.58-	4.7-	6,000
B122	MONITORING EQUIPMENT	.00	0	.00	4,125	4,125.00-	100.0-	5,500
B123	OUTSIDE LAB SERVICES	728.40	2,000	15,559.46	16,800	1,240.54-	7.4-	24,800
B124	CONTRACT SERVICES	3,667.08	0	21,159.01	0	21,159.01	.0	0
	SECT B TOTALS	8,911.75	9,300	81,474.76	82,525	1,050.24-	1.3-	119,700
SECT C	VEHICLES							
C222	GAS/FUEL	69.40	50	640.53	700	59.47-	8.5-	900
C225	OPERATION/REPAIR	.00	50	91.79	200	108.21-	54.1-	250
	SECT C TOTALS	69.40	100	732.32	900	167.68-	18.6-	1,150
	DEPT 13 TOTALS	35,495.26	31,119	274,020.73	275,442	1,421.27-	.5-	393,650
DEPT 14	O & M EXPENSES - SEWER SYSTEM							
SECT A	SALARIES AND WAGES							
A006	ENGINEERING	168.88	599	3,896.78	5,413	1,516.22-	28.0-	7,600
A050	SEWER MAINTENANCE - BUDGET	.00	21,095	.00	200,351	30,703.19	15.3	274,200
A051	SEWER MAINTENANCE	33,524.03	0	220,850.05	0	.00	.0	0
A054	SEWER MAINTENANCE - BACKUPS AND HIGH FLOWS	1,567.24	0	10,204.14	0	.00	.0	0
A060	INSPECTION - BUDGET	.00	18,744	.00	177,958	31,340.29-	17.6-	243,600
A061	INSPECTION - NEW CONSTRUCTION	92.69	0	1,103.18	0	.00	.0	0
A062	INSPECTION - CONSTRUCTION OF DGSD PROJECTS	3,652.56	0	39,775.61	0	.00	.0	0
A063	INSPECTION - PERMIT INSPECTIONS	1,995.82	0	14,849.50	0	.00	.0	0
A064	INSPECTION - MISCELLANEOUS	4,620.29	0	19,777.84	0	.00	.0	0
A065	INSPECTION - CONSTR BY VILLAGES, UTILITIES	2,936.36	0	21,689.03	0	.00	.0	0
A066	INSPECTION - CODE ENFORCEMENT	10,315.55	0	49,422.55	0	.00	.0	0
A070	SEWER INVESTIGATIONS - BUDGET	.00	304	.00	3,402	812.46-	23.9-	4,450
A072	SEWER INVESTIGATIONS	.00	0	2,589.54	0	.00	.0	0
	SECT A TOTALS	58,873.42	40,742	384,158.22	387,124	2,965.78-	.8-	529,850
SECT B	OPERATIONS AND MAINTENANCE							
B112	COMMUNICATION	724.33	1,000	7,074.76	8,000	925.24-	11.6-	12,000
B113	EMERGENCY/SAFETY EQUIPMENT	.00	250	797.71	2,400	1,602.29-	66.8-	3,400
B115	EQUIPMENT/EQUIPMENT REPAIR	146.01	2,100	29,003.53	36,100	7,096.47-	19.7-	44,500

NUMBER	COST DESCRIPTION	ACTUAL CURRENT MONTH	BUDGET CURRENT MONTH	ACTUAL Y-T-D	BUDGET Y-T-D	ACTUAL-BUDGET VARIANCE	VAR %	TOTAL BUDGET
B116	SUPPLIES	396.26	375	5,348.67	2,600	2,748.67	105.7	4,100
B117	EMPLOYEE/DUTY COSTS	1,171.94	1,300	15,537.79	10,400	5,137.79	49.4	15,500
B127	JULIE SYSTEM	.00	1,300	11,079.63	10,400	679.63	6.5	15,400
B128	OVERHEAD SEWER/BACKFLOW PREVENTION PROGRAM	.00	1,000	.00	11,000	11,000.00-	100.0-	15,000
B129	REIMBURSEMENT PROGRAM/PUBLIC SEWER BLOCKAGE	325.00	1,000	3,825.00	8,000	4,175.00-	52.2-	12,000
B900	SEWER SYSTEM REPAIRS - BUDGET	.00	576,000	.00	3,797,300	3,090,491.90-	81.4-	4,271,600
B901	SEWER SYSTEM REPAIRS - I/I PROGRAM	1,135.54	0	17,051.96	0	.00	.0	0
B902	SEWER SYSTEM REPAIRS - REPLACEMENT	4,240.00	0	7,646.08	0	.00	.0	0
B903	SEWER SYSTEM REPAIRS - REHABILITATION	58.25	0	28,594.68	0	.00	.0	0
B910	SEWER SYSTEM REPAIRS - BSSRAP PROGRAM	40,989.19	0	557,498.50	0	.00	.0	0
B913	SEWER SYSTEM REPAIRS - BSSRAP-REPAIR/REPL/R	794.28	0	5,221.28	0	.00	.0	0
B929	ARRA LOAN PRINCIPAL REPAYMENT	.00	0	90,795.60	0	.00	.0	0
	SECT B TOTALS	49,980.80	584,325	779,475.19	3,886,200	3,106,724.81-	79.9-	4,393,500
	SECT C VEHICLES							
C222	GAS/FUEL	2,941.52	2,100	12,227.48	17,600	5,372.52-	30.5-	26,000
C225	OPERATION/REPAIR	981.70-	750	7,662.85	6,000	1,662.85	27.7	9,000
C226	VEHICLE PURCHASES	.00	0	483,212.00	528,500	45,288.00-	8.6-	567,500
	SECT C TOTALS	1,959.82	2,850	503,102.33	552,100	48,997.67-	8.9-	602,500
	DEPT 14 TOTALS	110,814.04	627,917	1,666,735.74	4,825,424	3,158,688.26-	65.5-	5,525,850
	DEPT 15 O & M EXPENSES - LIFT STATIONS							
	SECT A SALARIES AND WAGES							
A006	ENGINEERING	88.46	611	914.10	5,512	4,597.90-	83.4-	7,750
A009	OPERATIONS MANAGEMENT	947.64	259	5,260.95	3,232	2,028.95	62.8	4,250
A030	BUILDING AND GROUNDS	241.31	55	6,492.00	686	5,806.00	846.4	900
A080	LIFT STATION MAINTENANCE	1,276.31	1,153	7,247.45	11,576	4,328.55-	37.4-	15,700
	SECT A TOTALS	2,553.72	2,078	19,914.50	21,006	1,091.50-	5.2-	28,600
	SECT B OPERATIONS AND MAINTENANCE							
B100	ELECTRICITY	7,912.02	13,500	71,127.11	108,000	36,872.89-	34.1-	162,000
B104	FUEL - GENERATORS	.00	0	.00	3,050	3,050.00-	100.0-	4,000
B112	COMMUNICATION	305.85	400	1,670.27	3,800	2,129.73-	56.1-	5,400
B113	EMERGENCY/SAFETY EQUIPMENT	.00	0	11,417.27	11,100	317.27	2.9	11,100
B116	SUPPLIES	.00	0	147.85	300	152.15-	50.7-	300
B124	CONTRACT SERVICES	5,165.00	0	15,012.50	0	15,012.50	.0	0
B520	EQPT/EQPT REPAIR - BUTTERFIELD	.00	500	181.42	5,400	5,218.58-	96.6-	7,400
B521	EQPT/EQPT REPAIR - CENTEX	.00	150	148.20	1,400	1,251.80-	89.4-	2,000
B522	EQPT/EQPT REPAIR - COLLEGE	.00	500	843.08	34,000	33,156.92-	97.5-	35,600
B523	EQPT/EQPT REPAIR - EARLSTON	220.41	250	327.30	5,500	5,172.70-	94.1-	6,300
B524	EQPT/EQPT REPAIR - HOBSON	.00	1,000	4,837.65	90,000	85,162.35-	94.6-	94,000
B525	EQPT/EQPT REPAIR - LIBERTY PARK	.00	250	1,997.21	3,250	1,252.79-	38.6-	4,100
B526	EQPT/EQPT REPAIR - NORTHWEST	.00	250	78.65	13,000	12,921.35-	99.4-	13,700
B527	EQPT/EQPT REPAIR - VENARD	.00	400	987.29	4,900	3,912.71-	79.9-	7,100

FUND 01 GENERAL FUND

NUMBER	COST DESCRIPTION	ACTUAL CURRENT MONTH	BUDGET CURRENT MONTH	ACTUAL Y-T-D	BUDGET Y-T-D	ACTUAL-BUDGET VARIANCE	VAR %	TOTAL BUDGET
B528	EQPT/EQPT REPAIR - WROBLE	.00	500	.00	10,500	10,500.00-	100.0-	12,800
B529	EQPT/EQPT REPAIR - LIFT STATIONS GENERAL	1,939.32	5,000	18,315.67	40,000	21,684.33-	54.2-	66,350
B820	BLDG AND GROUNDS - BUTTERFIELD	185.25	0	1,407.10	0	1,407.10	.0	0
B821	BLDG AND GROUNDS - CENTEX	185.25	0	1,148.55	0	1,148.55	.0	0
B822	BLDG AND GROUNDS - COLLEGE	20,000.00	0	20,000.00	20,000	.00	.0	20,000
B823	BLDG AND GROUNDS - EARLSTON	185.25	0	1,359.55	25,000	23,640.45-	94.6-	25,000
B824	BLDG AND GROUNDS - HOBSON	185.25	0	1,453.61	21,000	19,546.39-	93.1-	21,000
B825	BLDG AND GROUNDS - LIBERTY PARK	185.25	0	1,402.75	0	1,402.75	.0	0
B826	BLDG AND GROUNDS - NORTHWEST	185.25	0	3,431.73	37,000	33,568.27-	90.7-	37,000
B827	BLDG AND GROUNDS - VENARD	25,485.25	0	26,687.65	10,000	16,687.65	166.9	10,000
B828	BLDG AND GROUNDS - WROBLE	12,185.25	0	13,402.75	8,600	4,802.75	55.9	8,600
B829	BLDG AND GROUNDS - LIFT STATIONS GENERAL	.00	3,000	1,864.00	24,000	22,136.00-	92.2-	31,750
	SECT B TOTALS	74,324.60	25,700	199,249.16	479,800	280,550.84-	58.5-	585,500
	DEPT 15 TOTALS	76,878.32	27,778	219,163.66	500,806	281,642.34-	56.2-	614,100
DEPT 17	O & M EXPENSES - INSURANCE & EMPLOYEE BENEFITS							
SECT E	INSURANCE AND EMPLOYEE BENEFITS							
E452	LIABILITY/PROPERTY	.00	0	215,645.00	249,850	34,205.00-	13.7-	249,850
E455	EMPLOYEE GROUP HEALTH	45,513.39	55,000	358,757.83	440,000	81,242.17-	18.5-	658,000
E460	IMRF	14,810.39	18,750	138,793.08	181,250	42,456.92-	23.4-	250,000
E461	SOCIAL SECURITY	33,985.50	19,500	176,014.58	188,500	12,485.42-	6.6-	260,000
	SECT E TOTALS	94,309.28	93,250	889,210.49	1,059,600	170,389.51-	16.1-	1,417,850
	DEPT 17 TOTALS	94,309.28	93,250	889,210.49	1,059,600	170,389.51-	16.1-	1,417,850
DEPT 91	SA EXPENSE							
	DEPT 91 TOTALS	.00	0	.00	0	.00		0
	FUND EXPENSE TOTAL	800,965.17	1,169,979	6,933,954.62	11,562,264	4,628,309.38-	40.0-	14,496,550
	FUND 01 TOTALS	117,414.57-	775,673-	1,090,477.46-	2,617,761	3,708,238.46-	141.7-	2,419,169

TREASURER'S REPORT

DATE 01/09/24 MONTH ENDED 12/31/23 PAGE 7

FUND 02 IMPROVEMENT FUND

NUMBER	COST DESCRIPTION	ACTUAL CURRENT MONTH	BUDGET CURRENT MONTH	ACTUAL Y-T-D	BUDGET Y-T-D	TOTAL BUDGET
DEPT 05	REVENUES					
3007	INTEREST ON INVESTMENTS	1,401.28-	400-	10,919.82-	3,200-	4,700-
3010	TRUNK SEWER SERVICE CHARGES	6,839.04-	7,500-	13,880.90-	60,000-	90,000-
3035	INTERFUND TRANSFER	.00	0	400,000.00-	800,000-	800,000-
	DEPT 05 TOTALS	8,240.32-	7,900-	424,800.72-	863,200-	894,700-
DEPT 30	CAPITAL EXP - ARRA - LOAN REPAYMENTS					
0500	PROJECT BUDGET	.00	0	.00	46,600	93,200
0515	PAYMENT ON LOAN PRINCIPAL	.00	0	46,595.53	0	0
	DEPT 30 TOTALS	.00	0	46,595.53	46,600	93,200
DEPT 36	CAPITAL EXP - LIBERTY PARK LIFT STATION UPGRADE					
	DEPT 36 TOTALS	.00	0	.00	0	0
DEPT 47	CAPITAL EXP - CENTEX LIFT STATION UPGRADE					
0500	PROJECT BUDGET	.00	0	.00	304,400	304,400
0504	CONSTRUCTION ADMIN/RESIDENT ENG/ARCH SUPRVI	587.88	0	14,245.21	0	0
0506	CONSTRUCTION CONTRACTS AND PURCHASES	.00	0	614,968.28	0	0
	DEPT 47 TOTALS	587.88	0	629,213.49	304,400	304,400
DEPT 48	CAPITAL - VENARD LIFT STATION UPGRADE					
0500	PROJECT BUDGET	.00	150,000	.00	850,000	850,000
0502	DESIGN ENGINEERING/ARCHITECTURAL	6,306.50	0	9,602.75	0	0
	DEPT 48 TOTALS	6,306.50	150,000	9,602.75	850,000	850,000
DEPT 74	CAPITAL EXP - SEWER - UNSEWERED AREAS					
0500	PROJECT BUDGET	.00	0	.00	0	500
	DEPT 74 TOTALS	.00	0	.00	0	500
	FUND EXPENSE TOTAL	6,894.38	150,000	685,411.77	1,201,000	1,248,100
	FUND 02 TOTALS	1,345.94-	142,100	260,611.05	337,800	353,400

FUND 03 CONSTRUCTION FUND

NUMBER	COST DESCRIPTION	ACTUAL CURRENT MONTH	BUDGET CURRENT MONTH	ACTUAL Y-T-D	BUDGET Y-T-D	TOTAL BUDGET
DEPT 05	REVENUES					
3007	INTEREST ON INVESTMENTS	2,847.47-	1,475-	20,743.29-	11,800-	17,700-
3009	SEWER PERMIT FEES	11,287.50-	20,800-	86,847.00-	166,800-	250,000-
	DEPT 05 TOTALS	14,134.97-	22,275-	107,590.29-	178,600-	267,700-
DEPT 20	CAPITAL EXP - WWTC - GAS DETECTION/ALARMING					
0500	PROJECT BUDGET	.00	125,000	.00	416,000	419,000
0502	DESIGN ENGINEERING/ARCHITECTURAL	580.00	0	9,900.04	0	0
	DEPT 20 TOTALS	580.00	125,000	9,900.04	416,000	419,000
DEPT 21	CAPITAL EXP - WWTC - BIOSOLIDS IMPROVEMENTS					
0500	PROJECT BUDGET	.00	100,000	.00	176,000	997,500
0501	REPORT ENGINEERING/ARCHITECTURAL	8,285.90	0	9,193.40	0	0
	DEPT 21 TOTALS	8,285.90	100,000	9,193.40	176,000	997,500
DEPT 30	CAPITAL EXP - ARRA - LOAN REPAYMENTS					
0500	PROJECT BUDGET	.00	0	.00	14,450	28,807
0515	PAYMENT ON LOAN PRINCIPAL	.00	0	14,403.65	0	0
	DEPT 30 TOTALS	.00	0	14,403.65	14,450	28,807
DEPT 31	CAPITAL EXP - WWTC - CHP BIOGAS					
	DEPT 31 TOTALS	.00	0	.00	0	0
DEPT 32	CAPITAL EXP - WWTC - SECOND TURBOBLOWER					
	DEPT 32 TOTALS	.00	0	.00	0	0
DEPT 33	CAPITAL EXP - WWTC - DIGESTER MIXING/GAS PIPING					
	DEPT 33 TOTALS	.00	0	.00	0	0
DEPT 34	CAPITAL EXP - WWTC - GREASE WASTE DELIVERY RAMP					
	DEPT 34 TOTALS	.00	0	.00	0	0
DEPT 35	CAPITAL EXP - WWTC - CHP BIOGAS PHASE 2					

FUND 03 CONSTRUCTION FUND

NUMBER	COST DESCRIPTION	ACTUAL CURRENT MONTH	BUDGET CURRENT MONTH	ACTUAL Y-T-D	BUDGET Y-T-D	TOTAL BUDGET
	DEPT 35 TOTALS	.00	0	.00	0	0
DEPT 37	CAPITAL EXP - WWTC - GREASE RECEIVING STATN NO2					
	DEPT 37 TOTALS	.00	0	.00	0	0
DEPT 38	CAPITAL EXP - WWTC - PROPERTY ACQUISITION					
	DEPT 38 TOTALS	.00	0	.00	0	0
DEPT 39	CAPITAL EXP - WWTC - GRIT BLOWER REPLACEMENT					
	DEPT 39 TOTALS	.00	0	.00	0	0
DEPT 40	CAPITAL EXP - WWTC - LOAN REPAYMENT					
	DEPT 40 TOTALS	.00	0	.00	0	0
	FUND EXPENSE TOTAL	8,865.90	225,000	33,497.09	606,450	1,445,307
	FUND 03 TOTALS	5,269.07-	202,725	74,093.20-	427,850	1,177,607

FUND 05 PUBLIC BENEFIT FUND

NUMBER	COST DESCRIPTION	ACTUAL CURRENT MONTH	BUDGET CURRENT MONTH	ACTUAL Y-T-D	BUDGET Y-T-D	TOTAL BUDGET
DEPT 05	REVENUES					
	DEPT 05 TOTALS	.00	0	.00	0	0
DEPT 59	CAPITAL EXP - SEWER - SEWER EXTENSIONS					
	DEPT 59 TOTALS	.00	0	.00	0	0
DEPT 65	CAPITAL EXP - SEWER - REIMB FOR ADDED DEPTH					
	DEPT 65 TOTALS	.00	0	.00	0	0
	FUND EXPENSE TOTAL	.00	0	.00	0	0
	FUND 05 TOTALS	.00	0	.00	0	0

FUND 71 SEWER EXTENSIONS ESCROW

NUMBER	COST DESCRIPTION	ACTUAL CURRENT MONTH	BUDGET CURRENT MONTH	ACTUAL Y-T-D	BUDGET Y-T-D	TOTAL BUDGET
DEPT 05	REVENUES					
	DEPT 05 TOTALS	.00	0	.00	0	0
DEPT 92	SEWER EXPENSE					
	DEPT 92 TOTALS	.00	0	.00	0	0
	FUND EXPENSE TOTAL	.00	0	.00	0	0
	FUND 71 TOTALS	.00	0	.00	0	0

Commissioners of Public Works of the City of Charleston (d.b.a. Charleston Water System) v. Costco Wholesale Corporation, CVS Health Corporation, Kimberly-Clark Corporation, The Procter & Gamble Company, Target Corporation, Walgreen Co., and Wal-Mart, Inc.
Case No. 2:21-CV-00042

United States District Court for the District of South Carolina, Charleston Division

IF YOU ARE A SEWAGE TREATMENT SYSTEM OPERATOR IN THE UNITED STATES WHOSE SYSTEM WAS IN OPERATION BETWEEN JANUARY 6, 2018 AND NOVEMBER 21, 2023, CLASS ACTION SETTLEMENTS MAY AFFECT YOUR RIGHTS.

A federal court authorized this Notice. You are not being sued. This is not a solicitation from a lawyer.

- Proposed settlements ("Settlements") have been reached in the above class action against the remaining Defendants in the case, Costco Wholesale Corporation ("Costco"), CVS Health Corporation ("CVS"), The Procter & Gamble Company ("P&G"), Target Corporation ("Target"), Walgreen Co. ("Walgreens"), and Walmart Inc. ("Walmart" and collectively "Defendants"). The Court has already approved a settlement with Kimberly-Clark Corporation ("Kimberly-Clark"). The action challenges the manufacturing, design, marketing and/or sale of multiple Defendants' flushable wipes.[1] Defendants deny the allegations about their flushable wipes and there has been no finding of liability against Costco, CVS, P&G, Target, Walgreens, or Walmart. Defendants have agreed to the Settlements to avoid the uncertainties and expenses associated with continuing the case.

- You are a Settlement Class Member if you own[ed] and/or operate[d] sewage or wastewater conveyance and treatment systems in the United States between January 6, 2018 and November 21, 2023.

- If you are a Settlement Class Member, your legal rights are affected whether you act or don't act. Read this Notice carefully.

YOUR LEGAL RIGHTS AND OPTIONS IN THIS LAWSUIT	
Do Nothing	If you do nothing, then you will automatically receive benefits under the Settlements in the form of Defendants' business modifications that are further described in this Notice.
Object	Write to the Court about why you do not like something about the Settlements or Class Counsel's requested attorneys' fees and expenses such that it is received by the Court **no later than February 14, 2024**.

[1] The terms of the Settlements are in the Stipulations of Settlement, dated July 13, 2023, October 11, 2023, and October 26, 2023, and in an Addendum dated November 20, 2023 (the "Stipulations"), which can be viewed at www.charlestonwipessettlement.com. All capitalized terms not defined in this Notice have the same meanings as in the Stipulations.

Attend a hearing on [March 8, 2024	Ask to speak in Court about your opinion of the Settlements and/or the requests for attorneys' fees and expenses. Requests to speak must be received by the Court **no later than February 14, 2024.**

- **There is no need to submit a claim form**. The Settlements provide benefits in the form of business practice modifications that are further detailed on pages 5 - 15 of this Notice. If you do nothing, then you will automatically receive the benefits of the Settlements.

- These rights and options – **and the Court-ordered deadlines to exercise them** – are explained in this Notice.

- The Court in charge of this litigation still has to decide whether to approve the Settlements with Costco, CVS, P&G, Target, Walgreens, and Walmart.

A. WHAT THIS NOTICE CONTAINS

BASIC INFORMATION

1. Why should I read this Notice?

The Court authorized this Notice because you have a right to know about proposed settlements of a class action lawsuit, and about all of your rights and options, before the Court decides whether to approve the Settlements.

If you own[ed] and/or operate[d] a sewage or wastewater conveyance and treatment plant, such as a municipality, authority or wastewater district in the United States whose system was in operation between January 6, 2018 and November 21, 2023, you are part of the Settlement Class.

This Notice explains the lawsuit, the Settlements with Defendants, and your rights.

The Honorable Judge Richard M. Gergel of the United States District Court for the District of South Carolina is overseeing this class action. The lawsuit is known as *Commissioners of Public Works of the City of Charleston (d.b.a. Charleston Water System) v. Costco Wholesale Corporation, CVS Health Corporation, Kimberly-Clark Corporation, The Procter & Gamble Company, Target Corporation, Walgreen Co., and Wal-Mart, Inc.*, Case No. 2:21-CV-00042.

2. What is this lawsuit about?

Charleston's lawsuit challenges the manufacturing, design, marketing and/or sale of flushable wipes by Defendants, including Costco, CVS, P&G, Target, Walgreens, and Walmart. Defendants deny the allegations and maintain that their flushable wipes perform as advertised. There has been no finding of liability against any of the Defendants.

3. What is a class action and who is involved?

In a class action lawsuit, one or more people called "Class Representatives" (in this case, Commissioners of Public Works of the City of Charleston (d.b.a. Charleston Water System)) sue on behalf of other people who have similar claims. The people together are a "Settlement Class" or "Settlement Class Members." The people who sue – and all the Settlement Class Members like them – are called the "Plaintiffs." The company or companies the Plaintiffs sue (in this case, Costco, CVS, P&G, Target, Walgreens, Walmart, and Kimberly-Clark) is or are called the "Defendant" or "Defendants." If the court certifies (or approves) the Settlement Class, then one court can resolve the issues for everyone in the Settlement Class.

4. Why are there Settlements?

The Court has not decided whether Plaintiff, Charleston Water System, or Defendants, Costco, CVS, P&G, Target, Walgreens, or Walmart, should win this case. Instead, the respective parties agreed to settle. That way the respective parties avoid the cost and risks of trial, and Costco, CVS, P&G, Target, Walgreens, and Walmart will agree to make changes to their business practices to benefit Settlement Class Members now rather than years from now, if at all, were the matter to be litigated.

More information about the Settlements and the lawsuit is available in the "Important Documents" section of the Settlements Website: www.charlestonwipessettlement.com.

WHO IS IN THE SETTLEMENT CLASS?

5. Am I part of the Settlement Class?

If you own[ed] or operate[d] a sewage or wastewater conveyance and treatment system, such as a municipality, authority or wastewater district in the United States whose system was in operation between January 6, 2018 and November 21, 2023, you are part of the Settlement Class.

THE SETTLEMENTS' BENEFITS

6. What are the benefits of the Settlements with Defendants?

Defendants have agreed to implement certain modifications to their business practices with respect to the flushable wipes Products, including Charmin-branded flushable wipes, Kirkland Signature flushable wipes, Equate-branded flushable wipes, Great Value-branded flushable wipes, up & up™ flushable wipes, Walgreens-branded flushable wipes, Well Beginnings-branded flushable wipes, CVS™ flushable wipes, and Total Home® flushable wipes.

Costco, Target, and CVS

a. Product and Testing Criteria

(i) Defendants commit that their flushable wipes manufactured or sold in the United States do not contain plastic, as defined in Section 5.3.5 of IWSFG 2020: PAS 2.

(ii) Defendants commit to purchasing flushable wipes that meet the current International Water Services Flushability Group ("IWSFG") Publicly Available Specification ("PAS") 3 (Disintegration Test) (hereinafter referred to as "IWSFG 2020: PAS 3") flushability specifications for the Products manufactured on or after April 1, 2024 (for Costco and CVS) and on or after December 1, 2024 (for Target), whereby the average percentage of the total initial dry mass of the sample (as described in IWSFG 2020: PAS 3) passing through a 25 mm sieve for the five test pieces drawn from each of the four (or, at Defendants' election, more) packages of the Products (as further detailed below) after 30 minutes of testing shall be equal to or greater than 80% (at the temperature (20 degrees Celsius +/ 2 degrees), volume (4 liters) and RPM (18) specified in IWSFG 2020: PAS 3). If Defendants are able to attain IWSFG compliance prior to April 1, 2024 (for Costco and CVS) or December 1, 2024 (for Target), they can provide early written notice of such compliance to Plaintiff, which will initiate the monitoring period set forth in Paragraph 2.1(b)(ii) of the Settlement Agreement.

(iii) Once the Product meets the IWSFG 2020: PAS 3 specification and all other IWSFG 2020 specifications, Defendants may represent that Product is IWSFG 2020 compliant for a period of at least five years, subject to the on-going testing requirements set forth herein, irrespective of whether IWSFG adopts heightened testing specifications.

b. Testing Implementation/Monitoring

(i) If Plaintiff elects, Defendants, Nice-Pak, and/or other flushable wipes manufacturers that supply flushable wipes to Defendants, as applicable, will meet with Plaintiff (virtually if requested by Defendants) after the final Stipulation of Settlement is signed to discuss the Products' performance/certification and plan to achieve the performance criteria for wipes manufactured on or after April 1, 2024 (for Costco and CVS) and on or after December 1, 2024 (for Target).

(ii) Defendants, Nice-Pak, and/or other flushable wipes manufacturers that supply flushable wipes to Defendants as applicable, at their election, will submit to and either (1) host periodic independent testing of the Products, including funding of Reasonable Costs for a Plaintiff-selected representative to participate in the same, or (2) submit the Products at their cost to a mutually acceptable lab for independent testing (Parties agree in advance that the Integrated Paper Services ("IPS") lab and SGS are acceptable independent labs), beginning on April 1, 2024 (for Costco and CVS) and on December 1, 2024 (for Target) (or before at Defendants' election as noted above) in accordance with agreed-to IWSFG 2020: PAS 3 testing protocols. The PAS 3 testing will be conducted approximately every four months for a period of 24 months with five test pieces drawn from each of at least four (or more at Defendants' election) packages of each formula of the Products manufactured on or after April 1, 2024 (for Costco and CVS) and on or after December 1, 2024 (for Target) (or such earlier manufacture date that Defendants indicate to Plaintiff that the Products are IWSFG 2020: PAS 3 compliant) to be selected by Plaintiff. If the same formula is used for multiple Defendants at the time of testing, the tests will be performed once per formula. Plaintiff will provide Defendants with the lot number for the test pieces to confirm the manufacturer, formula, and the manufacturing date. The monitoring period will end after 24 months (assuming Defendants' products pass the test).

(iii) Defendants and/or Nice-Pak, and/or other flushable wipes manufacturer as applicable, shall have the right to observe (virtually if requested by Defendants) all testing conducted pursuant to Paragraph 2.1(b)(ii) of the Settlement Agreement. If any such tests find that any of the Products are not compliant with IWSFG 2020: PAS 3, Defendants have the right to object to the results of that testing and submit their own results or data. If the results or data submitted with Defendants' objection finds that the Products are compliant with IWSFG 2020: PAS 3 and the Parties cannot resolve inconsistent results, Defendants shall submit the Products to IPS for independent testing, in accordance with agreed to IWSFG 2020: PAS 3 testing protocols, within 30 days of receiving the conflicting results. If the Products are thereafter found non-compliant, Defendants shall have 150 days to regain compliance in their wipes manufacturing operations.

(iv) Reasonable Costs, as noted in Paragraph 2.1(b)(ii), consist of reimbursement of Plaintiff's selected representative for up to 48 hours of testing per testing cycle (i.e., three times per year) at a reasonable hourly rate agreed upon by the Parties, or a reasonable flat rate agreed upon by the Parties, along with reimbursement of flight, hotel, and incidental travel expenses for Plaintiff's selected representative.

c. Label Changes

(i) Defendants and/or Nice-Pak will add or cause to be added certain labeling changes, as described below, for its non-flushable wipes products nationwide at Costco, CVS, and Target, within 18 months from the date of the settlement agreement.

(ii) Defendants will add or cause to be added prominent language or illustration on their store-brand non-flushable wipes products identifying the non-flushable wipes products as "non-flushable" or instructing users not to flush the non-flushable wipes products (e.g., "Do Not Flush"), consistent with the provisions in Paragraph 2.1(c)(iii).

(iii) Defendants will ensure that its store-brand non-flushable wipes products labeling will meet the current "do not flush" labeling standards set forth in Chapter 590 of Assembly Bill No. 818 of California State, which took effect on July 1, 2022 ("AB818"), Section 3 of House Bill 2565 of Washington State, which took effect on March 26, 2020 ("HB2565"), and Section 1 of House Bill 2344 of Oregon State, which took effect on September 25, 2021 ("HB2344"), to the extent such products are "Covered Products" as defined in AB818, HB2565, and HB2344. Defendants agree to exceed the standards herein insofar as they will include "do not flush" symbols or warnings (or cause such warnings to be included), or disposal instructions, on not only the principal display panel, but also at least two additional panels of packaging for non-flushable baby wipes products, except for packages that only have two panels. If AB818, HB2565, or HB2344 cease to remain effective for any reason, Defendants will no longer be required to meet the labeling standards set forth in the law(s) that is no longer in effect.

(iv) Defendants have or will provide representative labeling for their store-brand baby wipes products to Plaintiff to confirm that it complies with the required labeling changes.

d. Acknowledgement and Endorsement

(i) After Nice-Pak, and/or Defendants implement the injunctive relief described herein, the Products shall be deemed "flushable," biodegradable, safe for sewer systems, and capable of breaking down after flushing, as advertised, subject to compliance with the testing provisions in Paragraphs 2.1(a)(ii) above.

(ii) After Nice-Pak and/or Defendants implement the injunctive relief described herein, Plaintiff will take the following steps to endorse the Products: (1) provide its endorsement of compliance with IWSFG 2020 as representative of the Settlement Class; (2) solicit commitment of U.S. municipal wastewater treatment industry (including members of IWSFG, such as NACWA) to provide acknowledgment that the Products are, in fact, flushable, biodegradable, safe for sewer systems, and capable of breaking down after flushing, as advertised; and (3) provide a sample press release for approval to Nice-Pak and/or Defendants acknowledging the Products' performance and compliance with IWSFG 2020.

e. Purchase of Wipes from Manufacturers

(i) In the event that any of the Defendants stops purchasing flushable wipes manufactured by Nice-Pak, the Settlement Agreement and Paragraphs 2.1(a)-(c) of the Stipulation of Settlement will not impose any obligations on Nice-Pak regarding the non-Nice-Pak-manufactured flushable wipes.

P&G

a. Product and Testing Criteria:

(i) P&G commits to Plaintiff, as a representative for the Rule 23(b)(2) settlement class, that P&G flushable wipes manufactured in the United States do not contain synthetic bicomponent (polyester/polyolefin) fibers.

(ii) P&G commits to meeting the current IWSFG 2020: PAS 3 flushability specifications for its Product by 18 months following the Effective Date ("Compliance Date"), whereby the average percentage of the total initial dry mass of the sample (as described in IWSFG 2020: PAS 3) passing through a 25 mm sieve for the five test pieces drawn from each of four (or, at P&G's election, more) packages of flushable wipes (as further detailed below) after 30 minutes of testing shall be equal to or greater than 80% (at the temperature (20 degrees celsius +/- 2 degrees), volume (4 liters) and RPM (18) specified in IWSFG 2020: PAS 3). P&G agrees that, upon request from Plaintiff to Defense Counsel, it will provide Plaintiff with an update (no more frequently than every 120 days following the Effective Date) as to its progress toward meeting the Compliance Date.

(iii) Once the Product meets the IWSFG 2020: PAS 3 specification and all other IWSFG 2020 specifications, P&G may represent that Product is IWSFG 2020 compliant for a period of at least five years, subject to the on-going testing requirements set forth herein, irrespective of whether IWSFG adopts heightened testing specifications.

(iv) Plaintiff agrees that if (1) Plaintiff reaches settlements with other manufacturers, marketers, distributors, or retailers of flushable wipes that require such companies' flushable wipes to comply with specifications more lenient than IWSFG 2020: PAS 3 specifications, or that commit such companies to more lenient testing frequency and testing expense terms, or (2) IWSFG adopts standards more lenient than IWSFG 2020: PAS 3, then P&G's Product needs to only meet those more lenient specifications and monitoring terms.

(v) The Compliance Date reflects the date upon which P&G begins manufacturing the Products. In the event exigent circumstances (such as supply chain disruptions) render the Compliance Date unworkable, P&G commits to promptly notify Plaintiff within 14 days of becoming aware that compliance may be delayed, and keep Plaintiff apprised of the expected date upon which the Products will be manufactured. Likewise, Plaintiff agrees that if such exigent circumstances make future compliance with IWSFG 2020: PAS 3 temporarily unworkable, no breach shall been deemed to occur should P&G cure the compliance defect expeditiously.

b. Testing Implementation/Monitoring:

(i) P&G and Plaintiff will co-promote the Settlement, including online and in social media, that the Product will soon meet the IWSFG 2020: PAS 3 flushability specifications. Plaintiff agrees that it will not promote any other flushable wipes as outperforming the Product upon the Compliance Date.

(ii) P&G and Plaintiff agree to engage in such co-promotion again regarding compliance with the IWSFG 2020: PAS 3 flushability specifications once P&G confirms that it meets the IWSFG 2020: PAS 3 flushability specifications.

(iii) Plaintiff agrees to cooperate with inquiries by media and other municipalities and wastewater treatment operators regarding flushability by reiterating that the Product meets the IWSFG 2020 flushability specifications.

(iv) Upon request from Plaintiff, P&G will submit at its election to either: (1) host periodic independent testing of the Product, including funding of Reasonable Costs[2] for Plaintiff-selected representative(s) to participate in and conduct testing, or (2) submit the Product at its cost to a mutually acceptable lab for independent testing (parties agree that Integrated Paper Services (IPS) lab is an acceptable independent lab, subject to IPS providing a reasonable cost proposal for the testing, which

[2] "Reasonable Costs" noted above shall consist of a flat rate of $2,800 per testing cycle (i.e., every four months), and reimbursement of reasonable agreed-upon in advance flight, hotel, and incidental travel expenses for Plaintiff's representative.

will be approved or rejected in P&G's discretion), beginning on the Compliance Date (or before at P&G's election) in accordance with agreed-to IWFSG 2020: PAS 3 testing protocols. Testing may be conducted at Plaintiff's request and conducted every four months for a period of 24 consecutive months following the Compliance Date, with five test pieces drawn from each of at least four (and more at P&G's election) packages of the Product manufactured on or after the Compliance Date (or such earlier manufacture date that P&G indicates to Plaintiff that the Product is IWSFG 2020: PAS 3-compliant). P&G has the right to observe testing, and, if Plaintiff's independent IWSFG: 2020 PAS 3 testing finds the Product non-compliant, to object to such result with its own data. If P&G's data finds the Product compliant, and the parties cannot resolve inconsistent results, P&G shall submit the Product to IPS within 60 days of either party providing the other with a notice of impasse for independent testing in accordance with agreed-to IWFSG 2020: PAS 3 testing protocols. If the Product is thereafter found non-compliant, P&G shall have eight weeks to regain compliance in its wipes manufacturing operations.

c. Label Changes:

(i) Flushable wipes labeling:

1) On or after the Compliance Date, P&G will modify the packaging and websites for the Product to add language specifying the bases or sources for the "flushable" claim that appears on its labeling, including that the Product complies with IWSFG 2020 and INDA GD4 guidelines.

2) For the avoidance of doubt, P&G will not recall the Product and is permitted to sell through any product manufactured prior to the Compliance Date.

(ii) Non-flushable wipes labeling:

1) P&G agrees that non-flushable wipes product labeling nationwide will meet the "do not flush" labeling standards set forth in Chapter 590 of Assembly Bill No. 818 of California State, which took effect on July 1, 2022 ("AB818"), to the extent such products are "Covered Products" as defined in AB818.

2) Upon the Compliance Date and for a period of five years, P&G agrees to exceed the standards of AB818 insofar as it will include "do not flush" symbols or warnings on not only the principal display panel, but also at least two additional panels of packaging for "non-flushable" baby wipe products (other than promotional packages, packages distributed to hospitals, travel size packages, or other small packages where inclusion of "do not flush" symbols or warnings on the additional panels is not practicable).

3) For the avoidance of doubt, P&G will not recall and is permitted to sell through any wipes manufactured prior to the Compliance Date.

d. Product Endorsement:

(i) For as long as P&G's flushable Product meets all IWSFG 2020 specifications, Plaintiff will provide its endorsement of the Product's compliance with IWSFG 2020 as representative for the Rule 23(b)(2) settlement class and will solicit commitment of U.S. municipal wastewater treatment industry including principally North American-based members of IWSFG, such as NACWA, to provide acknowledgement that the Product is, in fact, flushable for municipal sewer systems according to IWSFG 2020. Plaintiff will provide P&G with sample press release acknowledging the performance of the Product, which must be reviewed and approved by P&G. Plaintiff agrees that

P&G may use such approved press release(s)/acknowledgement(s), and the content therein, in social media posts, with influencers, and on its websites. Upon compliance with IWSFG 2020: PAS 3 specification and all other IWSFG 2020 specifications, P&G, if it elects, may be permitted to state on its packaging, advertisements, and website for the Product that it is "IWSFG 2020 Compliant," and/or if it chooses, use (with any necessary permissions), e.g., the following symbol, as long as compliance is maintained:

(ii) In addition to the above, P&G shall be entitled to state in advertising, packaging, and other marketing materials that the Product meets the 2020 IWSFG flushability specifications and is subject to regular confirmation testing.

Walgreens

a. Product and Testing Criteria

(i) Defendant commits that their flushable wipes manufactured or sold in the United States do not contain plastic, as defined in Section 5.3.5 of IWSFG 2020: PAS 2.

(ii) Defendant commits to purchasing flushable wipes that meet the current International Water Services Flushability Group ("IWSFG") Publicly Available Specification ("PAS") 3 (Disintegration Test) (hereinafter referred to as "IWSFG 2020: PAS 3") flushability specifications for the Product manufactured on or after April 1, 2024, whereby the average percentage of the total initial dry mass of the sample (as described in IWSFG 2020: PAS 3) passing through a 25 mm sieve for the five test pieces drawn from each of the four (or, at Defendant's election, more) packages of the Product (as further detailed below) after 30 minutes of testing shall be equal to or greater than 80%(at the temperature (20 degrees Celsius +/-2 degrees), volume (4 liters) and RPM (18) specified in IWSFG 2020: PAS 3). If Defendant is able to attain IWSFG compliance prior to April 1, 2024, it can provide written notice to Plaintiff, which will initiate the monitoring period set forth in Paragraph 2.1(b)(ii).

(iii) Once the Product meets the IWSFG 2020: PAS 3 specification and all other IWSFG 2020 specifications, Defendant may represent that Product is IWSFG 2020 compliant for a period of at least five years, subject to the on-going testing requirements set forth herein, irrespective of whether IWSFG adopts heightened testing specifications.

b. Testing Implementation/Monitoring

(i) If Plaintiff elects, Defendant, Nice-Pak, and/or other flushable wipes manufacturers that supply flushable wipes to Defendant, as applicable, will meet with Plaintiff (virtually if requested by Defendant) after the final Stipulation of Settlement is signed to discuss the Product's performance/certification and plan to achieve the performance criteria for wipes manufactured on or after April 1, 2024.

(ii) Defendant, Nice-Pak, and/or other flushable wipes manufacturers that supply flushable wipes to Defendant as applicable, at their election, will submit to and either (1) host periodic independent testing of the Product, including funding of Reasonable Costs for a Plaintiff-selected representative to participate in the same, or (2) submit the Product at their cost to a mutually acceptable lab for independent testing (Parties agree in advance that the Integrated Paper Services ("IPS") lab and SGS are acceptable independent labs), beginning on April 1, 2024 (or before at Defendant's election) in accordance with agreed-to IWSFG 2020: PAS 3 testing protocols. The PAS 3 testing will be conducted approximately every four months for a period of 24 months with five test pieces drawn from each of at least four (or more at Defendant's election) packages of each formula of the Product manufactured on or after April 1, 2024 (or such earlier manufacture date that Defendant indicates to Plaintiff that the Product is IWSFG 2020: PAS 3 compliant) to be selected by Plaintiff. To the extent Plaintiff enters into a similar settlement agreement with defendants Costco, CVS, and Target containing a similar PAS 3 testing compliance date, if the same formula is used for Walgreens and defendants Costco, CVS, or Target at the time of testing, the tests will be performed once per formula. Plaintiff will provide Defendant with the lot number for the test pieces to confirm the manufacturer, formula, and the manufacturing date. The monitoring period will end after 24 months.

(iii) Defendant and/or Nice-Pak, and/or other flushable wipes manufacturers as applicable, shall have the right to observe (virtually if requested by Defendant) all testing conducted pursuant to Paragraph 2.1(b)(ii). If any such tests find that the Product is not compliant with IWSFG 2020: PAS 3, Defendant has the right to object to the results of that testing and submit its own results or data. If the results or data submitted with Defendant's objection finds that the Product is compliant with IWSFG 2020: PAS 3 and the Parties cannot resolve inconsistent results, Defendant shall submit the Product to IPS for independent testing, in accordance with agreed to IWSFG 2020: PAS 3 testing protocols, within 60 days of receiving the conflicting results. If the Product is thereafter found non-compliant, Defendant shall have 150 days to regain compliance in its wipes manufacturing operations.

(iv) Reasonable Costs, as noted in Paragraph 2.1(b)(ii), consist of reimbursement of Plaintiff's selected representative for up to 12 hours of testing per testing cycle (i.e., three times per year) at a reasonable hourly rate agreed upon by the Parties, or a reasonable flat rate agreed upon by the Parties, along with reimbursement of flight, hotel, and incidental travel expenses for Plaintiff's selected representative.

c. Label Changes

(i) Defendant and/or Nice-Pak will add or cause to be added certain labeling changes, as described below, for its non-flushable wipes products nationwide within 18 months from the date of the settlement agreement.

(ii) Defendant will add or cause to be added prominent language or illustration on their store-brand non-flushable wipes products identifying the non-flushable wipes products as "non-flushable" or instructing users not to flush the non-flushable wipes products (e.g., "Do Not Flush"), consistent with the provisions in Paragraph 2.1(c)(iii).

(iii) Defendant will ensure that its store-brand non-flushable wipes products labeling will meet the current "do not flush" labeling standards set forth in Chapter 590 of Assembly Bill No. 818 of California State, which took effect on July 1, 2022 ("AB818"), Section 3 of House Bill 2565 of Washington State, which took effect on March 26, 2020 ("HB2565"), and Section 1 of House Bill 2344 of Oregon State, which took effect on September 25, 2021 ("HB2344"), to the extent such products are "Covered Products" as defined in AB818, HB2565, and HB2344. Defendant agrees to exceed the standards herein insofar as it will include "do not flush" symbols or warnings (or cause such warnings to be included), or disposal instructions, on not only the principal display panel, but also at least two additional panels of packaging for non-flushable baby wipes products, except for packages that only have two panels. If AB818, HB2565, or HB2344 cease to remain effective for any reason, Defendant will no longer be required to meet the labeling standards set forth in the law(s) that is no longer in effect.

(iv) Upon request, Defendant will provide one representative labeling for each of their store-brand baby wipes products to Plaintiff to confirm that it complies with the required labeling changes.

d. Acknowledgement and Endorsement

(i) After Defendant and/or Nice-Pak implements the injunctive relief described herein, the Product shall be deemed "flushable," biodegradable, safe for sewer systems, and capable of breaking down after flushing, as advertised, subject to compliance with the testing provisions in Paragraphs 2.1(a)(ii) above.

(ii) After Defendant and/or Nice-Pak implements the injunctive relief described herein, Plaintiff will take the following steps to endorse the Product: (1) provide its endorsement of compliance with IWSFG 2020 as representative of the Settlement Class; (2) solicit commitment of U.S. municipal wastewater treatment industry (including members of IWSFG, such as NACWA) to provide acknowledgment that the Product are, in fact, flushable, biodegradable, safe for sewer systems, and capable of breaking down after flushing, as advertised; and (3) provide a sample press release for approval to Defendant and/or Nice-Pak acknowledging the Product's performance and compliance with IWSFG 2020.

e. Purchase of Wipes from Manufacturers

(i) In the event Defendant stops purchasing flushable wipes manufactured by Nice-Pak, the Settlement Agreement and Paragraphs 2.1(a)-(c) of the Stipulation of Settlement will not impose any obligations on Nice-Pak regarding the non-Nice-Pak manufactured flushable wipes.

Walmart

a. Product and Testing Criteria

(i) Rockline Corporation supplies wipes products to Defendant Walmart. Rockline commits that the Products do not contain synthetic bicomponent (polyester/polyolefin) fibers.

(ii) Rockline commits that the Products meet the current International Water Services Flushability Group ("IWSFG") Publicly Available Specification ("PAS") 3 (Disintegration Test) (hereinafter referred to as "IWSFG 2020: PAS 3") flushability specifications, whereby the average percentage of the total initial dry mass of the sample (as described in IWSFG 2020: PAS 3) passing through a 25 mm sieve for the five test pieces drawn from each of the four (or, at Rockline's election, more) packages of the Products (as further detailed below) after 30 minutes of testing shall be equal to or greater than 80% (at the temperature (20 degrees Celsius +/-2 degrees), volume (4 liters) and RPM (18) specified in IWSFG 2020: PAS 3).

(iii) Plaintiff has reviewed qualified independent lab testing of the Rockline-manufactured Products dating back to 2021 showing the Rockline-manufactured Products pass and comply with the IWSFG 2020: PAS 3 flushability specifications.

(iv) So long as the Products meet the IWSFG 2020: PAS 3 specification and all other IWSFG 2020 specifications, Defendant and Rockline may represent that the Products are IWSFG 2020 compliant for a period of at least five years, subject to the on-going testing requirements set forth herein, irrespective of whether IWSFG adopts heightened testing specifications.

b. Testing Implementation/Monitoring

(i) If Plaintiff elects, Defendant and Rockline will meet with Plaintiff (virtually if requested by Defendant) after the final Stipulation of Settlement is signed to discuss the Products' performance/certification.

(ii) Upon request from Plaintiff, Rockline, at its election, will submit to either (1) host periodic independent testing of the Products, including funding of Reasonable Costs for a single Plaintiff-selected representative to participate in the same, or (2) submit the Products at their cost to a mutually acceptable lab for independent testing (Parties agree in advance that the Integrated Paper Services ("IPS") lab and SGS are acceptable independent labs), beginning within 90 days of final approval (or before at Rockline's election) in accordance with agreed-to IWSFG 2020: PAS 3 testing protocols. Defendant commits that it has no current intention of switching to a flushable wipes supplier over the course of the monitoring period that is not in compliance with the IWSFG 2020: PAS 3 flushability specifications. The PAS 3 testing will be conducted approximately every four months for a period of 24 months with five test pieces drawn from each of at least four (or more at Rockline's election) packages of each formula of the Products to be selected by Plaintiff. Plaintiff will provide Rockline with the lot number for the test pieces to confirm the manufacturer, formula, and the manufacturing date. The monitoring period will end after 24 months.

(iii) The Settling Parties shall have the right to observe (virtually if requested by Defendant or Rockline) all testing conducted pursuant to Paragraph 2.1(b)(ii). If any such tests find that any of the Products are not compliant with IWSFG 2020: PAS 3, Defendant and/or Rockline have the right to object to the results of that testing and submit their own results or data. If the results or data submitted with Rockline's objection finds that the Products are compliant with IWSFG 2020: PAS 3 and the Parties cannot resolve inconsistent results, Rockline shall submit the Products to IPS for independent testing, in accordance with agreed to IWSFG 2020: PAS 3 testing protocols, within 60 days of receiving the conflicting results. If the Products are thereafter found non-compliant, Rockline shall have 150 days to regain compliance in their wipes manufacturing operations.

(iv) Reasonable Costs, as noted in Paragraph 2.1(b)(ii)(1), will be paid by Rockline and consist of reimbursement of Plaintiff's selected representative for up to 12 hours of testing per testing cycle (*i.e.*, three times per year) at a reasonable hourly rate agreed upon by the Parties, or a reasonable flat rate agreed upon by the Parties, along with reimbursement of reasonable flight, hotel, and incidental travel expenses for one Plaintiff selected representative.

c. Label Changes

(i) Defendant agrees to ensure that its current suppliers of the Parent's Choice non-flushable baby wipe products modify packaging to include "do not flush" symbols or text on not only the principal display panel, but also at least two additional panels of packaging for "non-flushable" baby wipe products (other than promotional packages, packages distributed to hospitals, travel size packages, or other small packages where inclusion of "do not flush" symbols or text on the panels is not practicable) and within eighteen months of the Effective Date will implement changes to the packaging if not already in compliance.

(ii) Within 18 months of the effective date Defendant agrees that its Parent's Choice non-flushable wipes product labeling will be consistent in all states for each product label. Notwithstanding the foregoing, if additional warnings are required by Proposition 65 in California, nothing shall prevent the Defendant from complying with those requirements.

(iii) For avoidance of doubt, Defendant is permitted to sell through any current and/or ordered flushable and non-flushable wipes inventory.

(iv) Defendant has or will provide representative labeling for their Parent's Choice brand baby wipes products to Plaintiff to confirm that it complies with the required labeling changes.

(v) Notwithstanding the foregoing, should Defendant or its current suppliers become subject to future, more restrictive laws, regulations, or orders relating to the packaging of the Parent's Choice non-flushable baby wipe products, nothing in this agreement will impede Defendant or its current suppliers from complying with those laws, regulations, or orders.

(vi) Defendant commits to maintaining this labeling for 24 months after Defendant implements the labeling changes detailed in Paragraphs 2.1(c)(i)-(ii) above.

d. Acknowledgement and Endorsement

(i) So long as the Products comply with the IWSFG 2020: PAS 3 specification and all other IWSFG 2020 specifications, the Products shall be deemed "flushable," biodegradable, safe for sewer systems, and capable of breaking down after flushing, as advertised, subject to compliance with the testing provisions in Paragraphs 2.1(a)(ii) above. Defendant, if it elects, is permitted to state on its packaging, advertisements, and website for the Product that it is "IWSFG 2020 Compliant," and/or if it chooses, use (with any necessary permissions), *e.g.*, the following symbol, as long as compliance is maintained:

(ii) Upon Final Judgment of the Settlement, and if Defendant and Rockline elect and request the same of Plaintiff, Plaintiff will take the following steps to endorse the Products: (1) provide its endorsement of compliance with IWSFG 2020 as representative of the Settlement Class; (2) solicit commitment of U.S. municipal wastewater treatment industry (including members of IWSFG, such as NACWA) to provide acknowledgment that the Products are, in fact, flushable, biodegradable, safe for sewer systems, and capable of breaking down after flushing, as advertised; and (3) provide a sample press release for approval to Rockline and/or Defendant acknowledging the Products' performance and compliance with IWSFG 2020.

e. Purchase of Wipes from Manufacturers

(i) In the event that Defendant purchases Products from a manufacturer other than Rockline, Rockline will have no obligations under the Settlement Agreement, including, but not limited to Paragraphs 2.1(a)-(c) of the Stipulation of Settlement, regarding the non-Rockline-manufactured flushable wipes. For the avoidance of doubt, nothing in this Settlement Agreement shall be interpreted in a manner that makes Rockline responsible for validating the performance or testing history of Products Rockline does not supply or manufacture.

7. What am I giving up by not objecting to the Settlement Class?

As a Settlement Class Member, you cannot sue, continue to sue, or be part of any other lawsuit against Defendants or the Released Parties or Released Persons about the Plaintiff's Released Claims (as defined below) in this case. It also means that all of the Court's orders will apply to you and legally bind you. If the Settlements are approved, you will give up all claims (as defined below), including "Unknown Claims" (as defined below), against the "Released Parties" (as defined below):

- "Plaintiff's Released Claims" means any and all claims of Plaintiff and the Settlement Class Members for injunctive relief that arise from or relate to the claims and allegations in the Complaint, including Unknown Claims, and the acts, facts, omissions, or circumstances that were or could have been alleged by Plaintiff in the Action, including but not limited to all claims for injunctive relief related to any wipe products (flushable and non-flushable) currently or formerly manufactured, marketed, or sold by Defendants or any of its affiliates or licensees. For the avoidance of doubt, "Plaintiff's Released Claims" do not include claims for damages or other monetary relief, including, but not limited to, claims for monetary relief under the law of nuisance.

- "Released Parties" or "Released Persons" means the parties or persons receiving a release, including Plaintiff, Class Counsel, Defendants, Nice-Pak, Radienz, and their present, former, and future, direct and indirect, parents, subsidiaries, affiliates, assigns, divisions, predecessors, licensees, insurers, and successors, and all of their respective officers, agents, administrators, and employees, Defense Counsel, and all Settlement Class Members.

- "Unknown Claims" means Plaintiff's Released Claims that arise from or relate to the Action (and, as to Costco, CVS, Target, Walmart and Walgreens, all of Defendants' Released Claims) and that any of the Settling Parties or Settlement Class Members do not know or suspect to exist in his, her, or its favor at the time of the release, which if known by him, her, or it, might have affected his, her, or its decision not to object to these Settlements or release of the Released Parties, Plaintiff, Class Counsel, or Settlement Class Members. With respect to any and all of Plaintiff's Released Claims and Defendants' Released Claims, the Settling Parties stipulate and agree that upon the Effective Date, the Settling Parties shall, to the fullest extent permitted by law, fully, finally, and forever expressly waive and relinquish with respect to such claims, any and all provisions, rights, and benefits of Section 1542 of the California Civil Code and any and all similar provisions, rights, and benefits conferred by any law of any state or territory of the United States or principle of common law that is similar, comparable, or equivalent to Section 1542 of the California Civil Code, which provides:

  A GENERAL RELEASE DOES NOT EXTEND TO CLAIMS THAT THE CREDITOR OR RELEASING PARTY DOES NOT KNOW

OR SUSPECT TO EXIST IN HIS OR HER FAVOR AT THE TIME OF EXECUTING THE RELEASE AND THAT, IF KNOWN BY HIM OR HER, WOULD HAVE MATERIALLY AFFECTED HIS OR HER SETTLEMENT WITH THE DEBTOR OR RELEASED PARTY.

YOUR RIGHTS AND OPTIONS

8. How do I object to the Settlements or to the request for attorneys' fees and expenses?

You can object to the Settlements and/or Class Counsel's request for attorneys' fees and expenses.

You can ask the Court to deny approval of the Settlements by filing an objection. You cannot ask the Court to order a different settlement or settlements; the Court can only approve or reject the Settlements. If the Court denies approval of the Settlements, no benefits in the form of modifications of Defendants' business practices will be made, and the litigation will continue. If that is what you want to happen, you must object.

Any objection to the proposed Settlements must be in writing. If you file a timely written objection, you may, but are not required to, appear at the Final Approval Hearing, either in person or through your own attorney. If you appear through your own attorney, you are responsible for hiring and paying that attorney.

All written objections must contain the following:

- the name and case number of this lawsuit (*Commissioners of Public Works of the City of Charleston (d.b.a. Charleston Water System) v. Costco Wholesale Corporation, CVS Health Corporation, Kimberly-Clark Corporation, The Procter & Gamble Company, Target Corporation, Walgreen Co., and Wal-Mart, Inc.*, Case No. 2:21-CV-00042);
- your full name, mailing address, email address, and telephone number;
- an explanation of why you believe you are a Settlement Class Member, including documents sufficient to establish the basis for your standing as a Settlement Class Member;
- all reasons for your objection or comment, including all citations to legal authority and evidence supporting the objection;
- whether you intend to personally appear and/or testify at the Final Approval Hearing (either personally or through counsel), and what witnesses you will ask to speak;
- the name and contact information of any and all attorneys representing, advising, and/or assisting you, including any counsel who may be entitled to compensation for any reason related to your objection or comment, who must enter an appearance with the Court in accordance with the Local Rules;

- the name and case number of all class action settlements to which you or your counsel have objected; and

- your handwritten or electronically imaged signature (an attorney's signature or typed signature is not sufficient).

To be considered by the Court, your objection must be received by the Court either by mailing it to the Class Action Clerk, United States District Court for the District of South Carolina, Charleston Division, J. Waties Waring Judicial Center, 83 Meeting Street, Charleston, South Carolina 29401, or by filing it in person at any location of the United States District Court for the District of South Carolina.

To be considered, your objection must be received on or before the February 14, 2024.

THE LAWYERS REPRESENTING YOU

9. Do I have a lawyer in this case?

The Court decided that the law firms of Robbins Geller Rudman & Dowd LLP ("Robbins Geller") and AquaLaw PLC are qualified to represent you and all Settlement Class Members. These firms are called "Class Counsel" and are experienced in handling similar class action cases. More information about Robbins Geller and AquaLaw is available at www.rgrdlaw.com and www.aqualaw.com, respectively.

Class Counsel believe, after investigating and litigating the case for several years, that the Stipulations are fair, reasonable, and in the best interests of the Settlement Class. You will not be separately charged for these lawyers. If you want to be represented by your own lawyer in this case, you may hire one at your expense.

10. Should I get my own lawyer?

You do not need to hire your own lawyer because Class Counsel is working on your behalf. But if you want your own lawyer, you will have to pay for that lawyer. For example, you can ask him or her to appear in court for you if you want someone other than Class Counsel to speak for you.

11. How will the lawyers be paid?

Class Counsel's attorneys' fees and expenses will be paid in an amount to be determined and awarded by the Court. Defendants have also agreed to pay reasonable attorneys' fees and expenses in the amounts set forth in the Stipulations.

Class Counsel will ask the Court to approve attorneys' fees and expenses from Defendants of no more than $1,900,000.

The final amount of attorneys' fees and expenses will be determined by the Court.

Class Counsel's application for an award of attorneys' fees and expenses will be made available on the "Important Documents" page of the Settlements Website at www.charlestonwipessettlement.com on the date it is filed or as quickly thereafter as possible.

THE COURT'S FINAL APPROVAL HEARING

12. When and where will the Court decide whether to approve the Settlements with Defendants?

The Court is scheduled to hold the Final Approval Hearing on March 8, 2024 at 10:00 a.m. in Courtroom 1 of the United States District Court for the District of South Carolina, Charleston Division, J. Waties Waring Judicial Center, 83 Meeting Street, Charleston, South Carolina 29401. The hearing may be rescheduled to a different date, time, or location without another notice to Settlement Class Members. Especially given the national health emergency, the date, time, or location of the hearing may be subject to change, as will the manner in which Settlement Class Members might appear at the hearing. Please review the Settlements Website for any updated information regarding the hearing.

At the Final Approval Hearing, the Court will consider whether the Settlements with Defendants are fair, reasonable, and adequate. If there are objections, the Court will consider them. The Court may listen to people who appear at the hearing and who have provided notice of their intent to appear at the hearing. The Court may also consider Class Counsel's application for attorneys' fees and expenses.

13. Do I have to come to the Final Approval Hearing?

No. Class Counsel will answer any questions the Court may have. You may attend at your own expense if you wish. If you submit a written objection, you do not have to come to the Court to talk about it. As long as you submit your written objection on time, and follow the requirements above, the Court will consider it. You may also pay your own attorney to attend, but it is not required.

14. May I speak at the Final Approval Hearing?

Yes. You may ask the Court for permission to speak at the Final Approval Hearing. At the hearing, the Court, in its discretion, will hear any objections and arguments concerning the fairness of the Settlements and/or Class Counsel's request for attorneys' fees and expenses.

To do so, you must include in your objection or comment a statement saying that it is your Notice of Intent to Appear in *Commissioners of Public Works of the City of Charleston (d.b.a. Charleston Water System) v. Costco Wholesale Corporation, CVS Health Corporation, Kimberly-Clark Corporation, The Procter & Gamble Company, Target Corporation, Walgreen Co., and Wal-Mart, Inc.*, Case No. 2:21-CV-00042 (D.S.C.). It must include your name, address, email, telephone number, and signature as well as the name and address of your lawyer, if one is appearing for you. Your submission and Notice of Intent to Appear must be filed with the Court and be received **no later than** February 14, 2024.

GETTING MORE INFORMATION

15. How do I get more information?

This Notice summarizes the proposed Settlements. For precise terms and conditions of the Settlements, please see the Stipulations available at www.charlestonwipessettlement.com, by contacting Class Counsel, Paul Calamita at (804) 716-9021, ext. 201, by accessing the Court docket in this case, for a fee, through the Court's Public Access to Court Electronic Records (PACER) system at https://ecf.scd.uscourts.gov/cgi-bin/login.pl, or by visiting the office of the Clerk of Court for the United States District Court for the District of South Carolina, Charleston Division, J. Waties Waring Judicial Center, 83 Meeting Street, Charleston, South Carolina 29401, between 9:00 a.m. to 4:00 p.m., Monday through Friday, excluding holidays.

PLEASE DO NOT TELEPHONE OR WRITE THE COURT OR THE COURT CLERK'S OFFICE TO INQUIRE ABOUT THE SETTLEMENTS.

All questions regarding the Class Settlements should be directed to Class Counsel.

DATED: November 21, 2023

BY ORDER OF THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF SOUTH CAROLINA

____
THE HONORABLE RICHARD M. GERGEL
UNITED STATES DISTRICT JUDGE

PLANT PROFILE:

Downers Grove Sanitary District

The Downers Grove Sanitary District (DGSD) was organized in 1921 under the *State of Illinois Sanitary District Act* of 1917 when properties in the Village of Westmont were connected to the Village of Downers Grove sanitary sewers. Upon its formation, ownership of the Village of Downers Grove sanitary sewer system and disposal plant, which were constructed in 1904, were transferred to the District. In addition to the Village of Downers Grove and part of the Village of Westmont, the District's service area eventually expanded to include portions of Woodridge, Lisle, Darien, Oak Brook, and Lombard – all located in DuPage County, IL. Today, the District serves approximately 64,000 people which includes 20,000 residential, commercial, industrial, and institutional customers.

COLLECTION SYSTEM

The District owns, operates and maintains all the sanitary sewers in its service area. The collection system consists of nine lift stations and approximately 250 miles of sewer, some of which are the original 1904 sewers. As identified in the District's Capacity, Management, Operation and Maintenance Plan or CMOM, the District cleans one fourth of the sewers annually, televises the sewers on a 13-year cycle, and invests at least 0.75% of the replacement value of the sewers back into the collection system annually in order to ensure the long-term sustainability of this asset.

Infiltration and inflow (I/I) is a chronic operational issue that is actively managed. The District's flow monitoring program provides information used to prioritize where I/I removal

The Staff of Downers Grove Sanitary District.

efforts should be concentrated. Early efforts to remove I/I were focused on public sewers. Through these efforts, which were not successful, the District determined that I/I removal from private property was necessary in order to guarantee success. In the early 2000s, the District updated its ordinances to provide the following customer assistance programs, which benefit the District by allowing access to private property to identify and eliminate sources of I/I:

1. The Cost Reimbursement Program for the Installation of Overhead Sewers or Backflow Prevention Devices offers financial assistance to the building owner by cost sharing with the owner to upgrade their plumbing to current requirements that will protect their building in the event of surcharging in the public main caused by a blockage or extreme weather. The program also benefits the District by eliminating the potential cost to the District from a damage claim by the owner due to a public sewer backup.
2. The Building Sanitary Service Repair Assistance Program is designed to allow the District to conduct repairs to defective service lines. Since the program's inception 21 years ago, 4,097 repairs have been completed, which represents approximately 20% of the connected buildings. Customer feedback on this program has been very positive.
3. The Private Property I/I Removal Program allows the District to perform corrective work on private property. Grouting, lining or replacing portions of the building service are measures that are performed by the District's contractors to meet its I/I removal objectives. I/I reduction projects which have included rehabilitation to both public and private sewers have successfully removed up to 65% of the I/I in comparison to previous projects which were focused on public sewers only and resulted in no I/I reduction.

WASTEWATER TREATMENT CENTER

In 1922, the District constructed a new treatment plant and decommissioned the Village's plant. Construction began on the current Wastewater Treatment Center (WWTC) in 1954. Almost immediately after construction was completed, plans to expand were underway so that the 1922 plant could also be decommissioned. The WWTC underwent several major expansions through the early 1990s until it reached its current design average capacity of 11 MGD. Flows up to 22 MGD receive full treatment. With excess flow treatment, the WWTC has a peak capacity of 110 MGD.

Wastewater receiving full treatment is processed through bar screens, raw sewage pumping, aerated grit tanks, primary clarifiers, a single stage nitrification activated sludge plant with secondary clarifiers, intermediate clarifiers, sand filters, seasonal disinfection using sodium hypochlorite followed by dechlorination. Fully treated effluent is discharged to the East Branch of the DuPage River.

Biosolids distribution center.

DGSD's exceptional quality biosolids

Excess flow passes through the bar screens before being pumped to excess flow clarifiers, where it receives primary treatment and is disinfected before discharging to either the East Branch of the DuPage River or the St. Joseph Creek.

Primary sludge from the primary clarifiers is treated in a dedicated set of anaerobic digesters. Waste activated sludge (WAS) is thickened in a volute thickener and co-digested with grease in its own anaerobic digestion system. Anaerobically digested sludge is dewatered either in gravity sludge drying beds, by a belt filter press (BFP) or reed beds in lagoons. A portion of the BFP cake is stockpiled in the drying beds while the rest is land applied on farms field as Class B biosolids. Sludge is aged in the drying beds for at least two years before being spread on a pad and dried further by turning it over with an auger for a few days. The resulting biosolids product is screened.

BIOSOLIDS DISTRIBUTION PROGRAM

In 1981, the Illinois EPA permitted the District's Sludge Management Plan. The District's plan was unique for the time. Under the Plan, the District gave its sludge away for free to residents and landscapers for use as a soil supplement in flowerbeds, on lawns, shrubs, hedges and other landscaping areas. The aged and screened biosolids meet the Class A pathogen requirement of the US EPA Part 503 regulations through testing for *Salmonella*, enteric viruses and viable helminth ova. In conjunction with the pathogen testing, the biosolids are also tested for metals to demonstrate that the District's biosolids are Exceptional Quality biosolids. Biosolids may be picked up by customers at the District's pickup station on Curtiss Street in Downers Grove. For orders three cubic yards or larger, the District will deliver biosolids within a reasonable distance from the WWTC.

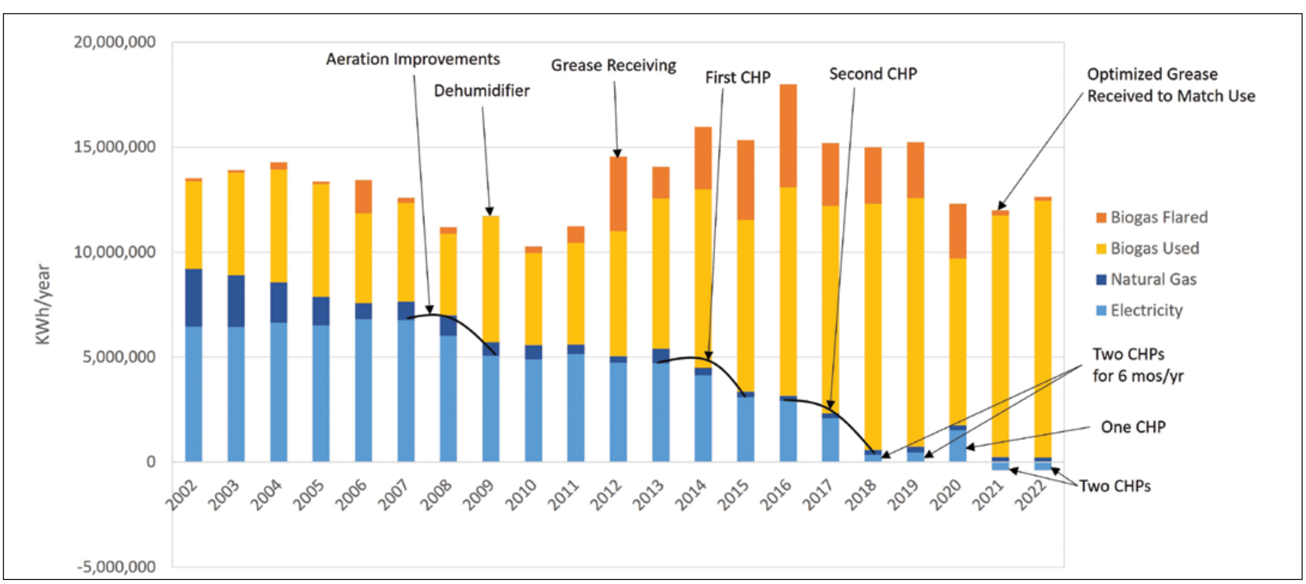


Figure 1: History of Energy Use at the DGSD WWTC.

BECOMING A NET ZERO ENERGY FACILITY

The Downers Grove Sanitary District began its journey to make the WWTC a net zero energy facility in 2007, when projects to reduce energy consumption were identified. The first project focused on reducing the energy used for aeration of the activated sludge plant. The District installed fine bubble diffusers in the aeration tanks, a high efficiency turbo-blower and a dissolved oxygen (DO) control system. This provided a significant reduction in electricity consumption as shown by the drop-in electricity between 2007 and 2009 in Figure 1. Subsequent energy efficiency projects included lighting upgrades, geothermal/effluent water heat pumps for building HVAC, replacement of the natural gas fired desiccant dehumidifier with one that uses biogas, and replacement of the grit blower with a high efficiency blower.

In 2010, the District piloted co-digestion of restaurant grease trap waste in the anaerobic digester where the WAS is stabilized. The pilot was successful, and the District began co-digestion of WAS with grease trap waste and commercial food waste (collective called "grease") permanently in 2012. The WWTC digester gas or biogas production has more than doubled since it began co-digestion, as seen in Figure 1.

With the excess biogas being produced from the grease, the District was able to install its first combined heat and power (CHP) engine generator in 2014. The 280-kWe CHP used biogas to generate electricity, and waste heat from the CHP was recovered to heat the digesters. In 2016, the District's Board of Trustees passed a resolution to achieve and sustain the WWTC as a net zero energy facility. In order to realize this goal, the District installed a second CHP engine rated for 375-kWe in 2017. The WWTC successfully operated as a net zero energy facility for twelve months before the older CHP engine failed. The first CHP engine was replaced with a 375-kWe CHP in late 2020. The WWTC was a net zero energy facility for all of 2021 and 2022. As shown in Figure 1, the WWTC produced more electricity in 2021 and 2022 than it used. Excess electricity is purchased by the utility.

DUPAGE RIVER SALT CREEK WORKGROUP

The District is a founding member and active participant in the DuPage River Salt Creek Workgroup (DRSCW), which is dedicated to managing the valuable stream resources of the East and West Branches of the DuPage River and Salt Creek. While other wastewater treatment plants in IL have received phosphorus limits in their NPDES permits, the District was able to negotiate with IL EPA a schedule that provides additional time before implementation of phosphorus limits in exchange for active participation in the DRSCW to better understand the impacts of nutrients in the watershed and to help fund restoration projects in the receiving stream, with the goal of achieving the most cost-effective environmental improvements with limited available resources.

DGSD COMMITMENT

For over 100 years, the Downers Grove Sanitary District has been committed to providing a better environment for the communities it serves. Today, the District has 39 employees across operations, maintenance, sewer system, laboratory, and administration. The District staff continues to be committed to providing the best possible service to its customers in an open and honest manner while protecting the environment and doing so as cost effectively as possible. CS

Downers Grove
Sanitary District

2710 Curtiss Street
P.O. Box 1412
Downers Grove, IL 60515-0703
Phone: 630-969-0664
Fax: 630-969-0827
www.dgsd.org

Providing a Better Environment for South Central DuPage County

RECEIVED
DEC 26 2023
DOWNERS GROVE
SANITARY DISTRICT

DOWNERS GROVE SANITARY DISTRICT
BUILDING SANITARY SERVICE REPAIR ASSISTANCE PROGRAM

QUESTIONNAIRE

What is your overall impression of this program?

We were very impressed with the program
It was timely, the workers were very polite and helpful. It was nice there was no cost, but even if we paid, it would still be a job well done from our viewpoint

Do you have any suggestions or comments on improving the program?

The severed pipe happened on a Saturday morning and we were very impressed someone came over from the DG Sanitary District that morning.

OPTIONAL Name: Peter + Patricia Poshepny

Address: [redacted] Rd
Downers Grove IL 60516

Date: Dec 17, 2023

GENERAL MANAGER'S REPORT TO EMPLOYEES — December 29, 2023

Personnel

We are currently reviewing the candidates for the Maintenance Mechanic position and will be extending an offer of employment very soon.

Employee Policy Manual

Everyone was sent a Target Solution assignment to review the changes to the employee manual that were approved by the Board of Trustees at the December 19, 2023 meeting. If you have any questions or would like a paper copy of the manual, please see Carly Shaw.

Paid Leave Information

New personal leave and vacation time for 2024 is not reflected on the current pay stub and will be shown on the first pay stub you receive in January.

Employee W-2s

Employee W-2s for 2023 will be ready for distribution by January 5.

Retirement Dinner

Please join us for Frank Furtak's retirement dinner. This will be held **Wednesday, January 17** at 5:30 pm at Zazzo's in Westmont off Ogden Avenue. You can sign up for this on the employee portal or if you are having trouble logging in, send your response to Michelle Jasso by email, mjasso@dgsd.org. Please RSVP whether you can come or not by Wednesday, January 10.

TopHealth

The January 2024 edition of Top Health is enclosed.

Illinois Wastewater Surveillance System

The District continues to participate in the Illinois Wastewater Surveillance System. COVID, RSV and Influenza data from our wastewater treatment center can be found at https://iwss.uillinois.edu/wastewater-treatment-plant/275/.

Sewer Rehabilitation/Infiltration and Inflow Removal

We are targeting the 2C-025 area in downtown Downers Grove for private property inspections and I/I removal. Regular flow monitoring continues.

Status of Projects

1) 001 Outfall Pipe Repair

   The televising inspection of the replaced pipe will be done soon.

2) Centex Lift Station Replacement

   Xylem is expected to be on site on January 4 for startup and training.

3) Curtiss Street Trunk Sewer Rehabilitation

   Tree removal has started.

4) Venard Forcemain Replacement

   Baxter & Woodman has provided draft plans and specifications to the District for review.

5) SCADA Platform Replacement (Ignition)

   Concentric continues to work on new displays and reporting.

6) Diesel Tank Replacement

   The project is currently out for bid with the opening scheduled for January 17.

HAPPY NEW YEAR TO YOU AND YOUR FAMILY!

GENERAL MANAGER'S REPORT TO EMPLOYEES **January 12, 2024**

Passing of Wally Van Buren

It is with great sadness that we announce the passing of our Board President, Wally Van Buren. Wally served on the District's Board of Local Improvements from 1990-1996 and has served on the Board of Trustees since 1992. Wally took the role of President of the Board in 2013. He was very supportive of the Staff at Downers Grove Sanitary District and had a high appreciation of the community. He will be missed.

Personnel

An offer was accepted for the Maintenance Mechanic position. Once the post offer requirements are completed by the applicant a starting date will be determined.

Chuck Preen has been promoted to Senior Mechanic in the Maintenance Department effective January 7, 2024.

Retirement Dinner

Just a reminder that Frank Furtak's retirement dinner is on Wednesday, January 17 at 5:30 pm at Zazzo's in Westmont.

WWTC Gate Etiquette

A note from our safety committee, please be respectful when entering or leaving through the gate at the WWTC. When employees or vendors are using the keypad to open the gate, do not pass them on the right. That is unsafe as the person at the keypad may not see you and this could cause an accident. Please leave space for them to safely pull forward through the gate then you may enter behind them. We appreciate everyone doing their part to keep our employees and visitors safe.

Illinois Wastewater Surveillance System

The District continues to participate in the Illinois Wastewater Surveillance System. COVID, RSV and Influenza data from our wastewater treatment center can be found at https://iwss.uillinois.edu/wastewater-treatment-plant/275/.

Sewer Rehabilitation/Infiltration and Inflow Removal

We are targeting the 2C-025 area in downtown Downers Grove for private property inspections and I/I removal. Regular flow monitoring continues.

Status of Projects

1) 001 Outfall Pipe Repair

   The televising inspection of the replaced pipe will be done soon.

2) Centex Lift Station Replacement

Xylem was on site on January 4 for startup and training. The new lift station operated for a few days before the old lift station was put back into service. Once weather conditions allow it, Berger will return to make the final connection of the new lift station to the force main, remove the old lift station and restore the site as much as possible for the winter.

3) Curtiss Street Trunk Sewer Rehabilitation

Tree removal is complete. The contractor has been placing matting for the machines to move on. They will be cleaning and televising in the next week in preparation for the lining.

4) Venard Forcemain Replacement

Baxter & Woodman has provided draft plans and specifications to the District for review.

5) SCADA Platform Replacement (Ignition)

Concentric continues to work on new displays and reporting.

6) Diesel Tank Replacement

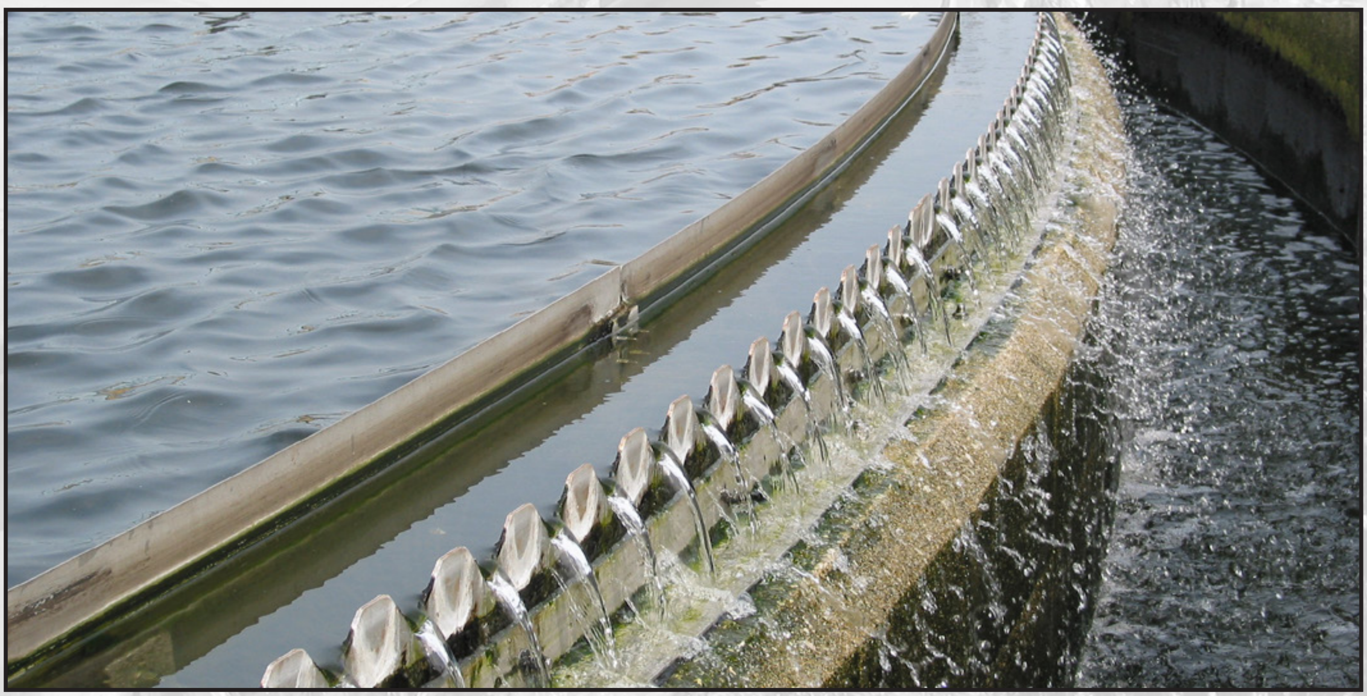
The project is currently out for bid with the opening scheduled for January 17.

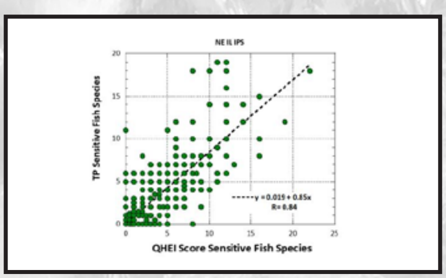
NUTRIENT IMPLEMENTATION PLAN

DECEMBER 31, 2023

DuPage River Salt Creek Workgroup

LOWER DUPAGE RIVER WATERSHED COALITION





Nutrient Implementation Plan for East Branch DuPage River, West Branch DuPage River, Lower DuPage River, and Salt Creek (Illinois)

December 31, 2023

PRESENTED TO

Illinois Environmental Protection Agency
1021 North Grand Avenue East
P.O. Box 19276
Springfield, Illinois 62794-9276

PRESENTED BY

DuPage River Salt Creek Workgroup
10 S 404 Knoch Knolls Road
Naperville, IL 60565

Lower DuPage River Watershed Coalition
10 S 404 Knoch Knolls Road
Naperville, IL 60565

SUPPORT BY

The Conservation Foundation
10 S 404 Knoch Knolls Road
Naperville, IL 60565

Tetra Tech
4000 Sancar Way, Suite 200
P.O. Box 14009
Research Triangle Park, NC 27709

Midwest Biological Institute
4673 Northwest Parkway
Hilliard, OH 43026

EXECUTIVE SUMMARY

Aquatic life and dissolved oxygen (DO) are interacting products of complex water chemistry, physical stream characteristics, and weather conditions. Both are influenced by phosphorus, but the attempts in Illinois to establish State or ecoregion-protective phosphorus criteria have been unsuccessful. This failure is due to an incomplete understanding of how total phosphorus (TP) impacts DO and aquatic life, the complexity of the other factors and their interactions, and the difficulty of establishing robust statistical relationships between them. These issues compounded as the geographical scale increases, maximizing variation in and between the factors. Hence, the value of developing specific watershed targets for TP can better account for regional variation, as recommended under the development of Nutrient Implementation Plans (NIPs) and Nutrient Assessment and Reduction Plans (NARPs). These plans were mandated in National Pollutant Discharge Elimination System permits for wastewater treatment plants (WWTPs) upstream of river segments that had an aquatic life use impairment related to phosphorus (low DO, nuisance algae or plant growth and nutrients, primarily TP) or at risk of eutrophication as judged by pH, sestonic algae, and DO saturation. The DuPage River Salt Creek Workgroup and Lower DuPage River Watershed Coalition have been working to improve aquatic life scores in the basins of the DuPage River and Salt Creek and have developed this NIP to meet the permit condition and remove TP as a barrier to meeting the aquatic life goal as set out by Illinois Environmental Protection Agency.

A crucial step in developing this NIP was establishing a watershed threshold concentration for TP that is protective of aquatic life in the NIP area. A relationship between TP concentrations and fish species and macroinvertebrate taxa and their indices of biotic integrity was established by a multivariate analysis published in 2023 by the watershed groups. The analysis, which drew on paired biological, chemical, and physical data from 640 sites in Northeast Illinois, found fish species and the Fish Index of Biotic Integrity (fIBI) were more sensitive to TP concentration variation than the macroinvertebrate taxa and the Macroinvertebrate Index of Biotic Integrity. The 75th percentile of sites in the fIBI range of 41 and 49 (meeting and exceeding the General Use standard for aquatic life) was found to correspond to a TP concentration of 0.277 milligrams per liter (mg/L).

Analysis of the mean TP concentrations at sites monitored by the watershed groups’ rolling bioassessments under various flow regimes show a clear differentiation between sites. Annual mean concentrations at sites downstream of WWTPs, a product of both wastewater and nonwastewater (stormwater and background sources, summarized as urban), ranged from 0.70 mg/L to 2.12 mg/L; concentrations at urban-only sites (upstream of any WWTP influence) had TP concentrations ranging nearly an order of magnitude lower, 0.03–0.53 mg/L. The flow was an important factor, with concentrations falling at both wastewater-influenced and urban sites as flow increased. Mean annual concentrations at all urban sites were beneath the watershed threshold (0.277 mg/L) in all years sampled when flows were above the 25th percentile. Sites downstream of WWTPs outfalls had a TP concentration significantly above the watershed threshold in all years. Aggregation of the flows and water quality data to allow for reduction scenarios modeling showed that while WWTPs contributed 13%–28% of annual flow, they contributed more than 80% of annual ambient instream TP.

Modeling was conducted using the QUAL2Kw platform to identify potential management scenarios that would decrease ambient instream TP concentrations below the identified TP watershed threshold. Receiving water models were developed for each basin and included the connectivity of the East and West Branches of the DuPage River model outputs to inform the headwater conditions of the Lower DuPage River. Following model calibration efforts, channel geometry and hydraulics were modified for the Lower DuPage River and Salt Creek to reflect the imminent removals of dams on these waterways (both dams have since been removed). The removal of the dam on Salt Creek was predicted to improve upstream DO conditions on average. Ultimately, the suite of scenarios modeled demonstrated that an effluent TP permit limit of 0.35 mg/L (for an effective effluent concentration of 0.28 mg/L) for WWTPs along Salt Creek and the West and East Branches of the DuPage River and an effluent TP permit limit of 0.5 mg/L (for an effective effluent concentration of 0.4 mg/L) for WWTPs along the Lower DuPage River would be sufficient to achieve the local threshold value satisfactorily.

The modeled reductions of effluent TP concentrations did not show meaningful improvements in predicted minimum and mean DO concentrations due in part to localized persistence of low gradients or flow restrictions which also factor into existing DO impairments.

The NIP recommends that targeted physical projects focused on eliminating DO sags and improving instream habitat be implemented. Recommendations include that (1) WWTPs discharging to Salt Creek and the East and West Branches of the DuPage River adopt an effluent limit of 0.35 mg/L TP (leading to an effective mean effluent concentration of 0.28 mg/L, assuming a 20% margin of safety) seasonal geometric mean for warm weather months (May–October) as part of an annual 0.50 mg/L TP geometric mean; (2) WWTPs discharging to the mainstem of the Lower DuPage River adopt an effluent limit of 0.50 mg/L TP (leading to an effective mean effluent concentration of 0.4 mg/L, assuming a 20% margin of safety) for warm weather months as an annual geometric mean, rolling 12-month basis; and (3) the Crest Hill STP, which discharges to a tributary on the Lower DuPage River, adopt the 0.35 mg/L TP limit.

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PURPOSE OF DOCUMENT

This Nutrient Implementation Plan (NIP) is submitted on behalf of the agencies managing wastewater treatment plants (WWTPs) who are members of the DuPage River and Salt Creek Workgroup (DRSCW) or the Lower DuPage River Watershed Coalition (LDRWC) to fulfill the following National Pollutant Discharge Elimination System (NPDES) permit Special Condition:

> *"The Permittee shall submit electronically to EPA.PrmtSpecCondtns@illinois.gov with "IL0028380 Special Condition 17.H" as the subject of the email and post to the DRSCWs website by December 31, 2023 a Nutrient Implementation Plan (NIP) for the DRSCW watersheds that identifies phosphorus input reductions by point source discharges, non-point source discharges and other measures necessary to remove DO and offensive condition impairments and meet the applicable dissolved oxygen criteria in 35 Ill. Adm. Code 302.206 and the narrative offensive aquatic algae criteria in 35 Ill. Adm. Code 302.203. The NIP shall also include a schedule for implementation of the phosphorus input reductions and other measures. The Permittee may work cooperatively with the DRSCW to prepare a single NIP that is common among DRSCW permittees. Progress reports shall be submitted every year until completion and submission of the NIP. The DRSCW may prepare a single progress report for all DRSCW permittees and may be submitted as part of a combined annual report with paragraph D above. The Agency will renew or modify the NPDES permit as necessary to incorporate NIP requirements."* **(DRSCW Permits)**
>
> *"The Permittee shall submit a Nutrient Implementation Plan (NIP) for the DRSCW/LDRWC watersheds that identifies phosphorus input reductions by point source discharges, non-point source discharges and other measures necessary to remove DO and offensive condition impairments and meet the applicable dissolved oxygen criteria in 35 IL Adm. Code 302.206 and the narrative aquatic algae criteria in 35 IL Adm. Code 302.203. The NIP shall also include a schedule for implementation of the phosphorus input reductions and other measures. The Permittee may work cooperatively with the DRSCW/LDRWC to prepare a single NIP that is common among DRSCW/LDRWC permittees. The NIP shall be submitted to the Agency by December 31, 2023."* **(LDRWC Permits)**

These agencies and their facilities are listed in Table 1.

The NIP is focused on developing a plan to target an ambient instream phosphorous concentration that is protective of aquatic life. However, it is a continuation of the DRSCW's and LDRWC's existing adaptive management plans to meet aquatic life use goals in the DuPage River and Salt Creek watersheds via comprehensive monitoring, data analysis, and redirecting water quality investments to address priority stressors. The NIP identifies essential physical projects to eliminate dissolved oxygen sags and improve aquatic habitat in parallel to total phosphorus (TP) reduction.

The TP watershed thresholds described in this document are not, nor are they intended to become, water quality standards. Therefore, they should not be used to set specific regulatory requirements. All schedules and project assessments are proposed for planning purposes only, and the agencies are only obligated to strictly adhere to them if and when they are formalized in an NPDES permit condition.

Table 1. Agencies and WWTPs contributing and participating in the NIP

Agency Name	Facility Name	NPDES Permit
Addison, Village of	A. J. LaRocca WTF	IL0027367
Addison, Village of	Addison - North STP	IL0033812
Bartlett, Village of	Bartlett WWTP	IL0027618
Bensenville, Village of	South STP	IL0021849
Bloomingdale, Village of	Reeves WRF	IL0021130
Bolingbrook, Village of	Bolingbrook #1	IL0032689
Bolingbrook, Village of	Bolingbrook #2	IL0032735
Bolingbrook, Village of	Bolingbrook #3	IL0069744
Carol Stream, Village of	Carol Stream WRC	IL0026352
Crest Hill, City of	Crest Hill STP	IL0021121
Downers Grove Sanitary District	Downers Grove S.D. – Wastewater Treatment Center	IL0028380
DuPage County	Green Valley	IL0031844
Elmhurst, City of	Elmhurst WRF	IL0028746
Glenbard Wastewater Authority	Glenbard WWTP	IL0021547
Glendale Heights, Village of	Glendale Heights WWTP	IL0028967
Hanover Park, Village of	Hanover Park STP	IL0034479
Itasca, Village of	Itasca STP	IL0079073
Joliet, City of	Aux Sable WWTP	IL0076414
Minooka, Village of	Minooka STP	IL0055913
Metropolitan Water Reclamation District of Greater Chicago	Egan WRP	IL0036340
Metropolitan Water Reclamation District of Greater Chicago	Hanover WRP	IL0036137
Naperville, City of	Springbrook WRP	IL0034061
Plainfield, Village of	Plainfield STP	IL0074373
Roselle, Village of	J. Botterman WWTP	IL0048721
Roselle, Village of	J. L. Devlin WWTP	IL0030813
Salt Creek Sanitary District	Salt Creek Sanitary District STP	IL0030953
West Chicago, City of and Winfield, Village of	West Chicago/Winfield Wastewater Authority Regional WWTP	IL0023469
Wheaton Sanitary District	Wheaton Sanitary District WWTF	IL0031739
Wood Dale, City of	City of Wood Dale - North STP	IL0020061
Wood Dale, City of	Wood Dale - South STP	IL0034274
Plainfield, Village of	Plainfield STP	IL0074373

Key:

DRSCW Member
LDRWC Member

ACRONYMS AND ABBREVIATIONS

Acronym/Abbreviation	Definition
µg/L	micrograms per liter
BMP	best management practice
BNR	biological nutrient removal
BOD	biochemical oxygen demand
BOD5	5-day biochemical oxygen demand
BPR	biological phosphorous removal
CADDIS	Causal Analysis/Diagnosis Decision Information System
CAFO	concentrated animal feeding operation
CART	classification and regression trees
CBOD	carbonaceous biochemical oxygen demand
CFR	Code of Federal Regulations
cfs	cubic feet per second
CSO	combined sewer overflow
CUP	Capital Upgrade Period
DAF	design average flow
D.C.	direct current
DC SWM	DuPage County Stormwater Management Department
DDT	dichlorodiphenyltrichloroethane
DMR	discharge monitoring report
DO	dissolved oxygen
DRSCW	DuPage River Salt Creek Workgroup
EB	East Branch DuPage River
fIBI	Fish Index of Biotic Integrity
FIT	goodness-of-fit statistical factor
FPCC	Forest Preserves of Cook County
FPDDC	Forest Preserve District of DuPage County
GIS	geographic information system
HRT	hydraulic retention time
HUC	hydrologic unit code
HUC12	12-digit hydrologic unit code
IBI	Index of Biotic Integrity
ICI	Invertebrate Community Index
IEPA	Illinois Environmental Protection Agency

Acronym/Abbreviation	Definition
IPCB	Illinois Pollution Control Board
IPS	Identification and Prioritization System
kg	kilogram
lbs	pounds
LD	Lower DuPage River
LDRWC	Lower DuPage River Watershed Coalition
LTCP	long-term control plan
macros	macroinvertebrates
MBI	Midwest Biodiversity Institute
mg/L	milligrams per liter
MGD	million gallons per day
mIBI	Macroinvertebrate Index of Biotic Integrity
MS4	municipal separate storm sewer system
MSE	mean square error
MWRDGC	Metropolitan Water Reclamation District of Greater Chicago
NARP	Nutrient Assessment and Reduction Plan
NE	northeast
NIP	Nutrient Implementation Plan
NLCD	National Land Cover Database
NLDAS-2	National Land Cover Database-Phase 2
NPDES	National Pollutant Discharge Elimination System
NPS	nonpoint source
NRCS	Natural Resources Conservation Service
NSAC	Nutrient Science Advisory Committee
O&M	operations and maintenance
PAHs	polycyclic aromatic hydrocarbons
PCBs	polychlorinated biphenyls
QHEI	Qualitative Habitat Evaluation Index
RF	random forest
RM	river mile
ROW	right of way
SC	Salt Creek
SOD	sediment oxygen demand
SRT	solid retention time

Acronym/Abbreviation	Definition
SSI	Sensitive Species Index
SSURGO	Soil Survey Geographic
STP	sewage treatment plant
TARP	Tunnel and Reservoir Plan
TKN	total Kjeldahl nitrogen
TMDL	total maximum daily load
TN	total nitrogen
TP	total phosphorus
TSOP	Treatment System Optimization Period
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
WB	West Branch DuPage River
WQS	water quality standards
WRC	water reclamation center
WRP	water reclamation plant
WWTP	wastewater treatment plant

1 BACKGROUND

This section details background information on the DuPage River and Salt Creek watersheds. This is a summary of the key elements that have gone into executing this Nutrient Implementation Plan (NIP), including an overall summary of the established watershed groups, workgroup studies, management planning, statistical tool evaluations of robust datasets, and implementation planning efforts.

1.1 ESTABLISHED WATERSHED GROUPS

Two watershed groups cover the project area of these watersheds: the DuPage River Salt Creek Workgroup (DRSCW), which covers the East and West Branches of the DuPage River and Salt Creek, and the Lower DuPage River Watershed Coalition (LDRWC), which covers the Lower DuPage River.

1.1.1 DuPage River Salt Creek Workgroup

The DRSCW is a consortium of wastewater treatment plants (WWTPs); municipalities; governmental agencies, such as park districts, forest preserves, and transportation agencies; engineering companies; and environmental advocacy groups in the East Branch DuPage River, West Branch DuPage River, and Salt Creek watersheds. A complete list of DRSCW members can be found on the DRSCW website[1] and is included in Table 2. The DRSCW was formed in 2005 in response to concerns about total maximum daily loads (TMDLs) being set for the East and West Branches of the DuPage River and Salt Creek. The DRSCW organized to implement rigorous analysis and targeted projects and programs that cost-effectively worked towards the goals of the Clean Water Act (CWA), particularly the designated use for aquatic life.

In 2015, the DRSCW submitted its Implementation Plan to the Illinois Environmental Protection Agency (IEPA). The adaptive management approach focuses on high-resolution, comprehensive monitoring of chemical, biological, and physical characteristics of the watersheds. This monitoring provides the data needed to execute the “Plan-Do-Check-Act” methodology inherent to adaptive management (Figure 1). Monitoring and analysis provide insight into the highest-priority stressors that affect stream health to identify projects or initiatives with the greatest potential to attain stream use goals. Monitoring also provides the feedback needed to properly assess the impacts of cutting-edge stream restoration projects and water quality initiatives to better formulate future activities.

[1] www.drscw.org

Figure 1. Infographic illustrating the Plan-Do-Check-Act adaptive management methodology.

The 2015 Implementation Plan was used to negotiate a Special Condition in the National Pollutant Discharge Elimination System (NPDES) permit for the watershed's major municipal WWTPs (see Section 3.8). The Special Condition covered two five-year permit cycles (10 years total); it set an effluent total phosphorus (TP) limit for WWTPs at 1.0 milligrams per liter (mg/L) required 10 years after the effective date of the initial permit for WWTPs using chemical treatment and 11 years after the effective date of the initial permit for WWTPs using biological treatment. Additionally, the Special Condition includes projects and activities as set out in the 2015 DRSCW Implementation Plan (Table 3).

Table 2. DuPage River Salt Creek Workgroup members by type

Member Type	Member Organizations		
Agency Members	Village of Addison City of Aurora Village of Arlington Heights Village of Bartlett Village of Bensenville Village of Bloomingdale Village of Bolingbrook Village of Carol Stream Village of Clarendon Hills Village of Downers Grove Downers Grove Sanitary District DuPage County City of Elmhurst Glenbard Wastewater Authority	Village of Glenn Ellyn Village of Glendale Heights Village of Hanover Park Village of Hinsdale Village of Hoffman Estates Village of Itasca Village of Lisle Village of Lombard Metropolitan Water Reclamation District of Greater Chicago City of Naperville City of Northlake Village of Oakbrook City of Oakbrook Terrace Village of Palatine	Village of Roselle Salt Creek Sanitary District Village of Schaumburg Village of Streamwood Village of Villa Park City of Warrenville City of West Chicago Village of Westchester Village of Western Springs Village of Westmont City of Wheaton Wheaton Sanitary District Village of Winfield City of Wood Dale Village of Woodridge
Associate Members	AECOM Baxter & Woodman, Black & Veatch The Conservation Foundation Christopher B. Burke Engineering Clark-Dietz, Deuchler Engineering Donohue & Associates Elmhurst-Chicago Stone Company	Engineering Resource Association Forest Preserve District of DuPage County Hey & Associates Huff & Huff Illinois Department of Transportation Illinois State Toll Highway Authority Village of LaGrange Park Lisle Township Highway Department The Morton Arboretum	Naperville Park District Prairie Rivers Network Robinson Engineering Salt Creek Watershed Network, Sierra Club River Prairie Group Stantec Strand Associates Trotter & Associates V3 Companies York Township Highway Department

Table 3. DRSCW Special Condition projects and activities per Implementation Planning from 2015 and 2020

Project Name	Completion Date	Short-Term Objectives	Long-Term Objectives
Oak Meadows Golf Course Dam Removal	December 31, 2016 (Completed)	Improve dissolved oxygen (DO)	Improve fish passage
Oak Meadows Golf Course Stream Restoration	December 31, 2017 (Completed)	Improve aquatic habitat (Qualitative Habitat Evaluation Index (QHEI)), reduce inputs of nutrients and sediment	Raise macroinvertebrate Index of Biotic Integrity (mIBI)
Fawell Dam Modification	December 31, 2022	Modify dam to allow fish passage	Raise fish Index of Biotic Integrity (fIBI) upstream of structure
Spring Brook Restoration and Dam Removal	December 31, 2020 (Completed)	Improve aquatic habitat (QHEI), reduce inputs of nutrients and sediment	Raise mIBI and fIBI
Fullersburg Woods Dam Modification Concept Plan Development	December 31, 2016 (Completed)	Identify conceptual plan for dam modification and stream restoration	Build consensus among plan stakeholders
Fullersburg Woods Dam Modification	December 31, 2023	Improve DO, improve aquatic habitat (QHEI)	Raise mIBI and fIBI
Fullersburg Woods Dam Modification Area Stream Restoration	December 31, 2023	Improve aquatic habitat (QHEI), reduce inputs of nutrients and sediment	Raise mIBI and fIBI
West Branch Physical Enhancement	December 31, 2023	Improve aquatic habitat (QHEI)	Raise mIBI and fIBI
Southern East Branch Stream Enhancement	December 31, 2024	Improve aquatic habitat (QHEI), reduce inputs of nutrients and sediment	Raise mIBI and fIBI
QUAL2Kw Modeling for West Branch, East Branch, and Salt Creek	December 31, 2023	Collect new baseline data and update model	Quantify improvements in watershed. Prioritize DO improvement projects for years beyond 2024
Nonpoint Source (NPS) Phosphorus Feasibility Analysis	December 31, 2021	Assess NPS performance from reductions leaf litter and street sweeping	Reduce NPS contributions to lowest practical levels
East Branch Phase II [a]	December 31, 2028	Improve aquatic habitat (QHEI), reduce Inputs of nutrients and sediment	Raise mIBI and fIBI
Lower Salt Creek Phase 2 [a]	December 31, 2028	Improve aquatic habitat (QHEI), Remove fish barrier, reduce inputs of nutrients and sediment	Raise mIBI and fIBI
West Branch Restoration Project [a]	December 31, 2028	Improve aquatic habitat (QHEI), reduce inputs of nutrients and sediment	Raise mIBI and fIBI

Note:
[a] Project was included in the 2020 DRSCW Implementation Plan and added to the Special Conditions in 2022.

Another requirement of the Special Conditions is that the included WWTPs participate in a watershed Chloride Reduction Program with the objective of optimizing public agency winter chloride compound application rates to decrease watershedwide chloride loading.

In 2022, the Special Conditions were extended for an additional five-year permit cycle and provided additional funding from participating members for projects identified in the 2020 Implementation Plan (Section 1.4.2). The

2022 Special Condition also extended the effective date of the effluent TP limit for WWTPs at 1.0 mg/L for an additional three years. Four DRSCW members chose to retain the original NPDES permit language and will be implementing a TP limit of 1.0 mg/L monthly average starting between 10/01/2025 and 08/02/2026 (see Section 9.1). Twelve agencies running 16 WWTPs have opted to adopt the new conditions. An additional two WWTPs are already treating to 1.0 mg/L TP due to earlier plant expansions.

The Special Conditions also require the DRSCW to prepare this NIP, as follows:

> *"The Permittee shall submit electronically to EPA.PrmtSpecCondtns@illinois.gov with "IL0021130 Special Condition 16.H" as the subject of the email and post to the DRSCWs website by December 31, 2023 a Nutrient Implementation Plan (NIP} for the DRSCW watersheds that identifies phosphorus input reductions by point source discharges, nonpoint source discharges and other measures necessary to remove DO and offensive condition impairments and meet the applicable dissolved oxygen criteria in 35 Ill. Adm. Code 302.206 and the narrative offensive aquatic algae criteria In 35 Ill. Adm. Code 302.203. The NIP shall also include a schedule for implementation of the phosphorus input reductions and other measures. The Permittee may work cooperatively with the DRSCW to prepare a single NIP that is common among DRSCW permittees. Progress reports shall be submitted every year until competition and submission of the NIP. The DRSCW may prepare a single progress report for all DRSCW permittees and may be submitted as part of a combined annual report with paragraph D above The Agency will renew or modify the NPDES permit as necessary to incorporate NIP requirements."*

The DRSCW has partnered with the adjacent LDRWC (see Section 1.1.2) on a multi-pronged and multi-year approach to develop this robust NIP. For DRSCW, this NIP serves as an update to the 2015 and 2020 implementation plans and will be used to direct future DRSCW work. The recommendations of the NIP are expected to be used to draft future NPDES permits for DRSCW member WWTPs.

1.1.2 Lower DuPage River Watershed Coalition

Communities in the Lower DuPage River Watershed came together to form the LDRWC after completion of a watershed plan in 2011. The LDRWC is also a consortium of WWTPs; municipalities; governmental agencies such as park districts, forest preserves, and transportation agencies; engineering companies; and environmental advocacy groups. A complete list of LDRWC members can be found on the group's website[2] and in Table 4. Following a similar adaptive management approach, the LDRWC implements a bioassessment monitoring program modeled after the DRSCW program, which allows for seamless data analyses across the entire DuPage River watershed. The LDRWC also plays an active role in providing education and outreach materials to members about water quality, stormwater, and aquatic ecosystems. The LDRWC works very closely with the DRSCW on monitoring and modeling efforts, analyzing data, reducing chloride, and developing this NIP for the entire DuPage River Watershed.

Similarly to the DRSCW, the LDRWC has negotiated a Special Condition with the IEPA that includes projects and activities that are the sole responsibility of the LDRWC (Table 5) as well as those that are the joint responsibility of the LDRWC and DRSCW (Table 6).

[2] www.ldpwatersheds.org

Table 4. Lower DuPage River Watershed Coalition members by type

Member Type	Member Organizations		
Agency Members	Village of Bolingbrook Village of Channahon City of Crest Hill City of Joliet	Village of Minooka City of Naperville Village of Plainfield	Village of Romeoville Village of Shorewood Will County Stormwater Management
Associate Members	Baxter & Woodman Channahon Park District	Forest Preserve District of Will County Naperville Park District Robinson Engineering	Strand Associates The Conservation Foundation Wheatland Township

Table 5. LDRWC Special Condition projects per Implementation Planning from 2016

Project Name	Completion Date	Short-Term Objectives	Long-Term Objectives
Hammel Woods Dam Removal	December 31, 2022	Improve DO, reduce nuisance algae	Improve fish passage
DuPage River Stream enhancement South of 119th Street in Plainfield	December 31, 2024	Improve aquatic habitat (QHEI), reduce inputs of nutrients and sediment	Raise mIBI and fIBI

Table 6. LDRWC/DRSCW joint activities

Project Name	Completion Date	Short-Term Objectives	Long-Term Objectives
NPS Phosphorus Feasibility Analysis	December 31, 2021	Assess NPS performance from reductions leaf litter and street sweeping	Reduce NPS contributions to lowest practical levels

The LDRWC Special Condition NIP language is similar to that of the DRSCW:

> *"The Permittee shall submit a Nutrient Implementation Plan (NIP) for the DRSCW/LDRWC watershed that identified phosphorus input reductions by point source discharges, nonpoint source discharges and other measures necessary to remove DO and offensive condition impairments and meet the applicable dissolved oxygen criteria in 3 IL Adm. Code 302.203. The NIP shall also include a schedule for implementation of the phosphorus input reductions and other measures. The Permittee may work cooperatively with the DRSCW/LDRWC to prepare a single NIP that is common among DRSCW/LDRWC permittees. The NIP shall be submitted electronically to EPA.PrmtSpecCondtns@illinois.gov with "NPDES Permit Number Special Condition 16.H: as the subject of the email and posted to the permittees website to the Agency by to the Agency by December 31, 2023."*

As stated above, the LDRWC has been working directly with the DRSCW to prepare a single comprehensive NIP for the DuPage River watershed including the Lower DuPage River, East Branch DuPage River, and West Branch DuPage River, along with the Salt Creek watershed.

1.2 WORKGROUP STUDIES AND MANAGEMENT PLANS

The DRSCW and LDRWC have conducted extensive water quality monitoring and commissioned various studies for the DuPage River and Salt Creek watersheds to understand how best to preserve and protect instream conditions for aquatic life. Summaries of relevant monitoring efforts and studies used in the development of this NIP are included in this section.

1.2.1 Monitoring Programs

Relevant monitoring programs conducted throughout the DuPage River and Salt Creek watersheds include a bioassessment sampling program, continuous and expanded dissolved oxygen (DO) monitoring efforts, and a continuous winter chloride monitoring program.

1.2.1.1 Bioassessments

The DRSCW bioassessment program began in 2006 with sampling in the West Branch DuPage River; the East Branch DuPage River and Salt Creek watersheds were sampled in 2007. From 2006 to 2016, each watershed was sampled on a three-year rotation. Beginning in 2017, the watersheds were sampled in a four-year rotation to allow time for the report writing and program assessment. As of 2023, the DRSCW watersheds will be sampled on a six-year rotation. The LDRWC began its bioassessment program around 2014 and sampled the watershed every three years between 2012 and 2021. Beginning in 2021, the LDRWC watersheds will be sampled every five years. Table 7 details the bioassessment sampling dates for each DRSCW and LDRWC watershed.

Table 7. Bioassessment sampling dates for the DRSCW/LDRWC watersheds

Watershed	Years with Completed Sampling	Next Upcoming Sampling Year
East Branch DuPage River	2007, 2011, 2014, 2019, 2023	2029
West Branch DuPage River	2006, 2009, 2012, 2015, 2020	2025
Salt Creek	2007, 2010, 2013, 2016, 2021	2027
Lower DuPage River	2012, 2015, 2018, 2021	2026

The combined DRSCW and LDRWC bioassessment program uses standardized biological, chemical, and physical monitoring and assessment techniques employed to meet three major objectives:

1. Determine the extent to which biological assemblages are impaired (using IEPA guidelines).
2. Determine the categorical stressors and sources that are associated with those impairments.
3. Add to the broader databases for the DuPage River and Salt Creek watersheds to track and understand changes through time in response to abatement actions or other influences.

The data collected as part of the bioassessment is processed, evaluated, and synthesized as a biological and water quality assessment of aquatic life use status. The assessments are directly comparable to previously conducted bioassessments such that trends in status can be examined, and causes and sources of impairment can be confirmed, amended, or removed. A final report is prepared following each bioassessment. It contains a summary of major findings and recommendations for future monitoring, follow-up investigations, and any immediate actions needed to resolve readily diagnosed impairments. The bioassessment reports are posted on the DRSCW[3] and LDRWC[4] websites. All Special Conditions projects were identified using data and analyses from the bioassessment monitoring (see Table 3).

Sampling sites for the bioassessment program are determined systematically using a geometric design supplemented by the bracketing of features likely to influence stream resource quality (such as combined sewer overflows [CSOs], dams, major stormwater sources, and WWTP outfalls). The number of sampling sites by method/protocol and watershed are listed in Table 8.

[3] https://drscw.org/activities/bioassessment/
[4] https://ldpwatersheds.org/about-us/lower-dupage-river-watershed-coalition/our-work/reports-resources/

IEPA maintains a statewide network of reference sites to support the derivation and calibration of their fish and macroinvertebrate IBIs. However, and according to the most recent State program evaluation conducted in 2013, these sites are limited to wadeable streams and small rivers. The wadeable stratum includes very few if any headwater reference sites and none less that third-order streams. In addition, only two IEPA reference sites exist in calibration region 3 for the Illinois fIBI. DRSCW developed a network of reference sites to fill this gap and provide evidence that the IEPA fish and macroinvertebrate indices could attain the General Use standard beginning in 2006 and eventually consisting of 16 sites ranging in drainage area from by 2013. Additional reference sites will be added for the Lower Des Plaines River watershed sampled in 2020 and 2021. The purpose of the reference sites was expanded in 2019 to include water chemistry, sediment, continuous DO, and chlorophyll-*a* to establish reference values for these non-biological parameters.

Table 8. Number of sampling sites in the DRSCW/LDRWC watersheds

Method/Protocol	West Branch DuPage River (2020)	East Branch DuPage River (2023)	Salt Creek (2021)	Lower DuPage River (2021)	Reference Sites (2006–2023)	Total Sites
Biological Sampling						
Fish	42	44[a]	65[b]	42	13	206
Macroinvertebrates	42	43[a]	65[b]	42	13	205
Qualitative Habitat Evaluation Index (QHEI)	42	44[a]	65[b]	42	13	206
Water Column Chemical/Physical Sampling						
Nutrients/Demand	42	39	57	40	6	184
Water Quality Metals	30	22	34	0	6	92
Water Quality Organics	18	11	17	0	6	52
Sediment Sampling	23	15	27	8	6	79

Notes:
[a] Includes seven sites that were being monitored for fish and macroinvertebrates and one site that was being monitored for fish only as part of pre-project monitoring at the Lower East Branch Stream Enhancement Project.
[b] Includes eight sites that were being monitored as part of pre-project monitoring at Fullersburg Woods and post-project monitoring at the Preserve at Oak Meadows.

The bioassessment sampling includes four sampling methods/protocols: biological sampling, Qualitative Habitat Evaluation Index (QHEI), water column chemical/physical parameter sampling and sediment chemistry. The biological sampling includes two assemblages: fish and macroinvertebrates.

Biological sampling includes fish and macroinvertebrates, and results are presented as Index of Biotic Integrity (IBI) scores, an environmental evaluation concept formulated by Dr. James Karr in 1981. IBI is an evaluation of a waterbody's biological community that allows the identification, classification, and ranking of water pollution and other stressors. IBI scores allow for the statistical association of various anthropogenic influences on a waterbody with the observed biological activity in said water body and, in turn, the identification and evaluation of management interventions in the process of adaptive management. Chemical testing of water samples produces only a snapshot of chemical concentrations, while an IBI score allows an evaluation of the net impact of chemical, physical, and flow variables on a biological community structure.

Methods for collecting fish at wadeable sites include using a tow-barge or longline pulsed direct current (D.C.) electrofishing apparatus (MBI 2012. A Wisconsin Department of Natural Resources battery-powered backpack electrofishing unit is used as an alternative to the longline in the smallest streams (Ohio EPA 1989). A three-person crew carries out the sampling protocol for each type of wading equipment sampling in an upstream direction. The sampling effort is indexed to linear distance and ranges from 150 to 200 meters in length. Non-wadeable sites are sampled with a raft-mounted pulsed D.C. electrofishing device in a downstream direction (MBI 2012). Sampling efforts are indexed to linear distance over 0.5 kilometers. Sampling is conducted during a June 15 to October 15 seasonal index period.

Samples from each site are processed by enumerating and recording weights by species and by life stage (year-over-year, juvenile, and adult). All captured fish are immediately placed in a live well, bucket, or live net for processing. Water is replaced and/or aerated regularly to maintain adequate DO levels and to minimize mortality. Fish not retained for voucher or other purposes were released back into the water after being identified to the species level, examined for external anomalies, and weighed individually or in batches. While the majority of captured fish are identified to species level in the field, any uncertainty about the field identification requires their preservation for later laboratory identification. Identification is made to the species level at a minimum and to the sub-species level if necessary. Vouchers are deposited and verified at The Ohio State University Museum of Biodiversity in Columbus, Ohio.

The macroinvertebrate assemblage is sampled using the IEPA multi-habitat method (IEPA 2005). Laboratory procedures followed the IEPA (2005) methodology for processing multi-habitat samples by producing a 300-organism subsample with a scan and pre-pick of large and/or rare taxa from a gridded tray. Taxonomic resolution is performed to the lowest practicable resolution for the common macroinvertebrate assemblage groups, such as mayflies, stoneflies, caddisflies, midges, and crustaceans, which goes beyond the genus level requirement of IEPA (2005). However, calculating the macroinvertebrate Index of Biotic Integrity (mIBI) followed IEPA's methods in using genera as the lowest taxonomy level for mIBI calculation and scoring.

Physical habitat is evaluated using the QHEI developed by the Ohio EPA for streams and rivers in Ohio (Rankin 1989, 1995; Ohio EPA 2006 and as modified by the Midwest Biodiversity Institute (MBI) for specific attributes. Attributes of habitat are scored based on the overall importance of each to the maintenance of viable, diverse, and functional aquatic faunas. The type(s) and quality of substrates; amount and quality of instream cover; channel morphology; extent and quality of riparian vegetation; pool, run, and riffle development and quality; and gradient are used to determine the QHEI score, which generally ranges from 20 to less than 100. QHEI scores and physical habitat attributes were recorded in conjunction with fish collections.

Water column and sediment samples are also collected as part of the bioassessment programs. The number of samples collected at each site is largely a function of the site's drainage area, with the sampling frequency increasing as the drainage size increases. Organics sampling is a single sample collected at a subset of sites. Sediment sampling is performed at a subset of sites using the same procedures as IEPA.

The parameters sampled are included in Table 9 and can be grouped into oxygen-demanding parameters, nutrients, demand, metals, and organics.

Table 10 includes the number of samples by analyte group for each watershed, and it shows the total number of collected samples by watershed (typical for a full watershed-specific assessment) All water sampling occurs between May and October, and sediment sampling occurs October to December. Standard Operating Procedures[5] were practiced for all water quality sampling.

[5] http://drscw.org/wp/bioassessment/

Table 9. Water quality and sediment parameters sampled as part of the Bioassessment Program

Water Quality Parameters Sampled by Group/Type	
Nutrients	Ammonia
	Nitrogen/nitrate
	Nitrogen – total Kjeldahl
	Phosphorus, total
	Chlorophyll-*a*
Oxygen Demand-Related Parameters	Total suspended solids
	Total dissolved solids
	DO
	pH
	Temperature
	Conductivity
	5-day biochemical oxygen demand
	Chloride
Metals	Cadmium
	Calcium
	Copper
	Iron
	Lead
	Magnesium
	Zinc
Organics	Polychlorinated biphenyls
	Volatile organic compounds
	Pesticides
	Semi volatile organics
Municipal Separate Storm Sewer System (MS4)	Sulfate
	Oil and grease

Sediment Parameters Sampled by Group/Type	
Sediment Nutrients	Phosphorus
Sediment Metals	Arsenic
	Barium
	Cadmium
	Chromium
	Copper
	Iron
	Lead
	Manganese
	Nickel
	Potassium
	Silver
	Zinc
Sediment Organics	Organochlorine pesticides
	Polychlorinated biphenyls
	Percent moisture
	Semi volatile organics
	Volatile organic compounds

Table 10. Number of samples in each watershed by analyte group in the Bioassessment Program

Watershed	# of Sites	Water Chemistry (# of Samples)				Sediment Chemistry (# of Samples)	
		Demand & Nutrients	MS4 Parameters	Metals	Organics	Metals	Organics
East Branch DuPage River	41	212	6	100	11	15	15
West Branch DuPage River	41	225	7	116	18	23	23
Salt Creek	57	319	7	167	17	27	27
Lower DuPage River	44	237	-	237	-	8	8

1.2.1.2 Continuous Dissolved Oxygen Monitoring

The DRSCW launched its continuous DO monitoring network in 2006. Before that, DO was monitored continuously at only one site in the Upper DuPage, on the West Branch, at the City of Wheaton under the authority of the Wheaton Sanitary District and at four sites on Salt Creek under the authority of the Metropolitan Water Reclamation District of Greater Chicago (MWRDGC). In 2022, DRSCW, in collaboration with DuPage County Stormwater Management (DC SWM), gathered continuous DO data via water quality sondes at four sites on Salt Creek, five sites on the East Branch DuPage River, and five sites on the West Branch DuPage River.

The LDRWC began collecting continuous DO data in 2015; most recently, in 2022, the LDRWC collected data at five locations on the Lower DuPage River. All sondes are deployed from May to October and collect DO, temperature, conductivity, and pH on an hourly basis. Details on the site locations are included in Table 11, and additional details on the program are available online.[6]

Table 11. Continuous DO monitoring locations in the DRSCW and LDRWC watersheds in 2022

Site ID	Stream Name	River Mile	Latitude	Longitude	Location
DuPage River Salt Creek Workgroup					
EBAR	East Branch (EB) DuPage River	23.0	41.935171	-88.05843	Army Trail Road
EBCB	EB DuPage River	18.8	41.88510	-88.04110	Crescent Boulevard
EBHL	EB DuPage River	14.0	41.82570	-88.05316	Hidden Lake Preserve
EBHR	EB DuPage River	8.5	41.76800	-88.07160	Hobson Road
EBWL	EB DuPage River	3.8	41.712315	-88.094842	Whalon Lake
WBAD	West Branch (WB) DuPage River	29.9	41.9750	-88.1386	Arlington Drive
WBBR	WB DuPage River	11.7	41.825268	-88.179456	Butterfield Road
WBWD	WB DuPage River	11.1	41.82027	-88.17212	Downstream of former Warrenville Grove Dam
WBMG	WB DuPage River	8.6	41.795928	-88.187263	Upstream of former McDowell Grove Dam
WBNPV	WB DuPage River	3.0	41.74029	-88.126879	Downstream Bailey Road
SCBW	Salt Creek	29.4	42.01630	-88.00061	Downstream of Busse Woods Dam (MWRDGC)

[6] http://drscw.org/wp/dissolved-oxygen/

Site ID	Stream Name	River Mile	Latitude	Longitude	Location
SCOM	Salt Creek	23.0	41.941279	-87.983363	Upstream of former Oak Meadows Dam
SCBR	Salt Creek	16.1	41.864686	-87.95073	Butterfield Road
SCFW	Salt Creek	11.1	41.825493	-87.93158	Fullersburg Woods impoundment
SCWR	Salt Creek	8.1	41.82576	-87.90045	Wolf Road (MWRDGC)
Lower DuPage River Watershed Coalition					
Channahon	DuPage River	0.88	41.4258836	-88.2327367	US Route 6
Shorewood	DuPage River	8.28	41.497661	-88.216733	River Crossing Drive
Minooka	DuPage River	3.36	41.4484391	-88.2405691	McEvilly Road
NPVLDOWN	DuPage River	26.53	41.695334	-88.162136	1090 feet downstream of Springbrook Water Reclamation Center Discharge
NPVLUP	DuPage River	26.68	41.697024	-88.160490	Upstream of Springbrook Water Reclamation Center Discharge

1.2.1.3 Expanded Dissolved Oxygen Monitoring

In 2019, the DRSCW began an Expanded DO Monitoring Program to collect additional DO-related data on parameters such as nutrients and benthic algae in the watersheds. This program is coordinated with the Bioassessment Program and is conducted during the same years as the watershed bioassessment sampling cycles (see Table 7). The sampling period for the Expanded DO Monitoring Program is late June to the end of August in dry and low-flow conditions (no rain for a minimum of 72 hours prior to any sampling). Sondes are deployed in the channel thalweg for a minimum of 72 hours, where they collect data on DO, temperature, pH, conductivity, turbidity, and chlorophyll-*a* at 15-minute intervals.

Composite water quality samples and sestonic algae sampling are collected once during the sonde deployment using the sampling technique described in the IEPA Standard Operating Procedure for Stream Water Quality Sample Monitoring (DCN184). Samples are analyzed for the water chemistry constituents listed below, including the one benthic algae sample collected at each site:

- 5-day biochemical oxygen demand (BOD5)
- 5-day carbonaceous biochemical oxygen demand (CBOD5)
- Total suspended solids (TSS)
- Volatile suspended solids (VSS)
- Total dissolved solids (TDS)
- Chloride
- Conductivity
- Total organic carbon
- Total dissolved carbon
- Ammonia
- Nitrite
- Nitrate
- Total Kjeldahl nitrogen (TKN)
- TP
- Orthophosphate
- Total dissolved phosphorus
- Sestonic chlorophyll-*a*
- Benthic chlorophyll-*a*

1.2.1.4 Winter Continuous Chloride Monitoring

As part of its Chloride Reduction Strategy Program, the DRSCW and its partners began collecting winter ambient continuous conductivity data in 2007. Currently, the DRSCW monitors winter stream conductivity at six locations (Table 12). The sites are positioned in the upper and lower sections of each subwatershed. For the sites located within the DRSCW watersheds, conductivity concentrations are used to calculate chloride concentrations based on a linear relationship established by the DRSCW.

The LDRWC began its continuous conductivity monitoring program in 2021 and currently monitors at two locations annually (Table 12). The LDRWC is still collecting grab sample chloride data to generate a linear relationship between conductivity and chloride for these sites.

Table 12. Winter continuous chloride monitoring locations in the DRSCW/LDRWC watersheds

Site ID	Stream Name	River Mile	Latitude	Longitude	Location
DuPage River Salt Creek Workgroup					
EBAR	East Branch DuPage River	23	41.935171	-88.05843	Army Trail Road
EBHR	East Branch DuPage River	8.5	41.768	-88.0716	Hobson Road
WBAD	West Branch DuPage River	29.9	41.975	-88.1386	Arlington Drive
WBNPV	West Branch. DuPage River	3	41.74029	-88.126879	Downstream Bailey Road
SCBW	Salt Creek	29.4	42.0163	-88.00061	Downstream of Busse Woods Dam (MWRDGC)
SCWR	Salt Creek	8.1	41.82576	-87.90045	Wolf Road (MWRDGC)
Lower DuPage River Watershed Coalition					
Channahon	DuPage River	0.88	41.4258836	-88.2327367	US Route 6
Shorewood	DuPage River	8.28	41.497661	-88.216733	River Crossing Drive

1.2.2 East Branch/Salt Creek Dissolved Oxygen Improvement Project

Between 1992 and 1998, Salt Creek and the East Branch DuPage River were listed as impaired for DO on the Section 303(d) List of Impaired Waters by the State of Illinois (see Section 2.2 for more information on the 303(d) List). In 2004, TMDLs for each of these streams were prepared by the IEPA and approved by the United States Environmental Protection Agency (USEPA). These reports focused on changes to WWTP effluent permit limits on nutrients to meet DO standards, but they also recommended that dam removal be investigated. The DRSCW designed the East Branch/Salt Creek Dissolved Oxygen Improvement Project to explore the feasibility and benefits of WWTP effluent nutrient load reductions, the removal or modification of existing dams, and the construction and operation of instream aeration projects. Modeling conducted for the study used publicly available WWTP discharge monitoring report (DMR) data, instead of the effluent limits used in the TMDL, and it incorporated continuous ambient data for calibration.

Additional field data collected included stream characteristics, such as stream depth, canopy cover, sediment accumulation, stream bank erosion, riparian zone composition, wetland presence, stream slope, bank heights, point source inputs, flow data, continuous DO data, and sediment oxygen demand (SOD) data. The updated field data were used to convert the existing TMDL models from the legacy software QUAL2E to the more-updated receiving water model platform QUAL2K, as it provided a more robust representation of instream processes and a more user-friendly interface. The updated calibrated and corroborated QUAL2K models were used to test various potential management scenarios that included the WWTP nutrient load reductions, dam removals, and aeration alternatives. DRSCW prioritized project evaluations that would benefit the ecosystem and surrounding community and improve DO concentrations. The feasibility studies found that, due to their use of effluent permit limits to allocate flow and concentration values, the TMDLs overestimated the influence of WWTP effluent on DO concentrations under typical conditions.

The East Branch DuPage River Final Report and Implementation Plan included a concept plan for removing the Churchill Wood Dam. DRSCW and the Forest Preserve District of DuPage County (FPDDC) developed construction plans to remove Churchill Woods Dam; in 2011, DC SWM removed the dam. The project was funded by DC SWM and a Section 319 grant provided by the IEPA and matched by the DRSCW.

Priority projects identified in the *Salt Creek Dissolved Oxygen Improvement Plan Final Report* included the removal of the Oak Meadows and Fullersburg Woods (Graue Mill) dams. These dam removals were incorporated into the

2015 Implementation Plan and are included in the NPDES permit's Special Condition language. The Oak Meadows Dam was removed in 2016, and the Fullersburg Woods (Graue Mill) Dam is scheduled for removal in 2023–2024.

More information on the East Branch/Salt Creek Dissolved Oxygen Improvement Project is available online at the DRSCW website.[7]

1.3 IDENTIFICATION AND PRIORITIZATION SYSTEMS TOOL

1.3.1 Identification and Prioritization System Tool Development (2010)

In the mid-2010s, the DRSCW partnered with the MBI to develop the Identification and Prioritization System (IPS) tool. The IPS was a key tool in selecting projects for inclusion in the DRSCW's 2015 Implementation Plan. DRSCW used the IPS Tool to perform robust relational analyses of stressors responsible for aquatic life (low DO) impairments based on biological resources, and the results were used to help select implementation projects that:

- Address the most limiting stressors at a reach level
- Prioritize reaches for intervention
- Establish restoration endpoints
- Provide a level of confidence in the likelihood of success
- Have measurable outcomes

The IPS Tool employs statistical techniques to examine correlations between observed aquatic communities (as measured by IBI) relative to 42 potential stressor parameters. Possible stressors include landscape-scale stressors (such as land use, road density, and basin size), ambient water chemistry (such as chloride and phosphorous concentrations) and physical conditions (using subcomponents of the QHEI such as measures of riparian buffer width and stream sinuosity). The stressors evaluated in the IPS Tool analysis do not directly include physical barriers to fish movement (such as dams or other control structures); however, other metrics affected by such structures (such as poor habitat or sediment conditions that exist due to the presence of impounded water upstream of a dam) are included. Sampling sites directly affected by dams were weighted high (prioritized) during the final restorability ranking. The IPS examined relationships between the independent variables (stressors) and IBIs, and it also considered stressor relationships with specific species and taxa from which IBIs are constructed. The methods used in the IPS Tool are based on the USEPA Causal Analysis/Diagnosis Decision Information System (CADDIS) methodology, incorporating cluster analysis and Non-metric Multidimensional Scaling and Classification and Regression Trees (CART).

The IPS Tool statistical analyses identified the following nine priority or "proximate" stressors as having the most significant correlation with the 2007–2013 IBI values used in the analysis:

1. Riparian habitat
2. Riffles
3. Channel condition
4. Substrate
5. Pools
6. Chloride
7. TKN
8. Biochemical oxygen demand (BOD)
9. Ammonia

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[7] https://drscw.org/activities/dissolved-oxygen/

Quantile regression was used to examine the relationships between individual stressors and the Fish Index of Biotic Integrity (fIBI) and mIBI scores. This analysis supplied thresholds for the stressor response in aquatic communities and information for project planners to design potential restoration projects. Two additional stressors, physical fragmentation (dams) and polycyclic aromatic hydrocarbons (PAHs), were also added to the list of priority stressors identified by the IPS Tool. Although neither stressor was used in the statistical evaluation for methodological reasons, both have explanatory power in IBI variation, the former (dams) in longitudinal IBI plots and the latter (PAHs) in sediment samples.

Stream segments were then graded according to their estimated "restorability" using a composite score based on three factors:

- The site score was positively weighted if the site had proximity to open space (based on geospatial analysis of aerial images and land use coverage). This criterion was selected to ensure that sufficient physical space existed in the riparian corridor for physical enhancement projects.
- The site score was negatively weighted relative to the number of proximate stressors (based on the analysis outlined above) identified at the site. A low number of proximate stressors was assumed to mean that restoring the biotic integrity to the site would be less complex than at a site with many proximate stressors.
- The site score was increasingly negatively weighted as an inverse to observed deviation from the IEPA biotic threshold for IBI rankings. This criterion assumes that segments nearest to compliance would be easier to bring into full compliance than sites with poorer assemblages (exhibited by large deviations from thresholds).

The grading exercise allowed potential restoration projects to be ranked on a nominal scale of 1–6 in descending order of restorability, and it also generated a list of actions to undertake at the priority sites, such as creating riparian buffers, addressing chloride, or restoring channel meanders. The IPS tool was validated by evaluating priority sites with field visits by stream restoration and water quality specialists.

Once a site was chosen to move forward, restoration projects were identified based on IPS Tool results. Restoration projects were designed based on remediation actions identified by the IPS Tool to reduce proximate stressors. Target thresholds for proximate stressors were determined by quantile regressions using site-specific field data (QHEI subset scores and species data).

1.3.2 IPS Tool Update (2023)

In 2019, the DRSCW, LDRWC, and two other partner watershed organizations elected to update and refine the IPS Tool. The updated tool draws on a larger regional dataset of paired biological, chemical, and physical data across seven northeastern Illinois Level IV subregions (53a, 53b, 54a, 54b, 54d, 54e, and 54f). The IPS Tool was used to statistically derive tiered thresholds for a more robust 87 different potential stressors paired with biological data at the site level across a total of 640 sites in the Northeast (NE) Illinois IPS study area. The 87 stressors were identified from a total dataset that included 139 water column parameters, 144 sediment parameters, 16 habitat variables, and 39 land use variables. Observed thresholds (or targets for potentially improving aquatic life conditions) were derived and tiered to five narrative categories of the fIBI and mIBI. Thresholds were derived for 31 water column parameters, 31 sediment parameters, and 25 habitat and land use variables. Each individual threshold includes a parameter-specific numeric evaluation of a goodness-of-fit (FIT) factor, which allows each parameter to be ranked in order from the strongest to the weakest stressor response.

The refined IPS Tool includes several improvements from the original application across the DRSCW watersheds (2010 IPS, described in Section 1.3.1), including:

- More sampling sites—expanded from 120 to 640—by including additional sites from sampling efforts conducted by the IEPA basin monitoring program, Lake and Will counties (collected with a methodology consistent with DRSCW methods), and DRSCW, which had collected data from additional reference sites outside the DRSCW area to supplement the dataset.
- An increased temporal dataset at the original sampling sites (three years of assessment rather than one).
- An improved spatial dataset built by incorporating a more heterogeneous geographical area. The DRSCW watersheds, as the only dataset used in the original iteration of the IPS Tool, have experienced a high level of physical and chemical anthropomorphic modification; therefore, these watersheds support only a truncated list of fish species and macroinvertebrate taxa. Including additional sites from a larger range of healthy aquatic conditions allows for a more fully developed statistical evaluation of “good” and “excellent” aquatic community stressor response relationships.
- An updated methodology for deriving stressor-response relationships. The modified approach included identifying stressor-sensitive species and taxa first and then linking the species or taxa to Illinois fIBI or mIBI General Aquatic Life Use benchmarks and the five narrative classes of condition.

In addition to these improvements, the IPS methodology was updated and refined to take advantage of new applications and methods. Paired data collected from participating agencies and the IEPA was used to calculate weighted means for fish species and macro taxa sensitive in relation to each stressor and stream drainage area (wadeable and headwater). This allowed the most sensitive species and taxa to be identified at the upper and lower 20% of species or taxa, depending on stressor “direction.” Stressor direction is due to the nature of the stressor’s relationship with the biological communities. Typically, this is an inverse relationship, with community health declining as a stressor increases (seen with chemical stressors such as chloride and ammonia, but also landscape variables such as imperviousness). However, some stressors, such as QHEI, have positive relationships with biological communities.

Once the taxa and species had been identified, the numbers of stressor-sensitive species/taxa at each site in the IPS study area were then observed and weighted (using the numbers of individuals present at each site). The sensitive species index (SSI) thus generated were then plotted against the sites Illinois IBI scores to allow agreement to be observed. This allows the user to map out the relationship between the two to see if SSI represents Illinois IBI across the sites but also gauge if the Illinois IBI is sensitive to the stressor under consideration. The sites and their SSI and IBI rankings are plotted against the stressor values in scatter plots; then, quantile regression is used to characterize the “goodness of fit” (i.e., strong versus weak).

Sites were then sorted into IBI score categories of very poor (IBI 0–15), poor (16–29), fair (30–40), good (41–49), and excellent (>50), with “good” being equivalent to the Illinois General Use standard for fish and macroinvertebrates. The 25th percentile (for positive stressors such as QHEI) or 75th percentile (for negative stressors such as chloride) stressor value of sites for both fIBI or mIBI values for each category was identified as the threshold corresponding to the Illinois biotic threshold for fish and macroinvertebrates. The more sensitive of the two communities (fish or macroinvertebrates) was adopted as the basis for the threshold. The steps used for threshold derivation are shown in Figure 2.

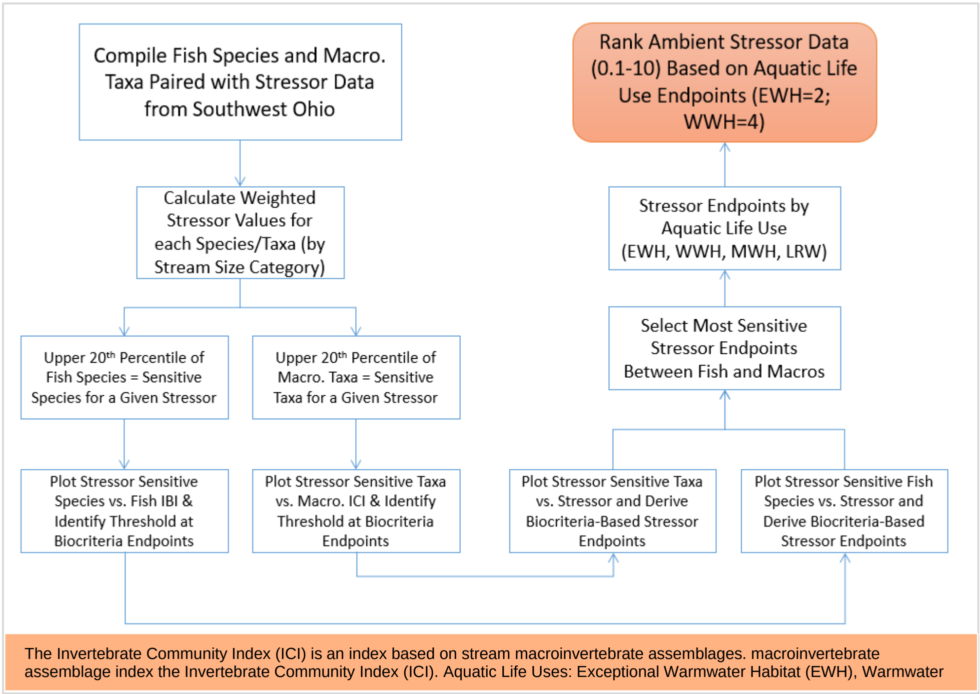


Figure 2. Steps in threshold development in the updated IPS Tool.

Aquatic assemblages are not equally impacted by each category of stressor, or even by stressors within the same category. Stressors were weighted (scaled from 0.1 to 10) based on the strength of the relationship between the stressor and its most stringent biological assemblage. The number of stressor-specific sensitive fish species or macroinvertebrate taxa at a site can also be used to predict a stressor rank; comparing this to the actual stressor rank using a FIT analysis allows the user to rank order stressors. Stressors that are strongly limiting along such a threshold have a relatively “tight” relationship, with few outliers that exceed the predicted threshold.

The FIT coefficient compared existing stressor ranks to backcasted (or reverse-engineered) predicted stressor ranks determined by stressor-specific fish species or macro-invertebrate taxa richness. A FIT value was calculated based on the sum of the divergences from the expected stressor ranks and was extrapolated from the sensitive species or taxa collected at a site. The larger the deviation from the expected stressor rank (e.g., more sensitive species at higher stressor levels), the larger the FIT score, and thus, a worse FIT. Sites with lower FIT scores indicates that higher stressor levels were associated with fewer sensitive species, indicating that the stressor was more likely limiting these species (i.e., better FIT). In a perfect FIT test, all stressor values would be at or below the categories along the slope represented by the threshold line. The results of this analysis showed that habitat stressors dominated (seven of the top 12 stressors were QHEI variables), but landscape variables such as impervious surfaces were also prominent. QHEI and its component pieces had scores in the 0.04–0.31 range, while parameters such as PAH compounds and metals (except zinc) had the weakest FIT scores. Nutrients also came to the forefront as important stressors based on their FIT scores, with TP having the strongest score (0.04) in this category. Table 13 shows the FIT results for the top 20 stressors alongside two random forest (RF) rankings (another method for ranking stressors relative to each other).

The RF ranking scores were then used to cross-check the FIT scoring. Here again, habitat-based, 12-digit hydrologic unit code (HUC12) QHEI variables were at or near the top of each RF analysis, illustrating the overarching importance of reach-level and small watershed-level cumulative habitat conditions. After HUC12 QHEI, the urban-related developed and impervious land use variables at both the watershed and 500-meter spatial buffer scales were important for both the fIBI and mIBI. This was followed by the site QHEI score and QHEI embeddedness score.

While the exact rank order of the importance measures between the FIT scores and the RF regression scores is not identical, the pattern suggests that multiple stressors nearly always contribute to observed variation in fIBI and mIBI, particularly habitat features (e.g., substrate and embeddedness), chlorides, DO, and nutrients. The IPS analysis indicated that habitat conditions dominate the explanation for variation in aquatic life. Sites that suffer from multiple stressors are key explanatory variables for aquatic life conditions, unlike results from the predecessor IPS Tool application, which indicated that TP may have explanatory power on aquatic life conditions (Section 1.3.1).

The updated IPS Tool can be used to generate site restorability scores for creating a prioritized project list. The database used as inputs and the threshold analysis have been placed in a Power BI platform to ease use for program management.

Table 13. Measures of FIT (values <0.32) and RF importance ranks (1–20)[3] for key NE Illinois IPS stressors.

Stressor	FIT Score	Regression and Classification Tree		RF Regression Tree Importance Rank (MSE[1]/Impurity[2])		RF Classification Tree Importance Rank (MSE[1]/Impurity[2])		
		Fish	Macros	fIBI	mIBI	Fish by Narrative	Macros by Narrative	General Use Standard Attainment
HUC12 Mean QHEI	-	-	-	**1/1**	**2/2**	**1/1**	**3/3**	**1/1**
Impervious Land Use (500 meter [m] scale)	0.01	✓	✓	12/20	6/9	11/17	6/7	8/9
QHEI Embeddedness Score	0.03	✓	✓	17/**5**	16/7	-	16/ -	11/16
Urban Land Uses (Watershed Scale)	0.03	-	-	6/6	**5/5**	**5/5**	**3/3**	**2/2**
QHEI Overall Score	0.04	✓	✓	10/12	**4**/8	9/6	**5/5**	17/ -
QHEI Substrate Score	0.04	✓	✓	17/14	19/20	12/10	14/12	-
QHEI Good Attributes	0.04	✓	✓	-	-	-	-	-
TP	0.04	✓	✓	-	17/15	15/ -	9/16	18/ -
Impervious Land Use (30m scale)	0.04	-	-	-	20/ -	10/15	18/ -	7/11
Impervious Land Use (30m scale Clipped)	0.04	-	-	8/13	17/ -	7/8	-	9/10
Conductivity	0.05	✓	✓	-	-	- /18	- /13	- /20
QHEI Channel Score	0.07	✓	✓	-	-	-	-	-
QHEI Silt Cover Score	0.07	-	-	-	-	- /16	-	-
Developed Land Use (Watershed Scale)	0.07	✓	✓	**3/4**	**3/4**	**2/2**	**2/1**	**5/3**
Minimum DO	0.10	-	-	9/11	9/10	-	-	- /12
TDS	0.10	-	-	-	-	-	-	-
Impervious Land Use (Watershed Scale)	0.10	-	-	7/9	8/11	**4**/7	8/10	**4/4**
Hydro-QHEI Depth Score	0.11	-	-	-	-	14/ -	15/ -	19/ -
QHEI Poor Habitat Attributes	0.12	✓	✓	**5/3**	7/**3**	16/9	10/9	10/12
Hydro-QHEI Overall Score	0.13	-	-	- /10	-	17/11	11/14	14/15
Zinc (in water column)	0.13	✓	✓	-	-	-	-	-
Hydro-QHEI Current Score	0.14	-	-	- /15	-	20/ -	-	-
TKN	0.14	✓	✓	-	12/15	-	19/20	-

Stressor	FIT Score	Regression and Classification Tree		RF Regression Tree Importance Rank (MSE[1]/Impurity[2])		RF Classification Tree Importance Rank (MSE[1]/Impurity[2])		
		Fish	Macros	fIBI	mIBI	Fish by Narrative	Macros by Narrative	General Use Standard Attainment
QHEI Pool Score	0.15	-	-	-	-	18/19	17/15	-
Heavy Urban Land Use (Watershed Scale)	0.17	-	-	4/6	10/6	3/4	7/6	6/5
Chloride	0.17	✓	✓	11/16	14/13	13/12	-	15/7
QHEI Cover Score	0.17	-	-	-	-	- /16	-	20/ -
BOD5	0.21	-	-	-	-	-	-	-
QHEI Riffle Score	0.27	-	-	- /18	-	- /13	-	-
Total Ammonia	0.28	✓	✓	-	-	-	-	-
Nitrate	0.29	✓	✓	14/ -	13/ -	8/20	13/19	12/14
Sodium	0.29	-	-	- /17	- /18	-	-	13/8
QHEI Gradient Score	0.31	-	-	13/7	11/12	6/3	1/2	16/ -
Total Suspended Solids	0.32	-	-	16/ -	- /19	19/ -	-	- /19

Notes:
[1] MSE definition: Mean square error which is average of the summation of the squared difference between the actual output value and the predicted output value.
[2] Impurity definition: In random forest analyses, impurity is a measure of the variance in a node; conversely you want nodes where purity is high (low variance of the data in a node).
[3] The top five ranked forest variables in each analysis are in blue boldface type

1.3.3 Summary of Relationships and Thresholds for Continuous Dissolved Oxygen Variables, Nutrient Effects, and Biological Attributes in Northeast Illinois Rivers and Streams

An Illinois Nutrient Science Advisory Committee (NSAC) 2018 report identified several data issues that hindered the development of strong associations between biological responses and stressor levels, one of which was too few samples with continuous DO data. The NE Illinois IPS document (MBI 2023) identified data gaps, like insufficient continuous DO data, which prevented an accurate assessment of nutrients' influence on fish and macroinvertebrate assemblages. As a result, watershed surveys in NE Illinois implemented the collection of continuous DO over the past 10–15 years, which was supplemented by continuous DO data collected across Illinois by IEPA.

Statistics generated from recently collected continuous DO data were integrated with NE Illinois biological, habitat, and nutrient data (e.g., TP, nitrate, ammonia, TKN, etc.) and algal response data (sestonic and benthic chlorophyll-*a*) from sites with a sufficient range of quality from very poor to excellent. The goal of this data analysis was to examine how continuous DO could better quantify the effects of nutrients on biological assemblage conditions in NE Illinois.

The analyses in this document identified the minimum DO statistics (as measured by the 5th percentile value)[8] as the most explanatory of the studied DO statistics compared to the maximum value or the maximum diurnal swing

[8] The 5th percentile of DO was used rather than the 25th percentile used for other parameters in the IPS because of the controlling nature of DO; also, the continuous data provides hundreds of values of DO compared to the 6–8 or fewer grab samples used to present exposure to parameters such as nutrients, dissolved constituents, etc. We used the 5th percentile rather than the absolute minimum to reduce the influence of extreme outliers.

of DO. Because of the lack of association between the maximum DO or maximum diurnal swing and the fIBI or mIBI, these statistics are, not by themselves, predictive of aquatic life impairment unless associated with low DO.

Similarly, little correlation existed between chlorophyll-*a* measures and the fIBI and mIBI. For benthic chlorophyll-*a*, the lack of correlation may be related to generally low benthic chlorophyll-*a* values compared to literature values that are considered excessive. This is consistent with other Illinois studies that found similar lower benthic chlorophyll-*a* measures than might be expected based on enriched nutrient concentrations. We generated minimum DO thresholds focused on the 5th percentile DO statistic for fish and macroinvertebrates that can be used for stressor identification. Identifying nutrients as major causes of aquatic life impairment is complex, particularly in urban settings. Stream geomorphology and physical habitat quality can influence nutrient and DO dynamics. In this study, QHEI and several of its metrics showed threshold relationships with minimum DO such that sites with physically degraded habitat are more likely to have low minimum DO values.

1.4 DRSCW IMPLEMENTATION PLANNING

1.4.1 DRSCW Implementation Plan (2015)

The DRSCW 2015 Implementation Plan set forth the DRSCW's adaptative management approach to achieve the attainment of water quality standards (WQS) and designated uses for Salt Creek, East Branch DuPage River, and West Branch DuPage River. The DRSCW adaptive management approach focuses on high-resolution, comprehensive monitoring of the watersheds' chemical, biological, and physical characteristics. These monitoring efforts (detailed in Section 1.2.1) provide the data needed to execute the "Plan-Do-Check-Act" methodology inherent to adaptive management and complex problem-solving. Monitoring and analysis provide insight into the highest-priority stressors affecting stream health to identify projects or initiatives with the greatest potential to attain stream use goals. Monitoring also provides the context for pre- and post-project conditions needed to properly assess the impacts of stream restoration projects and water quality initiatives. Adaptive management requires reviewing and assessing activities to better formulate future activities based on lessons learned.

Holistic monitoring and analysis of stream characteristics from 2013 in the DRSCW program area have revealed that point source nutrient loading alone is insufficient to explain the inability of local streams to support aquatic life. Based on empirical evidence, the physical anthropomorphic modifications to stream corridors and changing streamflows associated with increased watershed imperviousness provide more compelling and statistically correlated explanations for poor aquatic life conditions. Successful management actions need to be:

1. Implemented on a watershed scale.
2. Systematically applied over an extended period of time.
3. Guided by a system that prioritizes actions both by nature (physical restoration, pollutant reduction) and space (stream reaches) to ensure measurable progress.

The DRSCW has developed the IPS Tool (see Section 1.3), which uses monitoring data to identify priority stressors at a small spatial scale and rank the assessed stream reaches for restoration activities. This prioritization system was used to identify potential projects for further development and design, including preliminary scopes and costs. Post-project monitoring is conducted to evaluate the impacts and identify the next set of activities, which may include modifying future project design based on an improved understanding of the relationships between stressors and biological communities.

DRSCW data and analyses currently indicate that major investments in channel form and instream and riparian habitat at a watershed scale are essential to making efficient and measurable progress toward attaining designated uses for aquatic life. The 2015 Implementation Plan included activities and projects that would be performed by DRSCW as part of an adaptive management program focused on working towards the aquatic life use goals in affected watersheds. The identified projects and activities were included in the Special Conditions of the NPDES permit for the major municipal WWTPs in the watershed (See Table 3 for a list of the projects and Section 3.8 for a list of the major WWTPs). The Special Condition covers two five-year NPDES permit cycles ending in approximately 2025.

To fund these watershed plan projects, the 2015 Implementation Plan established a funding structure—paid by WWTPs participating in the Special Condition—that would generate approximately $7.5 million over the initial five-year NPDES permit cycle and approximately $15 million over the eight-year period of the assessment.

To date, three prioritized projects have been completed: Oak Meadows Golf Course Dam Removal and Stream Restoration, Spring Brook Restoration and Dam Removal, and Klein Creek Streambank Stabilization Project. Post-project monitoring was completed for the Oak Meadows and Spring Brook projects. Details on these projects and post-project monitoring results can be found in the DRSCW and LDRWC Annual Reports.[9]

The 2015 Implementation Plan was designed to be amended for future planning periods coinciding with future NPDES permit cycles. The 2015 Implementation Plan (DRSCW 2015) was updated in 2020 (see Section 1.4.2), and this NIP will serve as an update to the 2015 and 2020 DRSCW implementation plans.

1.4.2 DRSCW Implementation Plan (2020)

In 2020, the DRSCW Implementation Plan was updated with the inclusion of three additional projects (one per watershed) and/or expansions of projects that were included in the 2015 Implementation Plan (see Section 1.1 and Table 3). The projects will be implemented over an additional five-year NPDES permit cycle (through approximately 2028) and are funded by an additional $6 million.

1.5 LDRWC IMPLEMENTATION PLANNING

1.5.1 LDRWC Implementation Plan (2016)

The LDRWC 2016 Implementation Plan set forth the LDRWC's adaptative management approach to achieve the attainment of WQS and designated uses for Lower DuPage River. The adaptative management strategy in the LDRWC Implementation Plan is similar to that of the 2015 and 2020 DRSCW implementation plans.

The identified projects and activities in the Implementation Plan were included in the Special Conditions of the NPDES permit for the major municipal WWTPs in the watershed (See Section 1.1 for a list of the projects and Section 0 for a list of the major WWTPs). To fund these watershed projects, this plan established a funding structure that would generate approximately $3.3 million in project funding from the two WWTPs participating in the Special Condition, Naperville and Bolingbrook #3.

To date, the LDRWC has completed one project: the Hammel Woods Dam Removal. Details on this project and related post-project monitoring can be found in the DRSCW and LDRWC Annual Reports.[10]

The 2016 Implementation Plan was designed to be amended for future planning periods coinciding with NPDES permit cycles. This NIP will serve as an update to the 2016 LDRWC Implementation Plan.

[9] https://drscw.org/activities/stressors-analysis/
[10] https://drscw.org/activities/project-identification-and-prioritization-system/

2 WATER QUALITY ASSESSMENT

This section details the designated uses, impairments, TMDLs, and WQS as relevant to the DRSCW and LDRWC NIP.

2.1 DESIGNATED USES

The waters of Illinois are classified by site-specific designated uses (Table 14). Designated uses applicable to the DuPage River and Salt Creek watersheds include aquatic life, aesthetic quality, fish consumption, and primary contact recreation. The corresponding water quality standard classification for these designated uses is the General Use standard. The General Use classification is defined by Illinois Pollution Control Board (IPCB) as being developed to protect the state's waters for aquatic life, wildlife, agricultural use, secondary contact use, and most industrial uses and ensure the aesthetic quality of the state's aquatic environment. Primary contact uses are protected for all General Use waters whose physical configuration permits such use.

Table 14. Illinois designated uses and applicable WQS for the DuPage River and Salt Creek watersheds

Illinois EPA Designated Uses	Illinois Waters where Designated Use and Standards Apply	Applicable Illinois WQS
Aquatic Life	Streams, Inland Lakes	General Use Standards
	Lake Michigan Basin waters	Lake Michigan Basin Standards
Aesthetic Quality	Inland Lakes	General Use Standards
	Lake Michigan Basin Waters	Lake Michigan Basin Standards
Primary Contact	Streams, Inland Lakes	General Use Standards
	Lake Michigan Basin Waters	Lake Michigan Basin Standards
Fish Consumption	Streams, Inland Lakes	General Use Standards
	Lake Michigan Basin Waters	Lake Michigan Basin Standards
	Specific Chicago Area Waters	Secondary Contact and Indigenous Aquatic Life Standards

2.2 IMPAIRED WATERS

Each waterbody has one or more designated uses that may include aquatic life, aesthetic quality, indigenous aquatic life (for specific Chicago-area waterbodies), primary contact (swimming), public and food processing water supply, and fish consumption. Water quality assessments are based on biological, physicochemical, physical habitat, and toxicity data. The degree of support (attainment) of a designated use in a waterbody (or segment) is assessed as "fully supporting" or "not supporting." Waters in which at least one applicable use is not fully supported is designated as "impaired." Potential causes and sources of impairment are also identified for these waters. The 303(d) List (i.e., the state's list of impaired and threatened waters) is organized by watershed based on the requirements of 40 Code of Federal Regulations (CFR) Part 130.7(b)(4).

Several streams, lakes, and impoundments within the DuPage River and Salt Creek watersheds have been placed on the State of Illinois Section 303(d) list of impaired waters. The list includes 17 mainstem river segments, 11 tributary segments, and 11 lakes/impoundments identified as impaired in the DuPage River and Salt Creek Watersheds on the 2020–2022 Section 303(d) lists (Table 15 for streams; Table 16 for lakes). The geographical coverage of the various designated use support classifications are included for aquatic life (Figure 3 for streams; Figure 4 for lakes), aesthetic quality (Figure 5 for streams; Figure 6 for lakes), fish consumption (Figure 7 for streams; Figure 8 for lakes), and primary contact recreation (Figure 9 for streams; Figure 10 for lakes).

Total phosphorus is listed as a cause of aquatic life impairment for 13 mainstem segments, four tributary segments, and one lake in the DuPage River and Salt Creek watersheds. TP is also listed as an impairment to aesthetic quality in one tributary segment and nine lakes. Low DO concentrations are listed as a cause of aquatic life impairment on one mainstem segment and three tributary segments. Excessive algae growth has been noted on one mainstem segment, two tributary segments, and five lakes. Excessive aquatic plant growth has been noted on one mainstem segment and three lakes.

Segments are placed in Category 4c rather than on the Section 303(d) list when the State determines that the failure to meet an applicable water quality standard is not caused by a pollutant, but rather is caused by other types of pollution (i.e., only nonpollutant causes of impairment). Waterbodies placed in the 4c category are usually those where the aquatic life use is impaired by habitat-related conditions (Table 17 and Figure 11).

2.3 TMDL DEVELOPMENT IN THE WATERSHEDS

Section 303(d) of the CWA and the USEPA Water Quality Planning Regulations (40 CFR Part 130) require states to develop TMDLs for impaired waterbodies that are not meeting designated uses or WQS. A TMDL is a calculation of the maximum quantity of specific pollutants that a waterbody can receive and still meet applicable WQS and the targets that are necessary to protect the designated beneficial use (or uses) for that waterbody.

Previous TMDL reports have been developed and approved in the DuPage River and Salt Creek watersheds. The development of the West Branch DuPage River, East Branch DuPage River, and Salt Creek TMDLs began in 2000. Table 18 summarizes the TMDLs developed for each of these watersheds.

Table 15. DuPage River and Salt Creek stream impairments and pollutants, 2020–2022 Illinois 303(d) List

Waterbody ID	Waterbody Name	Stream Segment Length (miles)	Designated Use	Pollutant(s)	Observed Effects
IL_GB-01	DuPage River	8.14	Fish Consumption	Mercury, polychlorinated biphenyls (PCBs)	Mercury, PCBs
IL_GB-11	DuPage River	10.07	Aquatic Life	Arsenic, Cause Unknown, Methoxychlor, TP, PCBs	Aquatic Plants, Arsenic, Cause Unknown, Cover Loss, Flow Modification, Methoxychlor, Nitrogen, PCBs, TP
			Fish Consumption	Mercury; PCBs	Mercury, PCBs
IL_GB-16	DuPage River	11.31	Aquatic Life	TP	Cover Loss, DO, Flow Modification, Nitrogen, TP
			Fish Consumption	Mercury; PCBs	Mercury, PCBs
IL_GBLG	Armitage Ditch	1.2	Aquatic Life	Cause Unknown	Cause Unknown, Loss of Instream Cover, Alterations in Streamside or Littoral Vegetative Covers
IL_GBA	Illinois & Michigan Canal	9.85	Fish Consumption	Mercury	Mercury
IL_GBE-02	Lily Cache Creek	10.05	Aquatic Life	Cause Unknown	Cause Unknown
IL_GBAA-01	Rock Run	9.64	Aquatic Life	Cause Unknown	Cause Unknown
IL_GBK-02	West Branch DuPage River	9.43	Fish Consumption	Mercury	Mercury
IL_GBK-05	West Branch DuPage River	10.51	Aquatic Life	Cause Unknown, TP, TSS	Cause Unknown, Flow Regime, Modification, Nitrogen, TP, TSS
IL_GBK-09	West Branch DuPage River	11.86	Aquatic Life	Cause Unknown, TP, Sedimentation/Siltation	Cause Unknown, TP, Sedimentation/Siltation
IL_GBK-14	West Branch DuPage River	3.82	Aquatic Life	Chloride	DO, Flow Alteration-Changes in Depth and Flow Velocity, Alterations in Streamside or Littoral Vegetative Covers
IL_GBKB-01	Kress Creek	7.91	Aquatic Life	DO	Alterations in Streamside or Littoral Vegetative Covers, DO, Loss of Instream Cover
IL_GBKA	Spring Brook	1.74	Aquatic Life	Chloride, TP	Chloride, DO, Alterations in Streamside or Littoral Vegetative Covers
IL_GBKA-01	Spring Brook	3.18	Aquatic Life	TP	Alterations in Streamside or Littoral Vegetative Covers, Loss of Instream Cover, TP
IL_GBKF-01	Winfield Creek	6.89	Aquatic Life	DO	DO, Alterations in Streamside or Littoral Vegetative Covers
IL_GBL-02	East Branch DuPage River	8.01	Aquatic Life	Arsenic, Cause Unknown, Methoxychlor, TP, Sedimentation/ Siltation	Arsenic, Cause Unknown, Flow Regime, Modification, Methoxychlor, TP, Sedimentation/Siltation

Waterbody ID	Waterbody Name	Stream Segment Length (miles)	Designated Use	Pollutant(s)	Observed Effects
			Fish Consumption	Mercury	Mercury
IL_GBL-05	East Branch DuPage River	3.18	Aquatic Life	TP, TSS	Chloride, DO Alterations in Streamside or Littoral Vegetative Covers, TP, TSS
			Fish Consumption	PCBs	PCBs
IL_GBL-08	East Branch DuPage River	4.71	Aquatic Life	Arsenic, Dieldrin, Hexachlorobenzene, Methoxychlor, TP, TSS, Sedimentation/Siltation,	Arsenic, Dieldrin, Flow Regime Modification Hexachlorobenzene, Methoxychlor, Nitrogen, TP, Sedimentation/Siltation, Alterations in Streamside or Littoral Vegetative Covers, TSS
			Fish Consumption	PCBs	PCBs
IL_GBL-10	East Branch DuPage River	4.64	Aquatic Life	Arsenic, Cause Unknown, Dieldrin, Hexachlorobenzene, Methoxychlor, TP	Arsenic, Cause Unknown, Dieldrin, Hexachlorobenzene, Methoxychlor, Nitrogen, TP
			Fish Consumption	PCBs	PCBs
IL_GBL-11	East Branch DuPage River	3.45	Aquatic Life	DO, pH, TP, Sedimentation/Siltation	DO, Flow Regime Modification, Nitrogen, pH, Sedimentation/Siltation, Alterations in Streamside or Littoral Vegetative Covers, TP
			Fish Consumption	PCBs	PCBs
IL_GBLC	Lacey Creek	3.69	Aquatic Life	Bottom Deposits, Chloride, Sedimentation/ Siltation	Bottom Deposits, Chloride, Loss of Instream Cover, Sedimentation/Siltation
IL_GBLB-01	St Joseph Creek	4.29	Aquatic Life	Oil and Grease, TSS	Algae, Loss of Instream Cover, Flow Regime Modification, Oil/Grease, Alterations in Streamside or Littoral Vegetative Covers, TSS
IL_GL	Salt Creek	11.34	Aquatic Life	Chloride, Dissolved Oxygen, TP	Algae, Chloride, DO, Flow Regime Modification, TP
			Fish Consumption	Mercury, PCBs	Mercury, PCBs
			Primary Contact Recreation	Fecal Coliform	Fecal Coliform
IL_GL-03	Salt Creek	10.52	Aquatic Life	Dichlorodiphenyltrichlor-oethane (DDT), Heptachlor, TP, PCBs, Sedimentation/ Siltation	DDT, DO, Flow Alteration–Changes in Depth and Flow Velocity, Heptachlor, Nitrogen, PCBs, Sedimentation/Siltation, Alterations in Streamside or Littoral Vegetative Covers, TP, TSS
			Fish Consumption	Mercury, PCBs	Mercury, PCBs
IL_GL-09	Salt Creek	12.21	Aquatic Life	Aldrin, Cause Unknown, Methoxychlor, TP, TSS	Aldrin, Cause Unknown, Fish Barrier, Flow Regime Modification, Methoxychlor, Nitrogen, TP, TSS
			Fish Consumption	Mercury, PCBs	Mercury, PCBs

Waterbody ID	Waterbody Name	Stream Segment Length (miles)	Designated Use	Pollutant(s)	Observed Effects
IL_GL-10	Salt Creek	3.71	Aquatic Life	Arsenic, Hexachlorobenzene, Methoxychlor	Arsenic, Flow Regime Modification, Hexachlorobenzene, Methoxychlor, Nitrogen, Alterations in Streamside or Littoral Vegetative Covers
			Fish Consumption	Mercury, PCBs	Mercury, PCBs
IL_GL-19	Salt Creek	3.15	Aquatic Life	Cadmium, TP	Cadmium, Flow Regime Modification, Alterations in Streamside or Littoral Vegetative Covers, Nitrogen, TP, TSS
			Fish Consumption	Mercury, PCBs	Mercury, PCBs
IL_GLA-02	Addison Creek	6.71	Aquatic Life	Cause Unknown, Aldrin, Chromium (total), DDT, Hexachlorobenzene, TP	Aldrin, Cause Unknown, Chromium, DDT, Flow Alteration–Changes in Depth and Flow Velocity, Flow Regime Modification, Hexachlorobenzene, Alterations in Streamside or Littoral Vegetative Covers, TP
IL_GLA-04	Addison Creek	3.44	Aquatic Life	*a*-benzenehexachloride (Alpha-BHC), Copper, Hexachlorobenzene, PCBs, Sedimentation/ Siltation, TSS	Alpha-BHC, Copper, DO, Flow Regime Modification, Hexachlorobenzene, Nitrogen, PCBs, Sedimentation/Siltation, Alterations in Streamside or Littoral Vegetative Covers, TP
			Aesthetic Quality	Bottom Deposits, Oil, TP	Algae, Bottom Deposits, Oil, TP
IL_GLB-01	Spring Brook	3.14	Aquatic Life	DDT, Endrin, Hexachlorobenzene, TP, Sedimentation/Siltation	Algae, DDT, DO, Endrin, Flow Regime Modification, Hexachlorobenzene, Sedimentation/Siltation, Alterations in Streamside or Littoral Vegetative Covers, TP, TSS
IL_GLB-07	Spring Brook	4.19	Aquatic Life	Cause Unknown	Cause Unknown

Table 16. DuPage River and Salt Creek watershed lake impairments and pollutants, 2020–2022 Illinois 303(d) List

Waterbody ID	Waterbody Name	Size (acres)	Designated Use	Pollutant(s)	Potential Source(s)
IL_RGG	Churchill Lagoon	21.0	Aquatic Life	Aldrin, Silver, TP, TSS	Aldrin, Silver, Algae, TP, TSS
			Aesthetic Quality	TP, TSS	TP, TSS
IL_WGZE	Hidden Lake	10.0	Aesthetic Quality	TP, TSS	Aquatic Plants, TP, TSS
IL_WGB	Marmo	3.7	Aesthetic Quality	Cause Unknown	Algae, Aquatic Plants, Cause Unknown
IL_WGA	Meadow	4.9	Aesthetic Quality	TP	Algae, TP
IL_WGC	Sterling Pond	2.1	Aesthetic Quality	TP, TSS	Algae, Aquatic Plants, TP, TSS
IL_WGZW	Rice Lake (DuPage)	38.0	Aesthetic Quality	Cause Unknown	Algae, Cause Unknown
IL_WGN	Herrick Lake	20.5	Aesthetic Quality	TP	TP
IL_VGZ	Whalon Lake	249.0	Aesthetic Quality	TP	TP
IL_RGD	Silver	56.9	Aesthetic Quality	TP	TP
IL_RGZX	Busse Woods	21.0	Aesthetic Quality	TP, TSS	TP, TSS
			Fish Consumption	Mercury, PCBs	Mercury, PCBs
			Primary Contact Recreation	Fecal Coliform	Fecal Coliform
IL_WGZY	Swan (Indiana Lake)	4.0	Aesthetic Quality	TP	Algae, TP

Table 17. DuPage River and Salt Creek 4c waters

Waterbody ID	Waterbody Name	Stream Segment Length (miles)	Cause
IL_GBLF-01	Glencrest Creek	1.48	Alteration in Streamside or Littoral Vegetative Cover, Loss of Instream Cover
IL_GBKC-01	Klein Creek	3.38	Alteration in Streamside or Littoral Vegetative Cover, Loss of Instream Cover, Flow Alteration–Changes in Depth and Flow Velocity, Flow Regime Modification
IL_GBLA	Prentiss Creek	3.50	Alteration in Streamside or Littoral Vegetative Cover, Flow Alteration–Changes in Depth and Flow Velocity

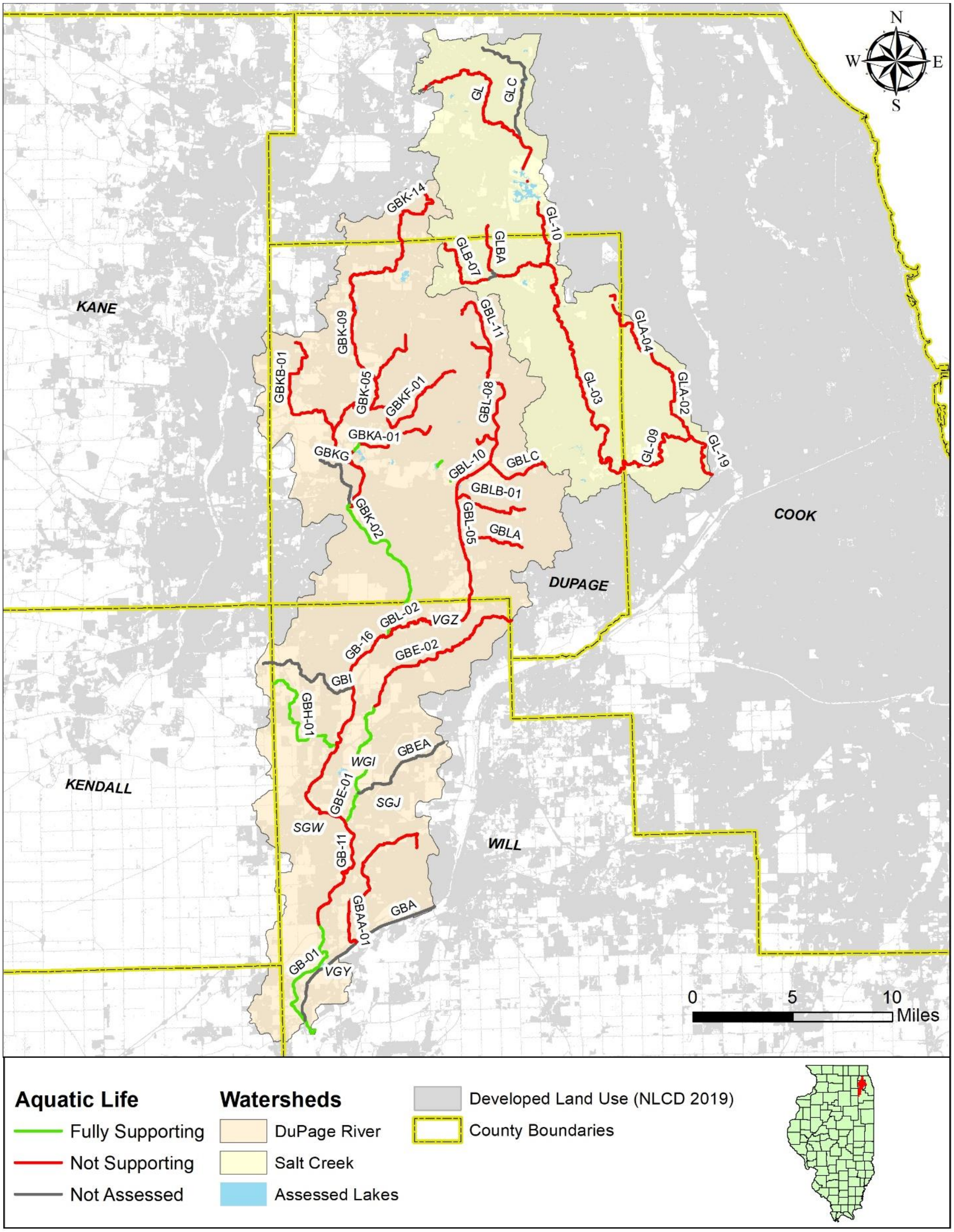


Figure 3. Aquatic life use support in the streams and rivers in the DuPage River and Salt Creek watersheds.

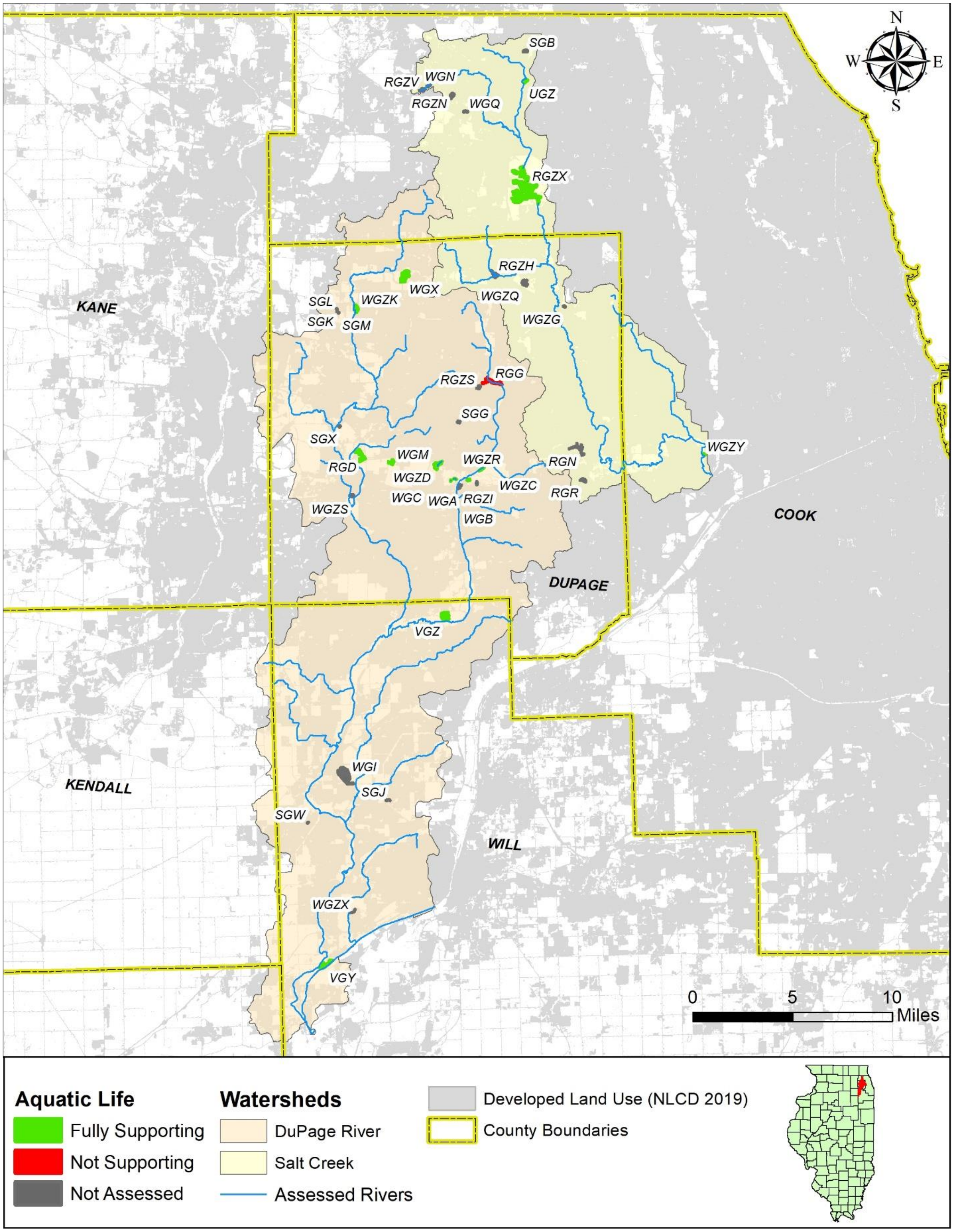


Figure 4. Aquatic life use support in lakes in the DuPage River and Salt Creek watersheds.

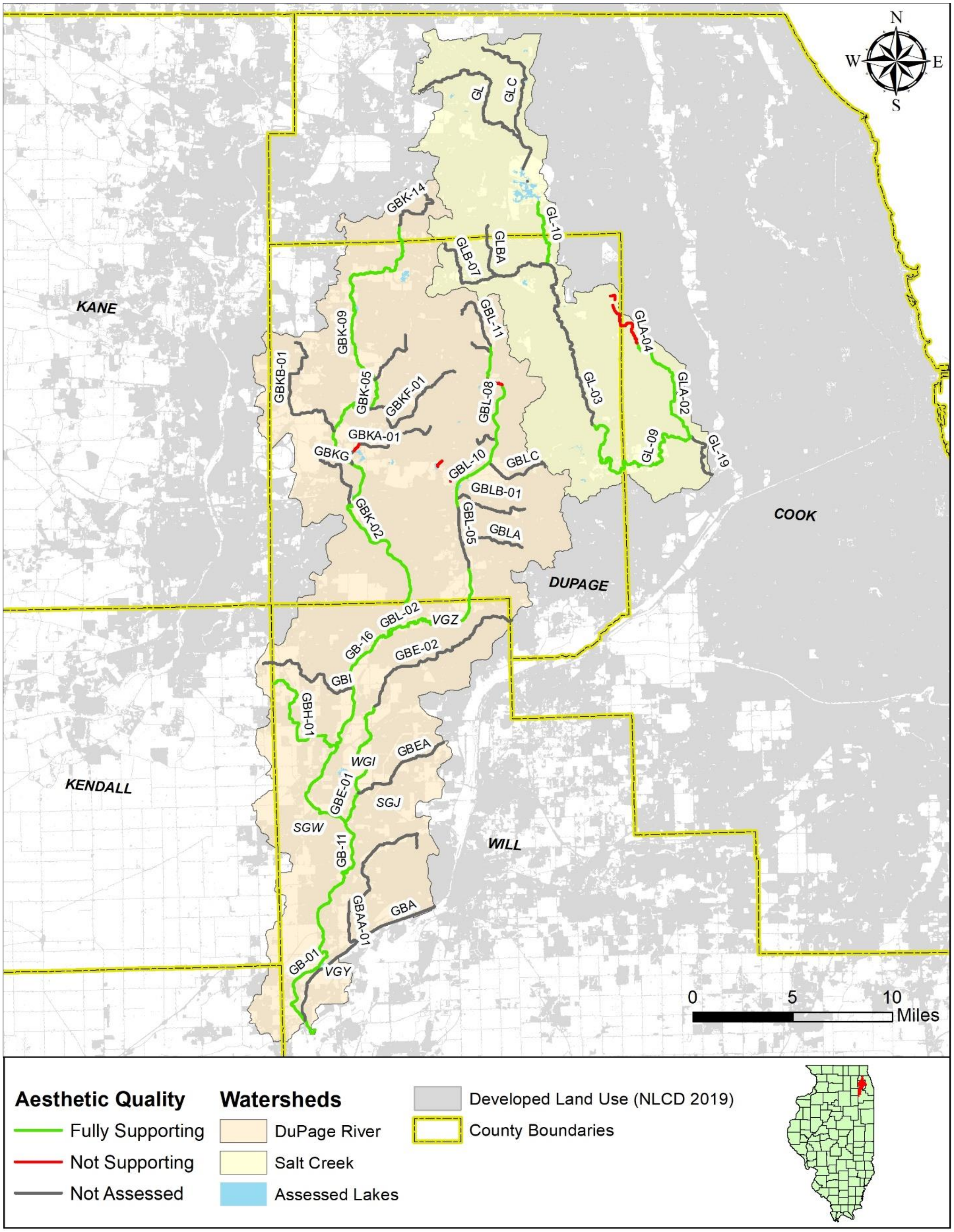


Figure 5. Aesthetic quality use support in the streams and rivers in the in the DuPage River and Salt Creek watersheds.

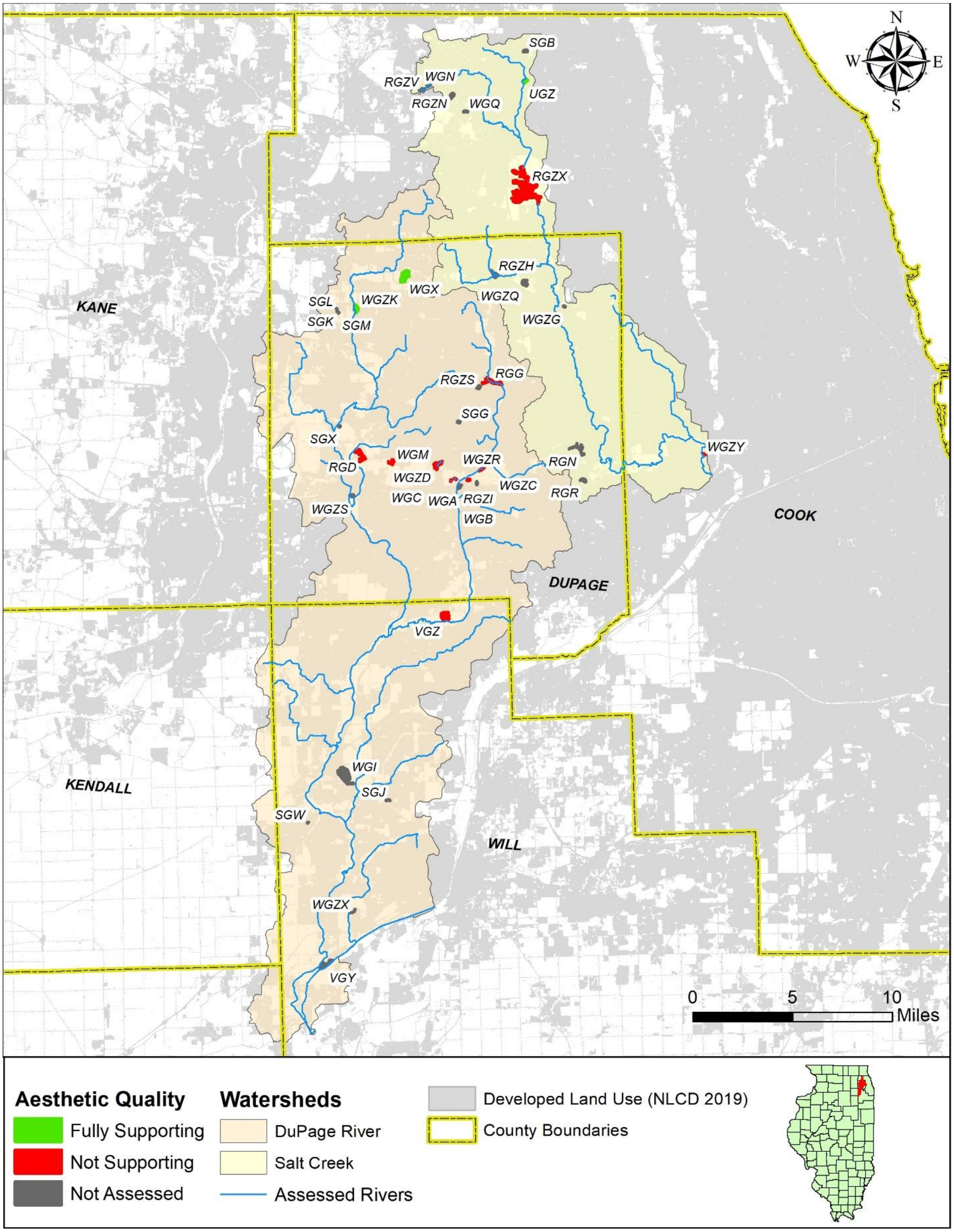


Figure 6. Aesthetic quality use support in lakes in the DuPage River and Salt Creek watersheds.

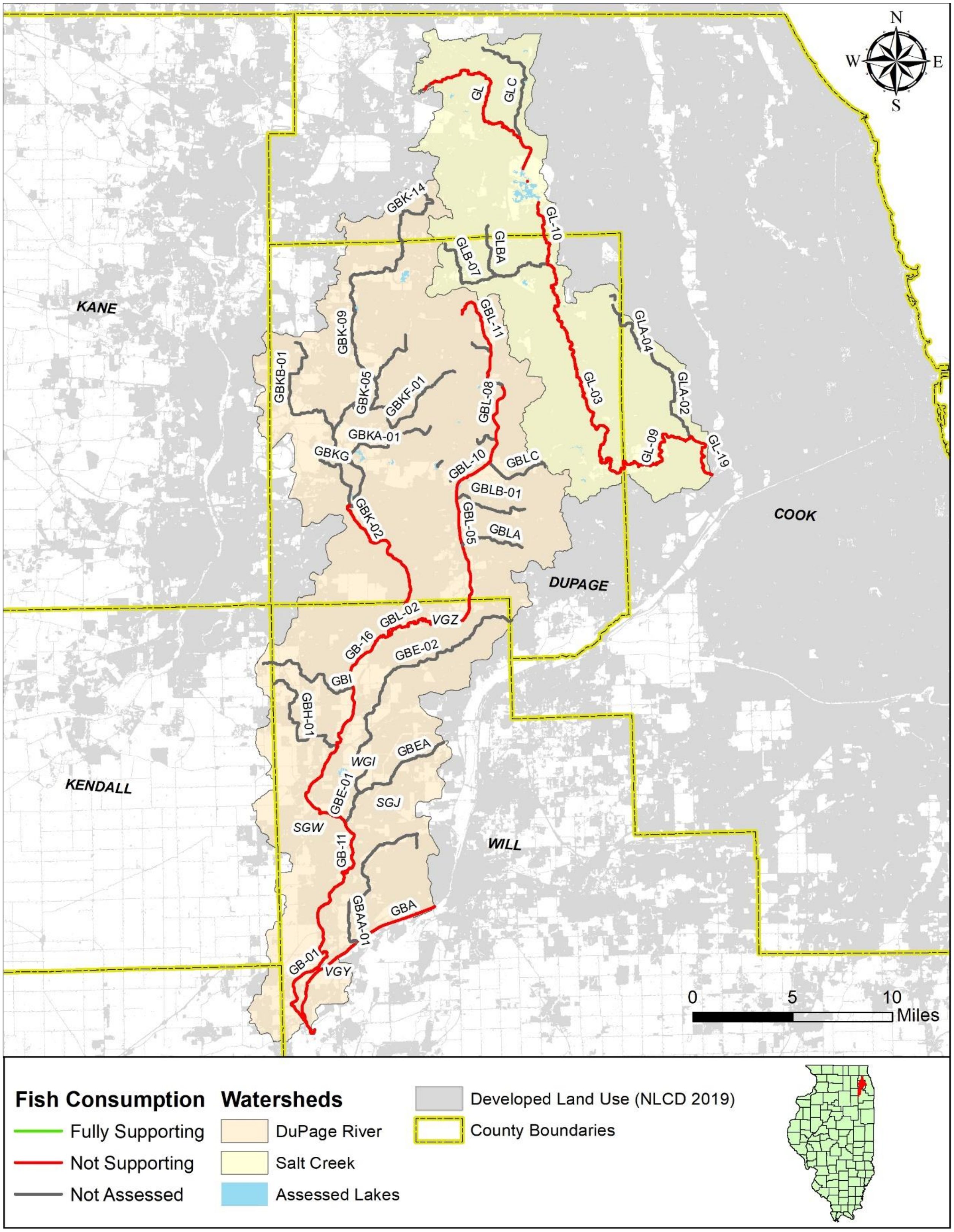


Figure 7. Fish consumption use support in the streams and rivers in the DuPage River and Salt Creek watersheds.

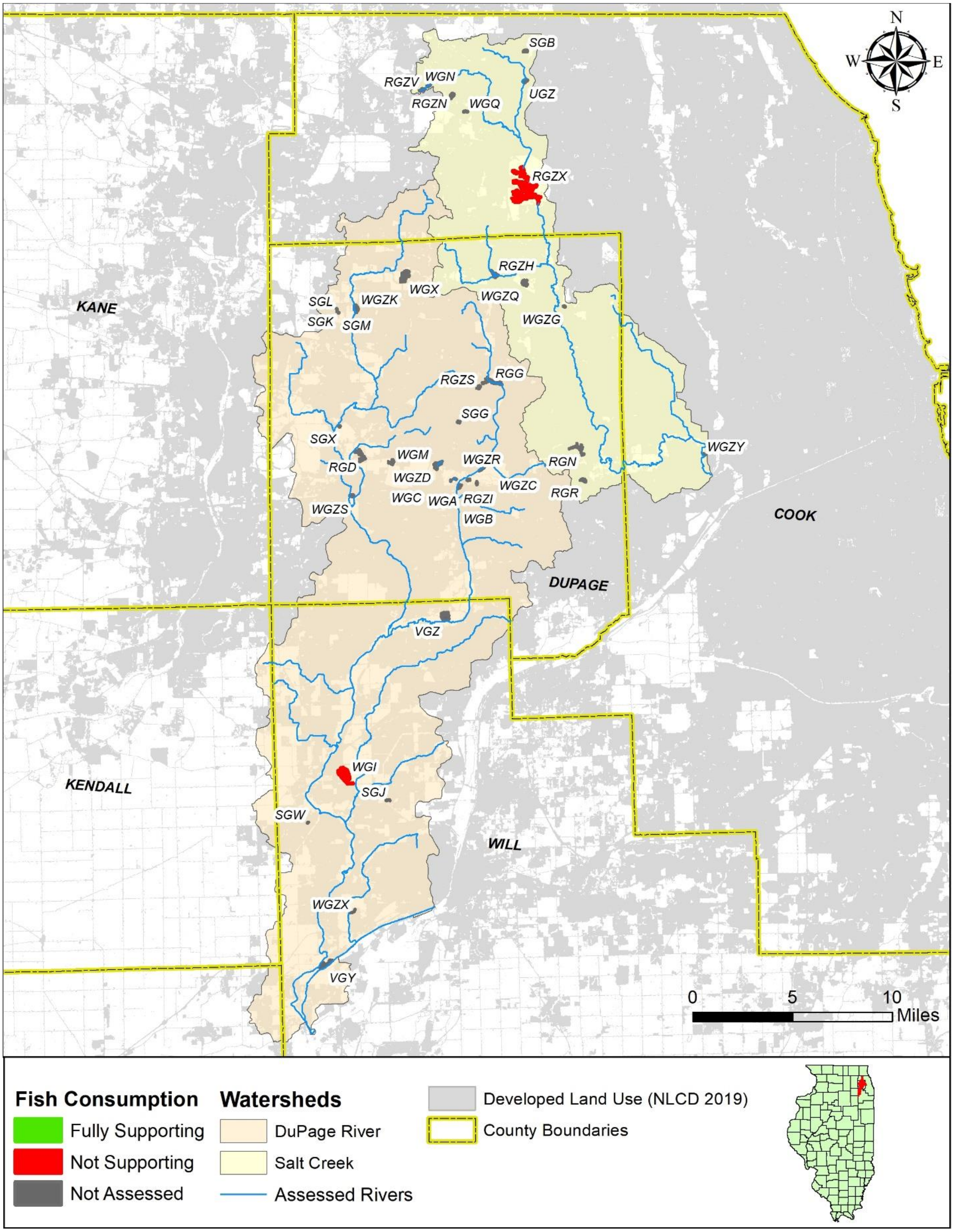


Figure 8. Fish consumption use support in lakes in the DuPage River and Salt Creek watersheds.

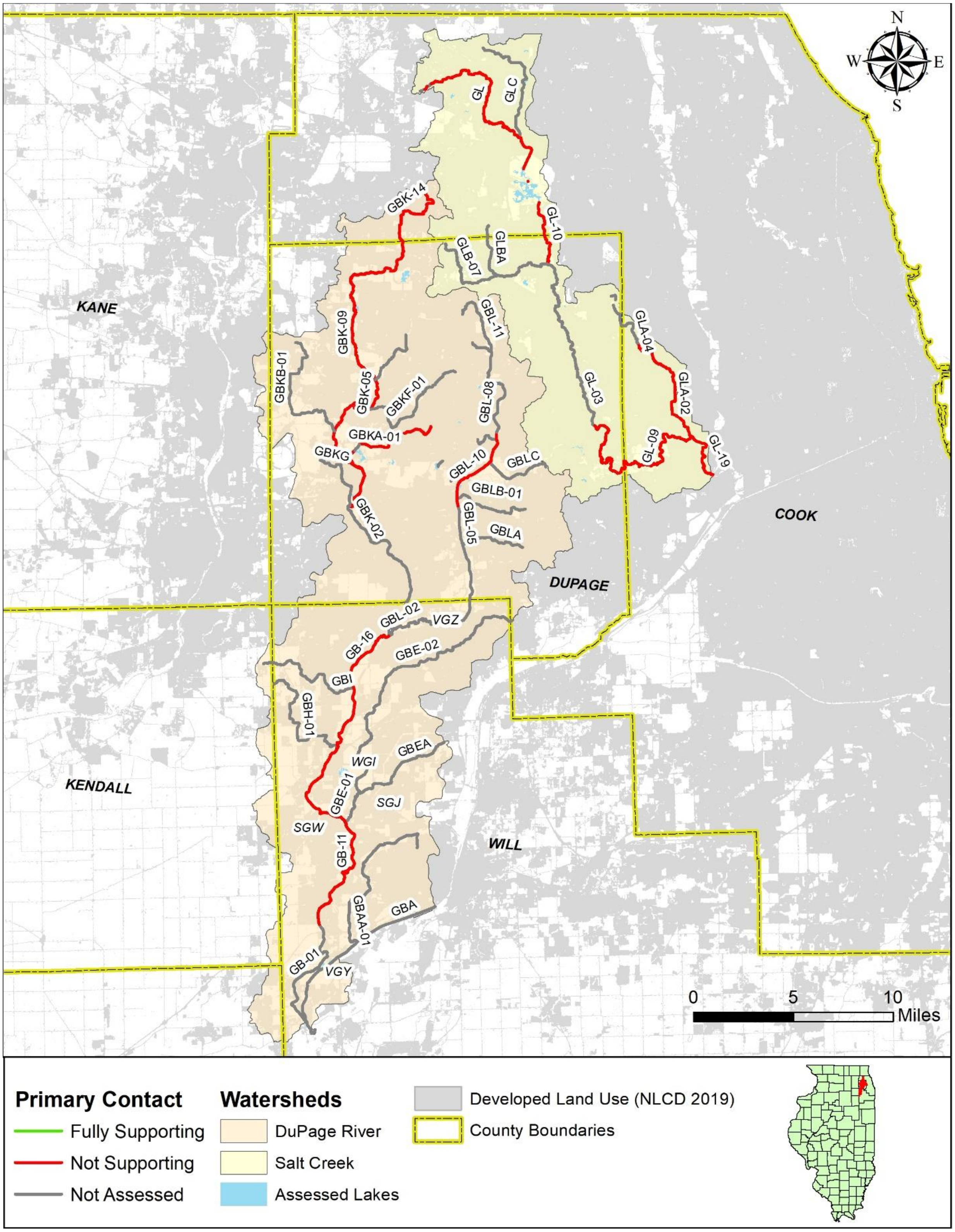


Figure 9. Primary contact recreation use support in the streams and rivers in the DuPage River and Salt Creek watersheds.

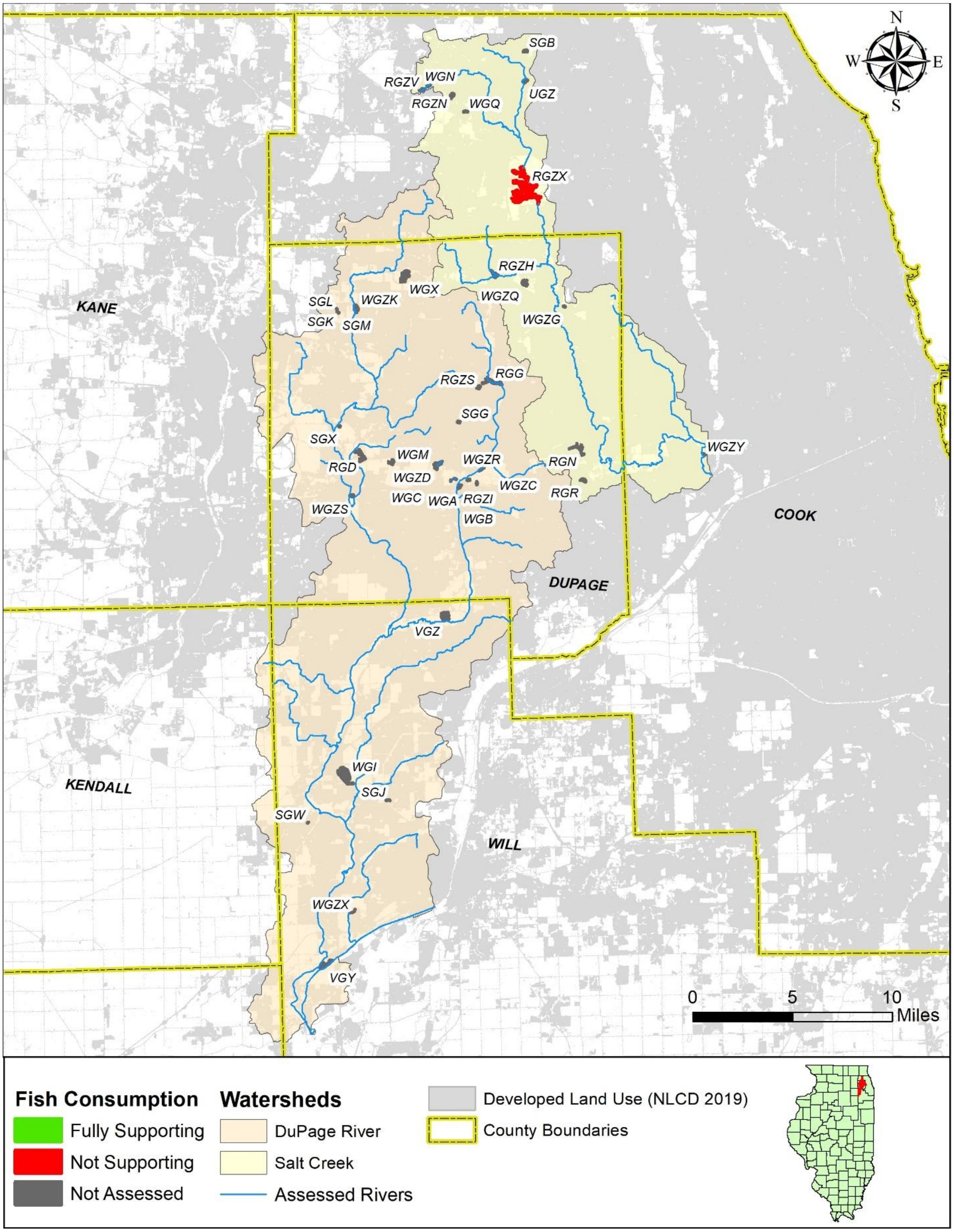


Figure 10. Primary contact recreation use support in lakes in the DuPage River and Salt Creek watersheds.

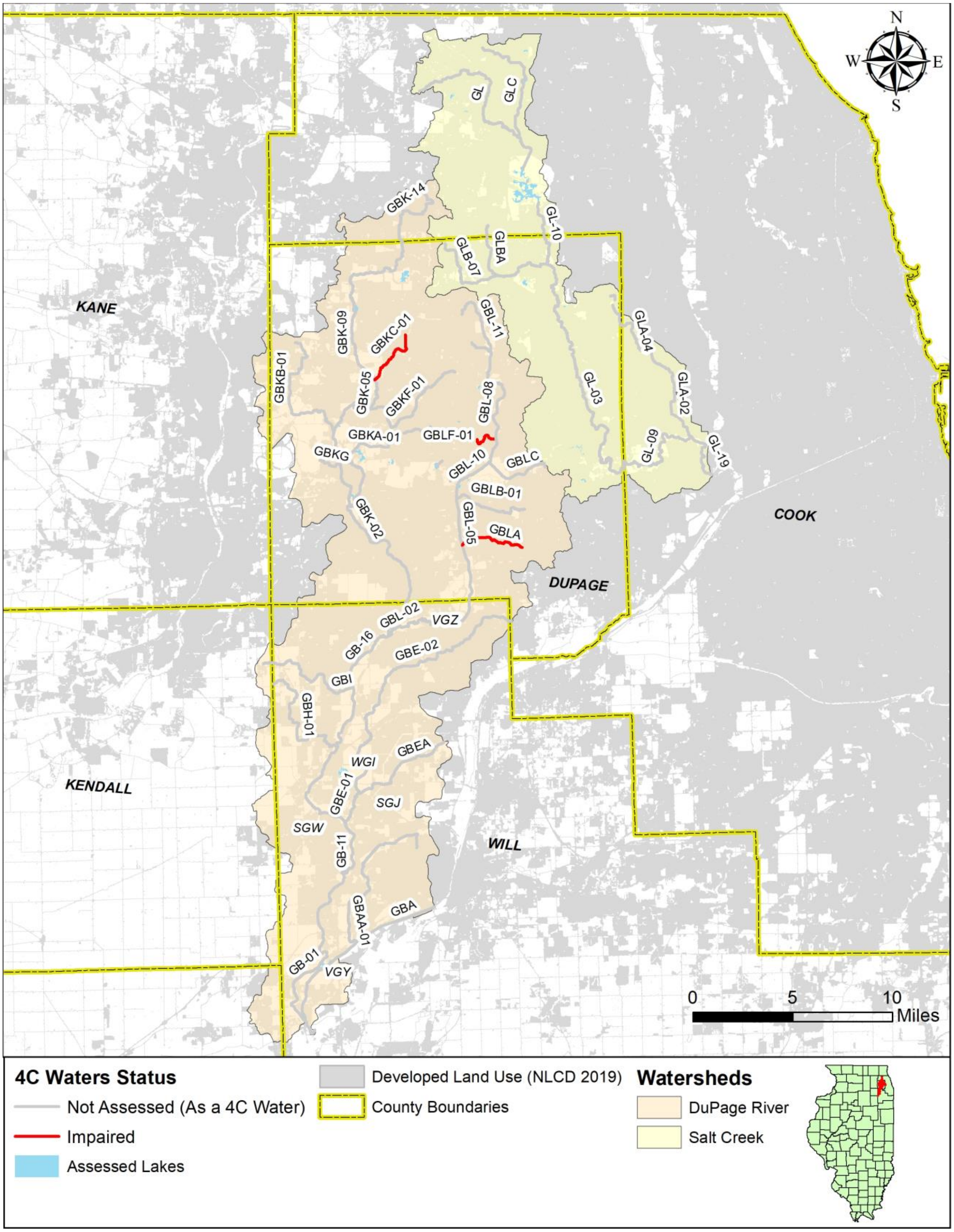


Figure 11. Map of Category 4c waters in the DuPage River and Salt Creek watersheds.

Table 18. Summary of existing TMDLs in the DuPage and Salt Creek watersheds

TMDL Project	TMDL Approval	Waterbody Name	Impaired Segments Addressed by TMDL	Pollutant(s) Addressed by TMDL
DuPage River/Salt Creek Watershed TMDL Report	2019	DuPage River	IL_GB-11	Chloride, Fecal Coliform
			IL_GB-16	DO (TP, CBOD5, and Ammonia), Fecal Coliform
		West Branch DuPage River	IL_GBK-06	Fecal Coliform
			IL_GBK-09	Fecal Coliform
			IL_GBK-14	DO (DO Deficit)
		Spring Brook	IL_GBKA	DO (DO Deficit), Fecal Coliform
			IL_GBKA-01	Fecal Coliform
		East Branch DuPage River	IL_GBL-10	Fecal Coliform
		Salt Creek	IL_GL-09	Fecal Coliform
			IL_GL-10	Fecal Coliform
			IL_GL-19	Fecal Coliform
		Addison Creek	IL_GLA-02	Fecal Coliform
TMDLS for the West Branch of the DuPage River, IL	2004	West Branch DuPage River	GBK-07	Chloride
			GBK-09	Chloride
			GBK-05	Chloride
			GBK-12	Chloride
TMDLs for the East Branch of the DuPage River, IL	2004	East Branch DuPage River	IL_GBL-05	Chloride, DO (Ammonia, CBOD5)[a]
			IL_GBL-10	Chloride, DO (Ammonia, CBOD5)[a]
			IL_GBL-09	DO (Ammonia, CBOD5)
TMDLs for Salt Creek, IL	2004	Salt Creek	GL-03	Chloride, DO (Ammonia, CBOD5, VSS)[a,b]
			GL-09	Chloride[a]
			GL-10	Chloride[a]
			GL-19	DO (Ammonia, CBOD5, VSS)[b]
		Addison Creek	GLA-02	Chloride
			GLA-04	DO (Ammonia, CBOD5, VSS)[b]
		Spring Brook	GLB-01	DO (Ammonia, CBOD5, VSS)[b]
		Prentiss Creek	GBLA	DO (Ammonia, CBOD5, VSS)[b]
		Busse Woods	RGZX	DO (Ammonia, CBOD5, VSS)[b]

Notes:
[a] One chloride TMDL was set at the mouth of the river to address all chloride impairments.
[b] One TMDL was developed to address all DO-impaired segments in the Salt Creek watershed.

2.4 NIP-APPLICABLE WATER QUALITY STANDARDS AND CRITERIA

Environmental regulations for the State of Illinois are contained within the Illinois Administrative Code, Title 35. Specifically, Title 35, Part 302, contains WQS promulgated by the IPCB. Relevant WQS associated with the DuPage River and Salt Creek watersheds NIP are provided in Table 19.

Table 19. Summary of relevant Illinois water quality standards

Standard Type	Parameter	General Use Water Quality Standard
Numerical WQS	Chloride (mg/L)	>500
	DO (mg/L)[a]	**For most waters:** • March–July > 5.0 minimum, and > 6.0 seven-day mean • August–February > 3.5 minimum, and > 4.0 seven-day mean, and > 5.5 30-day mean **For waters with enhanced protection (i.e., GB-16):** • March–July > 5.0 minimum, and > 6.25 seven-day mean • August–February > 4.0 minimum, and > 4.5 seven-day mean, and > 6.0 30-day mean **Lakes:** Seasonally and waterbody dependent
	TP (mg/L)	**Lakes ≥ 20 acres**[b] Acute: 0.05
Narrative WQS	Offensive Conditions	Waters of the State shall be free from sludge or bottom deposits, floating debris, visible oil, odor, plant or algal growth, color or turbidity of other than natural origin.

Notes:
[a] Applies to the DO concentration in the main body of all streams, in the water above the thermocline of thermally stratified lakes and reservoirs, and in the entire water column of unstratified lakes and reservoirs. Additional DO criteria are found in 35 Ill Adm. Code 302.206, including the list of waters with enhanced DO protection and methods for assessing attainment of DO minimum and mean values.
[b] The TP standard at 35 Ill. Adm. Code 302.205 applies to lakes of 20 acres or larger.

DuPage River segment GB-16 is designated for DO “enhanced protection” according to Title 35 Ill Adm. Code 302.206. Waters with enhanced protection have a more stringent DO standard than all other waters of the state. These waters were chosen based on the potential biota (fish early life stages present) and the DO concentrations needed for these biota to thrive. The “most waters” DO standard applies to all other riverine waterways in the DuPage River and Salt Creek watersheds.

Illinois does not have an IPCB-approved standard for TP, total nitrogen (TN), sestonic chlorophyll-*a*, or benthic chlorophyll-*a* for streams and rivers. The TP standard for lakes greater than 20 acres in size is 0.05 mg/L for acute toxicity. Illinois does not have an IPCB-approved standard for TN, sestonic chlorophyll-*a*, or benthic chlorophyll-*a* for lakes.

2.4.1 Total Phosphorus Impairments on the Section 303(d) List

TP is listed as a cause of aquatic life impairment on 13 mainstem segments, four tributary segments, and one lake in the DuPage River and Salt Creek watersheds. These listings were based on violations of a nonstandards-based numeric criteria for TP (0.61 mg/L derived from 85th-percentile values) determined from a statewide set of TP observations from the Ambient Water Quality Monitoring Network for water years 1978–1996.

2.4.2 Illinois Nutrient Science Advisory Committee Recommendations

NSAC consisted of scientific experts nominated by stakeholder sectors represented in the Illinois Nutrient Loss Reduction Strategy Policy Working Group to assist IEPA with developing numeric nutrient criteria. Between 2015 and 2018, NSAC worked to develop potential numeric criteria most appropriate for Illinois streams and rivers based on the best available science. NSAC published their final report, *Recommendations for numeric criteria and eutrophication standards for Illinois streams and rivers*, on December 10, 2018 (NSAC 2018); the relevant recommendations are included below (Table 20).

To date, IEPA has not adopted the NSAC-recommended nutrient criteria as WQS. Through the development of this NIP, IEPA has asked DRSCW and LDRWC to evaluate the implementation of the NSAC TP recommendations for potential to remove the DO and offensive condition impairments or develop their own watershed-specific TP target.

Table 20. Summary of relevant water quality criteria recommended by NSAC

Parameter	Total Nitrogen	Total Phosphorus
North Ecoregion	3979 micrograms per liter (µg/L) (based on seasonal [May–October] geometric means)	Not applicable (N/A)
South Ecoregion	901 µg/L (based on seasonal [May–October] geometric means)	N/A
Non-wadeable Rivers and Streams (≥ 5th order)	N/A	TP must exceed 100 µg/L and chlorophyll-a must exceed 25 µg/L to exceed the eutrophication standard (based on seasonal [May–October] geometric means)
Wadable Streams (≤ 4th order)	N/A	TP must exceed 110 µg/L and either chlorophyll-*a* criteria (5 µg/L sestonic, 79 mg per square meter benthic) to exceed the eutrophication standard. **OR** If TP <110 µg/L and either of the chlorophyll-*a* criteria are exceeded, eutrophication standard is violated.

3 WATERSHED CHARACTERIZATION

This section describes the general characteristics of the DuPage River and Salt Creek watersheds, including location, topography, land cover, soils, population, climate, hydrology, and both point and nonpoint pollutant sources. The DuPage River and Salt Creek watersheds are in northeastern Illinois and together cover approximately 520 square miles (332,600 acres). The watersheds include the DuPage River (U.S. Geological Survey [USGS] HUC 0712000408) and Salt Creek (USGS HUC 0712000404), which are located within Cook, Kendall, Will, Grundy, and DuPage counties.

The DuPage River originates from two branches, the East Branch DuPage River and the West Branch DuPage River. The two rivers meet near Bolingbrook to create the main branch of the DuPage River. The mainstem of the DuPage River flows approximately 30 miles before its confluence with the Des Plaines River near the town of Channahon, Illinois.

Salt Creek is approximately 40 miles long and drains to the Des Plaines River. The Des Plaines River flows southwest and, after its confluence with the DuPage River, joins the Illinois River, a major tributary of the Mississippi River flowing south to the Gulf of Mexico.

3.1 TOPOGRAPHY

Topography can influence prevalent soil types, precipitation patterns, and, subsequently, watershed hydrology and pollutant loading. For the DuPage and Salt Creek watersheds, a USGS 30-meter resolution digital elevation model was obtained from the Illinois Natural Resources Geospatial Data Clearinghouse to characterize topography (Figure 12). Generally, the watersheds are at a higher elevation in the north and west, grading down to lower elevations in the south and east. This topography results in an overall surface water flow from northwest to southeast toward the Des Plaines River. A ridge separates the Salt Creek and DuPage River watersheds. Elevations across the DuPage River and Salt Creek watersheds range from 475–974 feet.

The elevation at the Salt Creek headwaters is 895 feet, and the stream flows approximately 43 miles before entering the Des Plaines River (elevation of 607 feet), resulting in a stream gradient of 6.72 feet per mile (0.0013 slope). The elevation at the DuPage River headwaters is 974 feet, and the river flows into the Des Plaines River 63 miles downstream (elevation of 475 feet). The resulting stream gradient is 7.92 feet per mile (0.0015 slope).

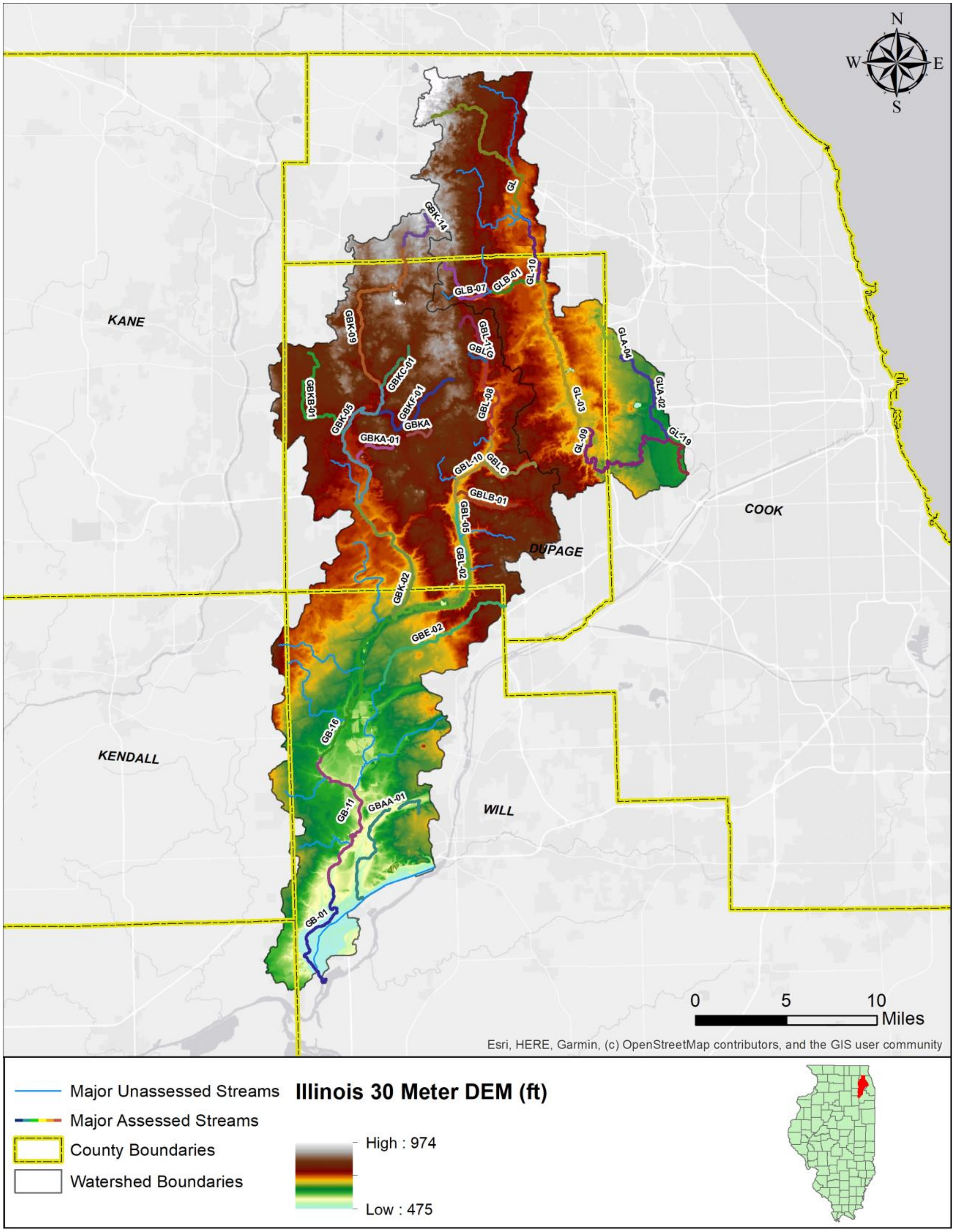


Figure 12. DuPage River and Salt Creek watersheds' topography.

3.2 SOILS

Soils data and Geographic Information Systems (GIS) files from the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) were used to characterize soils in the DuPage River and Salt Creek watersheds. General soils data and map unit delineations for the country are provided as part of the Soil Survey Geographic (SSURGO) database. Field mapping methods using national standards are used to construct the soil maps in the SSURGO database. Mapping scales generally range from 1:12,000 to 1:63,360; SSURGO is the most detailed level of soil mapping prepared by the NRCS. A map unit is composed of several soil series having similar properties. Identification fields in the GIS coverage can be linked to a database that provides information on chemical and physical soil characteristics. The SSURGO database contains many soil characteristics associated with each map unit.

The SSURGO data were analyzed based on hydrologic group (Figure 13) and soil erodibility, or "K-factor" (Figure 14). The hydrologic soil group classification identifies soil groups with similar infiltration and runoff characteristics during periods of prolonged wetting. Typically, clay soils that are poorly drained have lower infiltration rates, while well-drained sandy soils have the greatest infiltration rates. The U.S. Department of Agriculture has defined four hydrologic soil groups (A, B, C, or D) for soils. Group A soils have high infiltration potential, while D soils have very low infiltration rates. Table 21 summarizes the group characteristics and shows the distribution of hydrologic soil groups in the DuPage River and Salt Creek watersheds.

The K-factor is a dimensionless measure of a soil's natural susceptibility to erosion. Factor values may range from 0 for water surfaces to 1.00 (although in practice, the maximum K-factor values do not generally exceed 0.67). Large K-factor values reflect a greater potential for soil erodibility. The compilation of K-factors from SSURGO data was completed in several steps. Soils are classified in the SSURGO database by map unit symbol. Each map unit symbol is made up of "components," and each component is further broken down into horizons or layers. The K-factor was determined by selecting the dominant components in the most surficial horizons per each map unit. The distribution of K-factor values in the DuPage River and Salt Creek watersheds is shown in Figure 14. K-factors range from 0.02 to 0.43 in this watershed. Areas with the highest K-factor are dispersed throughout the watershed with the greatest concentration within DuPage County.

Table 21. Relative characteristics of hydrologic soil groups

Hydrologic Soil Group	Runoff Potential	Infiltration Rate	Percent of Watersheds
A	Low	High	0.25%
A/D	High[1]	Very Low[1]	0.21%
B	Moderate	Moderate	6.59%
B/D	High[1]	Very Low[1]	13.65%
C	High	Low	28.84%
C/D	High[1]	Very Low[1]	29.05%
D	High	Very Low[1]	16.42%
No Data (Water, Gravel Pits, Landfill, Urban Land)	--	--	5.00%

Notes:
[1] Undrained soils in their natural condition

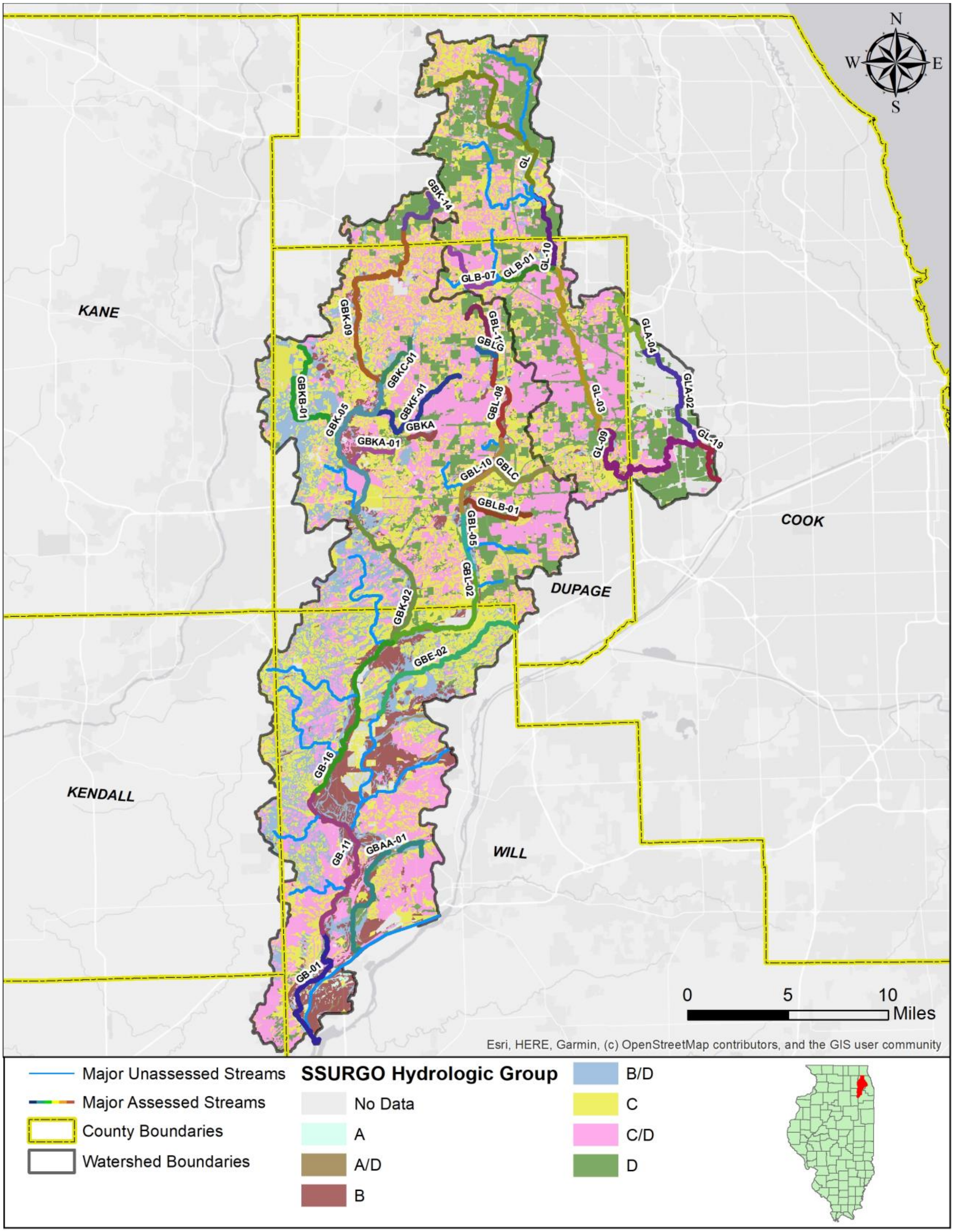


Figure 13. DuPage River and Salt Creek watersheds' hydrologic soil groups.

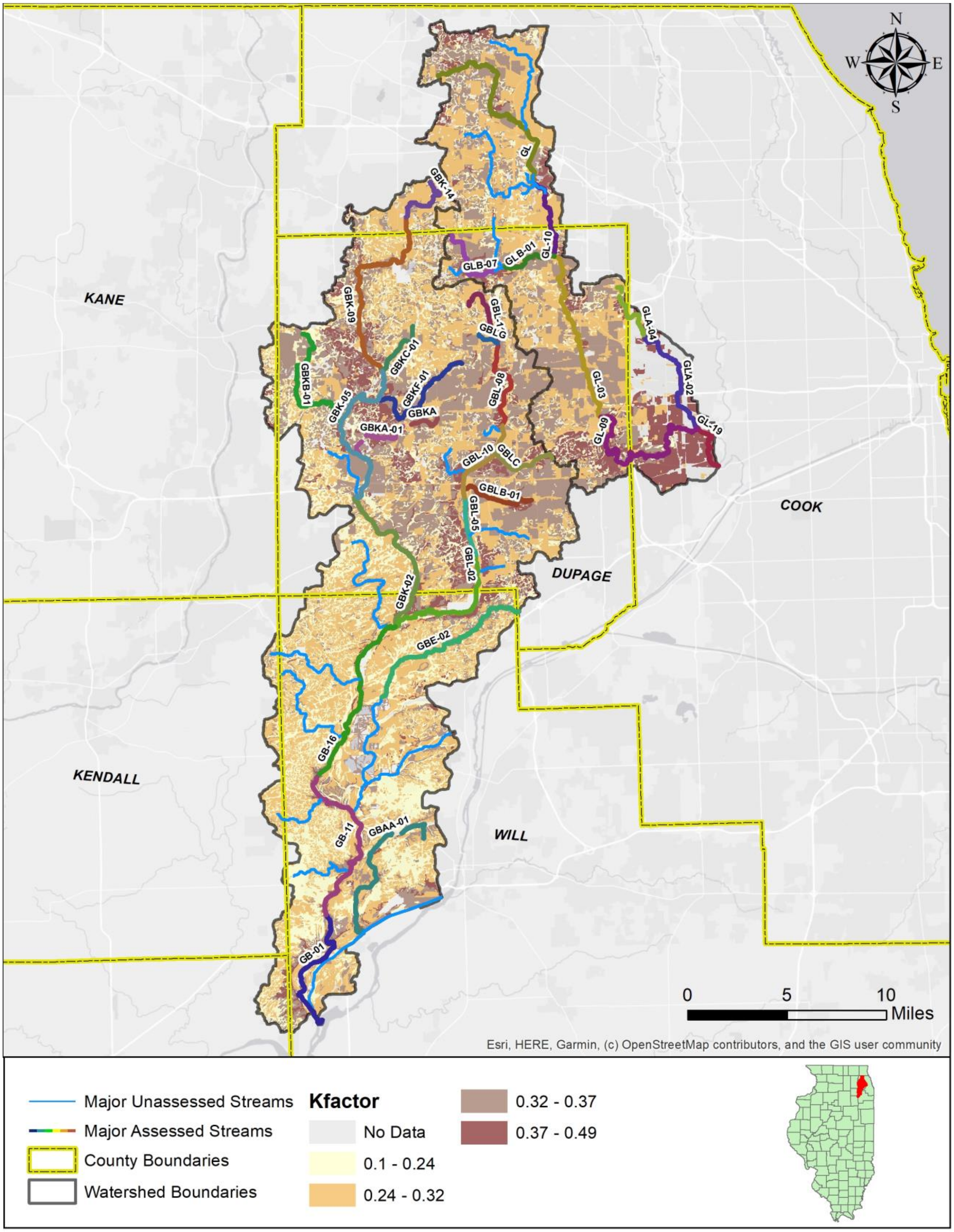


Figure 14. DuPage River and Salt Creek watersheds' SSURGO K-Factor.

3.3 LAND COVER

Land cover data for the watershed were extracted from the 2019 NLCD. Table 22 and Table 23 summarize the land cover for the DuPage River and Salt Creek watersheds, respectively.

Figure 15 shows the land cover in the DuPage River/Salt Creek watersheds and indicates that developed land cover is dominant in both subwatersheds, accounting for 75% of the total area in the DuPage River watershed and 91% in the Salt Creek watershed. In the DuPage River and Salt Creek watersheds, low intensity development is the predominant land cover (33% and 37% of the total land cover, respectively). Agricultural land accounts for 13% of land cover in the DuPage River watershed and less than 1% in the Salt Creek watershed.

Table 22. Summary of land cover data (NLCD 2019) for the DuPage River watershed

<table>
<tr><th>Land Cover Classification</th><th>Acreage</th><th>Percent</th><th>Aggregated Acreage</th><th>Aggregated Percent</th></tr>
<tr><td>Open Water</td><td>3,820</td><td>1.6%</td><td>3,820</td><td>1.6%</td></tr>
<tr><td>Developed, Open Space</td><td>26,090</td><td>10.8%</td><td rowspan="5">181,899</td><td rowspan="5">75.6%</td></tr>
<tr><td>Developed, Low Intensity</td><td>79,198</td><td>32.9%</td></tr>
<tr><td>Developed, Medium Intensity</td><td>54,719</td><td>22.7%</td></tr>
<tr><td>Developed, High Intensity</td><td>20,522</td><td>8.5%</td></tr>
<tr><td>Barren Land</td><td>1,370</td><td>0.6%</td></tr>
<tr><td>Deciduous Forest</td><td>9,496</td><td>3.9%</td><td rowspan="3">10,207</td><td rowspan="3">4.2%</td></tr>
<tr><td>Evergreen Forest</td><td>62</td><td>< 0.1%</td></tr>
<tr><td>Mixed Forest</td><td>648</td><td>0.3%</td></tr>
<tr><td>Shrub/Scrub</td><td>443</td><td>0.2%</td><td rowspan="2">5,916</td><td rowspan="2">2.5%</td></tr>
<tr><td>Herbaceous</td><td>5,473</td><td>2.3%</td></tr>
<tr><td>Hay/Pasture</td><td>4,581</td><td>1.9%</td><td rowspan="2">32,132</td><td rowspan="2">13.4%</td></tr>
<tr><td>Cultivated Crops</td><td>27,551</td><td>11.5%</td></tr>
<tr><td>Woody Wetlands</td><td>5,007</td><td>2.1%</td><td rowspan="2">6,570</td><td rowspan="2">2.7%</td></tr>
<tr><td>Emergent Herbaceous Wetlands</td><td>1,563</td><td>0.6%</td></tr>
</table>

Table 23. Summary of land cover data (NLCD 2019) for the Salt Creek watershed

Land Cover Classification	Acreage	Percent	Aggregated Acreage	Aggregated Percent
Open Water	1,229	1.3%	1,229	1.3%
Developed, Open Space	11,288	11.9%	86,942	91.4%
Developed, Low Intensity	34,703	36.5%		
Developed, Medium Intensity	27,142	28.5%		
Developed, High Intensity	13,705	14.4%		
Barren Land	105	0.1%		
Deciduous Forest	2,778	2.9%	3,082	3.2%
Evergreen Forest	9	< 0.1%		
Mixed Forest	295	0.3%		
Shrub/Scrub	108	0.1%	465	0.5%
Herbaceous	357	0.4%		
Hay/Pasture	321	0.3%	620	0.7%
Cultivated Crops	300	0.3%		
Woody Wetlands	2,398	2.5%	2,805	2.9%
Emergent Herbaceous Wetlands	407	0.4%		

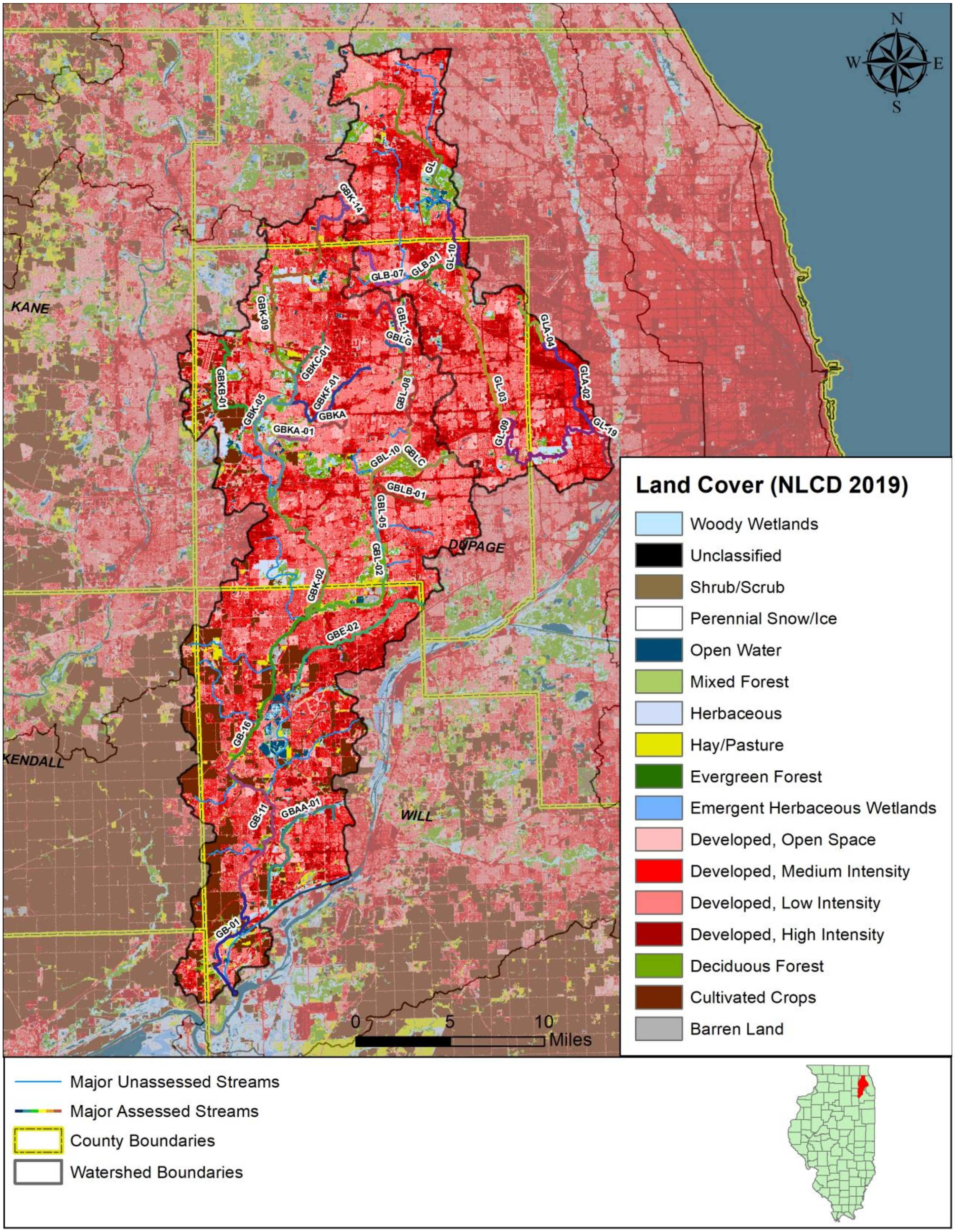


Figure 15. DuPage River and Salt Creek watersheds land use. IEPA stream reach codes are supplied for state-assessed reaches.

3.4 POPULATION

Today's conditions in the DuPage River and Salt Creek watersheds are not only the product of the geologic and natural processes that have occurred in the watershed, but also a reflection of human impacts and population growth. Development has changed the watershed's natural drainage system, as channelization and dredging have replaced slow-moving shallow streams and wetlands. This alteration has affected water runoff patterns and pathways across the landscape, increasing the volume and velocity and resulting in potential increases in pollutant transport.

In 2020, approximately 1.66 million people resided in the DuPage River and Salt Creek watersheds, roughly 3,173 persons per square mile. Census blocks with the greatest populations occur in the central and southern areas of the DuPage River watershed in Aurora, Naperville, and Joliet. The Chicago Metropolitan Agency for Planning provides population projections by municipality on their website ("Population Forecast"; updated in 2014).

Figure 16 depicts the projected percent population change in the watershed from 2020 to 2050. In general, the southern portion of the DuPage watershed is expected to have the most growth, with 100%–200% combined growth across smaller municipalities within Kendall and Will counties. Based on these data, the entire watershed is expected to continue to increase in population over the upcoming years, but development will grow dramatically in the southern portion of the watershed.

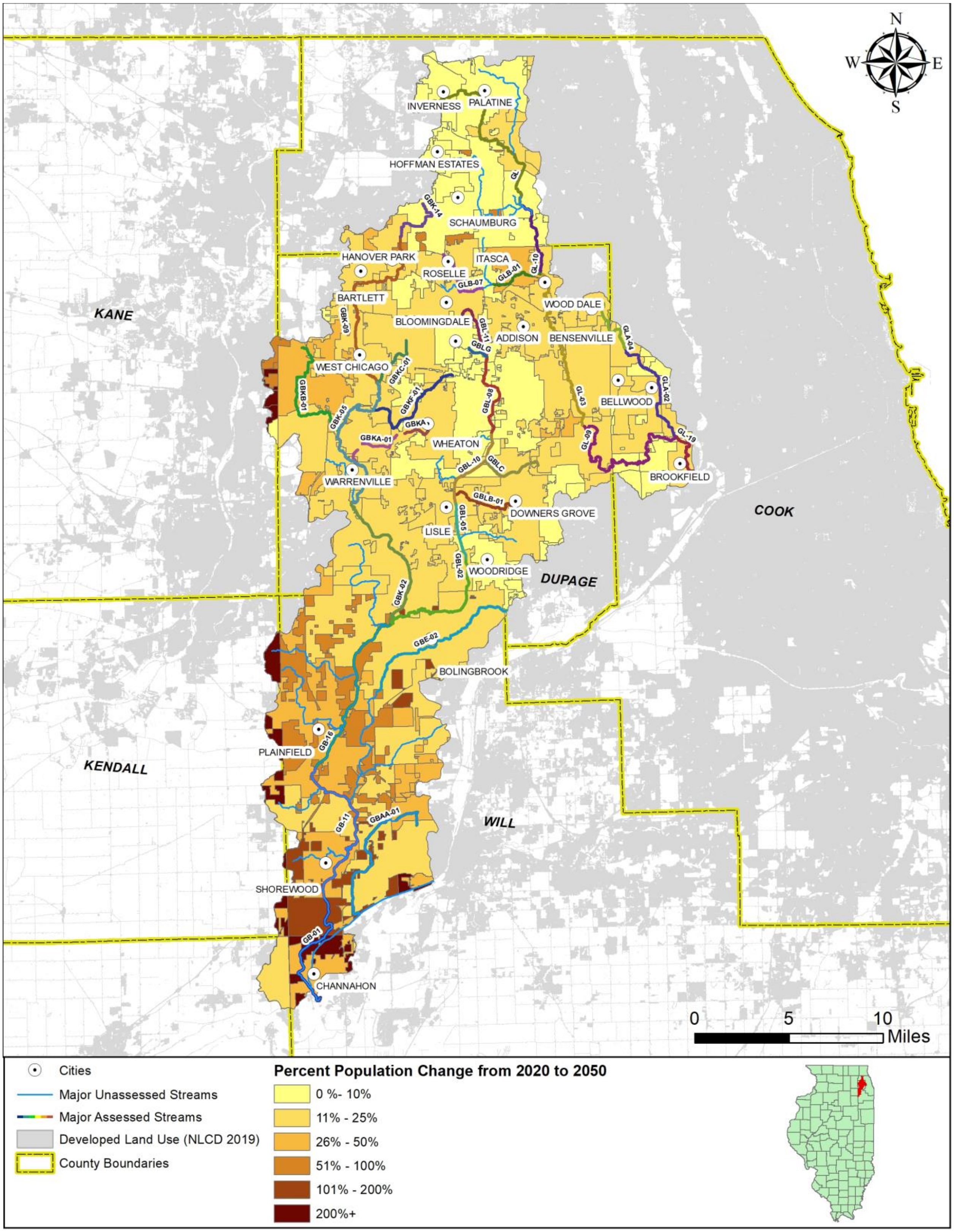


Figure 16. DuPage River and Salt Creek watersheds population projection (2020–2050).

3.5 CLIMATE

NE Illinois has a continental climate with highly variable weather. The temperatures of continental climates are not buffered by the influence of a large waterbody (like an ocean, inland sea, or Great Lake). Areas with continental climates often experience wide temperature fluctuations throughout the year. Temperature and precipitation data were obtained from the Illinois State Climatologist Office website. The nearest monitoring station to the DuPage River and Salt Creek watersheds is the Village of Lisle (IL5097), which is located in the central area of the watershed. For the DuPage River and Salt Creek watersheds, the highest temperatures in the summer can range from the high 80s to over 100 degrees Fahrenheit (°F), and the lowest winter temperatures might range between sub-zero and the teens. Precipitation in the form of rainfall is greatest in the growing season (April through September) (Figure 17).

Climate data were analyzed for the Village of Lisle at the Morton Arboretum (IL5097) for 1950–2021. The mean high summer air temperature was 72.1 °F, and the mean low air temperature in winter was 26.1 °F. Mean annual high air temperatures were approximately 60.8 °F, while mean annual air low temperatures were approximately 39.3 °F (Table 24). Mean monthly precipitation data in Lisle are displayed in Figure 17. Lisle receives most of its precipitation in the spring and summer months, with maximum precipitation occurring in June (4.2 inches). The least amount of average rainfall precipitation occurs in February (1.7 inches). Annual total precipitation average was approximately 37 inches.

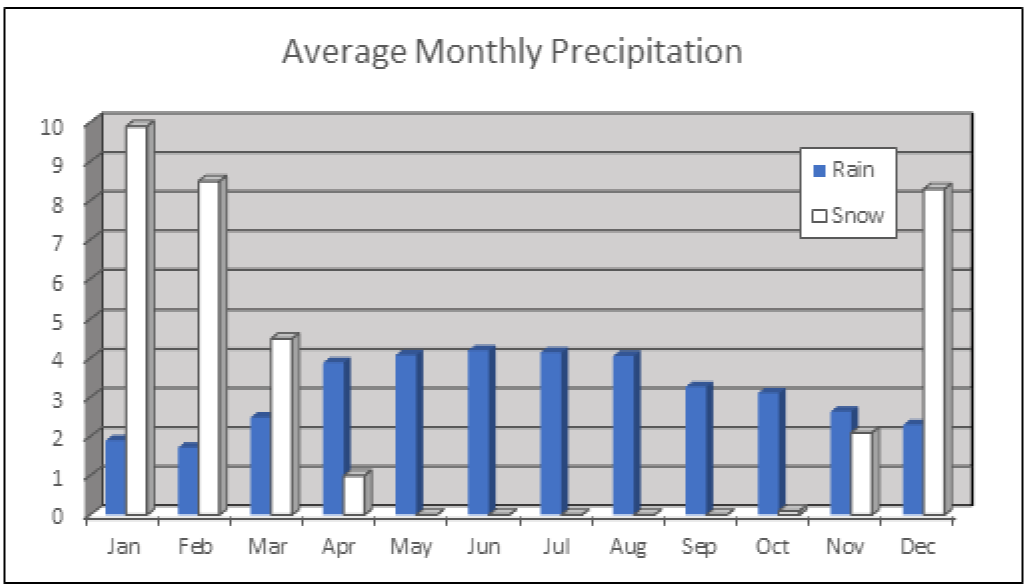


Figure 17. Mean monthly precipitation in Lisle, IL, the Morton Arboretum (1950–2021).

Table 24. Temperature characterization, the Morton Arboretum, Lisle, IL (1950–2021)

Averaging Period	Average High (°F)	Average Low (°F)	Average Number of Days with High >90 (°F)	Average Number of Days with Low <32 (°F)	Mean (°F)
January	31.26	14.50	0.00	28.36	22.91
February	36.13	17.86	0.00	25.11	26.99
March	47.78	27.30	0.00	21.99	37.55
April	61.47	37.60	0.10	9.00	49.53
May	73.03	47.76	1.16	1.30	60.40
June	82.48	57.56	6.03	0.01	70.01
July	85.64	62.30	8.31	0.00	73.97
August	83.81	60.81	5.50	0.00	72.29
September	77.42	53.04	2.10	0.20	65.25
October	65.01	42.06	0.03	5.68	53.54
November	49.19	30.96	0.00	17.21	40.12
December	36.25	20.32	0.00	26.38	28.29
Annual	60.79	39.34	1.94	11.27	50.07
Spring	60.76	37.55	0.42	10.76	49.16
Summer	83.98	60.22	6.61	0.00	72.09
Fall	63.87	42.02	0.71	7.69	52.97
Winter	34.55	17.56	0.00	26.62	26.06

3.6 HYDROLOGY

Understanding hydrologic pathways is an important component of characterizing watershed conditions. All the parameters listed in the previous sections (i.e., topography, land cover, soils, population dynamics, and climate) affect a watershed's hydrology. Hydrological data are available from the USGS website. The USGS maintains stream gages throughout the United States, and it monitors conditions such as gage height and stream flow and, at some locations, precipitation and water quality (Figure 18).

Four USGS gage stations within the DuPage River and Salt Creek watersheds were chosen to evaluate stream flow: East Branch of DuPage River at Downers Grove, IL (05540160), West Branch of DuPage River at Naperville, IL (05540130), DuPage River at Shorewood, IL (05540500), and Salt Creek at Western Springs, IL (05531500). The Salt Creek gage is located just upstream from the Addison Creek confluence near its confluence with the Des Plaines River. The East Branch is located upstream of the confluence with the West Branch. The West Branch of the DuPage River gage station is located immediately upstream of the confluence with the East Branch. Finally, the DuPage River at Shorewood is located immediately upstream of the confluence of the DuPage River mainstem and the Des Plains River.

Figure 18 shows the location of these four and other USGS gages throughout the watershed. Figure 19 depicts the streamflow measured at Salt Creek for 1945–2021. The drainage area upstream of this gage was 115 square miles. The highest average monthly streamflows at Salt Creek were measured in April (243.1 cubic feet per second [cfs]), while the lowest monthly streamflows were measured in September (112.4 cfs). Overall, the highest stream flow for this gage occurs during the late winter and spring months, while low flows occur during the fall. The annual streamflow for the Salt Creek gage was measured at about 153.9 cfs.

The East Branch DuPage gage drains an area of 26.6 square miles; data from this gage exist for 1989–2021. Over this period, the average stream flow of the East Branch was 53.1 cfs (Figure 20). Similar to the Salt Creek gage, streamflows were highest in the late winter and spring months, with lower flows in the fall. The maximum average monthly flows occurred in May (79.2 cfs), while the lowest average monthly flows occurred in September (39.6 cfs).

Figure 21 displays the streamflow measured at the West Branch DuPage River for 1988–2021. The drainage area upstream of this gage was 123 square miles, and the highest average monthly streamflows at the West Branch were measured in May (278.4 cfs). The minimum average monthly streamflows of 177.9 cfs were measured in September. The annual streamflow for the West Branch gage was approximately 171.5 cfs.

Data from the mainstem DuPage River gage are available for 1940–2021. This gage has a drainage area of 324 square miles; over the duration of its monitoring, the average streamflow of the DuPage River at this point was 349.7 cfs (Figure 22). Peak streamflows typically occur here in the late winter and spring months, with lowest flows occurring in the fall. The maximum monthly flow volumes occurred in April (558 cfs), while the lowest monthly flows occurred in September (230 cfs).

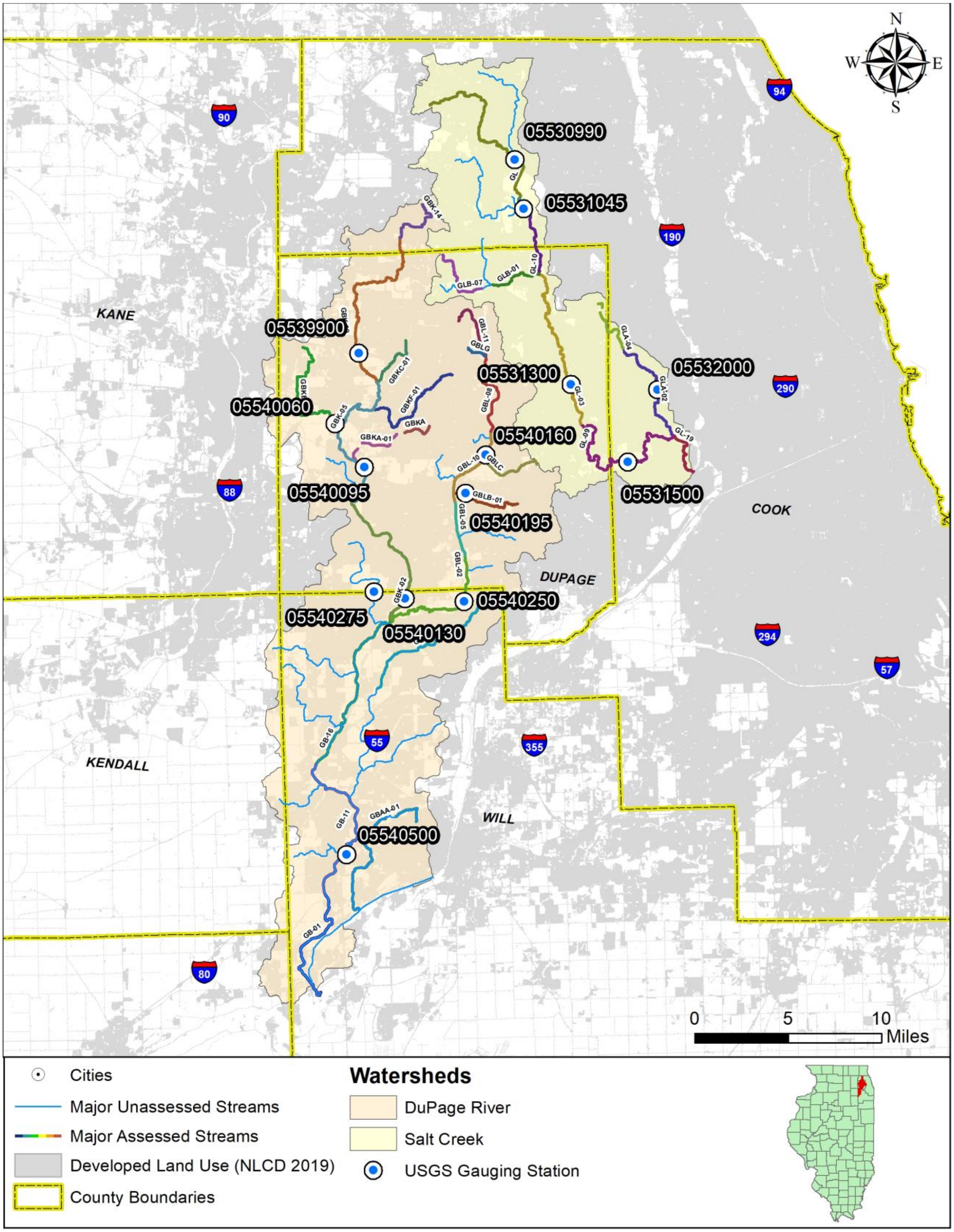


Figure 18. DuPage River and Salt Creek watersheds' USGS gaging stations.

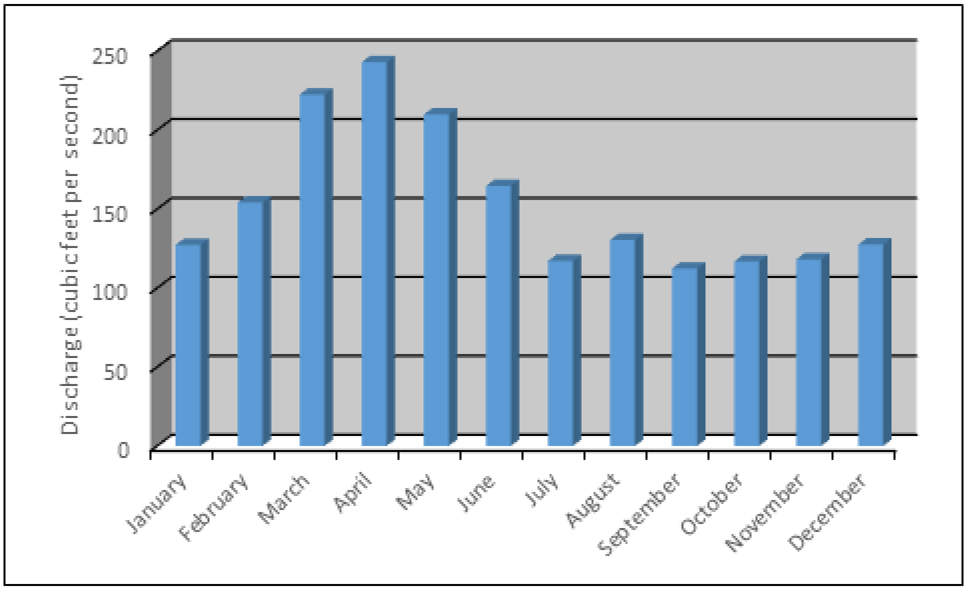


Figure 19. Mean monthly flow in Salt Creek at Western Springs, IL USGS station 05531500 (1945–2021).

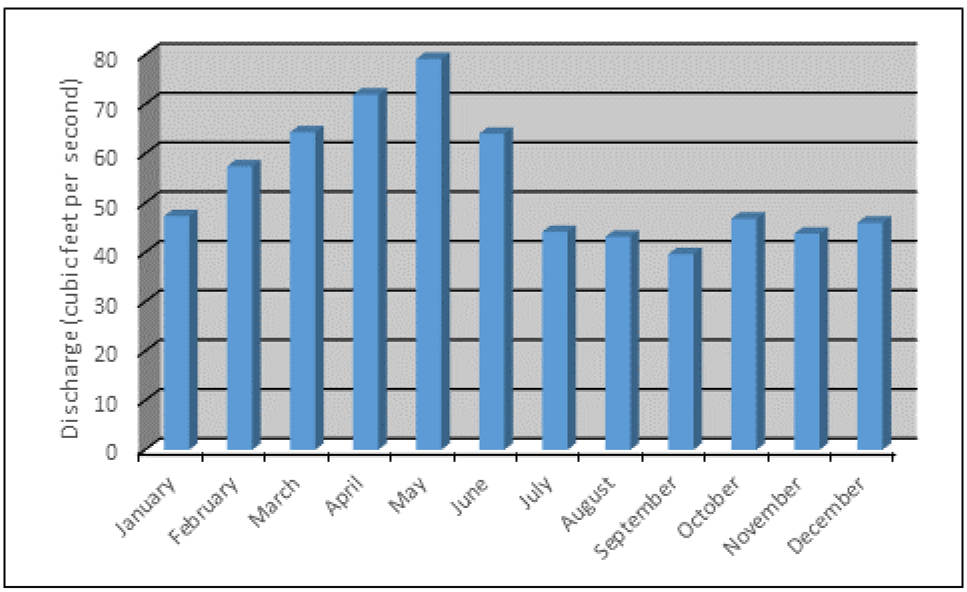


Figure 20. Mean monthly flow for the East Branch DuPage River at Downers Grove, IL USGS 005540160 (1989–2021).

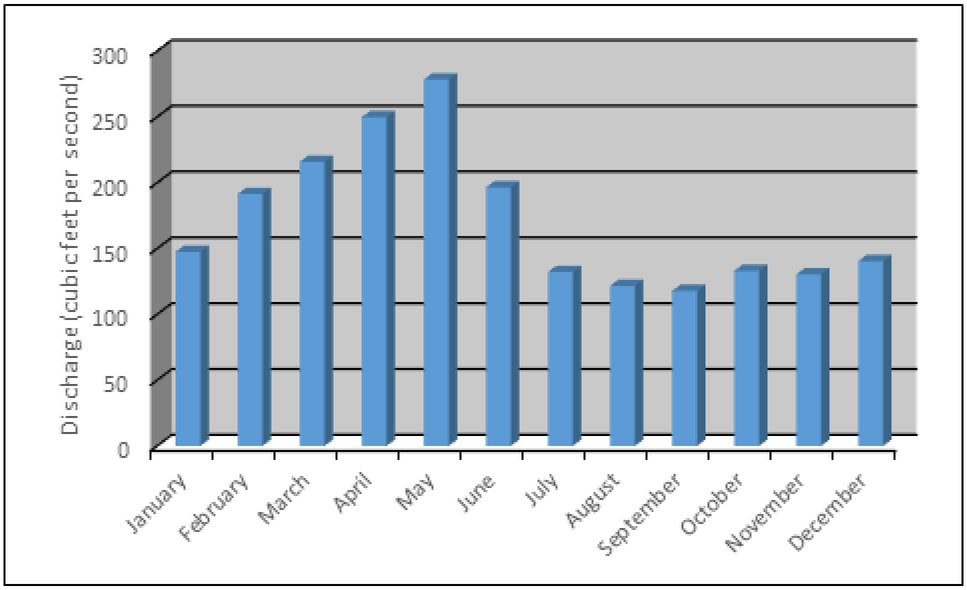


Figure 21. Mean monthly flow in the West Branch DuPage River at Naperville, IL USGS 05540130 (1988–2021).

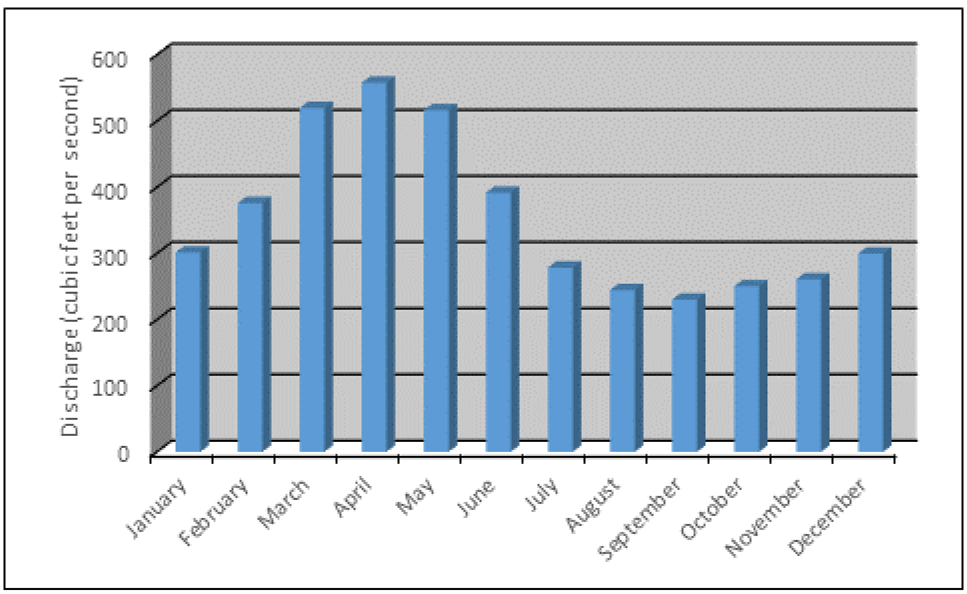


Figure 22. Mean monthly flow in the Lower DuPage River at Shorewood, IL USGS 05540500 (1940–2021).

3.6.1 Dams

Dams also influence a watershed's hydrologic and water quality conditions. Dams regulate the depth of water in the river and affect flows. They can also prevent fish migration and contribute to low DO conditions due to slow-moving or stagnant waters in upstream pools. This section details all major dams in the DuPage River and Salt Creek watersheds (Figure 23). Four dams within the watersheds have been removed or modified to address these issues. Design plans are underway for the removal or modification of two additional two dams. Details on the dams in the DuPage River and Salt Creek watersheds are included below.

3.6.1.1 Lower DuPage River

Hammel Woods Dam: The Hammel Woods Dam is owned by the Forest Preserve District of Will County and is located within their Hammel Woods Forest Preserve in Shorewood, IL. The Hammel Woods dam was removed in 2021. The dam was formerly located at River Mile 10.6, about 300 feet upstream from the Illinois Route 52 Bridge over the river. The dam was a run-of-the-river structure constructed of quarried limestone with a concrete foundation. The original construction plans for the dam are not available. The dam was a straight, broad-crest weir 110 feet across, with a total height of about 4 feet and a hydraulic height of 2.3 feet (from spillway crest to tailwater elevation under average flow conditions).

Channahon Dam: The Channahon Dam is the first dam on the DuPage River, located 1.1 miles from the DuPage confluence with the Des Plaines River in the I&M Canal State Park in Channahon. The 9-foot-high dam has effectively disconnected the DuPage River from the Des Plaines River from a biological standpoint. The impoundment behind the dam extends upstream 4.1 miles and covers an area of 75 acres. The environment within the impoundment is characterized as a deep channel with little or no diversity of flows and silty deposits over a rocky substrate.

In 1996, the dam was breached under extremely high flow conditions, but the damaged structure was fully rebuilt, and the impoundment was restored in 1998.

The Channahon Dam is a key piece of infrastructure preventing invasive nonnative carp (*Asian carp or Copi*) from entering the DuPage River watershed. As such, there is no potential for the modification or removal of this dam to allow for fish passage through this structure at this time.

3.6.1.2 West Branch DuPage River

Warrenville Grove Dam: The Warrenville Grove Dam was fully removed in September 2011 under a cooperative project administered by the DC SWM and the FPDDC. It was located on the West Branch of the DuPage River within the Warrenville Grove Forest Preserve in the City of Warrenville. The dam was one-third mile upstream from Warrenville Road and 0.4 miles downstream from Butterfield Road (Illinois Route 56). The site is owned by the FPDDC, and the dam was approximately 75 years old. Access to the site is best gained via the Forest Preserve parking lot on the east side of Batavia Road.

The dam was constructed of limestone facing placed in a stair step configuration, with a concrete foundation and headwall on the upstream face of the spillway. The dam was 107 feet across, with a curving spillway face that has a total crest length of about 125 feet. The dam height was 8.5 feet above the downstream river channel bottom, with a total hydraulic height of 5.7 feet (from spillway crest to tailwater elevation under average flow conditions).

The site maintains the original millrace that was partially retrofitted in 1995 to function as a fish ladder and canoe chute. The original dam impoundment was approximately 1.2 miles long and covered 16.9 acres.

The dam was designed by the National Park Service and constructed by the Civilian Conservation Corps between 1936 and 1938 as part of a dam-building program introduced to mitigate bank erosion. The dam site was chosen due to the presence of an older, abandoned mill dam that existed at the same location between 1847 and 1897.

McDowell Grove Dam: The McDowell Grove Dam was removed in mid-2008 under a cooperative project administered by DC SWM and the FPDDC. The dam was located on the West Branch of the DuPage River within the McDowell Grove Forest Preserve in unincorporated DuPage County and was approximately 75 years old.

Fawell Dam: The Fawell Dam is located on the West Branch of the DuPage River at river mile 8.1. It is a flood control structure operated by DC SWM. The dam consists of a set of three gate structures that can control flow through a three-barrel concrete box culvert to impound water, as necessary, upstream within the McDowell Grove Forest Preserve. The existing three-barrel concrete box culverts consist of a center barrel (11.83 feet wide by 10 feet high) and two square side barrels (10 feet by 10 feet). The culvert barrels are 80 feet long, and the bottom slopes down at 5% from the upstream end to the downstream end. There are concrete wing walls on the upstream side of the culvert structure and a 50-foot-long concrete stilling basin structure on the downstream side. Atop the culvert, the grade slopes up from the ends to a 25-foot-wide path running perpendicular to the structure, which is approximately 10 feet above the top elevation of the barrels. During low water events, when the structure is not operating, the upstream end of the culvert features a concrete sill set above the natural bed elevation of the river. The earth embankment is approximately 1,000 feet long.

To comply with the NDPES Special Conditions (Table 3 in Section 1), the DRSCW is currently working with DC SWM and the FPDDC to install a fish ladder system in one of the culverts of the Fawell Dam to allow for fish passage through the structure. The project is expected to be completed in 2024.

Arrow Road/Spring Brook Marsh #1 Dam: The dam was located at river mile 0.85 on Spring Brook # 1 in the Blackwell Forest Preserve. The structure consisted of a 4.5-foot weir (approximately 35 inches wide), which spilled into a reinforced concrete pipe that passed under Arrow Road. When the weir was fully closed, the impoundment was approximately 15 acres, most of which was less than one foot deep. The FPDDC owned the dam site and the impoundment. The dam was removed in a cooperative project administered by the FPDDC, the Illinois State Toll Highway Authority, and DRSCW during the 2020 field season; stream restoration efforts concluded soon thereafter.

3.6.1.3 East Branch DuPage River

West Lake Dam: The West Lake Dam is in West Lake Park in Bloomingdale, approximately one-half mile north of Army Trail Road and 500 feet west of Glen Ellyn Road. The existing concrete inlet and outlet channels and the existing lake outfall structure were constructed in the early 1970s in conjunction with the development of the Westlake Subdivision. The primary purpose of the lake is to retain excess stormwater runoff from the upstream Westlake development. The secondary benefit of the lake is that it provides aesthetic benefits and recreational uses as a public park area on land owned and operated by the Bloomingdale Park District. Maintenance to sustain the lake function as a stormwater retention facility is handled by the Village.

Churchill Woods Dam: The Churchill Woods Dam was located on the East Branch (river mile 18.7) within the Churchill Woods Forest Preserve in Glen Ellyn. Originally built in the 1930s as part of the Works Progress Administration, the 50-foot-long and 3.5-foot-high concrete gravity dam was removed in February 2011. The former impoundment created by the dam was approximately 31 acres in size and extended from Crescent Boulevard to approximately St. Charles Road (river miles 18.7–20.0). The river is still somewhat impounded at the site, with the new elevation being set by three box culvers under Crescent Boulevard immediately downstream of the former dam wall. The remaining impoundment area is approximately 12 acres.

Maryknoll Gabion Weir Dam: The Maryknoll Gabion Weir Dam is located on the East Branch, adjacent to the Maryknoll residential subdivision in Glen Ellyn. The dam is located east of Maryknoll Circle, approximately one-quarter mile south of Route 38 and 200 feet west of I-355. The dam was constructed in the early 1980s as part of Maryknoll Development to provide stormwater detention for the development. Flow at normal water level is not impeded. The dam consists of gabions with no concrete caps. The impoundment does not extend further upstream than Route 38.

Seven Bridges and Prentiss Creek dams (flow-through): The Seven Bridges and Prentiss Creek dams are located within the Seven Bridges Golf Club in Woodridge. The Seven Bridges Dam is located on the

East Branch DuPage River, and the Prentiss Creek Dam is located at the mouth of Prentiss Creek, and both are located immediately upstream from Hobson Road. The Village of Woodridge owns the structures, which are 19 years old. The dams were constructed in 1989 to provide in-line stormwater detention for the adjacent development. The dams are gravity structures consisting of rock-filled gabions that impound water at a greater rate as the flow increases. The East Branch structure is 20 feet wide, and the Prentiss Creek structure is 10 feet wide.

3.6.1.4 Salt Creek

Busse Woods Reservoir South Dam: The Busse Woods Reservoir South Dam is located on Salt Creek within the Busse Woods Forest Preserve in Elk Grove Village. The dam is owned and maintained by the Illinois Department of Natural Resources Office of Water Resources, while the forest preserve is owned by The Forest Preserve District of Cook County. The dam was built for flood control and recreational purposes in 1977. The dam is of earthen construction and is 23 feet high and 1381 feet long. The reservoir has a surface area of 415 acres.

Itasca Country Club Dam: Situated on Spring Brook 50 feet upstream of Prospect Avenue, this dam is privately owned and maintained. No other information was available.

Lake Kadijah Dam: This dam is located one-half mile upstream of Rohlwing Road/Illinois Route 53. This dam is maintained by the Medinah County Club and serves as part of the DC SWM Spring Creek Reservoir operation system.

Eaglewood Dam: The Eaglewood Dam is located on Spring Brook upstream of Route 53 on the Eaglewood Golf Course. This dam was constructed to support irrigation purposes.

Oak Meadows Golf Course Dam: The Oak Meadows Golf Course Dam was located on Salt Creek within the Oak Meadows Golf Course. The dam was removed in 2016 by the FPDDC, the DRSCW, and the DC SWM. The golf course is maintained by the FPDDC and is east of Addison Road and north of I-290. The date of original construction is unknown. The dam was originally built by Elmhurst Country Club to provide a source of irrigation water for the golf course; it impounded 6 acres over 4,500 linear feet of the mainstem. The spillway was approximately 3 feet high and 75 feet wide.

Westwood Creek Dam (Salt Creek Tributary WWTP dam): The Westwood Creek Dam is located on Westwood Creek, a tributary to Salt Creek in Addison. The dam is approximately 500 feet east of Addison Road and 200 feet southwest of I-290 and is maintained by the Village of Addison. The dam was brought online in 1994 as part of an effort by the DC SWM to reduce flooding in the area. Residential areas to the west along Westwood Creek are protected during flood events by closing the gates of the dam and pumping Westwood Creek to Louis' Reservoir, a two-stage, 210-foot retention and detention area at the southwest corner of Lake Street and Villa Avenue.

Redmond Reservoir Dam (George Street Reservoir): Located on Addison Creek in Bensenville and operated by the Village of Bensenville, this dam was originally constructed in 1999. The headwaters originate in Wood Dale and Bensenville.

Mount Emblem Cemetery Pond Dam: Located in Elmhurst at the southwest corner of Grand Avenue and County Line Road on Addison Creek, this low-head dam was originally constructed in the 1930s to create an online pond that is a landscape feature of the Mount Emblem Cemetery.

Graham Center Dam (Elmhurst County Forest Preserve Dam): The dam is located on Salt Creek near Elmhurst. The dam is one-quarter mile east of Route 83 and one-quarter mile south of Monroe Street. The dam was constructed in the early 1990s as a result of dredging on Salt Creek from Oak Brook north to this point. The structure was installed to allow for a step down between the dredged and not-dredged portions of the river and to prevent sedimentation of the dredged portions. The structure was not intended to be a dam, but it functions like one in low-flow conditions. The dam originally consisted of a single line of sheet metal piling. However, the creek began to erode the banks at the point of contact with the sheet metal piling. This was repaired by cutting a notch in the original sheet metal piling and installing another line of sheet metal piling further downstream.

Old Oak Brook Dam: The Old Oak Brook Dam is located on Salt Creek, downstream of 31st Street in Oak Brook. The dam is maintained by the Village of Oak Brook and is approximately 90 years old. The dam was originally built by Paul Butler in the 1920s to maintain an aesthetic pool on his property during low-flow periods.

Oak Brook Dam has undergone major rehabilitation over the last 20 years. There are two main spillway components: the fixed elevation spillway and an old, inoperable, gated emergency spillway. The gated spillway section consists of two steel vertical slide gates. The dam was rehabilitated in 1992. The primary spillway is 65 feet wide with about 3 feet of head at normal flow conditions, and it consists of grouted stone with a concrete cap. The left and right training walls consist of grouted stone and reinforced concrete, overlain to a larger extent by concrete-filled Fabriform® mats.

Fullersburg Woods Dam: The Fullersburg Woods Dam (also known as the Graue Mill Dam) is located on Salt Creek. It is associated with Graue Mill and is within the Fullersburg Woods Forest Preserve. The dam is 300 feet upstream of York Road near the Village of Oak Brook. The dam is owned by FPDDC and is 74 years old. The adjacent historic mill was originally constructed in 1852. The mill and dam were rebuilt by the Civilian Conservation Corps in 1934. The dam is 123 feet across and 6.3 feet high. The impoundment created by the dam covers 16 acres and 3,900 linear feet. The Fullersburg Woods dam was removed in November/December 2023 to comply with the NDPES Special Conditions (see Table 3 in Section 1).

Fox Lane Impoundment: An approximately 5-acre impoundment located at river mile 10.0 was created by what appears to be the remnant foundation of a former dam. The remnants currently function as a large riffle under low- to average-flow conditions.

Possum Hollow Woods Dam: Located in Westchester, three-fourth mile east of Wolf Road and one-quarter mile north of 31st Street on FPCC property, Possum Hollow Woods Dam does not result in a notable impoundment. No additional data are available at this time.

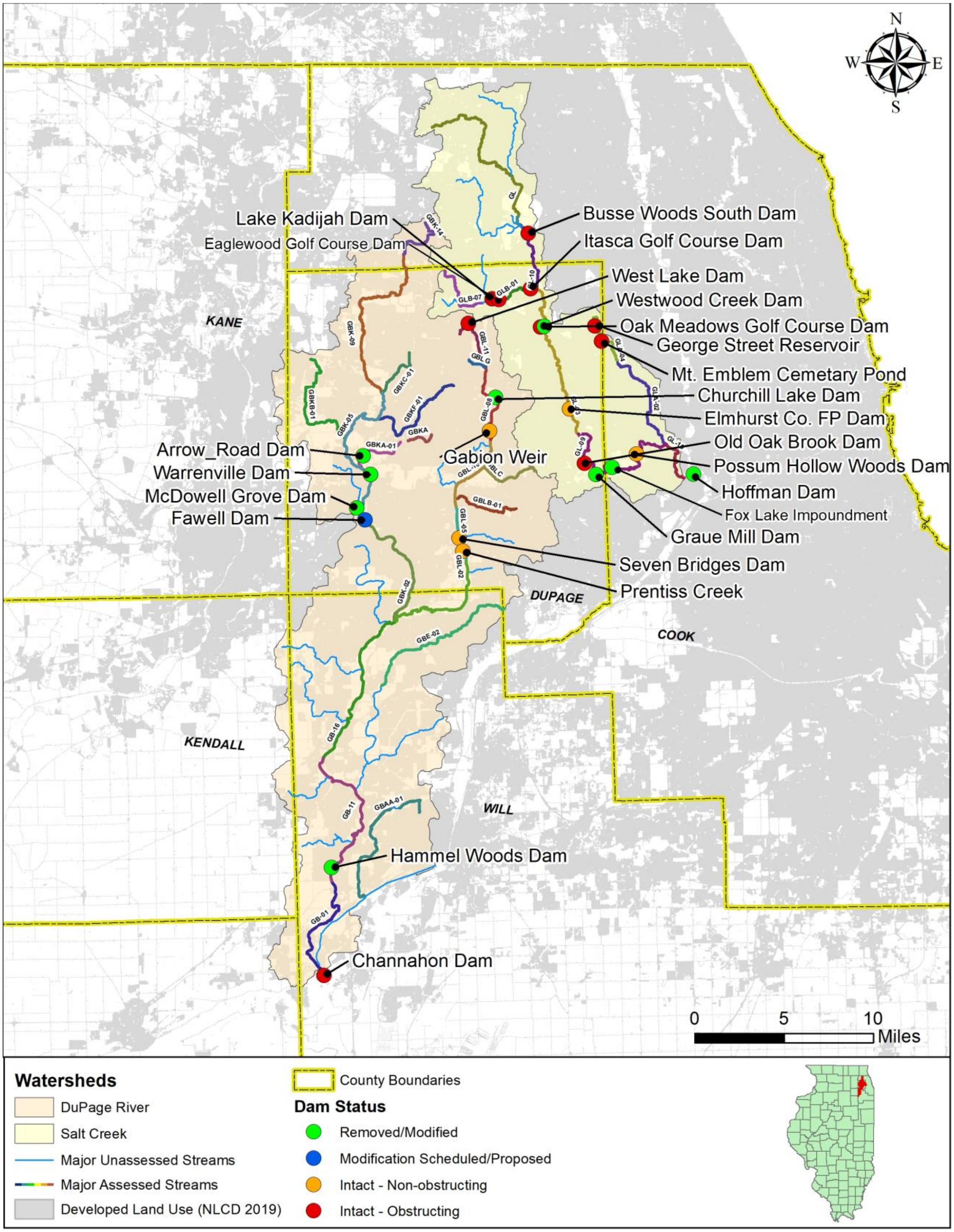


Figure 23. Dams in the DuPage River and Salt Creek watersheds.

3.7 NONPOINT SOURCES

The term nonpoint source pollution is defined as any source of pollution that does not meet the legal definition of point sources. Nonpoint source pollution typically results from overland stormwater runoff that is diffuse in origin, as well as background conditions. It should be noted that stormwater collected and conveyed through a regulated municipal separate storm sewer system (MS4) is considered a controllable point source. Runoff from nonregulated areas, which in this case is limited to agricultural areas, is the main nonpoint source of pollutants to impaired streams. In addition, SOD in streams also contributes to low DO conditions. Septic systems can also be a source of nonpoint pollution if they are not maintained properly.

Agricultural areas can significantly affect water quality if proper best management practices are not in place, specifically contributing to high BOD and nutrients that can affect the DO conditions in streams. Like MS4-permitted stormwater, nonpoint stormwater runoff acts as a delivery mechanism for several sources of pollutants. During wet-weather events (snowmelt and rainfall), pollutants, including fecal coliform, chloride and nutrients from fertilizer application, and oxygen-demanding substances (e.g., decaying vegetation), are incorporated into stormwater runoff and can be delivered to downstream waterbodies. Fertilizers used for cropland are typically considered a potential source of nutrient enrichment in waterbodies, which results in increased BOD and is linked to lower DO conditions. SOD is a result of the biological consumption of organic material at the sediment-water interface and is a component of BOD; however, because it is a result of biochemical processes in the stream itself, it is considered a nonpoint source pollutant.

3.8 POINT SOURCES

Point source is defined by the federal CWA Section 502(14) as:

> *"any discernible, confined and discrete conveyance, including any ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation [CAFO], or vessel or other floating craft, from which pollutants are or may be discharged. This term does not include agriculture stormwater discharges and return flow from irrigated agriculture."*

Under the CWA, all point sources are regulated under the NPDES program. A municipality, industry, or operation must apply for an NPDES permit if an activity at that facility discharges wastewater to surface water. Point sources can include facilities such as major WWTPs, minor municipal WWTPs, industrial facilities, CAFOs, or regulated stormwater including MS4s. There are no permitted CAFOs in the DuPage River and Salt Creek watersheds.

3.8.1 NPDES-Permitted Facilities

NPDES-permitted facilities within the watershed include municipal and industrial WWTPs of various sizes. Permitted major municipal WWTPs in the DuPage River and Salt Creek watersheds are summarized in Table 25 and included in Figure 24. Minor municipal WWTPs are summarized in Table 26 and also included in Figure 24. Industrial discharges in the watersheds are summarized in Table 27 and included in Figure 25.

Eight NPDES-permitted facilities also have permitted CSOs in the DuPage River and Salt Creek watersheds (Table 28 and Figure 26). CSOs occur as the result of wet weather, which is not of specific concern for this NIP because the critical condition for DO is during warm, dry, low-flow periods—not the wet weather season. When CSO events occur, untreated wastewater enters rivers and streams, potentially discharging pollutants such as fecal coliform, solids, chloride, and nutrients (e.g., phosphorus). An ongoing Long-Term Control Plan (LTCP) was established to eliminate CSO events across these watersheds. One facility (Glenbard Wastewater Authority-Lombard, IL002247) is exempt from developing a LTCP because, due to CSO control measures, the permittee has achieved no more than four overflows per year as required under the Presumption Approach and as allowed in its NPDES permit. Four CSO facilities are part of the MWRDGC Tunnel and Reservoir Plan (TARP) system, which diverts and conveys would-be CSO flows to storage reservoirs through underground tunnels. After wet weather events end, the water in the reservoirs is pumped to a water reclamation plant for treatment and discharge to surface waters. The facilities that are part of the TARP program are not required to submit separate LTCPs.

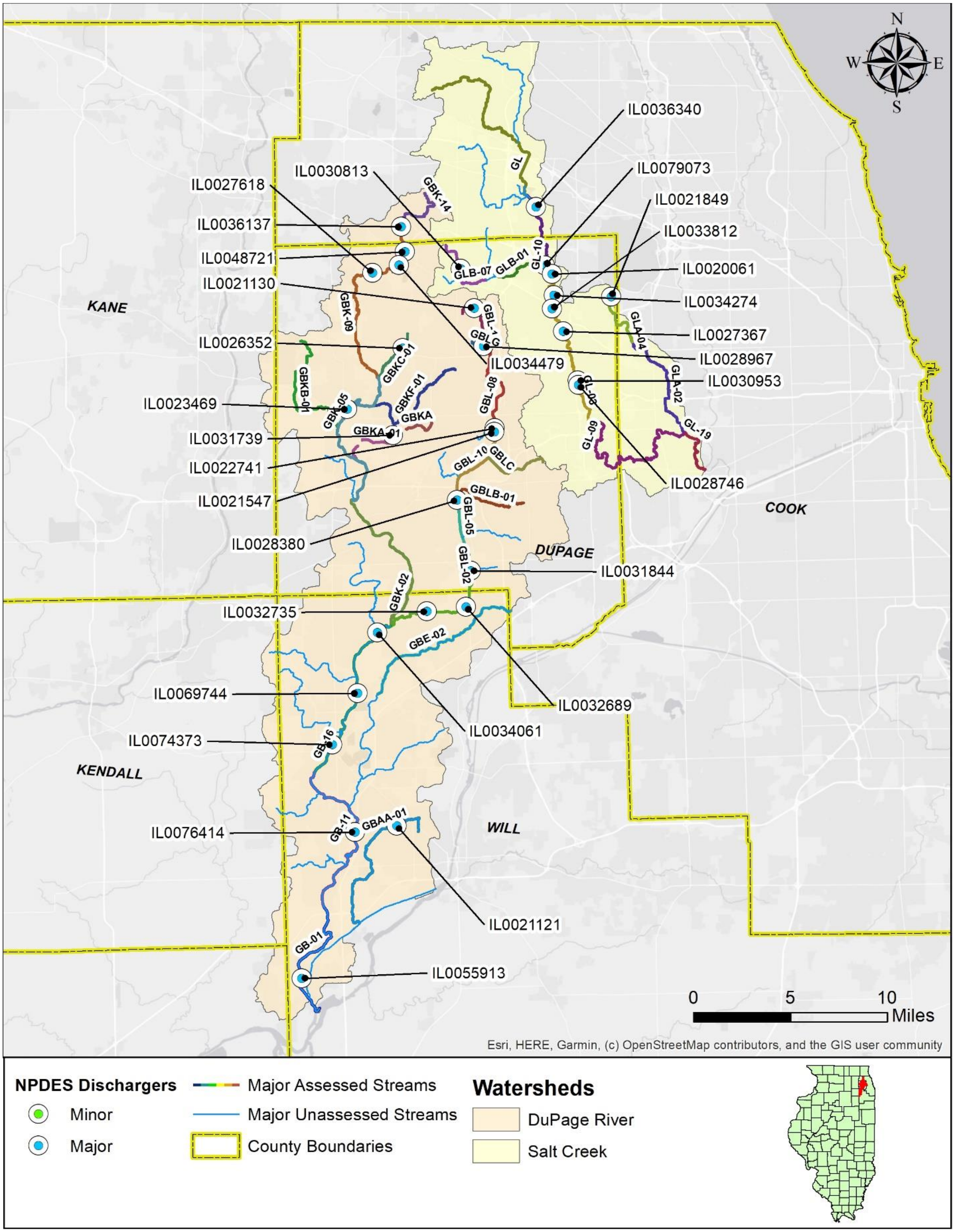


Figure 24. Major and minor municipal WWTPs in the DuPage River and Salt Creek watersheds.

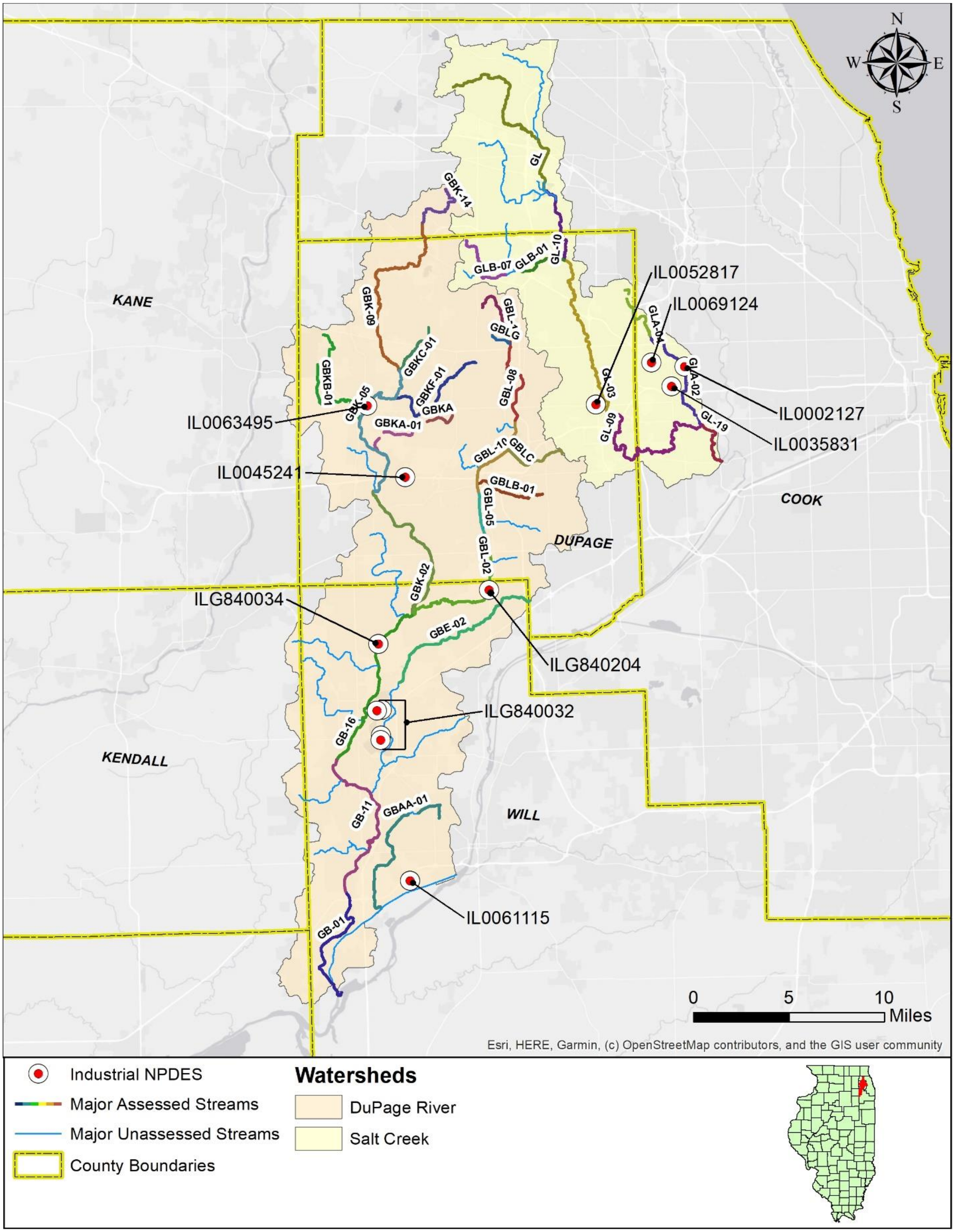


Figure 25. Industrial discharges in the DuPage River and Salt Creek watersheds.

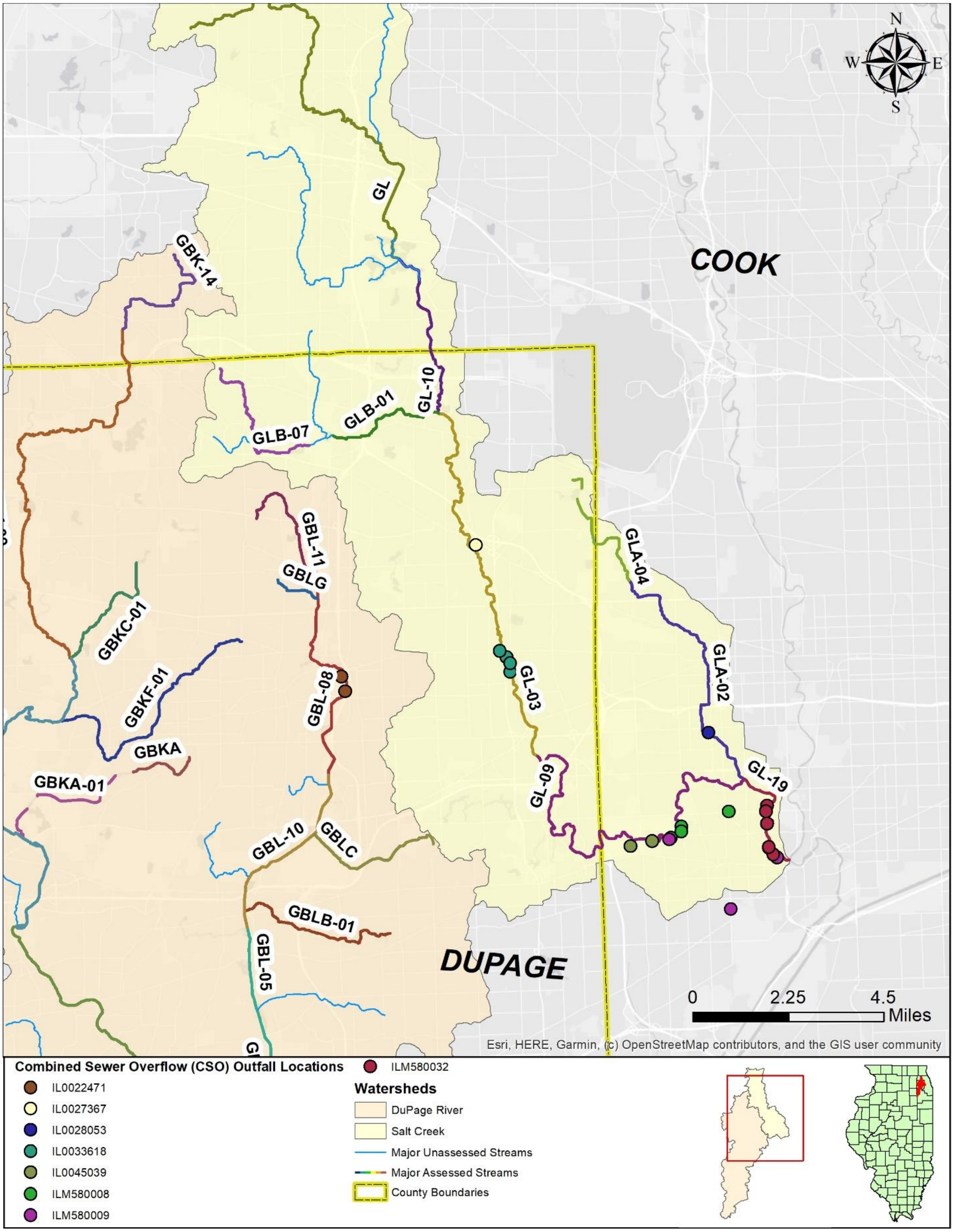


Figure 26. CSOs in the DuPage River and Salt Creek watersheds.

Table 25. Major municipal WWTPs in the DuPage River and Salt Creek watersheds

Watershed	NPDES Number	Facility and Outfall Number(s)	Receiving Water	Downstream Aquatic Life Impairments	Design Average Flow (million gallons per day [MGD])	Design Maximum Flow (MGD)
East Branch DuPage River	IL0021130	Bloomingdale-Reeves Water Reclamation Facility (WRF) – B01	East Branch DuPage River	GBL-10, GB-16, GB-11	3.45	8.625
	IL0028967	Glendale Heights Sewage Treatment Plant (STP) – 001	Armitage Ditch	GBL-10, GB-16, GB-11	5.26	10.52
	IL0021547	Glenbard Wastewater Authority – Main WWTP – 001	East Branch DuPage River	GBL-10, GB-16, GB-11	16.02	47
	IL0028380	Downers Grove Sanitary District WTC – B01	East Branch DuPage River & St. Joseph Creek	GBL-10, GB-16, GB-11	11	22.0
	IL0031844	DuPage County- Woodridge-Green Valley STP – 001	East Branch DuPage River	GB-16, GB-11	12	28.6
	IL0032735	Bolingbrook WRF #2 – 001	East Branch DuPage River	GB-16, GB-11	3	7.5
	IL032689	Bolingbrook STP #1 – B01	East Branch DuPage River to Des Plaines River	GB-16, GB-11	2.04	4.51
West Branch DuPage River	IL0036137	MWRDGC Hanover Park Water Reclamation Plant (WRP) – 007	West Branch DuPage River	GBK-09, GBK-05, GB-16 GB-11	12	22
	IL0048721	Roselle-Botterman WWTP – 001	West Branch DuPage River	GBK-09, GBK-05, GB-16, GB-11	1.22	4.60
	IL0034479	Hanover Park STP #1 – B01	West Branch DuPage River	GBK-09, GBK-05, GB-16, GB-11	2.42	8.68
	IL0027618	Bartlett WWTP – B01	West Branch DuPage River	GBK-09, GBK-05, GB-16 GB-11	3.679	5.151
	IL0026352	Carol Stream STP – B01	Klein Creek	GBK-05, GB-16, GB-11	6.5	13.0
	IL0023469	West Chicago/Winfield Wastewater Authority RWTP – B01	West Branch DuPage River	GBK-05, GB-16, GB-11	7.64	20.3
	IL0031739	Wheaton Sanitary District – 001	Spring Brook Creek	GBKA-01, GBK-05, GB-16, GB-11	8.9	19.1
Salt Creek	IL0036340	MWRDGC Egan WRP – 001	Salt Creek	GL-10, GL-09, GL-19	30	50
	IL0030813	Roselle STP – B01	Salt Creek	GL-09, GL-19	2	4
	IL0079073	Itasca STP – 001	Salt Creek	GL-09, GL-19	3.2	8.2
	IL0020061	Wood Dale North STP – 001	Salt Creek	GL-09, GL-19	1.97	3.93
	IL0034274	Wood Dale South STP – 001	Salt Creek	GL-09, GL-19	1.13	2.33
	IL0033812	Addison North STP – B01	Salt Creek	GL-09, GL-19	5.3	7.6
	IL0027367	Addison South – A.J. LaRocca STP – B01	Salt Creek	GL-09, GL-19	3.2	8.0
	IL0028746	Elmhurst WRF – 001	Salt Creek to Des Plaines River	GL-09, GL-19	8	20.0

Watershed	NPDES Number	Facility and Outfall Number(s)	Receiving Water	Downstream Aquatic Life Impairments	Design Average Flow (million gallons per day [MGD])	Design Maximum Flow (MGD)
	IL0030953	Salt Creek Sanitary District – 001, 002	Salt Creek	GL-09, GL-19	3.3	8.0
	IL0021849	Bensenville STP – 001	Addison Creek	GLA-02, GL-19	4.7	10.0
Lower DuPage River	IL0034061	Naperville Springbrook Water Reclamation Center (WRC) – 001	DuPage River	GB-16, GB-11	26.25 current, 30 future	55.13 current, 63 future
	IL0069744	Bolingbrook WRF #3 – 001	DuPage River	GB-16, GB-11	2.8 current, 4.2 future	7.0 current, 10.5 future
	IL0074373	Plainfield North STP – 001	DuPage River to Des Plaines River	GB-16, GB-11	7.5	15.0
	IL0076414	Joliet Aux Sable WWTP – 001	DuPage River	GB-11	7.7	17.3
	IL0021121	Crest Hill West STP – 001	Rock Run Creek	None	1.3	3.0 (also an excess flow facility)
	IL0055913	Minooka STP – 001	DuPage River to Des Plaines River	None	2.2	5.8

Table 26. Minor municipal WWTPs in the DuPage River and Salt Creek watersheds

Watershed	NPDES Number	Facility and Outfall Number(s)	Receiving Water	Downstream Aquatic Life Impairments	Design Average Flow (MGD)	Design Maximum Flow (MGD)
West Branch DuPage River	IL0028428	DuPage County – Cascade STP – 001	West Branch DuPage River	GBK-09, GBK-05, GB-16, GB-11	0.00585	0.0234
Salt Creek	IL0028398	DuPage County – Nordic Park STP – 001	Spring Brook Creek	GL-09, GL-19	0.5	1.0
Lower DuPage River	IL0045381	Camelot Utilities STP – 001	DuPage River	None (GB-01)	0.1	0.25

Table 27. Industrial dischargers in the DuPage River and Salt Creek watersheds

Watershed	NPDES Number	Facility	Receiving Water	Downstream Aquatic Life Impairments	Design Flow
East Branch DuPage River	ILG840204	Vulcan Construction Materials – Barbers Corner Quarry	East Branch DuPage River	GB-16, GB-11	No design flows, average flow of 2.62 MGD reported in 2023 Discharge Monitoring Reports (DMRs); discharge is pit pumpage and stormwater runoff
West Branch DuPage River	IL0063495	Kerr-McGee Chemical Corp.	West Branch DuPage River	GBK-05, GB-16, GB-11	No design flows, average flow of 0.0 MGD reported on 2023 DMRs; discharge is stormwater, wash water, and excavation pit water
	IL0045241	INEOS USA	West Branch DuPage River	GBK-05, GB-16, GB-11	No design flows, average flow of 0.0011 MGD reported on 2023 DMRs; discharge is stormwater and noncontact cooling water
Salt Creek	IL0035831	Congress Development	Des Plaines River	GLA-02, GL-19	No design flows, average flow of 0.097 MGD reported on 2023 DMRs; discharge is stormwater
	IL0002127	Union Pacific Railroad	Mud Creek Tributary to Addison Creek	GLA-02, GL-19	No design flows, average flow of 2.45 MGD reported on 2023 DMRs; discharge is stormwater
	IL0069124	Vanee Foods Company	Unnamed Tributary to Addison Creek	GLA-02, GL-19	No design flows, average flow of 0.043 MGD reported on 2023 DMRs; discharge is stormwater and noncontact cooling water
	IL0052817	Stonewall Utility Company – STP	Unnamed Ditch Tributary to Salt Creek	GL-09, GL-19	Design average and max flows: 0.01 and 0.07 MGD, respectively
Lower DuPage River	ILG840034	Vulcan Construction Materials – Bolingbrook Quarry	DuPage River	GB-16, GB-11	No design flows, average flow of 0.29 MGD reported in DMRs; discharge is stormwater
	ILG840032	Vulcan Materials	Lily Cache Creek	GBE-01	No design flows, average flow of 0.14 MGD reported in DMRs; discharge is stormwater
	IL0061115	LaFarge Aggregates – Joliet Quarry	Unnamed Tributary to Illinois and Michigan Canal	N/A	No design flows, average flow of 1.09 MGD reported in DMRs; discharge is stormwater

Table 28. Combined sewer overflows in the DuPage River and Salt Creek watersheds

Watershed	NPDES Number	Facility and Outfall Number(s)	Receiving Water	Downstream Aquatic Life Impairments	Status of Long-Term Control Plan
East Branch DuPage River	IL0022471	Glenbard WW Authority – Lombard – 002/003 Overflows	East Branch DuPage River	GBL-08, GBL-10, GB-16, GB-11	Exempt
Salt Creek	IL0027367	Addison South – A.J. LaRocca STP – 004 Overflows	Salt Creek	GL-09, GL-19	Submitted 2009, update due 2024
	IL0028053	MWRDGC Stickney WRP CSOs – 150 (Westchester Pump Station) Overflows	Addison Creek	GLA-02, GL-19	TARP (no LTCP required)
	IL0033618	Villa Park Wet Weather STP CSOs – 001/002/003/004 Overflows	Salt Creek	GL-09, GL-19	Submitted 2016, approved 2020
	IL0045039	Village of Western Springs CSOs – 001/002 Overflows	Salt Creek	GL-09, GL-19	Submitted 2015, updated 2019
	ILM580008	LaGrange Park CSOs – 001/002/003/ 004/005/006 Overflows	Salt Creek	GL-09, GL-19	TARP (no LTCP required)
	ILM580009	Village of LaGrange CSOs – 001/002/003 Overflows	Salt Creek	GL-09, GL-19	TARP (no LTCP required)
	ILM580032	Brookfield CSOs – 001/002, 003/005/006/007 Overflows	Salt Creek	GL-19	TARP (no LTCP required)

3.8.2 Municipal Separate Storm Sewer Systems

Stormwater alone is not a pollutant or pollutant source, but it acts as an important delivery mechanism of pollutants from various sources. Pollutant sources in urban stormwater runoff can be associated with decaying vegetation (e.g., leaves and grass clippings), pet and wildlife waste, sediment and soil, deposited atmospheric particulate matter, road de-icing salts, and oil and grease from vehicles. The most significant stormwater pollutants and their sources include chloride from de-icing agents used for winter road maintenance (road salt) and fecal coliform conveyed in runoff from pet and wildlife waste. In urban areas, nonpermitted cross-connections between sanitary sewers and storm sewers can also occur either due to unintentional negligence or intentional malfeasance occurring during construction activities. These illicit connections, although unknown and undocumented, cause discharges that may also be considered point sources.

Under the NPDES program, municipalities serving populations over 100,000 people are considered Phase I MS4 communities. Municipalities serving populations under 100,000 people are considered Phase II communities. Within Illinois, Phase II communities are allowed to operate under the statewide General Stormwater Permit (ILR40) for protection of waterways from urban stormwater runoff pollution, which first requires dischargers to file a Notice of Intent, acknowledging that municipal stormwater runoff discharges shall not cause or contribute to a WQS violation. To assure pollution is controlled to the maximum extent practical, regulated entities operating under the State General Permit (ILR40) are required to implement all six of the following control measures:

- Public education and outreach on stormwater impacts
- Public involvement and participation
- Illicit discharge detection and elimination
- Construction site stormwater runoff control

- Post construction stormwater management in new development and redevelopment
- Pollution prevention and good housekeeping for municipal operations

The entire project area included within this NIP is regulated under the State General Permit (ILR40). Aside from cities, major roadways are regulated by the Illinois Department of Transportation and Illinois State Toll Highway Authority, and counties are regulated MS4s responsible for permitting within unincorporated portions of the county. A list of all MS4s present within the DuPage/Salt NIP coverage area is provided in Table 29.

Table 29. MS4 communities in the DuPage River and Salt Creek watersheds

Permit ID	MS4 Name	Permit ID	MS4 Name	Permit ID	MS4 Name
ILR400001	Addison Township	ILR400199	Glen Ellyn Village	ILR400415	Oswego Village
ILR400277	Addison Village	ILR400342	Glendale Heights Village	ILR400107	Palatine Township
ILR400282	Arlington Heights Village	ILR400347	Hanover Park Village	ILR400416	Palatine Village
ILR400283	Aurora	ILR400063	Hanover Township	ILR400111	Plainfield Township
ILR400526	Aux Sable Township	ILR400354	Hillside Village	ILR400426	Plainfield Village
ILR400285	Barrington Village	ILR400355	Hinsdale Village	ILR400112	Proviso Township
ILR400008	Barrington Township	ILR400210	Hoffman Estates Village	ILR400433	Rockdale Village
ILR400286	Bartlett Village	ILR400494	IL State Toll Highway Authority	ILR400435	Rolling Meadows
ILR400288	Batavia	ILR400493	Illinois Dept of Transportation	ILR400436	Romeoville Village
ILR400009	Batavia Township	ILR400359	Inverness Village	ILR400437	Roselle Village
ILR400291	Bellwood Village	ILR400360	Itasca Village	ILR400122	Schaumburg Township
ILR400292	Bensenville Village	ILR400361	Joliet	ILR400443	Schaumburg Village
ILR400166	Berkeley Village	ILR400071	Joliet Township	ILR400445	Shorewood Village
ILR400013	Bloomingdale Township	ILR400259	Kane County	ILR400648	South Barrington Village
ILR400295	Bloomingdale Village	ILR400261	Kendall County	ILR400454	St Charles
ILR400298	Bolingbrook Village	ILR400365	LaGrange Park Village	ILR400131	St Charles Township
ILR400167	Broadview Village	ILR400364	LaGrange Village	ILR400248	Stone Park Village
ILR400302	Brookfield Village	ILR400076	Leyden Township	ILR400456	Streamwood Village
ILR400308	Carol Stream Village MS4	ILR400079	Lisle Township	ILR400141	Troy Township
ILR400027	Channahon Township	ILR400376	Lisle Village	ILR400463	Villa Park Village
ILR400623	Channahon Village	ILR400080	Lockport Township	ILR400274	Warrenville
ILR400175	Clarendon Hills Village	ILR400378	Lombard Village	ILR400149	Wayne Township
ILR400485	Cook County Highway Dept	ILR400082	Lyons Township	ILR400500	Wayne Village
ILR400319	Crest Hill, City	ILR400220	Lyons Village	ILR400466	West Chicago
ILR400561	Crystal Lawn Subdivision	ILR400384	Maywood Village	ILR400468	Westchester Village
ILR400180	Darien City	ILR400386	Melrose Park Village	ILR400469	Western Springs Village
ILR400040	Downers Grove Township	ILR400086	Milton Township	ILR400254	Westmont Village
ILR400183	Downers Grove Village	ILR400638	Minooka Village	ILR400152	Wheatland Township
ILR400502	DuPage County	ILR400594	NA-AU-SAY Township	ILR400470	Wheaton
ILR400042	DuPage Township	ILR400396	Naperville	ILR400153	Wheeling Township
ILR400048	Elk Grove Township	ILR400092	Naperville Township	ILR400272	Will County
ILR400334	Elk Grove Village	ILR400229	North Riverside Village	ILR400155	Winfield Township
ILR400187	Elmhurst	ILR400406	Northlake	ILR400474	Winfield Village
ILR400195	Franklin Park Village	ILR400407	Oak Brook Village	ILR400478	Wood Dale
ILR400341	Geneva	ILR400232	Oakbrook Terrace City	ILR400480	Woodridge Village
ILR400056	Geneva Township	ILR400104	Oswego Township	ILR400159	York Township

4 WHY IS BIOLOGY THE FOCUS OF THE NIP?

It is the objective of the CWA to protect and restore the chemical, biological, and physical integrity of the Nation's waters (CWA Section 101[a]). To achieve this objective, national goals were established by the 1972 Federal Water Pollution Control Act amendments or what is better known as the CWA. Perhaps most well-known is the CWA goal, "wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water (Section 101[a][2])," which is commonly referred to as the "fishable/swimmable" goal. It provides the legislative foundation for the WQS that are used to measure and manage water quality via monitoring and assessment and water quality-based regulation of pollution sources. A WQS consists of the designated use and the chemical, physical, and biological criteria designed to protect that use. Designated uses broadly include the protection of aquatic life, recreation in and on the water, aesthetics, providing safe water supplies, and consumption uses for protecting humans and wildlife. Both the attainability and attainment of WQS is determined via adequate monitoring and assessment, a commitment made by DRSCW when it was formed in 2004 (USEPA 2007). The systematic watershed monitoring, carried out by the DRSCW since 2006 and the LDRWC since 2012, has focused primarily on determining the status of the Illinois aquatic life designated use and determining the causes (agents) and sources (origins) of impairments. This is emblematic of the CWA's broad focus on the restoration and protection of aquatic life uses by considering all causes and sources of impairment.

DRSCW and LDRWC have supported using the IEPA biological indices as direct measures of attainment and nonattainment of the General Use standard for aquatic life. In Illinois, WWTP permit conditions are drawn from the state's CWA Section 303(d) list (Section 2.2). The 2020–2022 Illinois Integrated Water Quality Report and Section 303(d) list includes 29 segments out of 34 assessed stream segments in the DuPage River and Salt Creek watersheds as impaired for aquatic life, making it the most common designated use impairment—more than the other designated use impairments combined. This makes the understanding of aquatic life, and the effective monitoring of it, a priority for entities seeking compliance with state and federal law. Under the CWA, the states, including Illinois, use IBI for fish and macroinvertebrates to measure aquatic diversity and compliance. The direct measurement of IBIs allows for the direct measurement of current conditions, trends, and impacts of any remediate actions, deleterious interventions, or background changes. Such direct observation of the end goal's current and future condition is critical for success. A resource that is not adequately monitored and measured cannot be understood, managed, or protected.

A closer examination of the Integrated Water Quality Report and Section 303(d) List further reveals that many of the observed effects linked to aquatic life impairments are not subject to direct regulatory action, as they do not have an adopted numerical standard (Table 15 for streams and Table 16 for lakes in Section 2.2). With the exception of the few narrative standards (e.g., prevention of toxic or nuisance conditions), WQS are currently only developed for a limited set of chemical parameters, as these have been given priority by regulators and are easy to implement. While important, reliance on water chemistry without the context provided by direct measurement of the health of the aquatic communities can lead to over-prioritization of those selected parameters. The almost exclusive focus on individual parameters, especially when used in regulatory actions such as the implementation of TMDLs (Section 2.3) as recommendations for lower effluent limits in WWTP permits, can result in unnecessary expenditures by public utilities and a lack of measurable improvement because not all WQS excursions lead to aquatic life impairment.

Empirical observations demonstrate that it is possible to have aquatic life use attainment even in the presence of WQS exceedances. The ambient condition impacts of WQS exceedances on aquatic life are a function not only of the exceedance itself but also of the nature of the pollutant (toxicity) and the duration, magnitude, and frequency of the exceedance. The absence of data on the biological response makes it impossible to gauge the actual impact of such exceedances. Therefore, this precludes the design of an appropriate targeted response or the ability to weigh the impact's importance relative to other priorities. While a violation of a WQS is a violation of the law, efficient watershed management demands that choices be made on how to invest scarce resources to maximize progress towards meeting the end goal (in this case, aquatic life attainment). A second kind of error exists where a waterbody with no detected chemical exceedances is granted full attainment status even though biology indicates a significant impairment.

This still leaves those stressors with no WQS. To that end, the concept of "pollution" needs to take on a broader context (Karr and Chu 1999). Regulators generally understand and treat pollution as being purely chemical in nature. However, the 1972 CWA and its 1987 CWA reauthorization deliver a much broader and holistic definition (from CWA Section 502: General Definitions), defining it as "any man made or man-induced alteration of the physical, chemical or biological or radiological integrity of water." However, measuring such alterations piecemeal would mean sampling all such components—a practical impossibility. Living organisms, by their nature, are the product of the integration of these alterations and their cumulative effect. Indeed, IBIs, a multimetric index, are designed to measure such impacts and their accumulated effects. This makes aquatic life not just the objective of remediate actions but also the single most complete measure of existing stream resource quality, including identifying and weighing stressors that do not have a WQS. The nature of aquatic life, as a composite result of all stressors, allows interventions to be more precisely tailored and ranked based on the observed and predicted response of the aquatic organisms.

The condition of the biota of the receiving streams and rivers is the ultimate arbiter of the success or failure in meeting the terms and conditions of the NIP and any other restoration plans or projects. This is an essential aspect of the aforementioned adaptive management approach that is supported by robust and detailed analyses of the multiples of chemical, physical, habitat, and landscape stressors that affect the attainment of the General Use standard for aquatic life in the DuPage River and Salt Creek watersheds. At the same time, the DRSCW and LDRWC recognize the need to establish causal linkages between the objectives of the NIP to address DO- and nutrient-related stressors as they affect the attainment of the biological endpoints. This need was addressed by the development of the IPS framework and model (MBI 2010, 2023), as detailed in Section 1.3.

4.1.1 Measuring Biological Response

The fIBI and mIBI are multimetric indices that IEPA uses to measure attainment and nonattainment of the General Use standard for aquatic life (IEPA 2022); they are the established methods for determining aquatic life use status for Illinois. These types of indices are designed to integrate the effects of all stressors, partly by having an array of metrics comprised of species and taxa attributes that respond in a predictable manner along different parts of the stressor gradient and specifically to different categories of stress (habitat, toxics, nutrients, dissolved solids, etc.). Two assemblage groups are used in Illinois: fish and macroinvertebrates. These groups may respond differentially to the same stressors (e.g., Marzin et al. 2012), such that one index might be attaining its biocriteria while the other reveals an impairment. This is consistent with the USEPA (2013) bioassessment program evaluation methodology that calls for using two assemblages. The approach of using a fully calibrated and regionally relevant IBI fulfills one of the originally intended purposes of Karr et al. (1986) to assess ". . . large numbers of sample areas and to determine trends, thus enabling us to assess the effects of management programs for water resources...". It also reflects the unique role of the IBI for which no suitable surrogate exists.

Because the fIBI and mIBI are designed to integrate the effects of all stressors that are present, the aggregate index value alone has limited value in stressor identification (Vadas et al. 2022). Identical IBI scores can result from entirely different stressors, which some have erroneously cited as an inherent liability. In acknowledgment of the limitation of an IBI score alone to reveal specific stressors, the NE Illinois

IPS (MBI 2023) used fish species and macroinvertebrate taxa-based responses to individual stressors to develop stressor-specific Species Sensitivity Distributions. This was used to develop a compendium of biological response-based stressor thresholds for use in the NE Illinois watershed bioassessments. The Species Sensitivity Distributions were then linked back to the fIBI or mIBI narrative tier to act as a causal threshold for supporting stressor analyses and developing the Restorability, Susceptibility, and Threat factors with the IPS framework (Section 1.3).

4.1.2 Reliability of the Illinois IBIs

The IEPA bioassessment program underwent a series of such evaluations between 2002 and 2012 using the Critical Elements Evaluation (CEE) process (Yoder and Barbour 2009). Soon thereafter, the Critical Elements Evaluation was documented in a USEPA methodological document entitled *Biological Assessment Program Review: Assessing Level of Technical Rigor to Support Water Quality Management* (USEPA 2013). While several opportunities for improving the level of rigor of the IEPA program were identified (MBI 2010, 2013), the fIBI and mIBI were found to be capable of assessing Illinois rivers and streams beyond a pass/fail basis. In terms of their respective critical technical elements scoring, both Illinois and Ohio scored 3.5 and 4.0, respectively, for the ecological attributes and discriminatory capacity elements, which is at or near the maximum score of 4.0 (MBI 2010).

The statistical properties of the Illinois fIBI were examined by Gerritsen et al. (2011), who found the coefficient of variation at the least-disturbed sites was 9.5% but was higher at impaired sites, which is not unexpected. Holtrop and Dolan (2003) analyzed the precision of the fIBI as the mean difference in resampled sites, which was 17% or 10 fIBI units on a 60-point scale. The Illinois IBI has similar structural properties to the Ohio IBI (Ohio EPA 1987), which Fore et al. (1993) concluded reliably scales to six condition categories and, with sufficient numbers (>200) of fish in a sample, produces a variance of only +2 IBI units. Thus, using the five narrative condition categories defined by Smogor (2005) for the fIBI to provide a framework for deriving tiered stressor thresholds is appropriate.

4.1.3 The Central Role of Biological Response

Taken together, the structure of the indicators and parameters used in the systematic monitoring and assessment employed by DRSCW and LDRWC reflects the five factors that comprise the integrity of an aquatic resource: flow regime, chemical variables, biotic factors, energy source, and habitat structures (Karr et al. 1986; Figure 27). The aquatic biota, as measured via an IBI, integrate these five factors and serves as a composite of their combined effects in a river or stream. Hence, the biota contains multiple types of information in response to each of these factors and their subcomponents, including hundreds of chemical pollutants. This reinforces the primacy of using biological indicators to assess not only aquatic life use status, but also the causes and sources of impairments and the threats to attainment.

When stressors influence or impact one or more of these factors or their interactions, the aquatic biota responds predictably, as depicted in Figure 28, which also serves as an explicit model of causation (Karr and Yoder 2004). It establishes linkages between stressors (or drivers of ecosystem change) through the five major factors of water resource integrity (as each is altered by stressors) to the biological response produced by those interactions. The biological response is the endpoint of primary interest and is the focus of water quality management through protecting and restoring an aquatic life designated use. This model illustrates the multiple causes of water resource changes associated with human activities. The severity and extent of the biological response to these impacts are ultimately what is important, not the mere presence of an impact itself. The understanding of these interactions guides the selection of indicators and parameters for comprehensive monitoring programs that use biological endpoints for determining attainment and nonattainment status (Karr 1991).

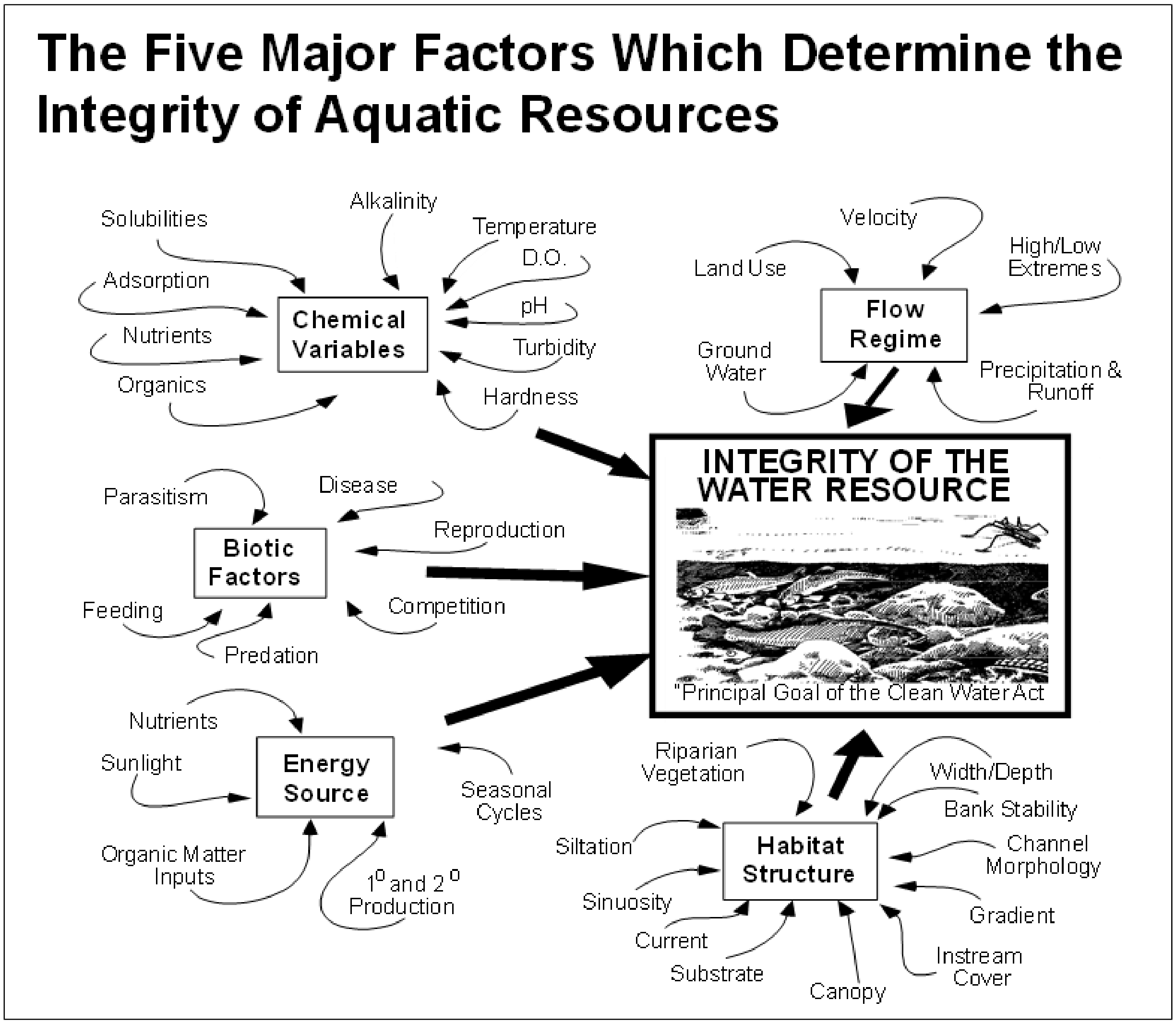


Figure 27. The five factors that comprise and determine the integrity of an aquatic resource (after Karr et al. 1986). Bioassessment serves as an integration of the five factors and a composite of their integration in an aquatic ecosystem.

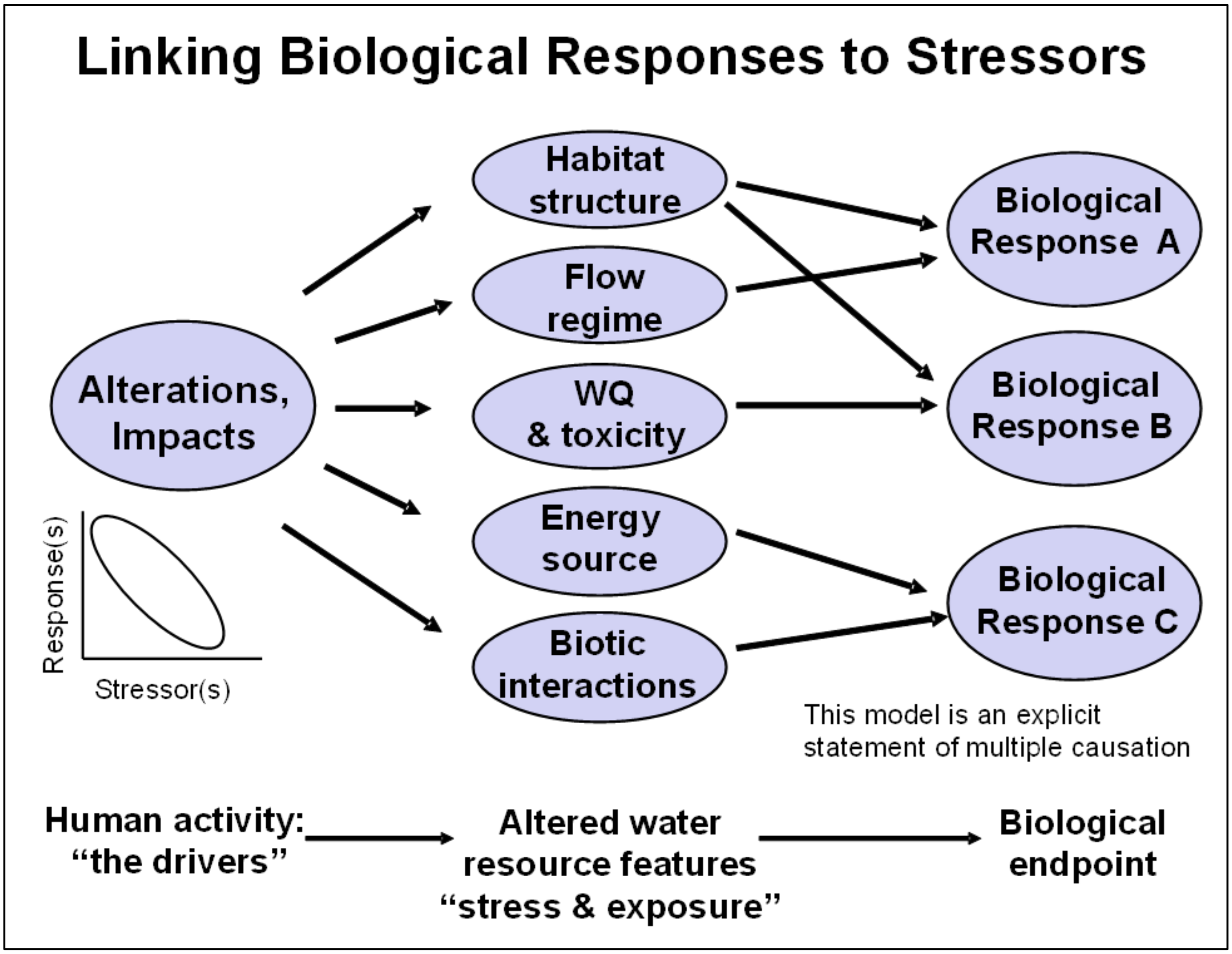


Figure 28. Linkages between stressors (or drivers of ecosystem change) through the five major factors of water resource integrity (as altered by stressors) to the biological responses produced by the interactions. The biological response is the endpoint of primary interest and is the focus of water quality management. The insert illustrates the relationship between stressor dose and the gradient of biological response that signals a good biological metric (modified from Karr and Yoder 2004).

Figure 29 illustrates two examples of the five factors linkage model to two common stressors in the DuPage and Salt Creek watersheds, urbanization and nutrient enrichment, which were two of the most limiting factors to aquatic life in the IPS study area (MBI 2023) (Section 1.3.2). Urban stressors included impervious cover and urban land use in the 500-meter spatial buffer and the HUC12 watershed scale; they were second only to the mean HUC12 QHEI in the battery of multivariate analyses and first in the univariate Species Sensitivity Distributions FIT score. Nutrients, mainly TP, ranked fourth in terms of the FIT score and as they affected DO in the multivariate analyses. By using the biological assemblage attributes (e.g., stressor-sensitive species and taxa) and IBIs, the IPS analyses directly linked General Use standard attainment for aquatic life to the most limiting stressors at the site, watershed, and HUC12 watershed scales. The IPS analysis provided insights about how to determine which of the five factors each contribute to the biological response to a given stressor category (such as urbanization or nutrient enrichment). These are illustrated in Figure 30 by the width of the arrows extending from each of the five factors to the biological response for that stressor category. Without the integrative capacity of the biota to respond to multiple stressors, the alternative would be limited to presumed outcomes based on single-dimension chemical surrogates that may or may not be real. Quite simply, using biological indicators as the endpoint of concern provides a reality check on such assumptions.

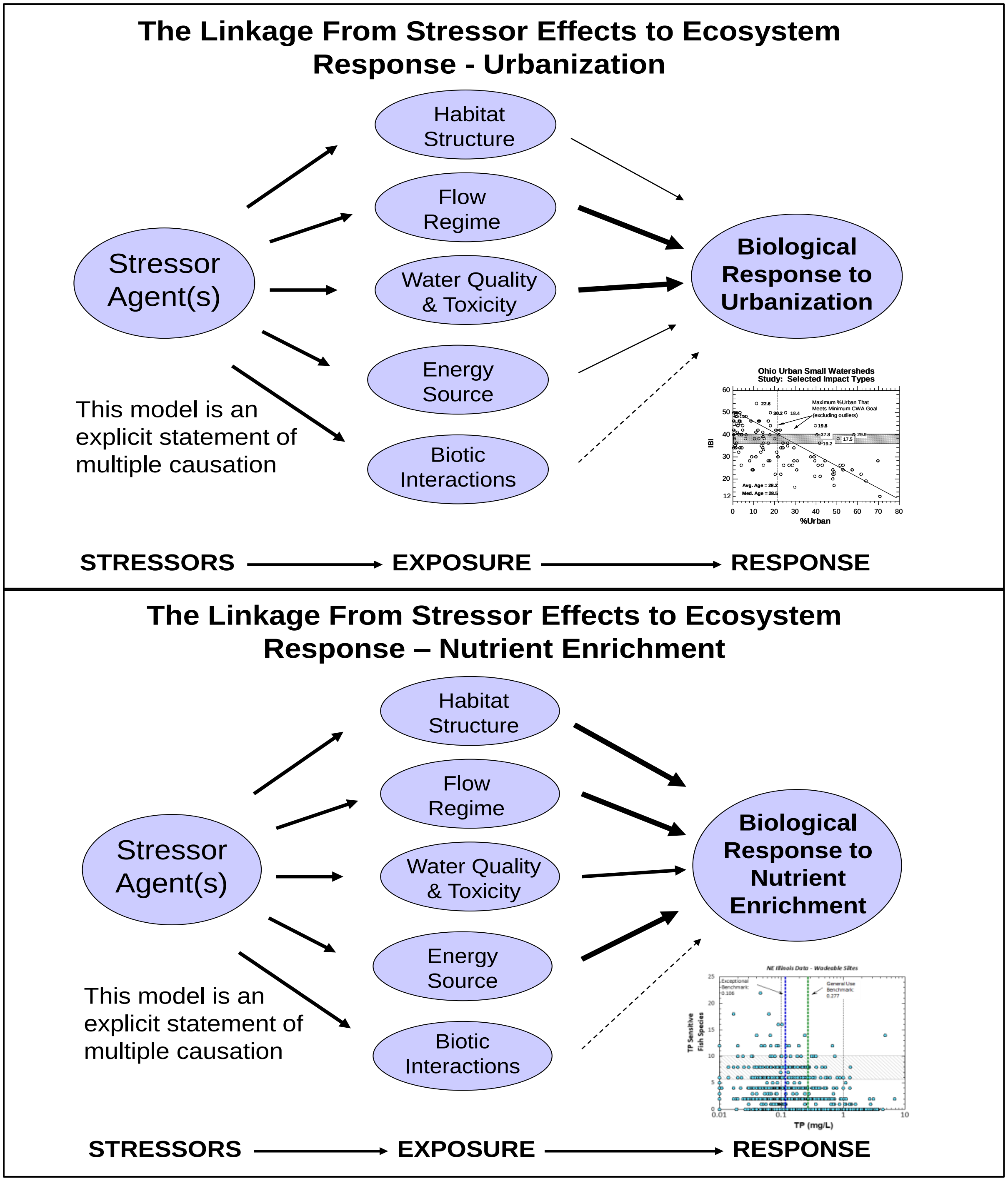


Figure 29. Two stressor linkage models show that the biological response will exhibit different stressor-specific characteristics. The response to watershed stressors common across NE Illinois, urbanization (upper) and nutrient enrichment (lower), are illustrated. The arrow thickness indicates the relative importance of that factor to the biological response.

5 NIP OBJECTIVES

An essential element of the NIP is the identification of a target threshold for TP which is protective of the desired objective. For the DRSCW and LDRWC, the principal objective is to create ambient conditions conducive to supporting aquatic biota that meet the Illinois General Use standard criteria for aquatic life (Section 2.1). Results from modeling the system (see Section 7.2) suggest that regional ambient DO concentrations are relatively unresponsive to instream TP changes at this magnitude, further supporting an approach that is centered around aquatic life.

The importance of identifying a protective instream TP concentration threshold is recognized by IEPA guidance after the DRSCW and LDRWC requirement for writing a NIP was included in their NPDES permits in 2015. IEPA guidance states that groups could either adopt the recommendations by the Nutrient Science Advisory Committee (NSAC 2018, see Section 2.4.2), or develop their own watershed-specific targets.

5.1 DERIVING A TP THRESHOLD PROTECTIVE OF AQUATIC LIFE

5.1.1 TP Threshold Derivation for Wadeable Streams

When the IPS Tool was most recently updated in 2023 (Section 1.3.2), the Tool's statistical analyses successfully derived a regionally specific instream TP concentration threshold for the adjacent DuPage River and Salt Creek watersheds. A central goal of the IPS Tool was the determination of numeric thresholds for stressors that can be protective of aquatic life, based on a robust suite of measured variables. In practice, the TP threshold identified herein for the DuPage/Salt wadeable streams is representative of quantifying attainment of the General Use standard waters criteria. The process of the TP threshold derivation process is illustrated in Figure 30 and detailed further below.

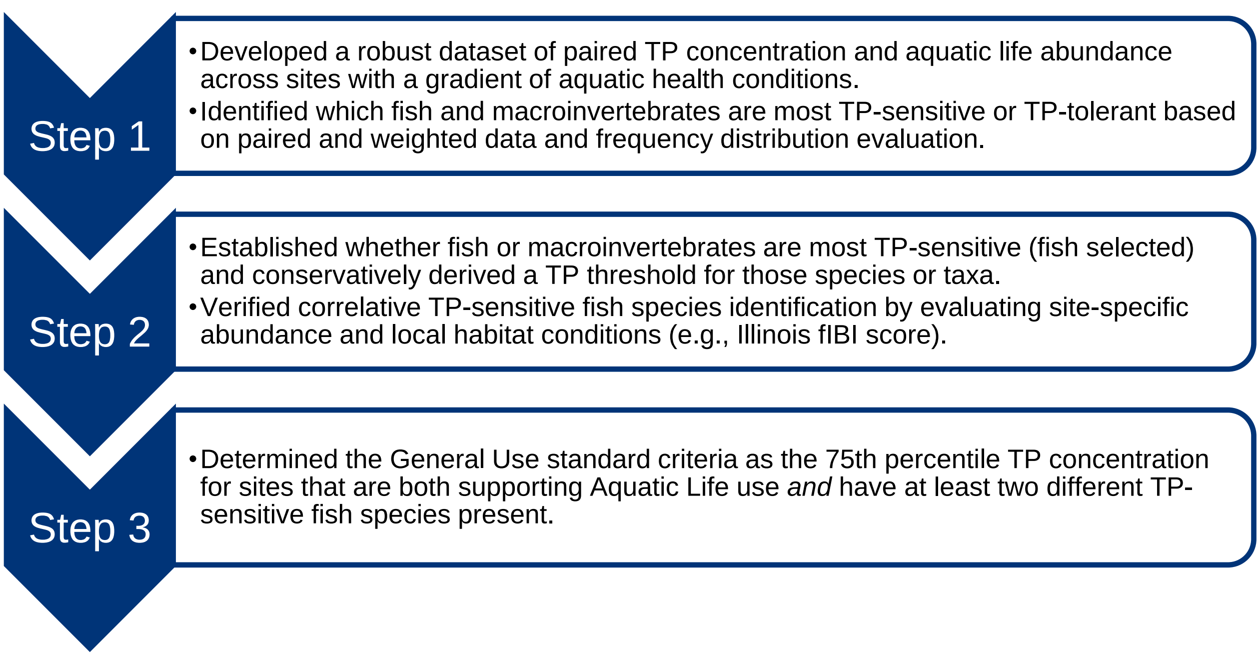


Figure 30. Simplified evaluation summary of the TP threshold derivation for DuPage/Salt wadeable streams.

The process of TP threshold derivation started with identifying the fish species and macroinvertebrate taxa that were most sensitive to TP concentrations. Each species or taxa was classified for its TP-sensitivity based on an evaluation of its occurrence and abundance relative to the paired ambient TP concentrations and assigned a weighted arithmetic mean TP concentration. Low weighted averages (low species/taxa abundance relative to TP concentrations) indicate that TP-sensitive aquatic life is frequently absent from high TP sites, with more frequent abundance at sites with low TP (relative to other species/taxa). The large dataset of paired aquatic life and TP concentrations was incorporated within the IPS Tool, allowing for a meaningful and robust correlative statistical analysis. Figure 31 illustrates the distribution of weighted mean TP concentrations for fish in wadeable streams based on IPS Tool data pairing, with the most and least TP-sensitive species emphasized. Various fish species and macroinvertebrates taxa were found to be sensitive to TP concentrations, with fish identified by the IPS Tool results having the most statistically significant TP-sensitivity of the two types of aquatic life. As a result, the TP threshold analysis was conducted conservatively along the TP concentration gradient for fish species to identify a threshold that is protective of both the fish species and the less-sensitive macroinvertebrates.

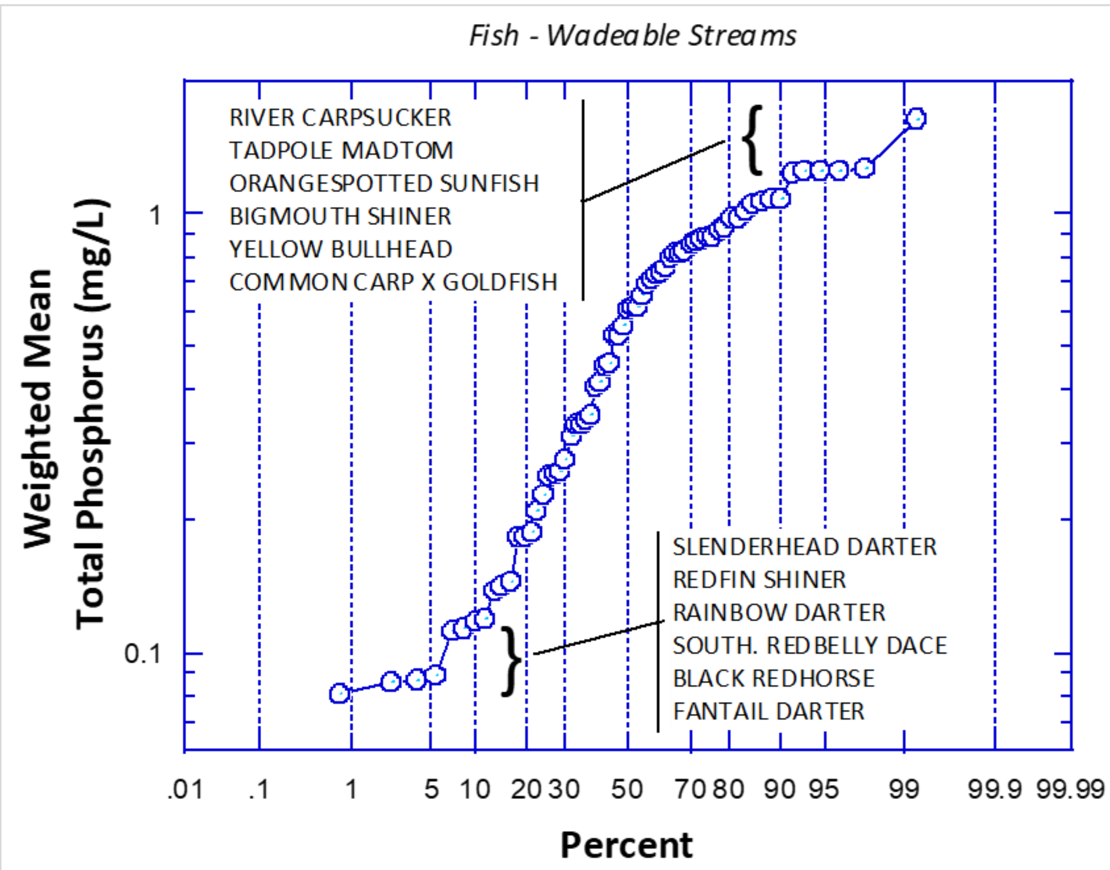


Figure 31. Field-data derived Species Sensitivity Distribution for fish species (most TP-sensitive and TP-tolerant species labeled), based on paired weighted mean TP concentrations as evaluated by the IPS Tool in northeastern Illinois.

After identifying the suite of TP-sensitive species, the occurrence of those species was linked back to the fIBI observation data for those same specific sampling locations to verify a strong positive correlation (Figure 32). As recommended in the *Nutrient Criteria Technical Guidance Manual: Rivers and Streams*, methods for examining potential relationships were conducted using frequency distribution approaches, focusing on the 25th and 75th percentiles of data (USEPA 2000). The 25th percentile of TP-sensitive fish species relative to fIBI was identified to be a count of at least two different species.

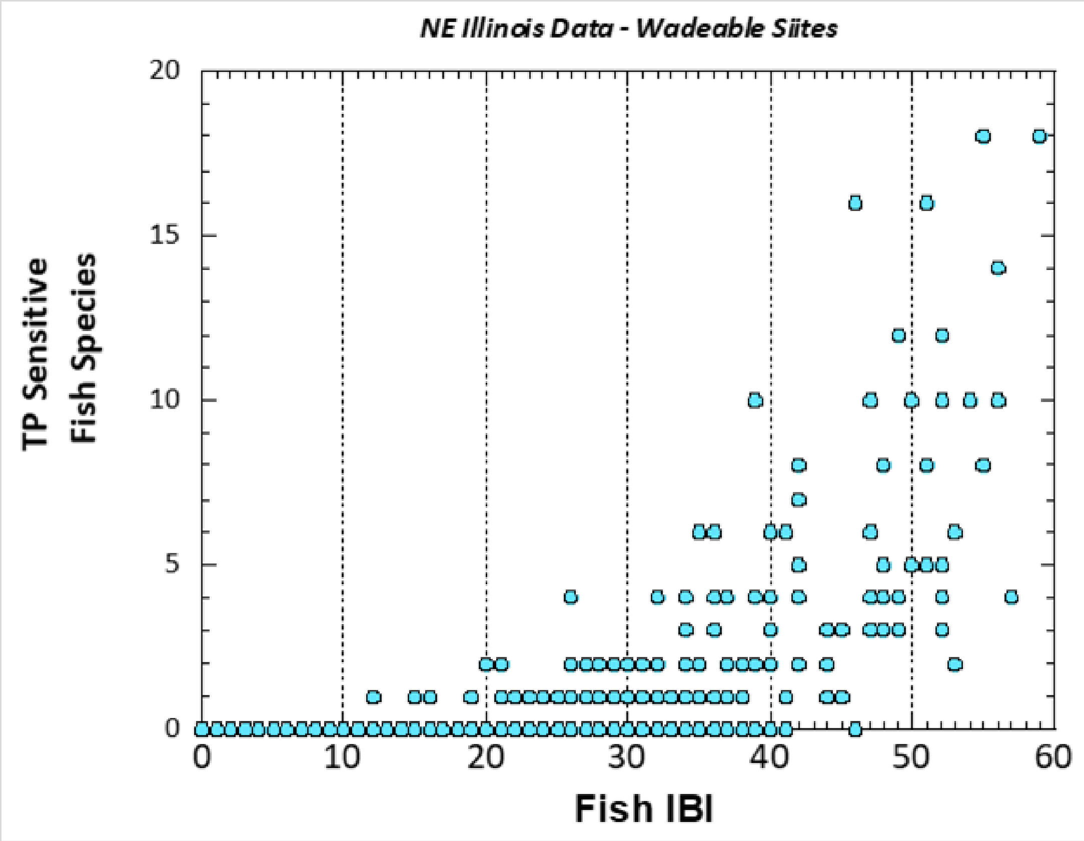


Figure 32. Scatterplot of observed TP-sensitive fish species abundance relative to fIBI scores in regional wadeable streams used as part of the derivation of the TP threshold support of the General Use standard.

Fully supporting sites (fIBI > 41) with at least two different TP-sensitive species found (25th percentile of species abundance per Figure 32) were placed in two groups (IBI 41–49 and 50–60) and were graphed on a probability plot (Figure 33). The TP threshold identified to reflect attainment of the General Use standard was then derived using the 75th percentile TP concentration at sampling sites, which support the Aquatic Life criteria (fIBI > 41) *and* have at least two different TP-sensitive fish species present (25th percentile of sensitive species abundance). This TP number for these sites was 0.277 mg/L; for exceptional sites, identified as those with IBIs scoring 50–60 and more than two sensitive species, the threshold was 0.1 mg/L.

For wadeable streams in NE Illinois, the General Use standard attainment threshold was identified to be 0.277 mg/L TP based on this evaluation.

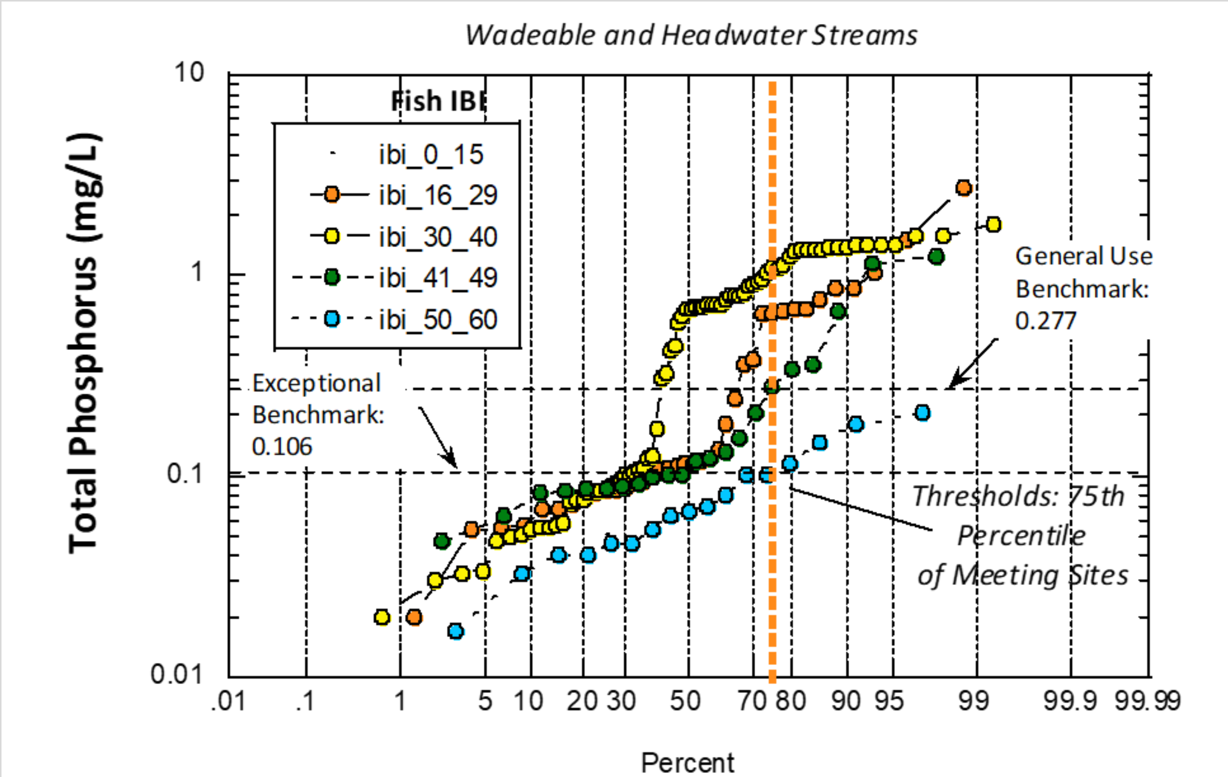


Figure 33. Probability plot of TP concentrations by narrative ranges of observed fIBI in regional wadeable streams used to identify the TP threshold supportive of General Use. The 75th percentile TP concentration associated with sites supporting good IBI (41–49) is clearly identifiable.

Using this same approach, an additionally informative subcategory (integrity class) of General Use standard attainment was derived to best characterize the observed relationship between TP and fIBI across a gradient of observed ranges. Figure 34 is a box-and-whisker plot showing the number of different TP-sensitive fish species observed relative to the range of observed fIBI values.

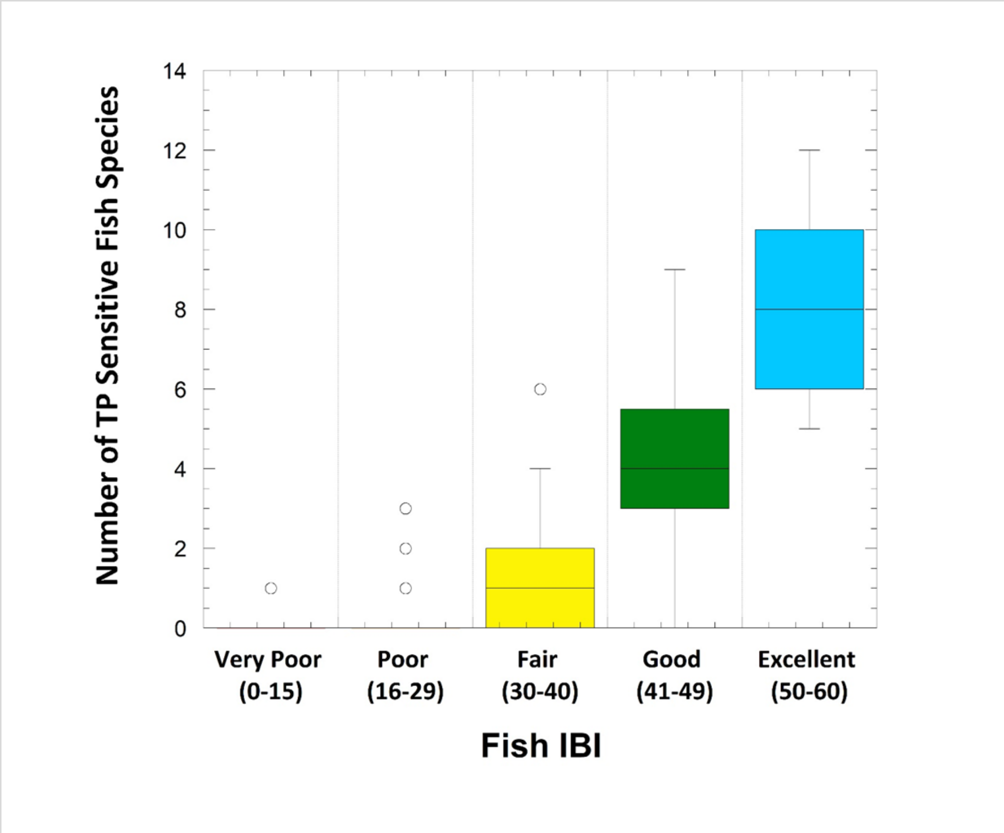


Figure 34. Box-and-whisker plot of TP-sensitive fish species abundance relative to site fIBI used in the northeast wadable streams Illinois IPS Tool.

This gradient includes General Use standard attainment integrity classes ranging (as IBI scores range) from Excellent, Good, Fair, Poor, to Very Poor, depending on the paired average of observed TP and fIBI:

- Excellent – Sites with more than two different TP-sensitive fish species present and fIBI score greater than 50. These sites provide “excellent” protective conditions for TP-sensitive fish species with a TP threshold of less than 0.11 mg/L TP (Figure 33 and Figure 34). These sites have the greatest number of different TP-sensitive species present and are fully supporting the General Use criteria.
- Good – Sites with at least two different TP-sensitive fish species present and an fIBI score of 41–49. These sites are the minimum protective conditions for TP-sensitive fish species, with a TP threshold less than 0.277 mg/L and are fully supporting the General Use standard.
- Fair – Sites with less than two different TP-sensitive fish species present and an fIBI score of 30–40. When fIBI scores fell below 30, no significant presence of TP-sensitive fish species was observed, so this classification does not support General Use standard attainment.
- Poor – Sites with less than two different TP-sensitive fish species present and an fIBI score of 16–29. This classification does not support General Use standard attainment.
- Very Poor – Sites with less than two different TP-sensitive fish species present and an fIBI score of less than 16. This classification does not support General Use standard attainment.

There is some natural variability and, therefore, uncertainty associated with these numeric thresholds, the magnitude of which can be evaluated by a calculation of FIT measuring the variability of relationships. For the relationship between TP and fIBI, the FIT score was relatively strong, indicating few sites have attaining fIBI scores paired with *high* TP concentrations, such that most sites with high TP concentrations show some level of aquatic life impairment.

5.1.2 Proposed Application of TP Threshold Results

The mean TP concentration range of 0.11–0.277 mg/L was determined to be conservatively protective of aquatic communities that meet the Illinois General Use standard. Because the threshold was derived to be protective based on fIBI (because fish species were observed to be more TP-sensitive than macroinvertebrates), the threshold will also be protective of the less TP-sensitive mIBI. The IPS Tool results also indicate that as TP concentrations fall even lower than 0.277 mg/L, aquatic life protections continue to improve, allowing for increases in both TP-sensitive species abundance and fIBI scores (see Table 30).

One critical finding of the IPS Tool evaluation was that no analyzed stream segments were identified as having TP concentrations as the exclusive limiting factor for aquatic life (see Section 1.3.2). The urban stream sites evaluated were found to be limited by multiple stressors (e.g., sediment metals, habitat, siltation, chloride); therefore, TP concentration reductions alone will not be sufficient to restore General Use standard attainment. The FIT scoring shown in Table 13 in Section 1.3.2 showed that habitat (general QHEI and its component pieces) plays the dominant role in limiting stream biology. To that end, this NIP recommends continued investments in improving QHEI in conjunction with instream TP reductions.

Additionally, this NIP recommends that subsequent monitoring data be used to refine and update thresholds to improve confidence in statistical relationships and reduce impacts from potentially confounding variables or covariance between metrics (e.g., habitat-related criteria).

Table 30. Paired thresholds for General Use standard attainment as derived by IPS Tool evaluation of TP concentrations and fIBI categories

IPS-Derived Threshold Parameters	General Use Standard Attainment Integrity Classes					Reference Median (IQR) N=35
	Very Poor	Poor	Fair	Good (General Use)	Excellent	
TP (mg/L)	> 1.74	1.01–1.74	0.277–1.01	**0.106–0.277**	≤ 0.106	0.088 (0.062–0.115)
fIBI (unitless)	< 16	16–29	30–39	**41–49**	> 50	N/A

Note: The green highlighted area represents Illinois General Use standard for aquatic life attainment and the target TP concentration range for ambient conditions applicable to this NIP.

5.1.3 Peer Review of Derivation of the TP Threshold

The DRSCW and LDRWC retained engineering consulting firm Kieser & Associates to conduct an independent peer review of the updated IPS Tool developed by MBI. The peer review was conducted to evaluate the scientific aspects of the tool in relation to its ability to develop nutrient thresholds, including TP, for wadeable streams in NE Illinois. Kieser & Associates determined that the IPS Tool is a useful, science-based approach for modeling stream ecosystem impacts to better inform management actions targeting restoration and protection of aquatic life in these surface waters. Strengths of the tool identified included the use of multiple years of field data on multiple biological and stressor variables in model development, as well as the systematic evaluation of relationships among those variables to assign potential causality. Additionally, the tool framework resembles other relative risk assessment approaches published in peer-reviewed literature to date. Stressor thresholds contribute to a weight-of-evidence approach for assessing the likely influence of each stressor of interest. The derived threshold for TP (0.11–0.277 mg/L), which was identified to be likely protective of aquatic communities that meet the Illinois General Use standard, was found to be reasonable.

Kieser & Associates identified areas of potential concern with respect to its ability to characterize nutrient-related stress during their peer review. These include the following:

- The lack of data on algal metrics and/or their surrogates (e.g., continuous DO data) limits the ability of the IPS Tool to assess impairments caused or threatened by nutrients.
- The use of the Species Sensitivity Distribution approach based on field data is relatively new.
- A more thorough description of the correlation between potential stressors is needed to maximize weight-of-evidence support.
- The dominance of habitat degradation in the IPS Tool evaluation as a macroinvertebrate and fish community stressor may limit the tool’s sensitivity to nutrient impacts.

The peer review also identified several additional areas for potential future data collection or research that could improve the support for, and transparency of, the IPS Tool output for nutrient assessment and management decision-making:

- Including primary productivity metrics (e.g., algal abundance, chlorophyll-*a*) as a biological endpoint for impact evaluation.
- The weight-of-evidence approach would benefit from a more detailed description of the expected nutrient impact mechanisms that account for observed patterns of fish and macroinvertebrate taxa presence or absence.
- Additional model validation using existing data and/or data collected in the future could further quantify the predictive performance of the IPS Tool related to nutrient impacts and risks.

6 EXISTING PHOSPHORUS CONDITIONS AND SOURCES

To determine the best potential opportunities to decrease TP concentrations instream, it is critical to evaluate TP contributions by source. For each of the watersheds, TP source loading was evaluated for a specific calendar year related to the year of simulation for the QUAL2Kw modeling detailed further in Section 5.0.

The DuPage River and Salt Creek watersheds produce approximately 1,441,257 pounds (lbs) (653,743 kilograms [kg]) of TP annually with 482,053 lbs (218,656 kg) attributed to Salt Creek and 959,204 lbs (435,087 kg) attributed to the DuPage River basin (Section 6.1). Because the instream TP threshold concentration is the basis for the majority of analyses, the source contributions are generally expressed in that form (TP concentrations as opposed to TP loads). The primary data source used for analyzing existing instream TP conditions and sources was the basinwide biological monitoring studies (bioassessments) carried out by the DRSCW and LDRWC over the last 16 years. A detailed summary of the DRSCW and LDRWC bioassessment program is in Section 1.2.1.1.

Another important data source used for the source analysis was the individual WWTP effluent discharge data supplied by the WWTPs and their IEPA filings, called DMRs. WWTP permits issued after calendar year 2015 included the following phosphorus-specific condition in their permits:

> *"The Permittee shall monitor the wastewater effluent, consistent with the monitoring requirements on Page 2 and 4 of this permit, for total phosphorus, dissolved phosphorus, nitrate/nitrite, total Kjeldahl nitrogen (TKN), ammonia, total nitrogen (calculated), alkalinity and temperature at least once a month" (emphasis added).*

This section of the NIP presents the existing TP conditions instream, a tabulation of TP source attribution, and ongoing implementation efforts to reduce TP from various WWTPs.

6.1 INSTREAM PHOSPHOROUS CONDITIONS

The mean ambient mainstem TP concentrations summarized here were derived from bioassessment program data collected from 2006 to 2021 (Figure 35, Figure 36, and Figure 37). Existing ambient phosphorus conditions along the mainstems of the West and East Branches of the DuPage River and Salt Creek have observably similar longitudinal patterns, where TP concentrations are highest near the headwaters immediately downstream of the first-discharging (most-upstream) WWTP. Where flows are low in the headwater reaches, the potential dilution of waste flows from background instream flows is the lowest. Concentrations gradually decline with the distance downstream of the initial WWTP discharge as background flows increase. This pattern is most clearly visible along Salt Creek, where the upper quarter of the basin includes no WWTP discharges (Figure 37). Observed TP concentrations along Salt Creek upstream of the first WWTP (Egan Water Reclamation Plant [WRP]; IL0036340) range from 0.1 mg/L to 0.2 mg/L, followed by a downstream spike ranging from 1.5 to 2.0 mg/L. These observed TP concentration patterns suggest that instream dilution of concentrated TP in wastewater by stormwater and background sources like tributaries plays an important role in determining ambient TP conditions instream. This is further reinforced by the water balance for all three waterways, where point sources contribute approximately 25% of the total streamflow volume relative to urban (non-WWTP) sources, which contribute 75% of the total flow (Section 6.2).

A somewhat different geographical TP pattern is observed on the Lower DuPage River (Figure 38). This system receives headwater flow from the East and West Branches of the DuPage River, which include large contributions of both point sources and urban background sources. The effect of this condition from the upper waterways effectively smooths out the TP concentration spike of the most upstream WWTP input to the Lower DuPage River (Naperville-Springbrook Water Reclamation Center, the largest WWTP on the Lower DuPage) due to dilution. The general pattern of ambient TP concentrations declining towards the outlet due to increased dilution from urban (non-WWTP) sources is also observed for the Lower DuPage River.

During all years for all basin assessments, observed instream TP concentrations on all four mainstem waterways exceeded the watershed TP threshold of 0.277 mg/L (solid dark line in Figure 35 – Figure 38), as identified in Section 5.1.

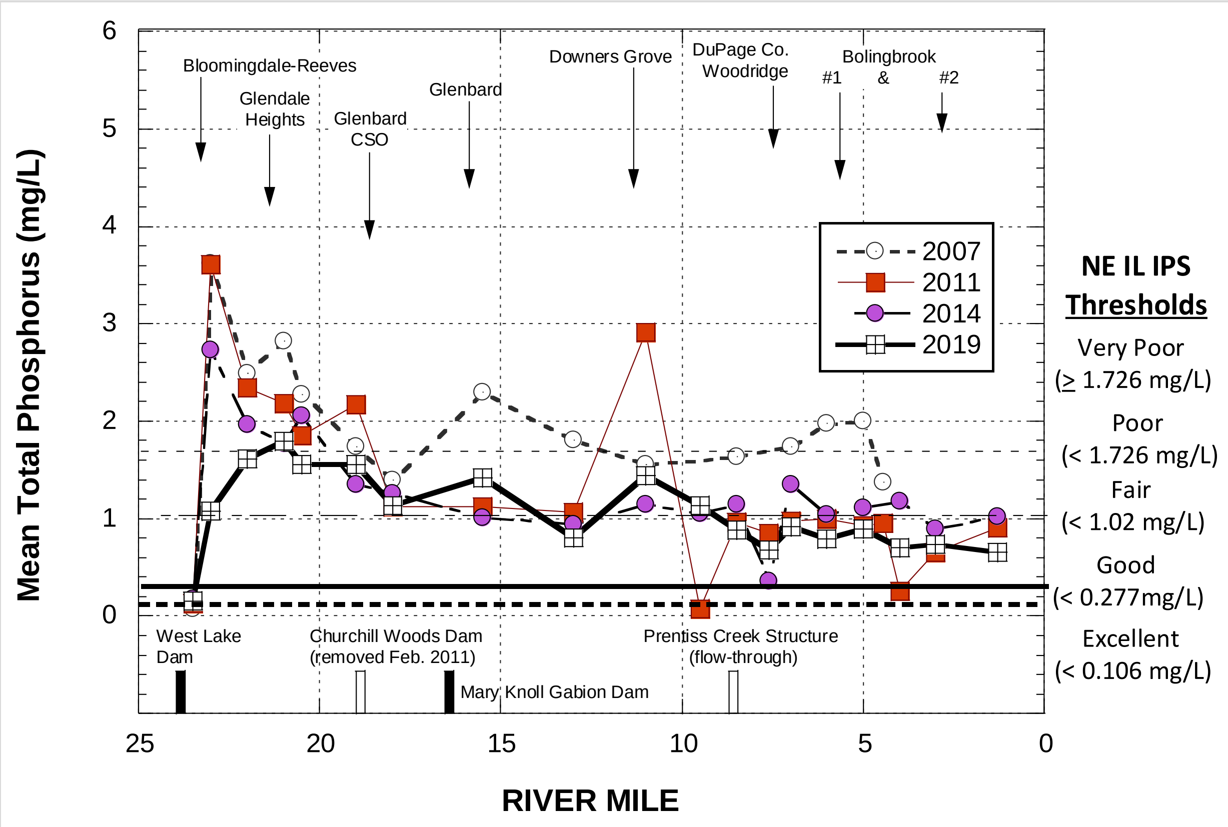


Figure 35. East Branch DuPage River mean instream TP concentrations for Basin Assessment years 2007, 2011, 2014, and 2019.

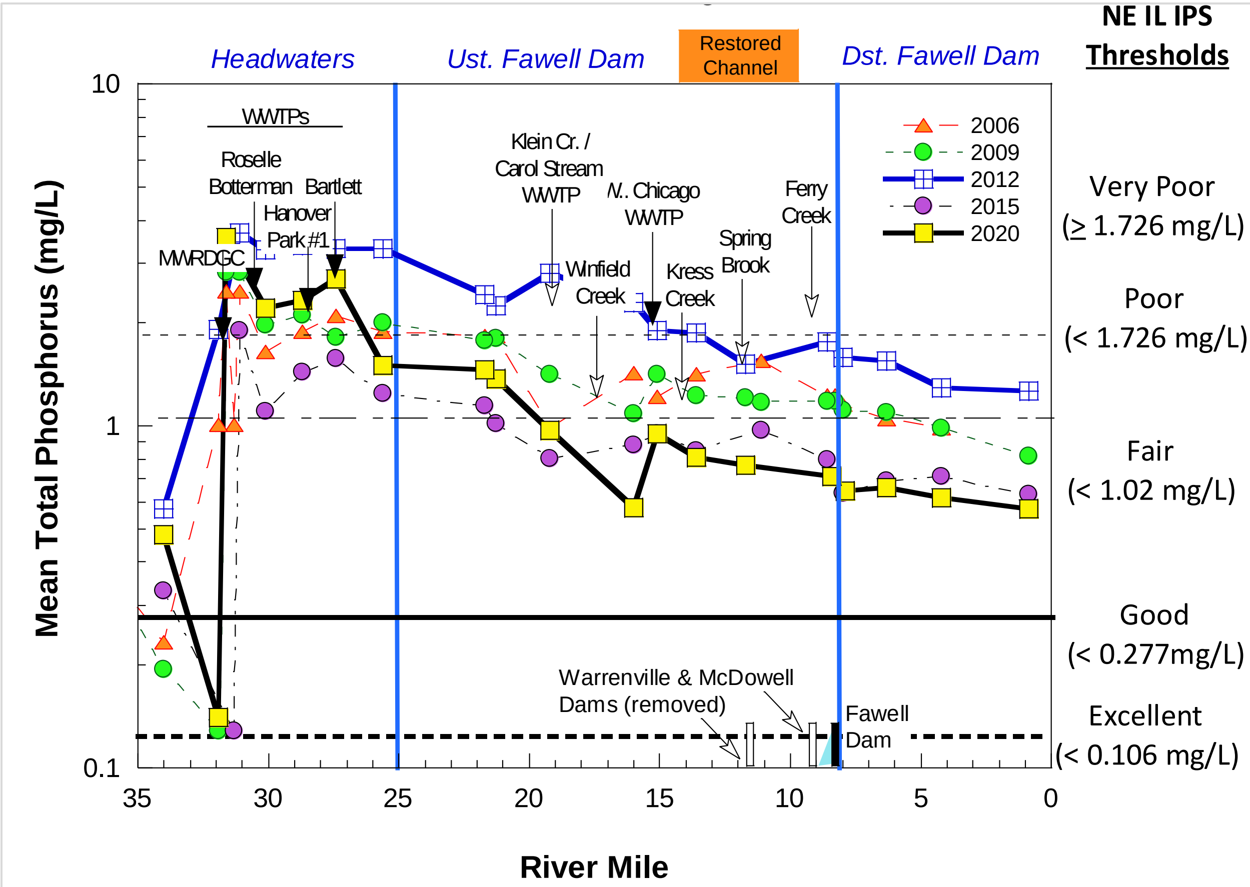


Figure 36. West Branch DuPage River mean instream TP concentrations for Basin Assessment years 2006, 2009, 2012, 2015, and 2020.

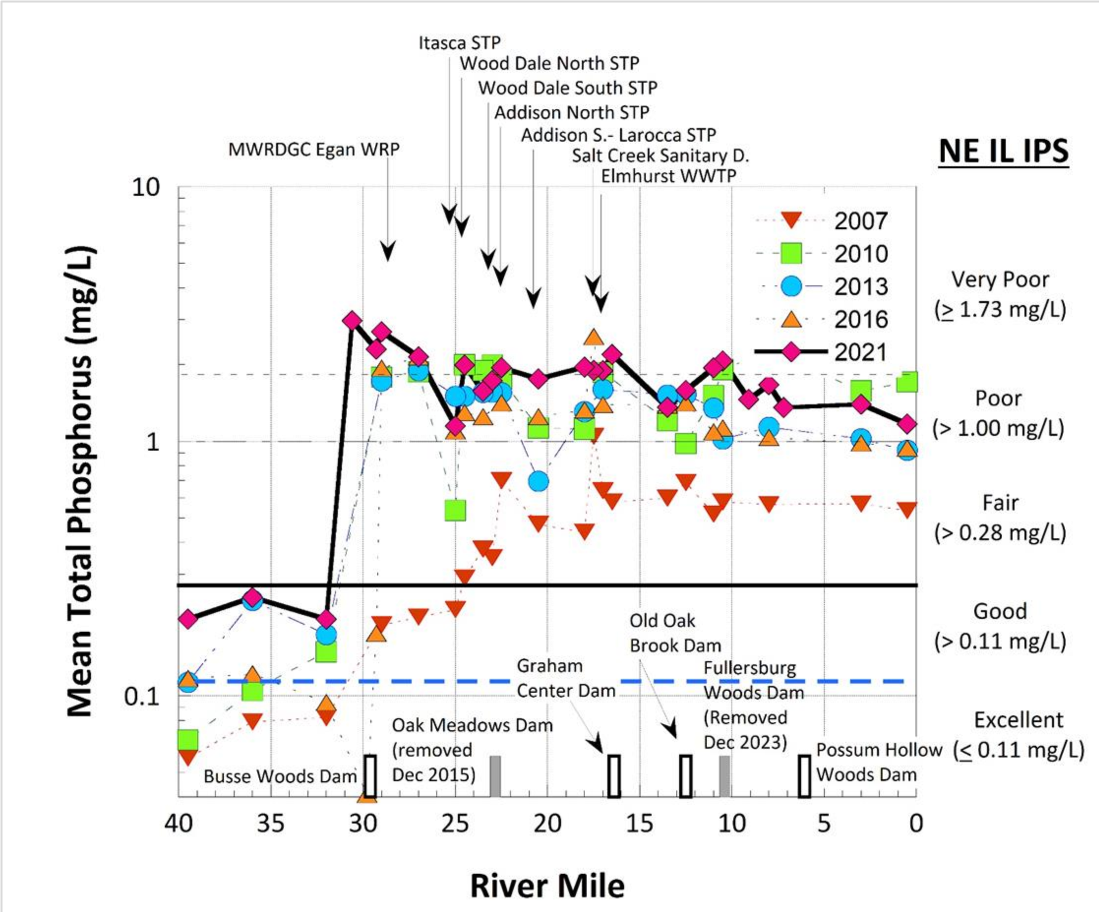


Figure 37. Salt Creek mean instream TP concentrations for Basin Assessment years 2007, 2010, 2013, 2016, and 2021.

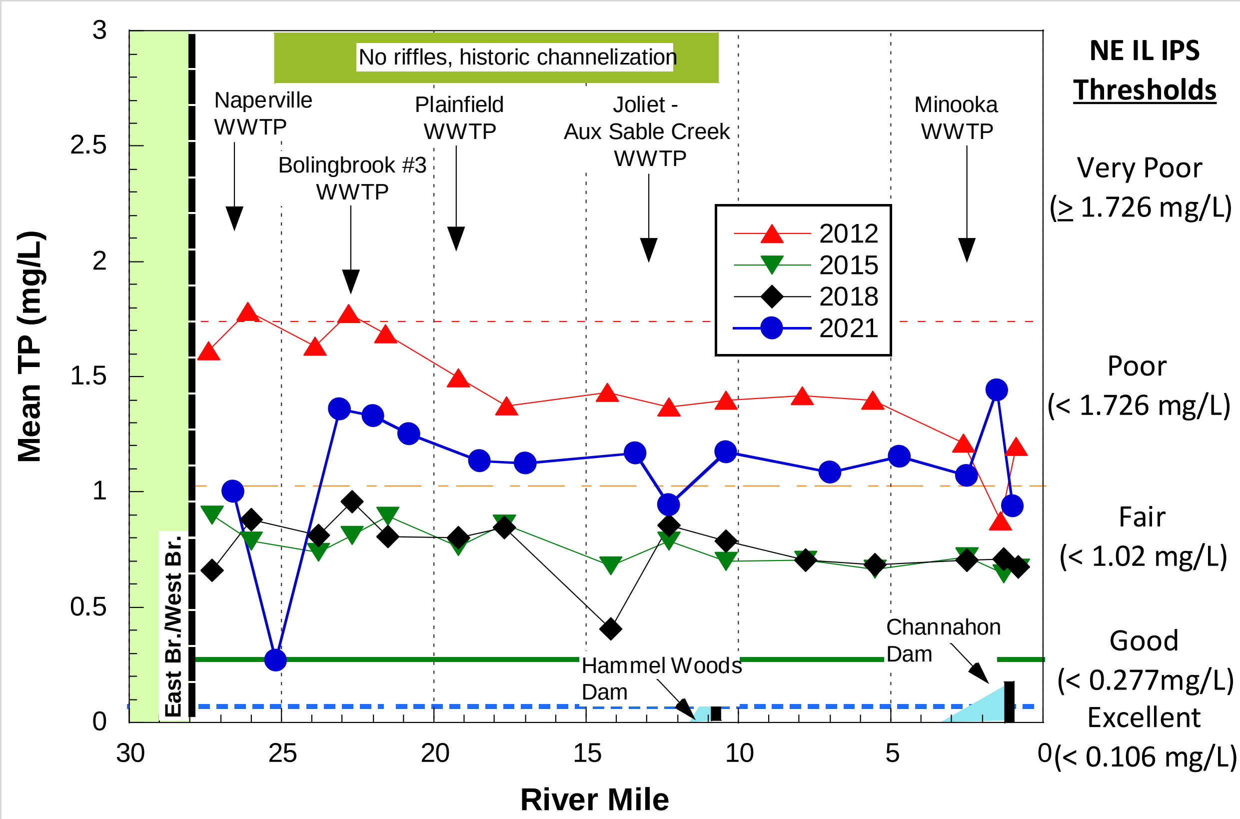


Figure 38. Lower DuPage River mean instream TP concentrations from Basin Assessment years 2012, 2015, 2018, and 2021 (downstream of the East and West Branches of the DuPage River).

During the 2007 assessment on Salt Creek, the typically observed pattern of higher TP concentration downstream of the Egan WRP at river mile 29 was absent (Figure 37). This was due to a temporary demonstration project conducted at the Egan WRP from February 5, 2007, to December 23, 2008, when the plant operated to achieve an effluent TP limit of 0.50 mg/L via chemical addition. During the 2007 basin assessment period (June to September), the WWTP discharge mean effluent concentration was 0.51 mg/L TP, compared to more typical effluent TP concentrations of 4.27 mg/L (for 2006, Zhang et al. 2010 and MWRDGC-supplied data). This TP reduction at the Egan WRP, which typically supplies over 50% of total WWTP effluent discharged to the Salt Creek basin, resulted in an observable decrease in TP concentrations downstream of the plant, from 1–2 mg/L in the no-action years to 0.2–0.3 mg/L during the project year. The impacts of the reduction were observed all the way to the mouth of the river (Figure 37). While temporary, this demonstration project clearly illustrates the potential for reductions in TP effluent concentrations to influence mainstem ambient TP concentrations.

The year-to-year variations from 2007 to 2022 in the mainstem TP concentrations (with the exception of 2007 for Salt Creek due to the Egan WRP demonstration project) exhibit an inverse relationship with streamflow. For example, the highest TP concentrations in the West Branch DuPage River were observed in 2012, the same year that the waterway experienced the lowest mean flows of all the assessment years. The lowest concentrations in the West Branch were observed for calendar years 2015 and 2020, which were the two assessment years with the highest annual flows.

Table 31 lists the mean annual flow for each basin for 2000–2021 and the mean TP concentrations for mainstem and tributary monitoring sites for the assessment years. Additional flow statistics for 2000–2021 are shown in Table 32. Mainstem TP concentrations fall in all mainstem data sets as flows increase. As

Table 31 shows, the same inverse relationship exists in tributaries except for the West Branch, whose tributaries show a modest increase in TP concentrations at higher flows.

With the exception of Salt Creek during 2007 due to the Egan WRP demonstration project, tributaries consistently had lower TP concentrations than mainstems (Figure 39). Figure 40 through Figure 43 show the distribution of TP concentrations for all mainstem and tributary sites for each basin for all assessment years. For the various assessment year periods, mean TP concentrations for all the waterways ranged from 0.078–0.94 mg/L for tributaries and 0.90–1.29 mg/L for mainstems (Table 31). The increased concentrations in the mainstems are due to their relatively higher contribution from WWTP effluent flows. Table 32 shows mean TP concentrations for tributaries and mainstems by mean annual flow, demonstrating again the variation between the two classes of sites and the impact of annual flow levels on ambient TP concentrations.

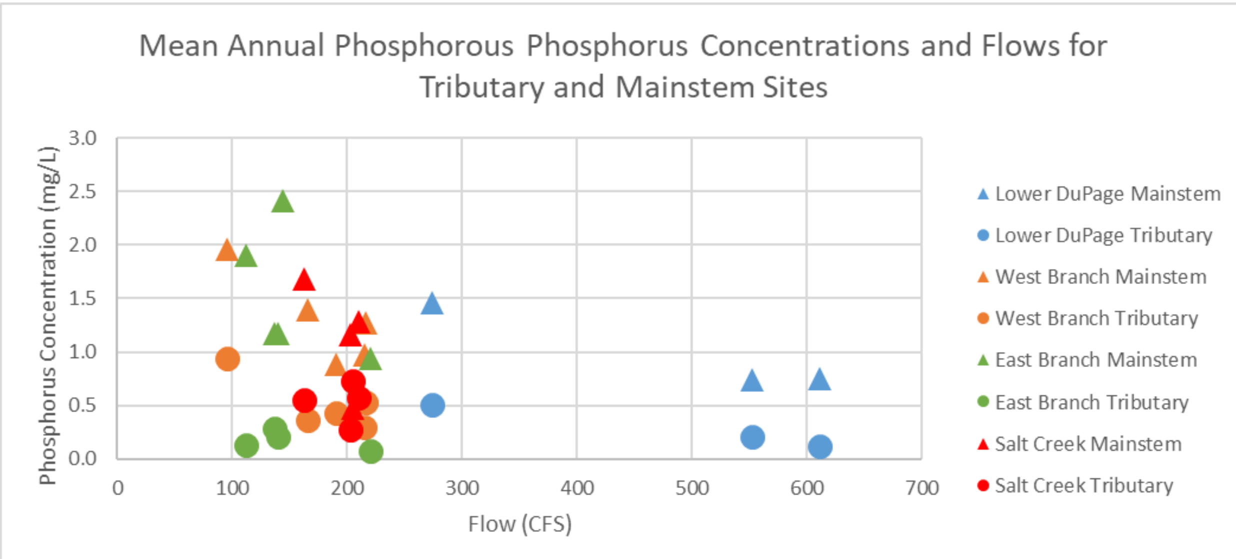


Figure 39. Mean annual TP concentrations for mainstem and tributary sites relative to streamflow for each basin assessment year by watershed.

Table 31. Mean annual flow (cfs) and mean annual phosphorus concentrations[1] (mg/L) for mainstem river sites (mainstem) and tributary river sites (tributaries) in the East Branch, West Branch, and Lower DuPage rivers and in Salt Creek

	East Branch DuPage River			West Branch DuPage River			Salt Creek			Lower DuPage River		
Year	Flow	Mainstem TP	Tributary TP	Flow	Mainstem TP	Tributary TP	Flow	Mainstem TP	Tributary TP	Flow	Mainstem TP	Tributary TP
2000	101	-	-	126	-	-	169	-	-	389	-	-
2001	124	-	-	207	-	-	223	-	-	491	-	-
2002	99	-	-	151	-	-	180	-	-	387	-	-
2003	92	-	-	117	-	-	161	-	-	349	-	-
2004	99	-	-	135	-	-	164	-	-	394	-	-
2005	80	-	-	96	-	-	119	-	-	309	-	-
2006	122	-	-	166	1.40	0.36	209	-	-	487	-	-
2007	111	1.90	0.14	175	-	-	204	0.47	0.72	475	-	-
2008	153	-	-	242	-	-	257	-	-	666	-	-
2009	154	-	-	216	1.28	0.53	260	-	-	679	-	-
2010	140	-	-	192	-	-	207	-	-	553	-	-
2011	140	1.17	0.21	210	-	-	235	-	-	612	-	-
2012	73	-	-	95	1.96	0.94	119	-	-	273	1.46	0.51
2013	144	-	-	194	-	-	210	1.28	0.58	539	-	-
2014	137	1.18	0.29	182	-	-	206	-	-	536	-	-
2015	137	-	-	190	0.88	0.43	218	-	-	552	0.74	0.21
2016	135	-	-	175	-	-	202	1.16	0.28	538	-	-
2017	165	-	-	213	-	-	249	-	-	651	-	-
2018	161	-	-	220	-	-	292	-	-	611	0.75	0.12
2019	220	0.94	0.07	287	-	-	331	-	-	836	-	-
2020	161	-	-	215	0.98	0.30	243	-	-	568	-	-
2021	103	-	-	119	-	-	162	1.68	0.55	368	-	-
TP Statistics:	**MAINSTEM** Mean: 1.22 Median: 1.00 Samples: 719		**TRIBUTARY** Mean: 0.18 Median: 0.10 Samples: 222	**MAINSTEM** Mean: 1.29 Median: 1.16 Samples: 965		**TRIBUTARY** Mean: 0.50 Median: 0.13 Samples: 353	**MAINSTEM** Mean: 1.20 Median: 1.04 Samples: 721		**TRIBUTARY** Mean: 0.52 Median: 0.21 Samples: 393	**MAINSTEM** Mean: 0.90 Median: 0.89 Samples: 397		**TRIBUTARY** Mean: 0.25 Median: 0.08 Samples: 204

[1] Deviation above the watershed threshold of 0.28 mg/L TP is denoted by color: red (result > 0.28 + 0.50 mg/L) and orange (result 0.28 + 0.01 to 0.28 + 0.50 mg/L).

Table 32. Annual flow statistics 2000–2022 at the most-downstream USGS gage for each waterway

Flow Statistic	Lower DuPage	West Branch	East Branch	Salt Creek
USGS Gage	**05540500**	**05540130**	**05540250**	**05531500**
Minimum (cfs)	273	95	73	119
25th Percentile (cfs)	392	143	102	175
Median (cfs)	536	182	135	207
Average (cfs)	513	178	130	210
75th Percentile (cfs)	590	212	148	239
Maximum (cfs)	836	287	220	331
Model Year	2018	2020	2019	2016
Model Year Flow	611	215	220	202
Model Year Flow Statistic	75th Percentile	~75th Percentile	Maximum	Median

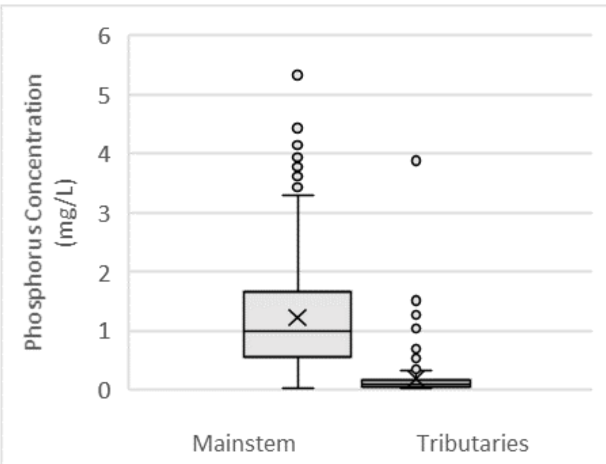


Figure 40. Box plots of TP concentrations in the mainstem and tributaries of the East Branch DuPage River during 2007–2019.

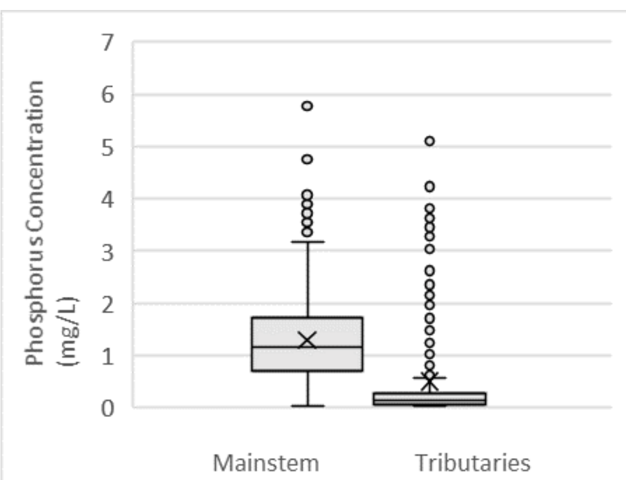


Figure 41. Box plots of TP concentrations in the mainstem and tributaries of the West Branch DuPage River during 2006–2020.

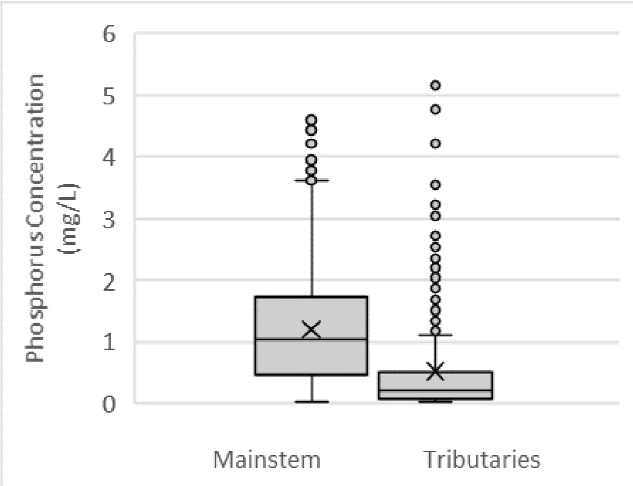


Figure 42. Box plots of TP concentrations in the mainstem and tributaries of Salt Creek during 2007–2021.

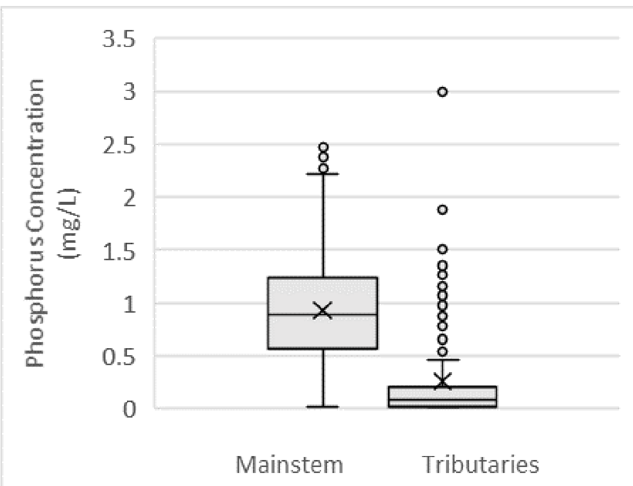


Figure 43. Box plots of TP concentrations in the mainstem and tributaries of the Lower DuPage River during 2012–2018.

6.2 TOTAL PHOSPHORUS SOURCES

To understand these systems better, it is valuable to not only to visualize instream TP concentrations spatially across the watershed (Figure 44), but also to explicitly compare instream TP concentrations from mainstem sites and tributary sites but also to further parse the data between monitoring locations that are influenced by wastewater (downstream of a WWTP outfall) and those not influenced by wastewater (these urban sites are a product of background and MS4 flows only). This data evaluation reveals a marked difference between these two types of sites, emphasizing the impact of WWTPs on instream TP concentrations. Table 33 shows the mean TP concentrations for urban sites and WWTP-influenced sites paired with annual mean flow data for each basin by year. Mean TP concentrations at sites across all watersheds downstream of WWTPs range from 0.71 mg/L to 2.12 mg/L, while sites not influenced by WWTPs experience TP concentrations nearly an order of magnitude lower, 0.03 mg/L to 0.53 mg/L (Figure 45).

Comparing the previous information from Section 6.1 of TP differences on mainstems and tributaries (Table 31 and box plots Figure 40 through Figure 43) and this Section 6.2 on differences impacted by WWTPs or not (Table 33 and box plots Figure 46 through Figure 49), the differences in magnitude of the various phosphorus sources become more clearly defined. Tributary sites reasonably approximate urban sources, and the dominance of WWTP inputs becomes even more apparent when sites influenced by them are isolated. Viewing the annual means for the two sets of sites by year (Table 32), in total aggregate (box plots Figure 46 through Figure 48 and Table 33) or geographically (Figure 44) demonstrates that waters downstream of WWTPs outfalls have a TP concentration significantly above the watershed threshold of 0.28 mg/L in all years.

In contrast, the inverse is observed at urban sites, with all years except two had annual mean concentrations below the threshold. Only West Branch DuPage River 2012 and Salt Creek 2021 had mean concentrations above the threshold (0.33 mg/L and 0.53 mg/L, respectively) at the urban sites. For the West Branch, this was 95 cfs—the lowest flow observed in the 21-year period examined for this NIP. On Salt Creek, the flow of 162 cfs was the lowest in the period that coincided with an assessment year; lower flows were observed in 2003 (161 cfs) and 2012 (119 cfs), but flows in 2021 were still comfortably below the 25th percentile flow for the basin (Table 32). Similarly, 2012 was also the lowest flow year in the Lower DuPage River (273 cfs), but the urban TP concentrations were comfortably below the watershed threshold at 0.21 mg/L.

This analysis suggests that the watershed threshold is invariably exceeded downstream of WWTPs but is met in sites with only urban flow as long as the flow rate is above the 25th percentile of flows set out in Table 32. This suggests that meeting the threshold will rely on reductions at WWTPs.

When trying to interpret the potential impacts of TP on aquatic life, it is important to explore both the mass of TP loading from various sources and how TP concentrations vary spatially across the watersheds. The pattern of increasing TP concentrations downstream of WWTPs on both the mainstems and tributaries is evident in Section 6.1.

Table 33. Mean annual flow (cfs) and mean annual phosphorus concentrations[1] (mg/L) for sites not impacted by WWTPs (urban) and impacted by WWTPs (WWTP) throughout the East Branch, West Branch, and Lower DuPage rivers and Salt Creek

	East Branch DuPage River			West Branch DuPage River			Salt Creek			Lower DuPage River		
Year	Flow	Urban TP	WWTP TP	Flow	Urban TP	WWTP TP	Flow	Urban TP	WWTP TP	Flow	Urban TP	WWTP TP
2000	101	-	-	126	-	-	169	-	-	389	-	-
2001	124	-	-	207	-	-	223	-	-	491	-	-
2002	99	-	-	151	-	-	180	-	-	387	-	-
2003	92	-	-	117	-	-	161	-	-	349	-	-
2004	99	-	-	135	-	-	164	-	-	394	-	-
2005	80	-	-	96	-	-	119	-	-	309	-	-
2006	122	-	-	166	0.23	1.42	209	-	-	487	-	-
2007	111	0.14	1.80	175	-	-	204	0.10	0.69	475	-	-
2008	153	-	-	242	-	-	257	-	-	666	-	-
2009	154	-	-	216	0.13	1.34	260	-	-	679	-	-
2010	140	-	-	192	-	-	207	-	-	553	-	-
2011	140	0.13	1.18	210	-	-	235	-	-	612	-	-
2012	73	-	-	95	0.33	2.12	119	-	-	273	0.21	1.41
2013	144	-	-	194	-	-	210	0.13	1.32	539	-	-
2014	137	0.16	1.21	182	-	-	206	-	-	536	-	-
2015	137	-	-	190	0.20	0.95	218	-	-	552	0.08	0.72
2016	135	-	-	175	-	-	202	0.11	1.15	538	-	-
2017	165	-	-	213	-	-	249	-	-	651	-	-
2018	161	-	-	220	-	-	292	-	-	611	0.03	0.71
2019	220	0.07	0.75	287	-	-	331	-	-	836	-	-
2020	161	-	-	215	0.11	0.98	243	-	-	568	-	-
2021	103	-	-	119	-	-	162	0.53	1.44	368	-	-
TP Statistics:	URBAN Mean: 0.12 Median: 0.10 Samples: 213		WWTP Mean: 1.22 Median: 1.02 Samples: 728	URBAN Mean: 0.19 Median: 0.12 Samples: 304		WWTP Mean: 1.35 Median: 1.21 Samples: 1,014	URBAN Mean: 0.23 Median: 0.08 Samples: 269		WWTP Mean: 1.19 Median: 1.03 Samples: 842	URBAN Mean: 0.09 Median: 0.06 Samples: 150		WWTP Mean: 0.90 Median: 0.86 Samples: 450

[1] Deviation above the watershed threshold of 0.28 mg/L TP is denoted by color: red (result > 0.28 + 0.50 mg/L) and orange (result 0.28 + 0.01 to 0.28 + 0.50 mg/L).

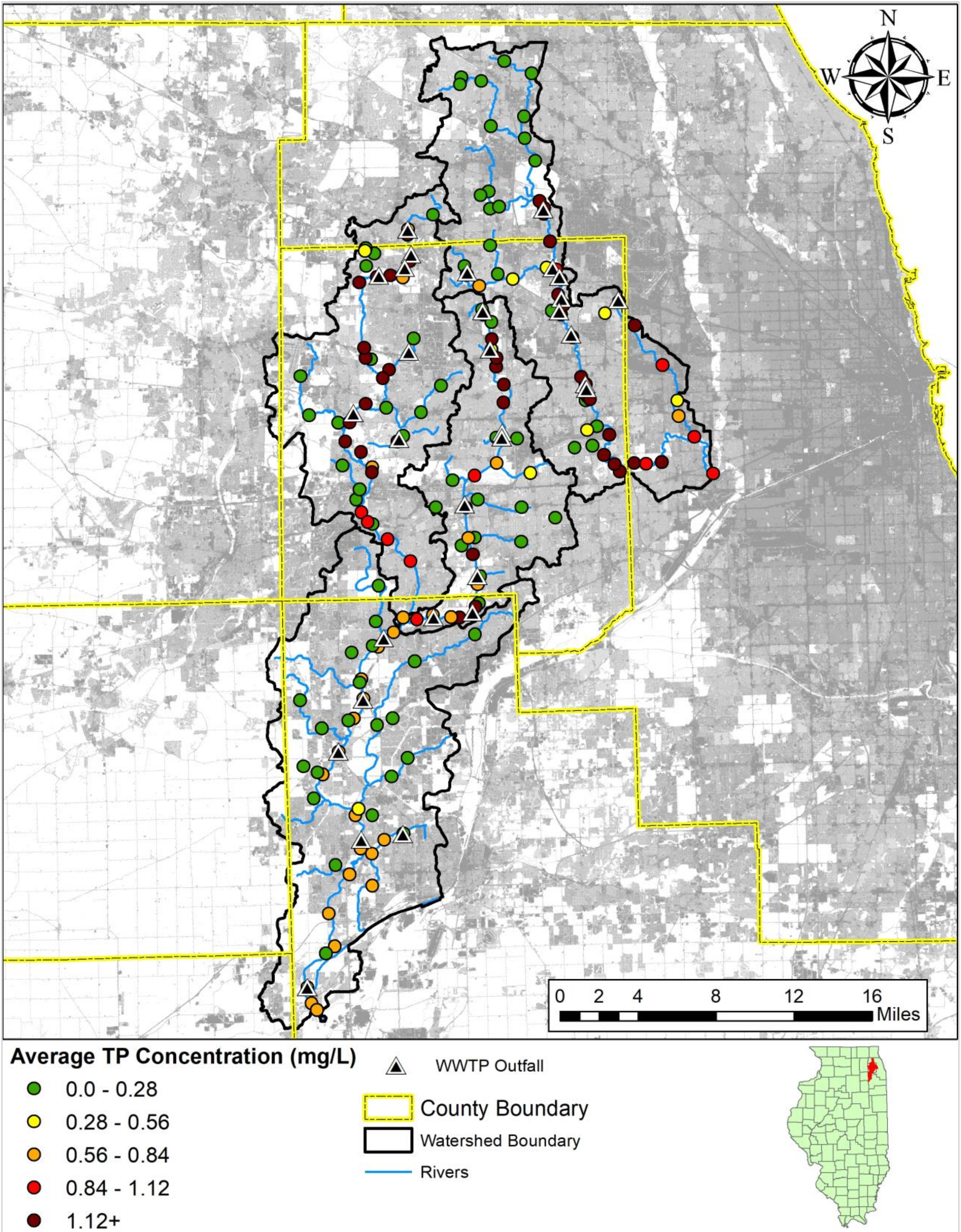


Figure 44. Mean instream TP concentrations for the DuPage and Salt Creek watersheds, 2006–2021.

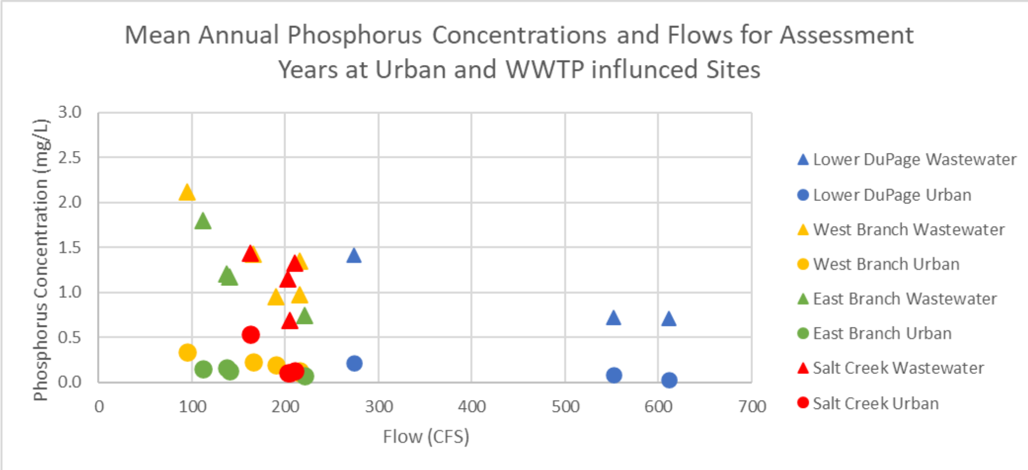


Figure 45. Mean annual TP concentrations for mainstem and tributary sites relative to streamflow for each basin assessment year by watershed.

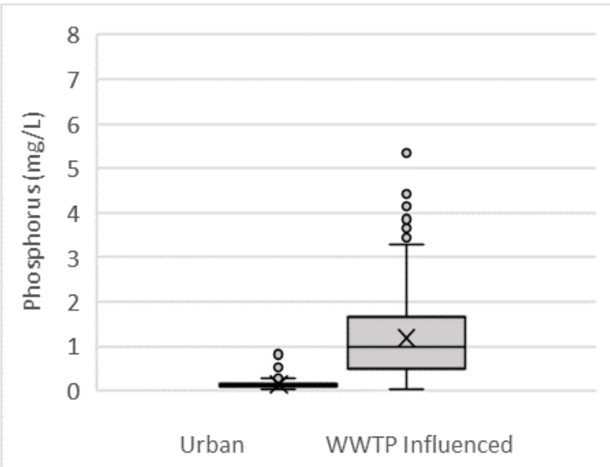


Figure 46. Box plots of TP concentrations in urban and wastewater-influenced segments of the East Branch DuPage River during 2007–2014.

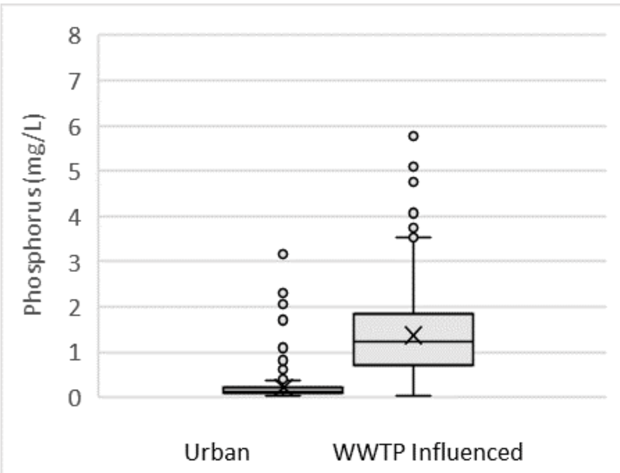


Figure 47. Box plots of TP concentrations in urban and wastewater-influenced segments of the West Branch DuPage River during 2006–2015.

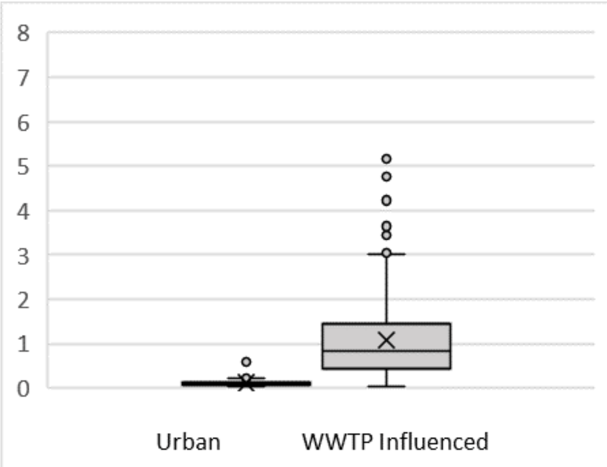


Figure 48. Box plots of TP concentrations in urban and wastewater-influenced segments of Salt Creek during 2007–2021.

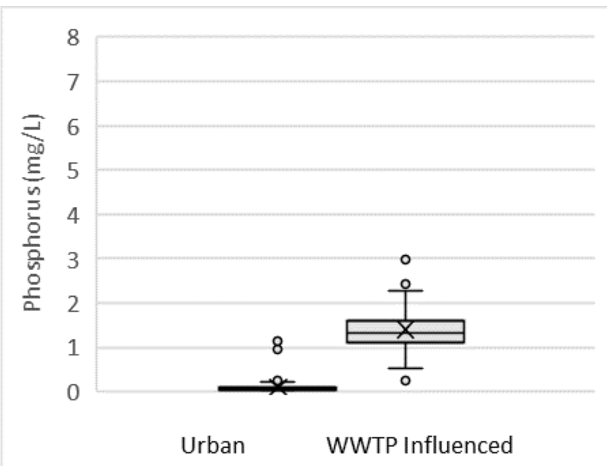


Figure 49. Box plots of TP concentrations in urban and wastewater-influenced segments of the Lower DuPage River during 2012–2018.

Monthly DMRs are submitted to IEPA by NPDES-permitted WWTPs and include records of effluent flow and water quality. Parameters required for monitoring and reporting are selected by IEPA based on specific WQS (e.g., DO) or due to special attention by the State of Illinois (e.g., TP). Table 34 shows a subset of DMR data, including flow and mean TP concentration and loading from WWTPs for selected years. As illustrated by this observed data from the WWTPs, the average effluent ranges from 0.48 mg/L to 5.46 mg/L TP, and the flows range from 0.10 MGD to 23.71 MGD. The scales of both flow and TP concentrations further support the hypothesis that WWTPs are the main contributors of instream ambient TP concentrations.

An examination of flow and water quality data to support a TP modeling effort (see Section 7.1) for the mainstems, tributaries, and WWTPs for each basin was conducted to calculate the relative contributions that various sources play in both flow and TP loading to the mainstems (Figure 50 through Figure 53). The allocations of different contributions were calculated using a water-balance approach, attributing annual average flows to major tributaries and headwaters based on observed flows from WWTP DMRs and USGS flow gages throughout the watersheds. The most recent year of expanded monitoring across each specific watershed available at the time of analysis (2019 for East Branch, 2021 for West Branch, 2022 for Lower DuPage, and 2016 for Salt Creek) were used to calculate annual flows and TP loading.

After calculating average flows from the various contributors for each model year (aggregated as either WWTP or nonpoint sources, including MS4s), TP loading was estimated based on average observed TP concentrations from DMR data for WWTPs and from the most downstream bioassessment tributary monitoring site for nonpoint sources. WWTPs that discharge to tributaries (Wheaton Sanitary District and Carol Stream Water Reclamation Facility on the West Branch DuPage River, Roselle Botterman, and Bensenville Sewage Treatment Plant [STP] on Salt Creek, and Crest Hill on the Lower DuPage River) are not explicitly accounted for but are included implicitly within the “tributaries with WWTPs” sections (yellow wedge).

The graphic illustrations of the flow and TP load contributions show that while WWTPs contribute from 13% (West Branch DuPage River) to more than 28% (Salt Creek) of annual flow, they are the source of approximately 85% of the ambient TP in the DuPage mainstem and more than 80% of the TP in the Salt Creek basin annually. These percent contributions from WWTPs increase during dry summer months when background and MS4 inputs (urban flow) are lowest.

Table 34. Mean effluent flow, design average flow, mean annual TP concentration, and total annual TP load by WWTP as simulated for each QUAL2Kw water quality model year (Section 7.1).

Watershed (Model Year)	WWTP	NPDES ID	Design Average Flow (MGD)	Mean Flow (MGD)	Mean TP (mg/L)	Annual TP Load (kg/yr)
East Branch DuPage River (2019)	Bloomingdale-Reeves WRF	IL0021130	3.45	2.97	2.87	11,305
	Glendale Heights STP	IL0028967	5.26	3.81	2.41	12,157
	Glenbard WW Authority STP	IL0021547	16	10.00	2.43	32,473
	Downers Grove Sanitary District	IL0028380	11	12.46	2.86	47,072
	DuPage County Woodridge	IL0031844	12	10.77	1.84	26,097
	Bolingbrook STP #1	IL0032689	2.04	1.80	5.46	13,671
	Bolingbrook STP #2	IL0032735	3	3.28	3.34	15,163
West Branch DuPage River (2020)	MWRDGC Hanover Park WRP	IL0036137	12	7.59	1.91	17,938
	Roselle – J Botterman WWTP	IL0048721	1.22	0.78	3.79	4,007
	Hanover Park STP #1	IL0034479	2.42	1.25	2.43	3,969
	Bartlett WWTP	IL0027618	3.679	2.37	2.85	8,610
	West Chicago/Winfield Wastewater Authority RWTP	IL0023469	7.64	6.15	1.91	14,585
	Carol Stream STP	IL0026352	6.5	3.61	3.23	16,111
	Wheaton Sanitary District	IL0031739	8.9	6.57	2.92	26,507
Salt Creek (2016)	MWRDGC Egan WRP	IL0036340	30	23.71	3.18	102,393
	Itasca STP [1]	IL0079073	3.2	1.65	0.57	1,330
	Wood Dale North STP	IL0020061	1.97	1.61	3.20	6,781
	Wood Dale South STP	IL0034274	1.13	0.34	2.26	1,059
	Addison North STP	IL0033812	5.3	3.65	3.58	16,824
	Addison South – AJ LaRocca	IL0027367	3.2	2.06	2.92	7,748
	Salt Creek Sanitary District	IL0030953	3.3	3.70	2.62	12,898
	Elmhurst WRF	IL0028746	8	7.38	2.56	25,132
	Roselle-Devlin STP	IL0030813	2	0.78	3.12	3,362
	DuPage County Nordic	IL0028398	0.77	0.24	1.06	352
	Bensenville STP [1]	IL0021849	4.7	3.91	1.03	5,564
Lower DuPage River (2018)	Naperville Springbrook WRC	IL0034061	26.25	19.71	2.79	75,328
	Bolingbrook STP #3	IL0069744	2.8	3.19	3.32	14,905
	Plainfield STP [1]	IL0074373	7.5	4.59	0.58	3,614
	Joliet Aux Sable Plant [1]	IL0076414	7.7	7.12	1.85	17,018
	Camelot	IL0045381	0.1	0.11	1.60	222
	Minooka STP [1]	IL0055913	2.2	1.03	0.48	635
	Crest Hill West STP	IL0021121	1.3	1.12	4.28	6,623

Note:
[1] These WWTPs have implemented their NPDES permit limit of 1.0 mg/L TP monthly average.

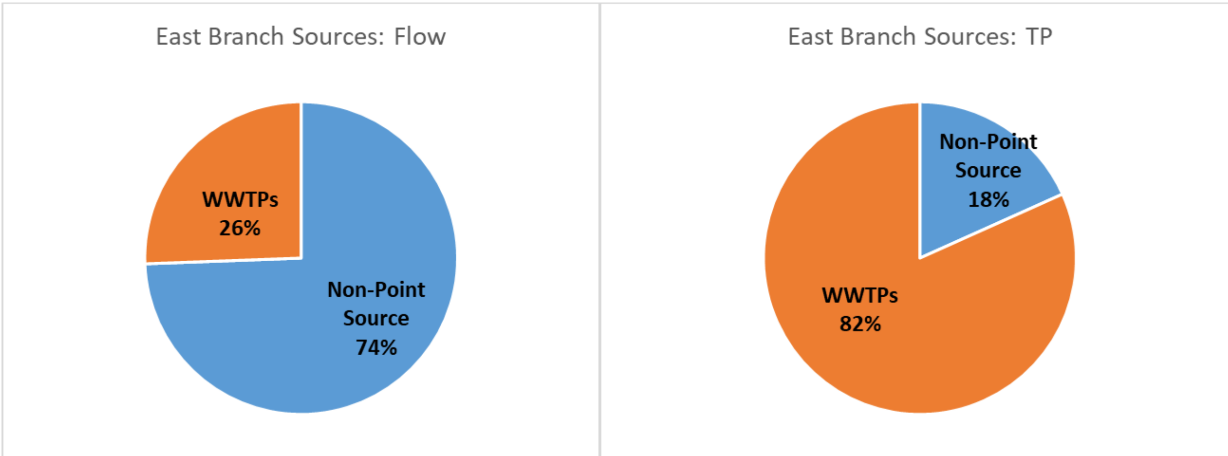


Figure 50. Distribution of source flow and TP loading to mainstem (2019): East Branch DuPage River.

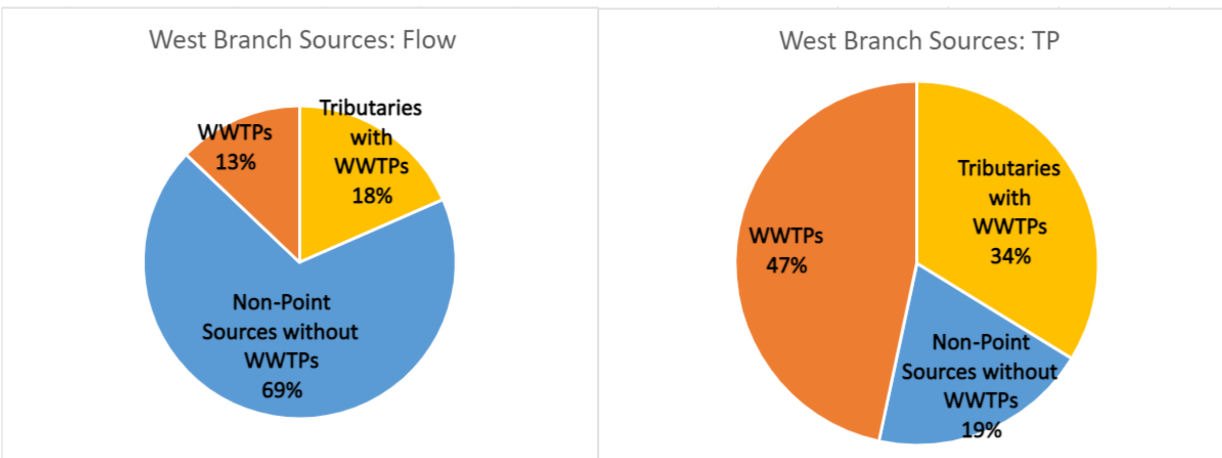


Figure 51. Distribution of source flow and TP loading to mainstem (2021): West Branch DuPage River.

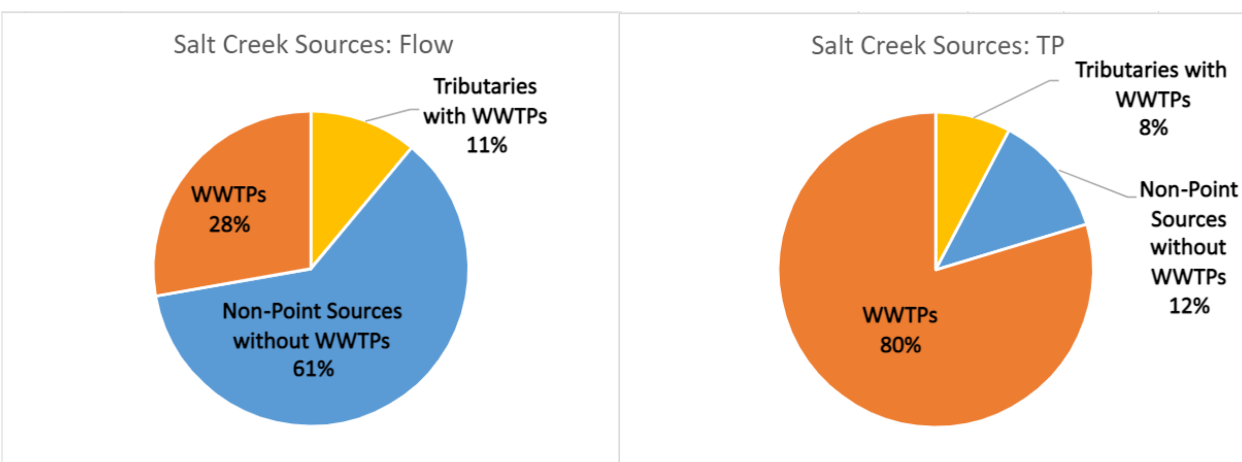
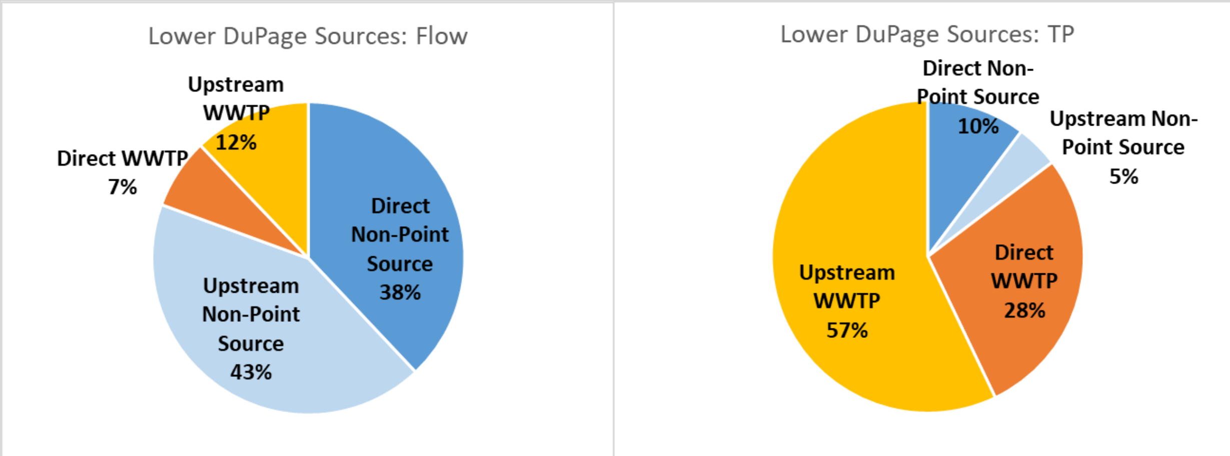


Figure 52. Distribution of source flow and TP loading to mainstem (2016): Salt Creek.



Note: Rock Run was not included in the tabulations of point sources because the inflow location is at the furthest downstream location on the mainstem.

Figure 53. Distribution of source flow and TP loading to mainstem (2020): Lower DuPage River.

6.3 CHANGES TO SOURCES POST-ANALYSIS

During the period covered by this analysis (2006–2021) five WWTPs initiated TP removal processes: Itasca STP (IL0079073; 2012), Bensenville STP (IL0021849; 2019), Plainfield STP (IL0074373; 2011), Joliet Aux Sable Plant (IL0076414; 2020), and Minooka STP (IL0055913; 2006–2007). With the exception of the Joliet Aux Sable Plant, these reductions are included in the data presented in Table 34 and Figure 50 through Figure 53, all of which were compiled using data gathered after treatment implementation. The TP limits were mandated as the WWTPs in question were undergoing plant expansions. The other WWTPs listed in Figure 38 operated under the 2015 Special Condition and did not undergo expansion in that period.

The 2015 Special Conditions allowed member WWTPs of both watershed groups to extend the implementation schedule of adopting a 1.0 mg/L effluent standard in return for implementing their watershed plan priorities. The delay was 10 years for plants adopting a chemical phosphorus removal treatment and 11 years for those who are using primarily biological phosphorus removal. In 2021, IEPA agreed to extend this condition for another permit cycle (five years). Six WWTPs have opted out of this extension (Table 35) and remain on the original permitted implementation schedule. These six WWTPs will implement an interim monthly average TP effluent limit of 1.0 mg/L between 2025 and 2028. All WWTPs listed in Table 35 discharge to the DuPage River basin, and with a conservative effective effluent concentration of 1.0 mg/L, reduce total annual load in the DuPage Basin by 57,752 kg (127,321.4 lbs).

Table 35. WWTPs adopting an interim 1.0 mg/L TP limit, with estimated TP load reductions relative to flows and loads simulated for their respective QUAL2Kw water quality modeling year

Watershed (Model Year)	Facility	NPDES ID	Design Average Flow (MGD)	Mean Flow Modeled (MGD)	Mean TP (mg/L)	Annual TP Load (kg/yr)	Date Limit Changes to 1.0 mg/L TP	Annual TP Load for 1.0 mg/L TP Limit	Percent Load Reduction (Average)
East Branch DuPage (2019)	Glendale Heights STP	IL0028967	5.26	3.81	2.48	12,157	10/01/2025	5,264	57%
West Branch DuPage (2020)	West Chicago/ Winfield Wastewater Authority Regional WWTP	IL0023469	7.64	6.15	1.91	14,585	10/02/2025	8,491	42%
	Bartlett WWTP	IL0027618	3.679	2.37	2.85	8,610	10/01/2025	3,277	62%
	Wheaton Sanitary District	IL0031739	8.9	6.57	2.92	26,507	08/02/2026	9,078	66%
Lower DuPage (2018)	Naperville Springbrook WRC	IL0034061	26.25	19.71	2.79	75,328	12/31/2028	27,230	64%
	Bolingbrook STP #3	IL0069744	2.8	3.19	3.32	14,905	06/30/2025	4,406	70%

WWTPs adopting the 2021 Special Conditions extension will have their existing scheduled permit dates for implementing the 1.0 mg/L monthly average *superseded* by the schedule and effluent limit set out in this NIP. Per the 2021 Extension permit language (F1 (chemical phosphorus removal) and F2 (biological phosphorus removal) of the Special Conditions):

> *"If the Permittee will use chemical precipitation (or Biological removal) to achieve the limit, the effluent limitation shall be 1.0 mg/L on a monthly average basis, effective October 1, 2028,[11] (2029 for biological conditions) or in accordance with the implementation schedule included in the Nutrient Implementation Plan unless the Agency approves and reissues or modifies the permit to include an alternate phosphorus reduction program or limit pursuant to paragraphs G.1 thru G.8 below".*

To balance the competing funding demands of meeting the watershed TP threshold (Section 5.1) and essential habitat improvements (Section 7.1.2), the NIP is recommending a new implementation schedule for TP control at WWTPs. An implementation schedule for all WWTPs is provided in Section 9.

[11] Effective date is for the Village of Bloomingdale and will vary between individual permits.

7 MANAGEMENT OPPORTUNITIES

The IPS Tool identified and prioritized actions and locations to maximize the aquatic biology potential throughout the DuPage and Salt watersheds. Principally, the goal was to improve overall QHEI or the component factors of QHEI at the site and watershed level. The IPS Tool methodology found TP to be a proximate stressor and identified a watershed TP threshold of 0.277 mg/L as protective of aquatic biota for the General Use standard (Section 5.1).

Like aquatic life improvement, cost-effective TP reductions and the resolution of ambient DO deficiencies demand a clear understanding of the factors contributing to such deficiencies and the sensitivity of DO to changes in the independent factors. Calibrated QUAL2Kw models were used to investigate WWTP TP effluent reductions as a way to meet the watershed threshold and predict DO sags, and to estimate the impact of WWTP loading reduction on mean daily minimum DO during the growing season.

Improving the QHEI and targeting the TP watershed threshold are complementary actions that are essential for meeting aquatic life goals. The NIP sets out a framework to implement both cost-effectively.

7.1 INTEGRATED APPROACH FOR IMPROVING AQUATIC LIFE CONDITIONS

7.1.1 Physical Conditions Impacting Dissolved Oxygen

Improving instream TP conditions (decreasing TP concentrations) is a necessary step toward improving conditions for aquatic life and DO conditions in the DuPage River and Salt Creek watersheds; however, reducing TP alone is not sufficient to meet these goals. As discussed in Sections 1.3.1 and 0 on the analysis of aquatic life, both the 2010 and 2023 IPS Tool analyses determined that multiple stressors, not just TP concentrations, contribute to observed variation in fIBI and mIBI., Other dominant stressors identified included landscape conditions (e.g., a high percentage of impervious area, the prevalence of urban land uses), habitat features (e.g., overall quality, substrate and embeddedness), chlorides, and nutrients. Further analysis with the IPS Tool indicated that landscape condition is the most dominant explanatory stressor on the observed variation in aquatic life, followed by overall and individual habitat conditions (Table 13 in Section 0).

This suggests that implementing the proposed WWTP TP effluent limits (0.35 mg/L for WWTPs in the DRSWC watersheds and 0.50 mg/L in the LDRWC watershed) will only help these waterways meet the General Use standard if TP reductions are partnered with strategic improvements to riparian and instream habitat.

Similarly, instream DO conditions can be impacted by factors other than instream TP concentrations. Instream DO conditions (average concentrations, saturation, and diel range) are also the product of multiple additional factors, including nitrogen concentrations, air and water temperature, algal respiration activities, SOD, physical reaeration due to channel bed morphology and wind, water depth, total streamflow, shading from topography and riparian vegetation, oxygen-demanding substances like organic matter, and more. A significant number of factors that influence DO concentrations are habitat variables. These parameters and changes to them can also have synergistic impacts. The QUAL2Kw modeling scenarios explored as part of the East Branch/Salt Creek Dissolved Oxygen Improvement Project (Section 1.2.2) predicted that even if oxygen-demanding substances (simulated primarily as nutrients and carbonaceous biochemical oxygen demand [CBOD]) were eliminated in WWTP effluent, DO deficits currently observed upstream of dams on the East Branch (Churchill Woods) and Salt Creek (Fullersburg Woods and Oak Meadows) remained. These modeling results indicate that the physical structures of the waterways, and not just water chemistry, are driving forces in instream DO conditions. These findings played a significant role in the IEPA's *Link Between TMDLs and NPDES Permits for Salt Creek and the East Branch of the DuPage River: A Practical Application of Adaptive Management and a Phased Approach for Meeting the DO Standard* (IEPA 2004) set forth in the DRSCW 2015 Implementation Plan (Section 1.4.1), allowing the DRSCW opportunity to pursue a TMDL alternative following the publication of the 2004 DO TMDLs (CH2MHILL 2004a, 2004b).

The updated QUAL2Kw models developed to support this NIP (Section 7.2) reinforced the findings that TP load reductions alone cannot improve instream DO concentrations sufficiently to attain the General Use standard.

Figure 54 through Figure 57 illustrate the model-predicted (simulated) DO concentration-response for each watershed for:

1. Current WWTP loading conditions (baseline)
2. Modeled scenario with WWTP effluent concentrations of TP, TN, and CBOD removed (no demand)

Results are summarized for these model applications as the average daily minimum simulated DO concentration by model reach, as averaged across the growing seasons (May–October). The lowest simulated DO conditions on the East Branch DuPage River for both "baseline" and "no demand" models occur in the impoundment formed by the Crescent Boulevard culverts (also known as Churchill Woods Lake; see Figure 54), illustrating that the impoundments' physical conditions, as opposed to water chemistry, are driving the local DO concentrations. In this area of the East Branch, the river's natural flow has been restricted, causing the water to remain in place for an extended period, leading to poor DO conditions. The slow movement of water through the impoundment allows for the accumulation and settling of organic matter, which consumes oxygen during decomposition while also covering valuable macroinvertebrate and fish habitats. Reductions of any kind to upstream WWTP oxygen-demanding substances are not predicted to be sufficient to remove the DO sag currently observed at Churchill Woods Lake. It is anticipated that removal of the impoundment will be required to restore DO in this area. QHEI scores will also respond positively to the return to natural, free-flowing conditions.

Similar to the East Branch, model results shown in Figure 56 and Figure 57 indicate that existing observable DO sags on Salt Creek and the Lower DuPage River upstream of the former Fullersburg Woods (Graue Mill) and Hammel Woods dams, respectively. The QUAL2Kw model scenarios were developed to simulate the impact of dam removals based on existing hydraulic models of physical alterations of stream configurations. These model scenarios attempt to estimate the impacts of these dam removals on instream DO conditions; however, at the time of modeling, no instream DO data were available to refine the simulation. The DRSCW and the LDRWC will continue to monitor DO concentrations at these former impoundments to document changes in conditions associated with the dam removals. It should be noted that the DO sag historically associated with the former Oak Meadows dam on Salt Creek at mile 23 and simulated in Figure 56 is no longer present based on observations since the dam's removal in 2016.

The primary simulated DO sag on the West Branch DuPage River (Figure 55) is predicted in the headwaters upstream of any WWTP discharge. The headwaters of the West Branch are in a channelized concrete ditch with intermittent flows, little to no stream structure (i.e., lacks pools and riffles), and no native riparian buffer. These headwaters are likely most impacted by low DO concentrations due to nutrients and organic matter present in urban wash-off in combination with poor reaeration resulting from low flows and flow velocities.

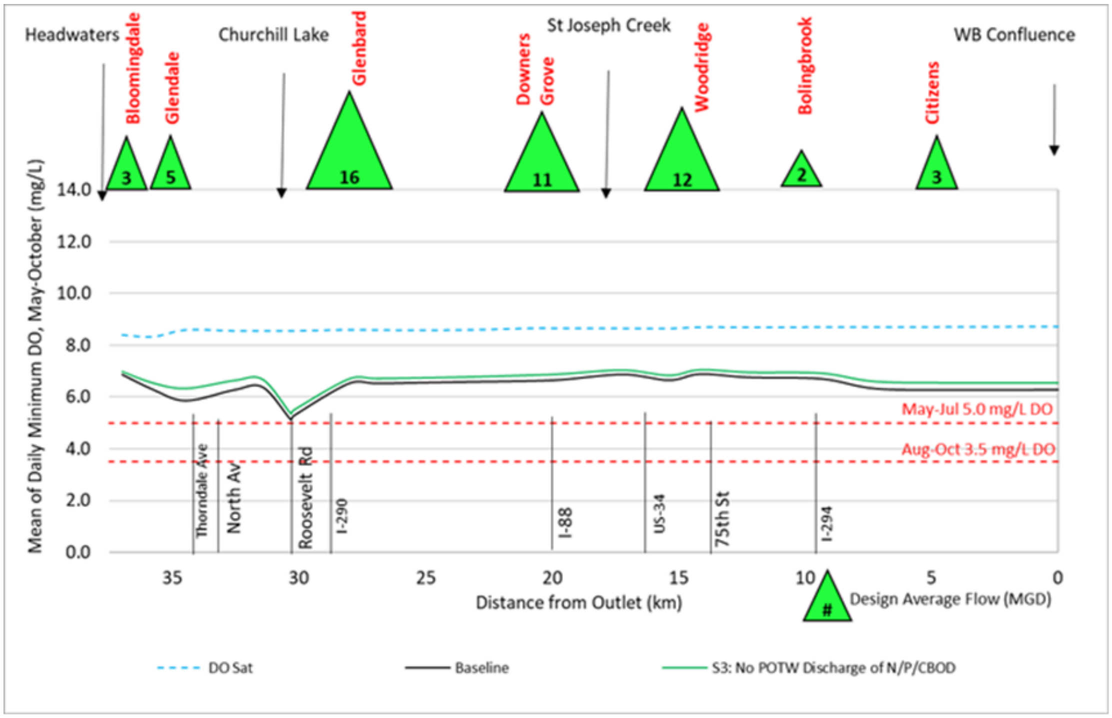


Figure 54. May–October mean of daily minimum DO concentrations longitudinally along East Branch DuPage River for baseline and for no discharge of nutrients and CBOD from WWTPs.

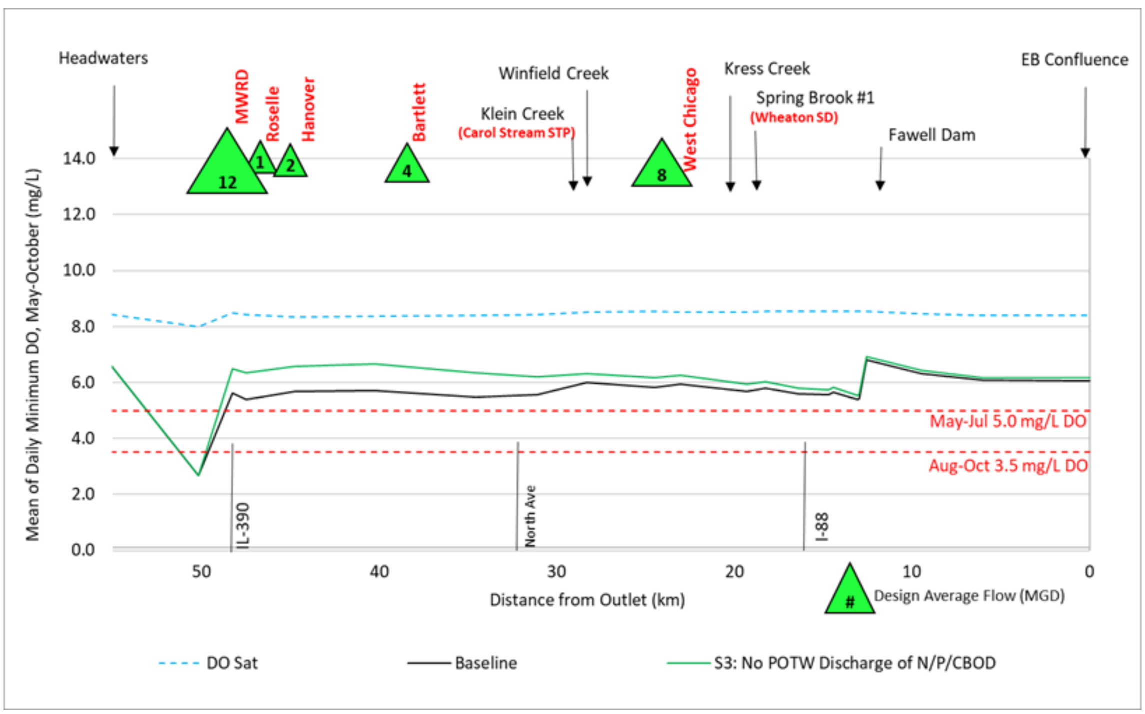


Figure 55. May to October mean of daily minimum DO concentrations longitudinally along West Branch DuPage River for baseline and for no discharge of nutrients and CBOD from WWTPs.

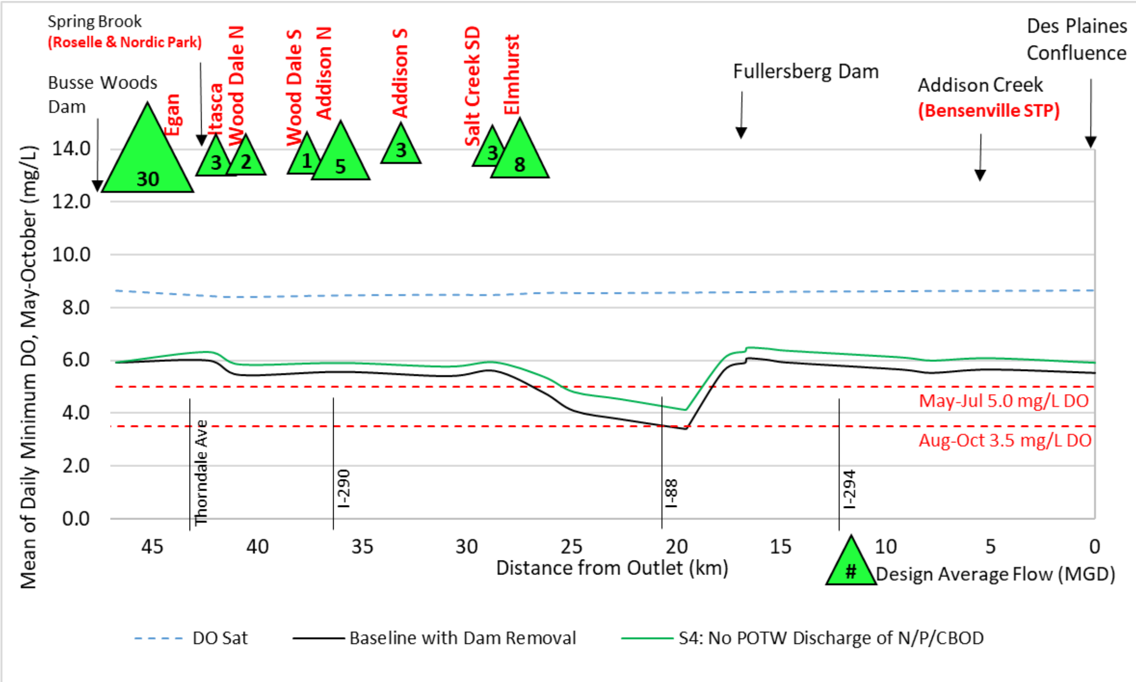


Figure 56. May to October mean of daily minimum DO concentrations longitudinally along Salt Creek for baseline and for no discharge of nutrients and CBOD from WWTPs.

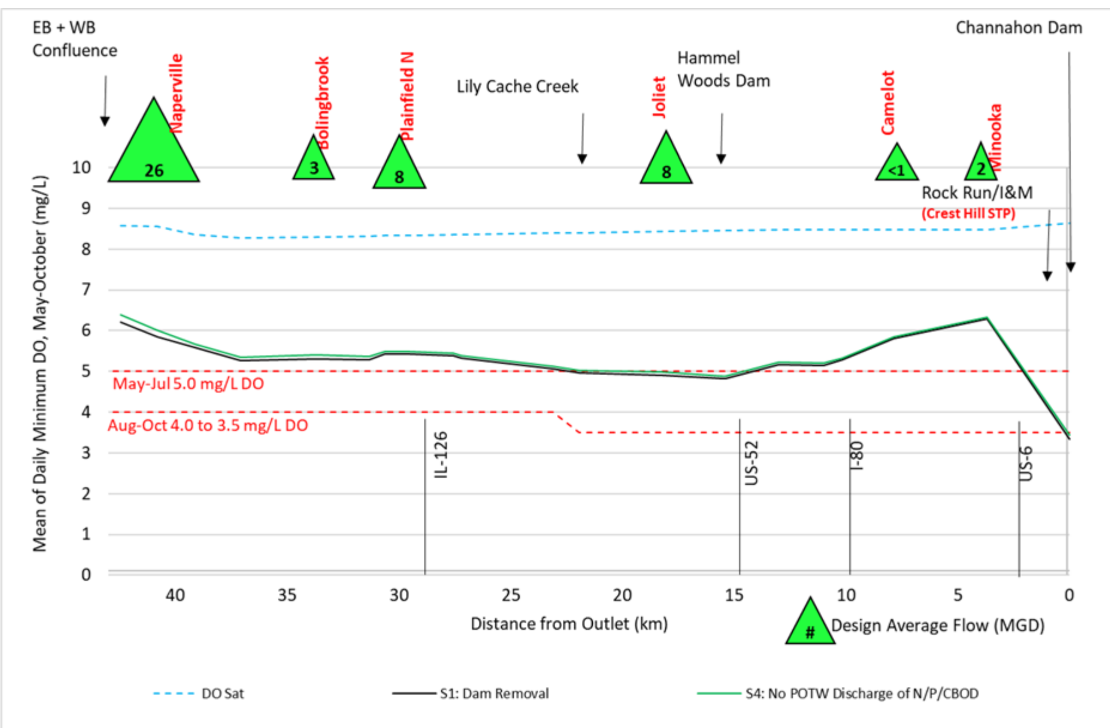


Figure 57. May to October mean of daily minimum DO concentrations longitudinally along Lower DuPage River for baseline and for no discharge of nutrients and CBOD from WWTPs.

Considering the correlation between low DO conditions and physical stream conditions in the DuPage River and Salt Creek watersheds (as supported by the IPS Tool and QUAL2Kw modeling results), this NIP makes several recommendations that are not directly related to TP loading. Instead, the recommendations are linked to the expression and assimilation of TP, the amelioration of DO sags, the improvement of habitat, and a focus on comprehensive improvements to support aquatic life.

Continuing watershed-scale aquatic life habitat improvement projects will be essential for cost-effectively improving DO, maximizing aquatic resources, and meeting the CWA's aquatic life goals. The schedule set out in Section 9 allows the DRSCW and LDRWC to continue implementing priority physical projects identified by applying the 2023 IPS Tool (see Section 0) for an additional permit cycle.

7.1.2 Practicality of Landscape and Habitat Restoration

In addition to developing stressor thresholds (Section 0 and Section 5.1 specifically for TP), applying the 2023 IPS Tool provides a framework for objectively sorting and ranking sites, reaches, and watersheds based on the potential for restoration that would bring these sites into full attainment related to existing aquatic life impairments. These quantifiable potentials for restoration or "restorability" rankings are calculated for impaired waters, while "susceptibility" and "threat" rankings are calculated for fully attaining waters. Restorability, susceptibility, and threat rankings are calculated at the site, reach, and watershed scales. The algorithm applied in the IPS Tool to develop restorability, susceptibility, and threat rankings is based on weighted scores associated with the aggregations of stressors, the magnitudes of biological departures, and the expectations for attainability with respect to the General Use standard. The basic assumption with the restorability rankings is that evaluation locations (sites, reaches, and watersheds) with the specific features are more or less likely to respond well to landscape and/or habitat restoration actions and efforts (Table 36).

Table 36. Assumptions for restorability based on landscape and/or habitat restoration activities

Likelihood of Positive Response to Restoration Activities	Stressors	Biological Impairment	Presence of Additional Factors that would Deter or Preclude Attainability
Less Likely	Relatively many stressors	More severe impairment	Irreversible factors are present
More Likely	Stressors are relatively few or no stressor present	Less severe impairment	Any factors present are reversible, or no factors are present

Another key principle of the IPS Tool is that success is more likely achieved by protecting currently attaining waters rather than attempting to restore already impaired ones. The concepts of environmental restorability, susceptibility, and threat characterization are among the most fundamental outputs of the IPS Tool framework because they provide a standardized quantifiable approach to ranking existing and potential projects and taking needed actions relative to the likelihood of success.

As most waters in the DuPage River and Salt Creek watersheds do not currently attain aquatic life designated uses, this NIP focuses on the IPS Tool rankings for restorability (as opposed to susceptibility or threat). Restorability refers to the capacity of impaired aquatic assemblages to attain the General Use standard conditions (or higher) by applying various implementation strategies (e.g., point source controls and/or best management practices [BMPs] for water quality treatment of urban stormwater). Sites with high restorability scores may already be close to the General Use standard attainment and influenced by relatively few stressors, most of which are readily reversible, or "fixable," with relatively straightforward interventions. Sites with lower restorability scores are more likely to have intractable or practically irreversible stressors (e.g., concrete channels, high urban land use in both the watershed and within riparian buffers, multiple severe stressor impairments). For each site and/or reach, specific restorability scores affect the determination of the most limiting stressors when developing restoration strategies.

The IPS Tool's restorability score's unique factors and relative weights are illustrated in Figure 58. Factors were developed from observed datasets and include:

1. The fIBI and mIBI (each ranked 1–10)
2. Percentage of sites attaining the General Use standard biological criteria for a single waterway (ranked 1–10)
3. Biological condition of sites within the same HUC12 watershed (ranked 1–10)
4. Local habitat rank (ranked 1–10)
5. Channel condition (ranked 1–20)
6. HUC12 watershed QHEI (ranked 1–20)
7. Land use within the catchment and riparian buffer (each ranked 1–10)
8. Ionic strength parameters (ranked 1–15)
9. Number of severe or intermediate chemical threshold exceedances by parameter category (e.g., nutrients, metal, and organics) (each ranked 1–10)

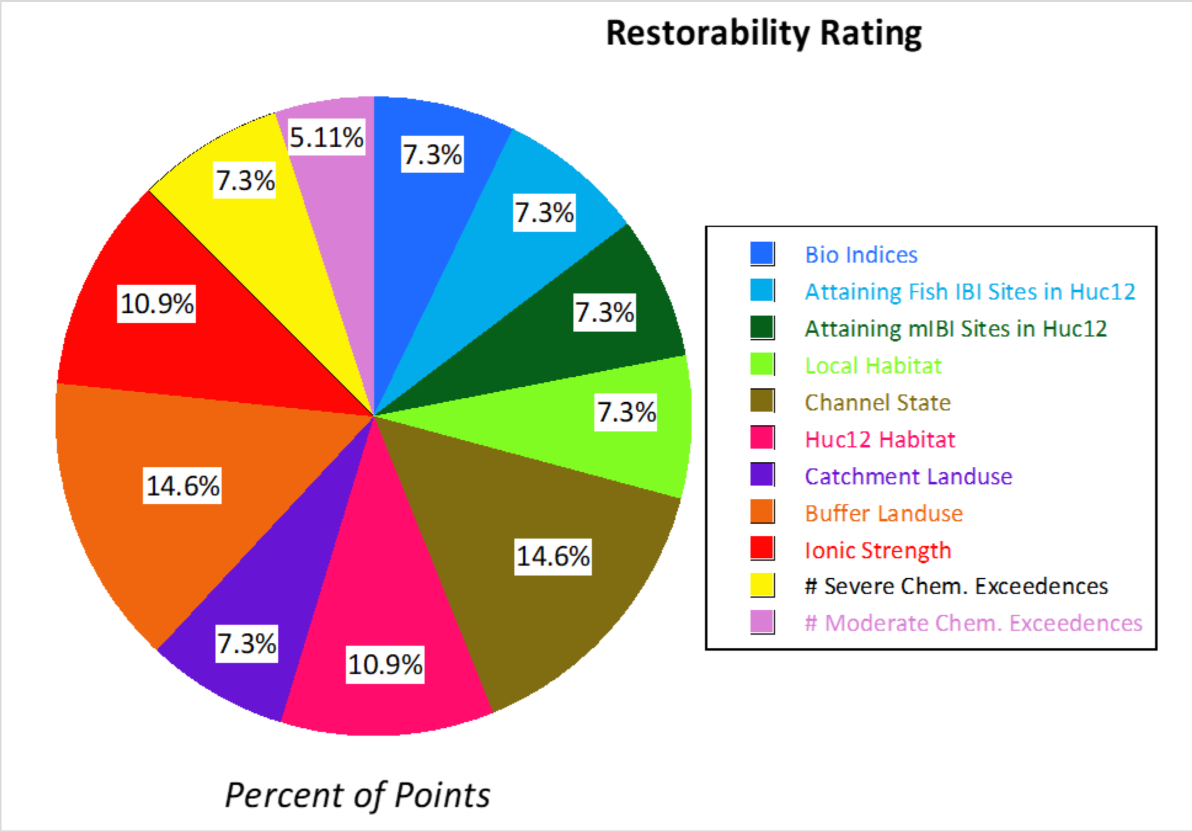


Figure 58. Maximum contribution of each restorability ranking factor for impaired sites in the IPS study area.

To standardize the interpretation of the complex environmental data, each with different measurement units and scales, used to calculate restorability rankings, each unique stressor and response variable (e.g., fIBI, local habitat rank) was normalized to an intuitively consistent scale, from 0 to 10 (Table 37). This scale is also linked to the range of narrative categories of the General Use standard for aquatic life. The Good range is indicative of meeting the General Use standard for aquatic life and serves as the baseline restoration goal under the CWA. The Excellent range serves as a high-end protection benchmark under a theoretical framework of use subcategories. The Fair, Poor, and Very Poor narratives do not meet the General Use standard, but the Fair and Poor ranges could serve as theoretical use subcategories when and if formal use attainability analyses are considered in the future.

The raw restorability ranking scores were then scaled from 0 (lowest restoration potential) to 100 (highest restoration potential). Scaling was completed for impaired sites based on the highest and lowest restorability rating scores (Table 37). Sites, reaches, and watersheds with restorability scores of very low (< 20) or low (20–40) are impaired by causes that are likely more difficult to restore fully. Recovery from this degree of impairment might only be incremental and slow to respond because of the ineradicable characteristics of the limiting stressor(s). Sites with high (> 60) or very high (> 80) restorability scores are more likely to be closer to attaining the General Use standard biocriteria and be subject to limiting stressors that are more readily abated (e.g., conventional chemical constituents, sites amenable to habitat restoration, or watersheds with more localized rather than watershedwide degradation). For sites with intermediate restorability scores (40–60), the severity and extent of the impairment within a reach or watershed and the types of limiting stressors should be examined on a case-by-case basis. The geographical extent of where these specific restorability scores and narrative conditions apply across the DuPage River and Salt Creek watersheds is provided in Figure 59.

Table 37. Summary of IPS Tool stressor ranks (0–10) and associated restorability scores (0–100) that coincide with specific narrative conditions and theoretical use subcategories

Narrative Condition	Theoretical Use Subcategory	Stressor Rank (0-10)	Restorability Scores (0-100)
Excellent	Exceptional	0.1–2.0	Not assigned to attaining sites[1]
Good	General Use	> 2–4	
Fair	Modified Use	> 4–6	Very High (> 80)
			High (> 60–80)
Poor	Limited Use	> 6–8	Intermediate (> 40–60)
			Low (> 20–40)
Very Poor	None	> 8	Very Low (< 20)

Note: Colors indicate restorability scores included in this table and Figure 59. Red colors reflect very low chance of restorability, orange colors reflect low scoring for potential restorability, green colors reflect a high potential for restorability, and blue colors reflect a very high potential for restorability.

[1]Sites with good or excellent narrative conditions that attain the General Use standards are therefore assigned Susceptibility or Threat rankings (not restorability scores).

Priority sites for potential future restoration projects were identified in each watershed based on the co-location of high restorability scores and observable DO sags (see Section 7.1.1. The NIP will include both existing DRSCW and LDRWC projects and selected projects for the priority sites (Table 37). For each priority project, the relative magnitude of the key stressors at that location are categorized as severe, moderate, and minor as determined by the IPS Tool evaluation (Figure 58, Table 39). The severe stressors for priority projects are predominantly landscape conditions (urban development).

Table 38. Priority projects identified for potential implementation

Project Name	Short-Term Objective	Long-Term Objectives
Southern East Branch Phase III (EB32, EB34, EB40, EB43, EB43A, EB45, EB46, EB47)	Improve aquatic habitat (QHEI); reduce inputs of sediment and nutrients	Raise mIBI and fIBI
East Branch DuPage River Stream Restoration at Churchill Woods (Reconstruction of Crescent Boulevard Culverts) (EB36)	Improve DO conditions, improve aquatic habitat (QHEI), and reduce inputs of sediment and nutrients	Raise mIBI and fIBI
West Branch DuPage River Stream Enhancement at Winfield Mounds (WB17)	Improve aquatic habitat, improve aquatic habitat (QHEI), reduce sediment transport, and reduce inputs of sediment and nutrients	Raise mIBI and fIBI
West Branch DuPage River and Unnamed Tributary Stream Enhancement at Timber Ridge Forest Preserve (WB33, WB18)	Improve DO conditions, improve aquatic habitat (QHEI), and reduce inputs of sediment and nutrients	Raise mIBI and fIBI
Salt Creek Stream Enhancement near Eldridge Park and the Salt Creek Greenway (SC51, SC57)	Improve DO conditions, improve aquatic habitat (QHEI), and reduce inputs of sediment and nutrients	Raise mIBI and fIBI
Old Oak Brook Dam Removal and Salt Creek channel restoration (SC55, SC56)	Remove fish barrier, improve aquatic habitat (QHEI), and reduce inputs of sediment and nutrients	Raise mIBI and fIBI
Lower Salt Creek Stream Enhancement at Salt Creek Woods Nature Preserve (SC49, SC60)	Improve DO conditions, improve aquatic habitat (QHEI), and reduce inputs of sediment and nutrients	Raise mIBI and fIBI
Lower DuPage River Stream Enhancement Phase II (LD12, LD13, LD25)	Improve flow conditions, improve aquatic habitat, reduce aquatic plant growth, and reduce inputs of sediment and nutrients	Raise mIBI and fIBI
Wolf Creek Stream Enhancement (LD33)	Improve aquatic habitat (QHEI)	Raise mIBI and fIBI
Lily Cache Creek Stream Enhancement (LD33)	Improve DO conditions, improve aquatic habitat (QHEI), and reduce inputs of sediment and nutrients	Raise mIBI and fIBI

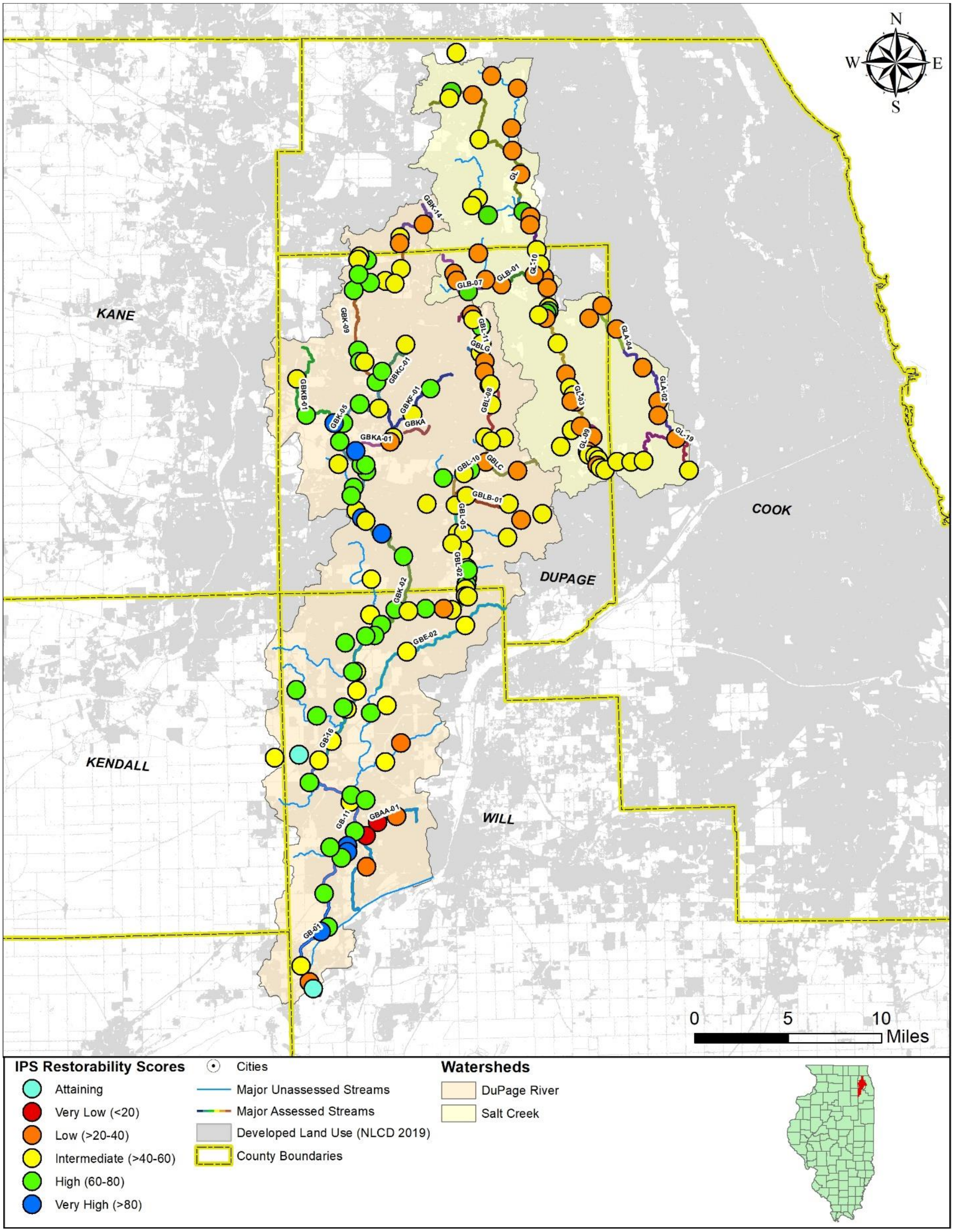


Figure 59. Restorability rankings for bioassessment sites in the DuPage River and Salt Creek watersheds.

Table 39. Priority project sites with severity magnitude of key stressors identified by the IPS Tool

Watershed	Site ID	River Mile	Restor-ability Score [a]	Severe Magnitude Stressors	Moderate Magnitude Stressors	Minor Magnitude Stressors
East Branch DuPage River	EB36	19.0	40.35	Urbanization – Watershed Scale (Urban-WS); Developed Land Uses – Watershed Scale (Dev-WS); Substrate; Water Column (WC) Metals	TP; QHEI	Impervious Area – 500m Radius (Imperv-500m); Nitrate; Channel; Chloride
	EB32	8.5	42.64	Urban-WS; Impervious Area (30m Radius Upstream Only (Imperv-30C); Dev-WS	WC Metals	Imperv-500m; Impervious Area – Radius (Imperv-30); TP; Nitrate; QHEI; Substrate; Channel; Chloride
	EB40	7.6	49.6	Urban-WS; Dev-WS	--	TP; Nitrate; QHEI; Channel; Chloride
	EB43	7.0	64.92	Urban-WS; Dev-WS	--	QHEI;
	EB43A	6.60	56.28	Dev-WS	--	QHEI; Channel
	EB34	5.0	55.48	Urban-WS; Dev-WS	WC Metals	TP; Nitrate; QHEI; Substrate; Chloride
West Branch DuPage River	WB17	19.2	75.2	Urban-WS; Dev-WS	--	TP; Nitrate; QHEI; Substrate; Chloride
	WB33	21.30	70.9	Urban-WS; Dev-WS; VSS	TP	Biological Oxygen Demand (BOD); Nitrate; Substrate
Unnamed Tributary to West Branch DuPage River	WB18	0.5	55.56	Urban-WS; Dev-WS; Substrate	BOD	TKN; QHEI; Channelization
Salt Creek	SC51	17.0	50.57	Urban-WS; Dev-WS; VSS	Imperv-500m; TP; Chloride	Low DO; TKN; BOD; Substrate; Conductivity; TDS; Turbidity; Sediment Metals
	SC57	16.5	33.64	Urban-WS; Dev-WS; TP	Imperv-500m; Chloride	Imperv-30; Imperv-30C; Low DO; TKN; QHEI; Substrate; Channel; Conductivity; TDS; Turbidity; Sediment; Metals
	SC55	13.5	28.04	Urban-WS; Dev-WS; Substrate; Channel	Imperv-500m;TP; Low DO; QHEI; Chloride	Imperv-30; TKN; Nitrate; Conductivity; TDS
	SC56	12.5	32.87	Urban-WS; Dev-WS	TP; Low DO; Substrate; Channel; Chloride	Imperv-500m; Imperv-30; Imperv-30C; TKN; BOD; Nitrate; QHEI; Conductivity; TDS
	SC49	8.0	44.19	Urban-WS; Dev-WS	TP; Chloride	Imperv-30; Low DO; TKN; BOD; Nitrate; Channel; Conductivity; TDS; Turbidity; Sediment Metals

Watershed	Site ID	River Mile	Restor-ability Score [a]	Severe Magnitude Stressors	Moderate Magnitude Stressors	Minor Magnitude Stressors
	SC60	7.20	52.88	Urban-WS; Dev-WS	TP; Chloride	Low DO; TKN; BOD; Nitrate; Substrate; Conductivity; TDS; Turbidity; Sediment Metals
Lower DuPage River	LD12	22.00	54.7	Urban-WS; Dev-WS	TP	Imperv-500m; Low DO; BOD; Nitrate; Max DO; QHEI; Channel; Chloride; Turbidity; Sediment Metals
	LD13	23.10	52.22	Urban-WS; Dev-WS	Imperv-500m; TP	Low DO; TKN; BOD; Nitrate; Max DO; QHEI; Channel; Chloride; Turbidity; Sediment Metals
	LD25	25.2	60.44	Urban-WS; Dev-WS; VSS	--	Imperv-500m; Low DO; TKN; BOD; Channel; Chloride; Turbidity; Sediment Metals
Wolf Creek	LD33	0.14	77.4	--	--	Imperv-500m; Urban-WS; Dev-WS; QHEI; Substrate; Channel
Lily Cache Creek	LD20	0.36	72.54	VSS	Urban-WS; Dev-WS; Low DO; Substrate; Chloride	Imperv-500m; TP; BOD; QHEI; Channel; Conductivity; TDS; TSS

Note:
[a] See Table 37 for narrative description of the restorability score.

7.1.3 Relationship between Chloride and Phosphorus

Recent studies have linked elevated instream chloride concentrations with increased dissolved phosphorus concentrations in rivers and streams (McIsaac et al. 2022; Novotny et al. 2009). Chloride concentrations in bioretention green infrastructure facilities, lakes, and detention ponds have also been linked to increased phosphorus in such features (Erickson et al. 2022). It is hypothesized that increased chloride may have a role in desorbing phosphate ions from sediment, leading to increased dissolved phosphorus in the water column and potentially resulting in nuisance conditions.

The 2010 IPS Tool (Section 1.3.1) identified chloride as a priority stressor on aquatic life in the Upper DuPage River and Salt Creek watersheds. Additionally, the FIT analysis conducted as part of the updated IPS Tool (Section 0 Table 13) placed both chloride (FIT score of 0.17) and conductivity (a proxy for chloride; FIT score of 0.05) in the top third of stressors limiting aquatic species across NE Illinois (the explanatory power increases as the FIT value approached 1).

To improve aquatic life conditions, municipalities in the DuPage River and Salt Creek watersheds have participated in a Chloride Reduction Program since 2006, explicitly focused on chlorides and winter management of impervious surfaces.[12,13] Data from this program show that mean winter and summer chloride concentrations have been declining in these watersheds (Baxter and Woodman 2023). Total chloride loading increased slightly over that period—likely a function of weather, with more ice and intense

[12] https://drscw.org/activities/chlorides-and-winter-management/
[13] https://ldpwatersheds.org/outreach/salt-smart/

winter storms in recent years. The DRSCW and LDRWC chloride reduction programs will continue with the implementation of this NIP. Chloride management implementation activities include:

- Hosting annual workshops covering numerous aspects of chloride management at various levels of program involvement, from plow drivers to elected officials.
- Encouraging peer-to-peer mentoring among snow professionals.
- Using questionnaires and other measures to track the implementation and adaptation of chloride BMPs by public works and highway departments.
- Conducting continuous winter monitoring (near the headwaters and near the confluence with the downstream receiving water in each of the four watersheds) to collect instream chloride concentration data to evaluate changes seasonally, annually, and spatially.
- Monitoring chloride loads in street sweeping waste to assess the potential for calculating chloride-removal rates. Data are being gathered to allow street sweeping to be evaluated as a chloride-reduction BMP. Analyses conducted in three NIP study communities found that annual street sweeping waste had a mean annual chloride concentration of 1,218 mg/kg of waste collected.
- Collaborating with local governments to develop guidance for evaluating and optimizing street sweeping activities as a chloride reduction BMP. This needs to be done in conjunction with the TP optimization measures provided in Section 8.3.
- Participation in the Salt Smart Collaborative[14] by the DRSCW and LDRWC.

Additionally, the LDRWC will continue to develop shared outreach material on chloride-reduction BMPs and related topics. Education campaigns include social media posts, videos, and graphics for Lower DuPage River watershed residents. Outreach materials and campaigns associated with residential chloride reduction efforts in DuPage County watersheds will be conducted in partnership with DC SWM.[15]

7.2 RECEIVING WATER MODELING

This section describes the efforts made to best understand and simulate existing water quality conditions instream of the DuPage River and Salt Creek waterways using receiving water modeling. Environmental modeling can be a versatile and informative decision-making tool for management opportunities, by simulating future impacts in the modeling environment after capturing existing conditions well. Modeling applications for decision-making is only as useful as the robustness of the datasets available to inform the model inputs, such as meteorological forcing, hydraulic parameterization, boundary inflows from point and nonpoint sources, and the availability of instream water quality data for model calibration. A model that captures existing conditions well, particularly across a range of flow and water quality conditions, can be used to inform potential nutrient management scenarios. Four separate models were developed for the DuPage River and Salt Creek waterways, including one each for: (1) the East Branch of the DuPage River; (2) the West Branch of the DuPage River; (3) the Lower DuPage River, whose boundary condition was informed by the terminal reaches of the two upstream models; and (4) Salt Creek.

[14] https://saltsmart.org/

[15] https://dupagecounty.gov/government/departments/stormwater_management/

7.2.1 Modeling History

The QUAL2K model is a quasi-steady state water quality model. It is an enhanced version of the USEPA preceding QUAL2E and QUAL-II models that includes a spreadsheet-based user interface for model input parameters and boundary conditions, including meteorology and boundary inflows for headwaters, tributaries, diffuse flows, and point sources (Chapra et al. 2012; Brown and Barnwell 1987). QUAL2K offers comprehensive hydraulic functions, diel heat budget and thermal dynamics, and dynamic water quality kinetics. The Washington Department of Ecology recently released QUAL2Kw Version 6, which provides the option to simulate nonsteady, nonuniform flow using kinematic wave flow routing; this version is capable of continuous simulation up to one year, with time-varying boundary conditions. In addition, optional surface and hyporheic transient storage zones are provided in the upgraded application.

The DRSCW and LDRWC have collaborated on developing an extensive environmental dataset and research findings for the entire DuPage River and Salt Creek watersheds (existing studies and datasets are summarized in Section 1.2). Due to the longstanding history of extensive hydromodification, dense urbanization, large wastewater treatment facility contributions to streamflow volumes, and concerns for aquatic life conditions, several watershed, hydraulic, and water quality models have been developed across the DuPage River and Salt Creek watersheds since the 1980s:

- 1980s: DuPage River QUAL-II model was developed to explore observed low DO summer conditions.
- 1996: Salt Creek QUAL2E model was developed, calibrated, and validated based on 1995 IEPA data.
- 2004: TMDLs were completed for the East and West Branch DuPage River and Salt Creek based on the prior QUAL2E models, focused on low DO impairments.
- 2008–2009: DO improvement feasibility studies for East Branch DuPage River and Salt Creek were completed, including updating and refining the 2004 QUAL2E models into the QUAL2K modeling environment based on observed data from 2006–2007.
- 2009: QUAL2K model was developed for a portion of the West Branch DuPage River and Lower DuPage River for the TMDL, including SOD data.
- 2019: QUAL2K model was developed for a tributary to and headwaters of West Branch DuPage River and the upper half of the Lower DuPage River for the TMDL using limited data from 2006–2016.

The suite of QUAL models (most recently QUAL2K and QUAL2Kw) is a well-established modeling framework appropriate for representing diel variability in DO concentrations and algal responses in flowing streams and run-of-river impoundments.

7.2.2 New QUAL2Kw Models Developed for the NIP

The QUAL2Kw modeling platform release provides many improvements relative to previous QUAL model versions, including enhanced phytoplankton and bottom algae routines and continuous water quality simulation capability. Existing model simulations throughout the DuPage River and Salt Creek mainstems were historically focused solely on representation of single or multiday critical conditions; however, by transitioning river modeling to the dynamic continuous QUAL2Kw environment, it is possible to capture existing conditions throughout these waterways across an entire calendar year. The QUAL2Kw models developed for Salt Creek (Tetra Tech 2023e), East Branch (Tetra Tech 2023b), West Branch (Tetra Tech 2023c), and Lower DuPage (Tetra Tech 2023d) rivers improve upon existing simulations with a more accurate representation of water temperatures, pH, conductivity, and DO concentrations. Previous modeling efforts were not calibrated to the robust instream nutrient data that have since been developed in recent years (See Section 1.2.1).

The model linkage between the East Branch, West Branch, and Lower DuPage River simulations was also employed to better simulate the relationship between these upstream rivers and downstream conditions in the Lower DuPage River. The new continuous QUAL2Kw models were developed and calibrated for all four mainstem waterways using the vast amount of data, reports, and historical modeling available.

These new QUAL2Kw models were developed to both better characterize and understand existing conditions instream and to support management scenario simulations developed to aid in decision-making for meeting the NIP goals for improving aquatic life conditions (scenario application detailed in Section 7.2.9.

The datasets presented in Section 6.1.2 were used for several purposes, including determining the initial parameterization, developing boundary conditions, and conducting model calibration. The updated QUAL2Kw models made use of pertinent information from the previous steady-state QUAL2K models in the region to establish the initial parameterization. Datasets containing information such as headwater, WWTP, tributary, and diffuse flows were used to develop boundary conditions for the receiving waterway. To verify the accuracy and quality of each model, mainstem datasets were compared to simulated outputs for model calibration.

7.2.3 Data Inventory

Development and calibration of each of the four QUAL2Kw models used recent and relevant monitoring datasets for flow, water quality, bioassessment monitoring, SOD, DO improvement feasibility studies, WWTP discharge data, dam configurations, meteorological datasets, and regional hydraulic models. Although some data sources varied by waterway, each model was developed similarly and was calibrated to the same types of available instream datasets to ensure a reasonable approximation of existing conditions (Table 40). Detailed information covering each of the four QUAL2Kw models can be found in the respective model development reports (one for each watershed).

Table 40. Data sources used in QUAL2Kw model development for DuPage River and Salt Creek

Data Item	Source	Description
Gage record of flow and channel hydro-geometry	United States Geological Survey (USGS)	Active USGS flow monitoring across DuPage River and Salt Creek watersheds
Bioassessment Monitoring Reports and datasets (chemistry and habitat)	MBI (DRSCW & LDRWC contract)	Annually rotating schedule of field monitoring for waterways in the region that includes grab sampling, field sampling, and long-term sonde deployment (water chemistry, biological, and habitat data) for waterways in the region (see Section 1.2.1.1 for more detail on this data)
Continuous Monitoring Program: sondes for DO, temperature, pH, conductivity	DRSCW, LDRWC, MWRDGC	Stations within the DuPage River and Salt Creek watersheds that take hourly water quality measurements between April and October of each year (see Section 1.2.1 for more detail on this data)
SOD Monitoring	HDR, CDM (DRSCW and IEPA Contract)	SOD data previously measured within each watershed
Existing Hydrologic and Hydraulic Models	Varies	Previous modeling efforts (QUAL2K, HSPF, HEC-RAS, FEQ) used for data gaps and initial parameterization
Stream Habitat Assessment Procedure Reports	Illinois EPA	Qualitative stream morphology summaries

Data Item	Source	Description
WWTP Discharge Monitoring Reports: flow and water quality	Illinois EPA NPDES program	Monthly flow and water quality reports for permitted discharge by WWTPs
Combined Sewer Overflow Reports	Illinois EPA NPDES program	Report of permitted overflow occurrences for combined sewer systems
Dam Structure Summaries	DRSCW, LDRWC	Overview of dam structures located within each watershed
Meteorological Forcing	North American Land Data Assimilation System – Phase 2 (NLDAS-2), and North American Regional Reanalysis	Gridded hourly meteorological datasets: Air and dew point temperatures, wind speed, solar radiation, and cloud cover (3-hour)

7.2.4 Simulation Period and Spatial Extent

DRSCW and LDRWC employ a multiyear cycling program for conducting targeted monitoring on specific waterways regionally. The model simulation year selected for each model was based on recent intensive sampling datasets for each respective waterway: 2019 for East DuPage River, 2020 for West DuPage River, 2018 for Lower DuPage River, and 2016 for Salt Creek. The East Branch DuPage QUAL2Kw model extends for 23.0 miles from Amherst Lake (West Lake Dam) to the confluence with the West Branch DuPage River. The West Branch DuPage QUAL2Kw model is 31.2 miles long, beginning from its designated headwaters near West Schaumberg Road until the confluence with the East Branch DuPage River. The Lower DuPage QUAL2Kw model begins at the point of confluence between the East Branch DuPage River and the West Branch DuPage River and extends 26.4 miles downstream to Channahon Dam before its confluence with the Des Plaines River. The spatial extent of the Salt Creek QUAL2Kw model encompasses the mainstem of Salt Creek, beginning at the outlet of Busse Woods Reservoir and Dam, and extends 26.3 miles to its confluence with the Des Plaines River. The decision to omit the approximately 11 miles of mainstem Salt Creek upstream of Busse Woods Dam was due to the absence of any WWTPs on that portion of the watershed. The segment was also omitted by the 2004 TMDLs (IEPA 2004) and the subsequent 2008–2009 DO improvement feasibility studies (HDR 2009) for the same reason.

7.2.5 Meteorology and Stream Shading

QUAL2Kw model inputs for air temperature, solar radiation, dew point temperature, wind speed, and stream shading were developed using the same methodology for all waterways. Gridded hourly NLDAS-2 data were used to develop inputs for air temperature, dew point temperature, solar radiation, and wind speed as spatially averaged across each watershed. Dew point temperatures were calculated using other various NLDAS-2 datasets. Cloud cover data series were generated using gridded North American Regional Reanalysis datasets with a temporal resolution of 3 hours and a spatial resolution of 32 kilometers on a Conformal Conic grid. Stream shading of each waterway was evaluated based on channel width, aerial imagery, and previous modeling applications, such that these large, wide rivers were modeled with no riparian stream shading.

7.2.6 Boundary Conditions

Each of the four QUAL2Kw models were constructed by incorporating primary flow inputs based on boundary conditions to the receiving mainstem, including headwaters, point sources (e.g., municipal wastewater discharges), and tributaries. Flow inputs were derived from a combination of continuous hourly USGS flow gage data and WWTP DMR records. Daily tributary and headwater inflows were derived for each model segment using a flow-balance approach between flow gages, known WWTP discharges, and site-specific, drainage-area-based flow contributions. Water quality parameterization for boundary conditions for headwaters and tributaries were developed using the most recent instream data sourced by DRSCW and LDRWC intensive sampling efforts across these watersheds (Section 1.2). Water quality parameterization for model inputs for all boundary conditions include DO, temperature, pH, conductivity, chlorophyll-*a*, nitrogen species, phosphorus species, CBOD, and more. Inputs were based on discrete grab sampling, field observations, and continuous sonde deployment data. Member WWTPs discharging directly to each of the four mainstem rivers were simulated explicitly in the model, while WWTPs discharging to tributaries were simulated implicitly based on the combined flow from that tributary to the mainstem. Occasionally, data gaps were identified in required model input datasets for boundary conditions, such as tributaries without significant cold-weather monitoring or WWTP discharges without organic nitrogen monitoring. These missing inputs were derived from the best available information, such as interpolation and extrapolation based on existing datasets. NPDES-permitted CSOs present in these watersheds were not simulated explicitly, given the infrequency of occurrence and the limited availability of water quality monitoring data.

7.2.7 Model Calibration

Each mainstem QUAL2Kw model simulated result was compared to observed data, including channel hydrogeometry, water temperature, DO, algae (simulated as sestonic and benthic chlorophyll-*a* concentrations), nutrients, and CBOD where available. First, it is important that the water quality model represents accurate flow conditions before adjusting any parameterization related to temperature. The focus of calibration then moves to nutrients, followed by calibration of algae kinetics and DO concentrations simultaneously. QUAL2Kw simulates several kinetic relationships relevant to DO concentrations in the water column, including SOD, reaeration at the air-water interface, temperature impacts on oxygen solubility, decay of oxygen-demanding substances (e.g., CBOD), oxygen-demanding chemical transformations (e.g., nitrification), and benthic algae and free-floating phytoplankton photosynthesis and respiration.

Where datasets were available, simulation results for each group of parameters were compared to observed measurements, with a primary focus on several key mainstem locations. A weight-of-evidence approach for model calibration was used to determine that each of the four QUAL2Kw models accurately simulated their respective model years' observed conditions. Mainstem calibrated models that reasonably represent observed existing waterway conditions make it possible to develop specific model applications that can simulate the potential conditions and instream impacts of potential future nutrient management scenarios.

While individual model development reports provide in-depth documentation of various boundary conditions and parameterization, a snapshot of the model simulations from a representative calibration point on each waterway was selected for reference. Figures included in this section depict modeled and observed TP and DO concentrations at these specific comparison locations for the entire respective simulation periods.

Model calibration for the East Branch is shown for Reach 20, relative to monitoring data collected at that location, site EB41 (Figure 60 and Figure 61). Site EB41 included 11 TP concentrations observed during model year 2019, as well as point-in-time DO concentrations measured in the field during grab sampling and several weeks of data from a continuously logging sonde in July. Model calibration for TP indicates a slight overestimation of TP concentrations at this location; however, given the relatively small number of observation points and the strong confidence in parameterization of point source inputs from DMR data, this simulation is reasonable. The diel cycle of DO is also well-captured in predicting both field visit and continuous sonde data during the summer period, which experiences significant diel fluctuation due to aquatic respiration and photosynthesis patterns.

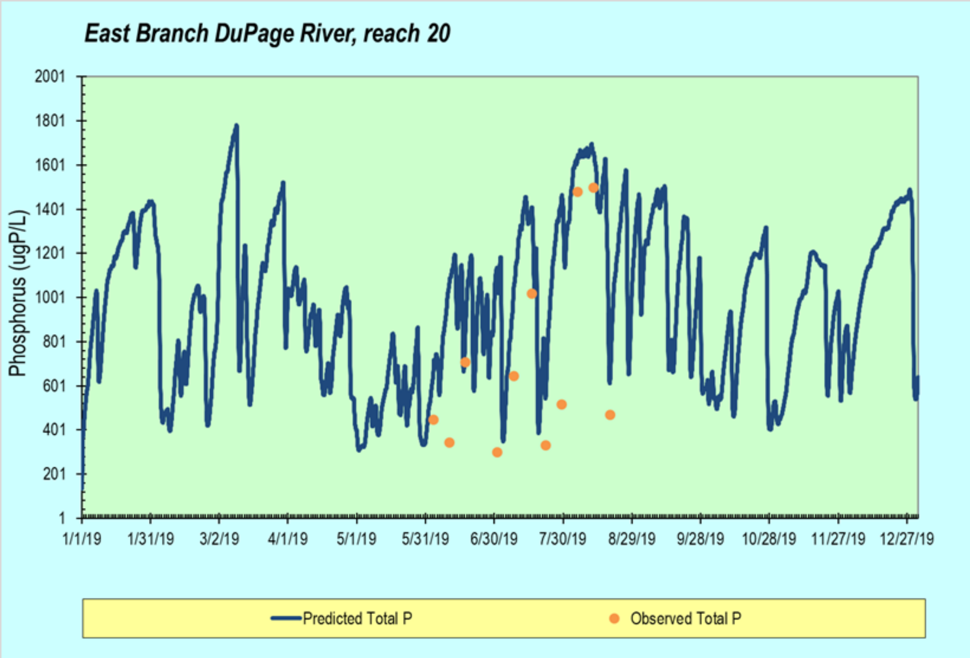


Figure 60. East Branch DuPage River: TP calibration at Reach 20, relative to monitoring site EB41.

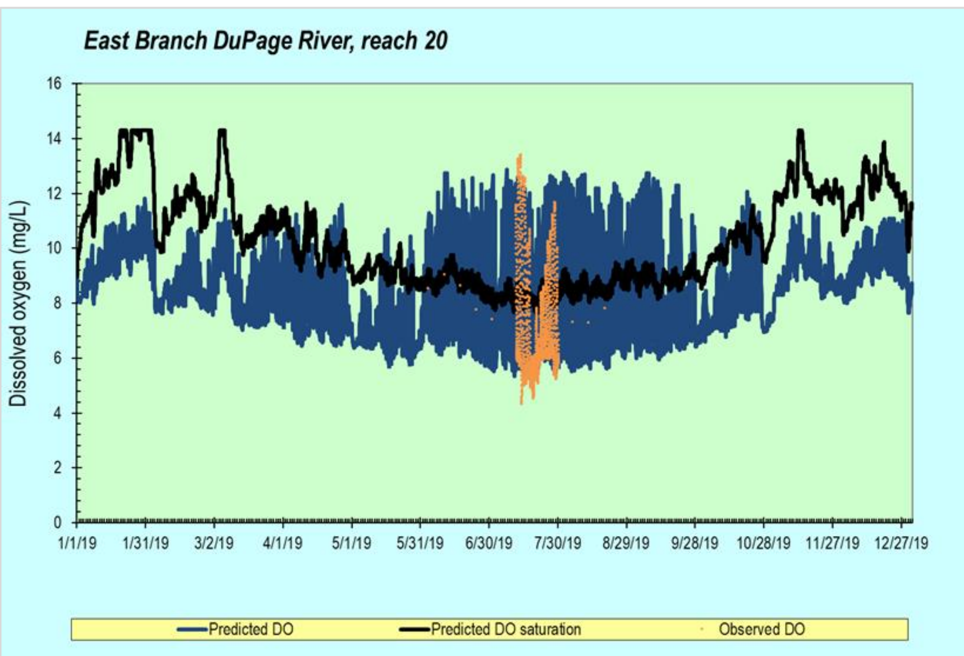


Figure 61. East Branch DuPage River: DO calibration at Reach 20, relative to monitoring site EB41.

Model calibration for the West Branch is shown for Reach 20, relative to monitoring at site WB35 (Figure 62 and Figure 63). With 12 TP grab samples measured from May through August at this site, the model captures the clear trend of increasing TP concentrations that occurs during the summer as observed during model year 2020. Additionally, observed DO concentrations are captured well during an extended sonde deployment period from May to October. Occasional DO abnormalities, such the one observed at deployment with very high DO concentrations at the beginning of May, are not captured by the model, perhaps because some anomalous, unmonitored, and therefore unmodeled event may have occurred that the model cannot capture, or the data represents an error in the sampling equipment itself.

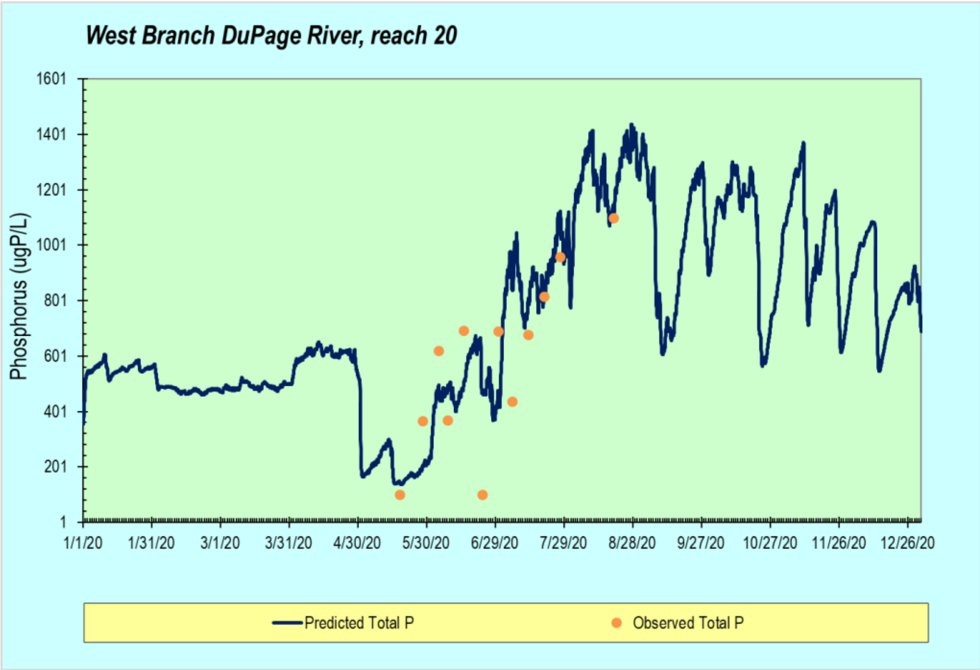


Figure 62. West Branch DuPage River: TP calibration at Reach 20, relative to monitoring site WB35.

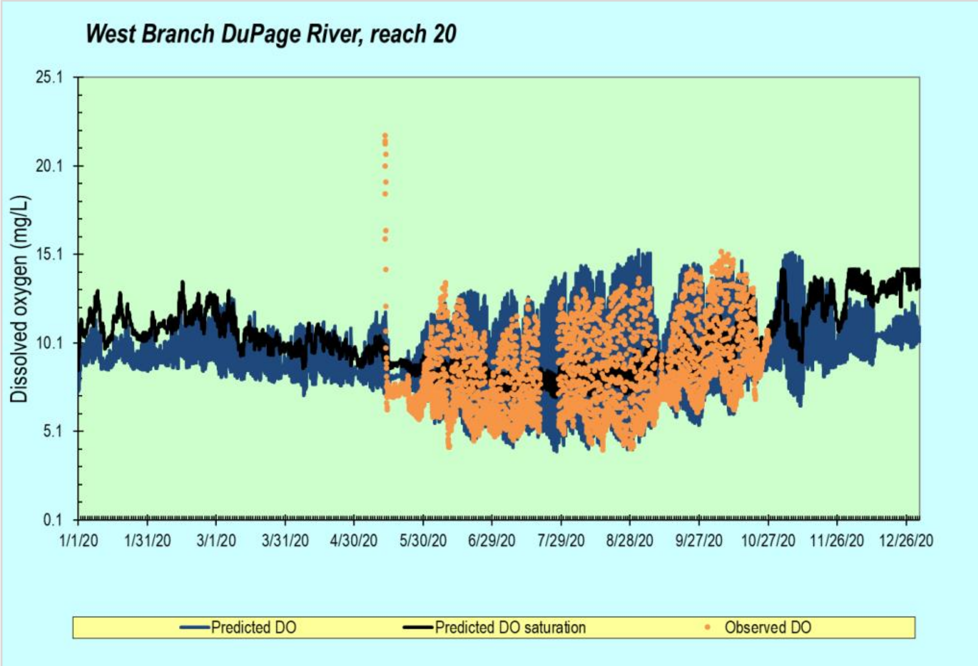


Figure 63. West Branch DuPage River: DO calibration at Reach 20, relative to monitoring site WB35.

Model calibration for Salt Creek is shown for Reach 12 relative to monitoring data at site SCGD (Figure 64 and Figure 65). Salt Creek did not experience a clear rise in TP concentrations across the summer, which is more like the East Branch than the West Branch or Lower DuPage. However, TP concentrations are well represented over the summer based on well-documented point source inputs. DO concentrations for Reach 12 in 2016 were observed and simulated to have generally lower average concentrations than those observed along the other mainstems, but the model is able to capture these trends, particularly as super-saturation occurs due to algal activity during the summer months.

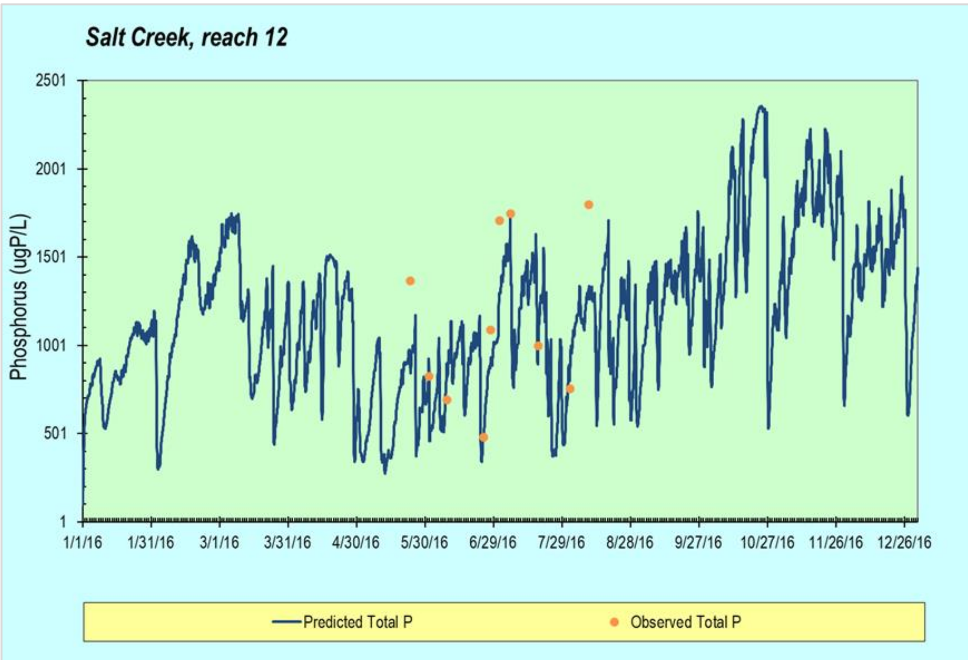


Figure 64. Salt Creek: TP calibration at Reach 12, relative to monitoring site SCGD.

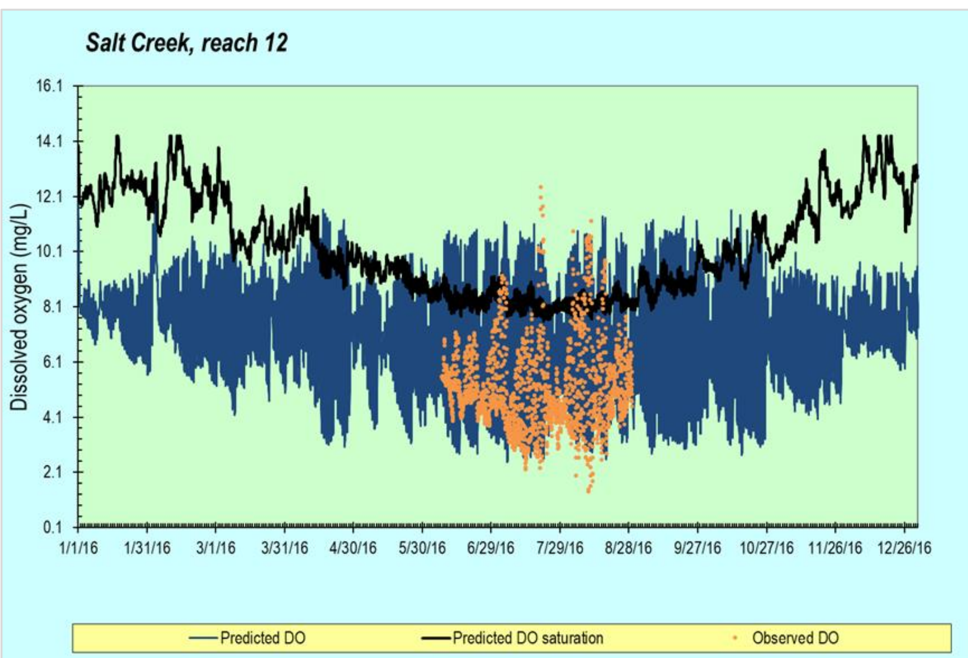


Figure 65. Salt Creek: DO calibration at Reach 12, relative to monitoring site SCGD.

Model calibration for the Lower DuPage is shown for Reach 9 relative to monitoring site LD09 (Figure 66 and Figure 67). This model also captures similar trends in clear increases of TP concentrations across the early summer period as observed on the West Branch. Continuous sonde data at this site shows higher diel variation in DO concentrations than was predicted by the model; however, the central trends of the data are similar, with the exception of the early September 2018 DO crash which might reflect an anomalous, unmonitored, and therefore unmodeled occurrence or an unidentified error in the sampling equipment itself. With limited data for benthic and sestonic algae and the inability to capture submerged aquatic vegetation with the model, it can be difficult to capture observed diel swings without potential overparameterizing the QUAL2K model (e.g., with reach-specific algae growth parameters).

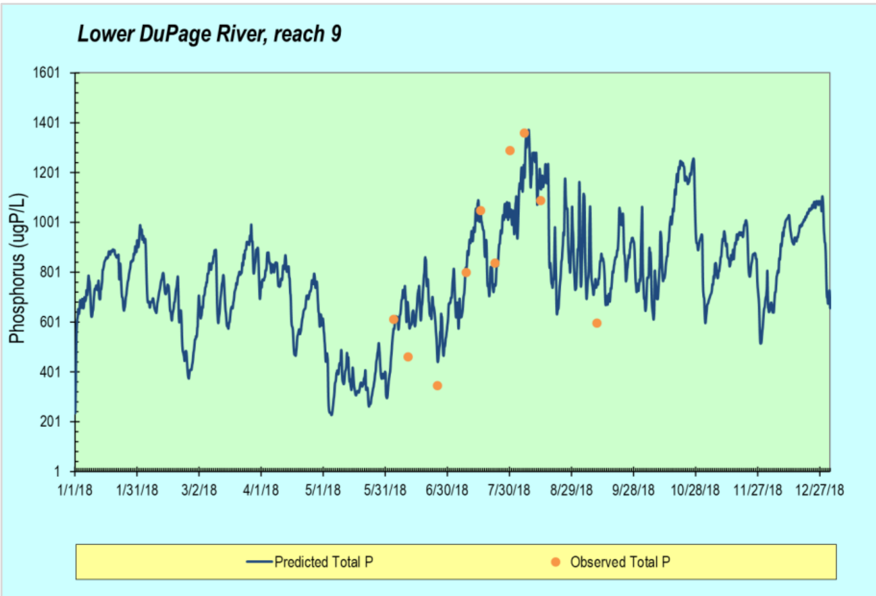


Figure 66. Lower Branch DuPage River: TP calibration at Reach 9, relative to monitoring site LD09.

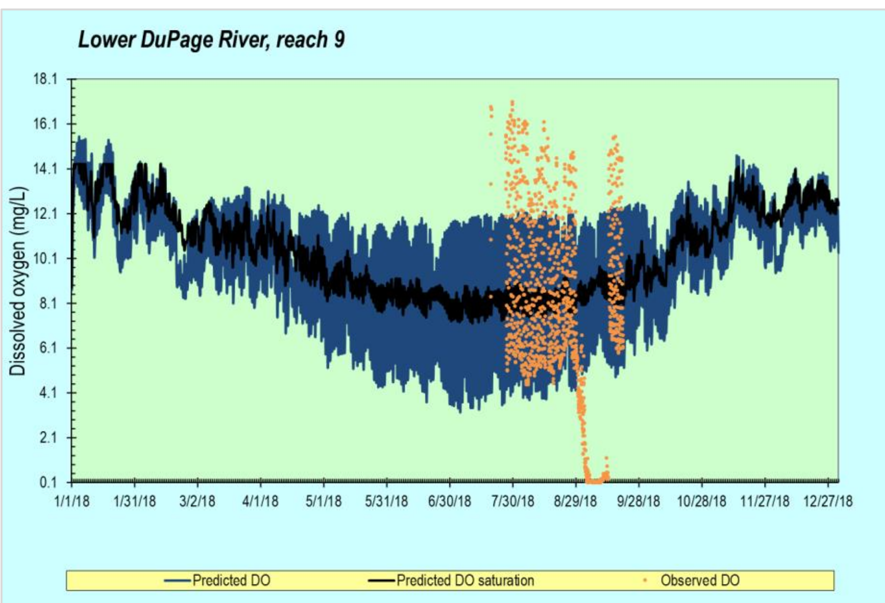


Figure 67. Lower Branch DuPage River: DO calibration at Reach 9, relative to monitoring site LD09.

7.2.8 Model Sensitivity

Each calibrated QUAL2Kw model was evaluated for sensitivity to a specific suite of input parameters by modifying those parameters consistently and reviewing model results relative to the DO simulation. While the IPS Tool determines the statistical biological significance of various observed parameters relative to each other, the QUAL2Kw sensitivity analyses were conducted to determine which model inputs were driving simulated DO concentrations at specific locations.

For each sensitivity test, inputs or conditions were altered for the entire year-long simulation period. Sensitivity was evaluated as the simulated change in minimum DO concentration between March and July relative to the baseline-calibrated condition for each respective model year. Sensitivity results were summarized below based on locations near the downstream end of each mainstem, where robust data were available for these sites during model calibration as well. Note that model sensitivity can vary both spatially and temporally.

The minimum DO concentration between March and July was selected as the response metric for the sensitivity tests because it is consistent with Illinois WQS, which specify that DO is to be above 5.0 mg/L at any time during these months. Note that bidirectional (i.e., increase and decrease) sensitivity tests were completed for most stressors evaluated; for example, the SOD rate was increased by 25% for one sensitivity test and then decreased by 25% for a subsequent sensitivity test. It was not feasible to simulate a decrease in riparian and topographic shade because shade is negligible for all baseline calibrated models. Sensitivity testing is not related to the true feasibility of potential management options.

Univariate leverage coefficients were computed to evaluate normalized response variable sensitivity for each scenario: $L_i = ((s_i - b_i) / b_i) / a$, where L_i is the leverage coefficient for response variable i (minimum DO concentration), s_i is the sensitivity test value for response variable i, b_i is the baseline value for response variable i, and a is the percent change in the stressor (e.g., 25%). Therefore, a leverage coefficient of one indicates that a 25% reduction/increase in a stressor (e.g., SOD, WWTP phosphorus loading) produces a 25% reduction/increase in the response variable, which is the minimum DO concentration across the simulation period. Leverage coefficients for minimum DO in March–July were calculated for each waterway separately (Table 41). Positive leverage coefficients (Figure 68; see the right-hand side of the example leverage coefficient “tornado plot” in example for the East Branch) indicate an increase in the minimum DO concentration and negative leverage coefficients (see the left-hand side of the tornado plot) indicate a decrease in the minimum DO concentration. Blue bars are used for scenarios that increase the variable (e.g., shade up 25%), and orange bars are used for scenarios that decrease the variable.

Physical and kinetic governing equations and well-documented relationships impact instream DO concentrations, such as temperatures that impact oxygen solubility in the water column, algal respiration activities, SOD, and other biogeochemical processes. Based on these analyses, minimum DO conditions at the downstream end of each of the four mainstems were found to be generally more sensitive to parameters such as benthic and sestonic algae abundance, stream shading, SOD, and occasionally boundary condition flow volumes and DO concentrations. Minimum instream DO concentrations were found to be least sensitive to nutrient loading from boundaries (primarily WWTPs) modeled as both TP, TN, and combined TP and TN loading. These sensitivity results are as expected based on well-documented biological relationships between instream nutrient concentrations and biological community responses that impact cyclic DO concentrations. Modeled responses in DO relative to nutrient reductions are minimal because critical thresholds of water quality that result in observable changes in biological assemblages and associated DO concentrations are not observed at instream nutrient concentrations as high as those observed in the DuPage River and Salt Creek systems (Evans-White et al. 2013; Dodds et al. 1998). It is anticipated that decreases in nutrient loading from WWTPs will move instream conditions in the right direction for restoring healthy conditions for instream aquatic organisms over time, even if DO concentrations are not predicted to be improved as an immediate response.

Table 41. Sensitivity test results for QUAL2Kw model inputs and relative impacts to minimum DO concentrations averaged March–July at specific locations

Model sensitivity parameters evaluated	East Branch DuPage	West Branch DuPage	Salt Creek	Lower DuPage
Location Evaluated →	*Downstream End*	*Downstream End*	*Above Graue Mill Dam*	*Above Channahon Dam*
1 (most sensitive)	Boundary DO	Algae	Algae	Algae
2	SOD	Shade	Boundary Flow	Shade
3	Algae	Boundary Flow	Shade	Boundary DO
4	Shade	SOD	SOD	Air Temperature
5	Boundary Flow	Air Temperature	Boundary N & P	SOD
6	Boundary N & P	Boundary P	Boundary N	Boundary Flow
7	Boundary N	Boundary N & P	Air Temperature	Boundary N & P
8	Air Temperature	Boundary DO	Boundary DO	Boundary N
9 (least sensitive)	Boundary P	Boundary N	Boundary P	Boundary P

Notes: N = nitrogen; P = phosphorus

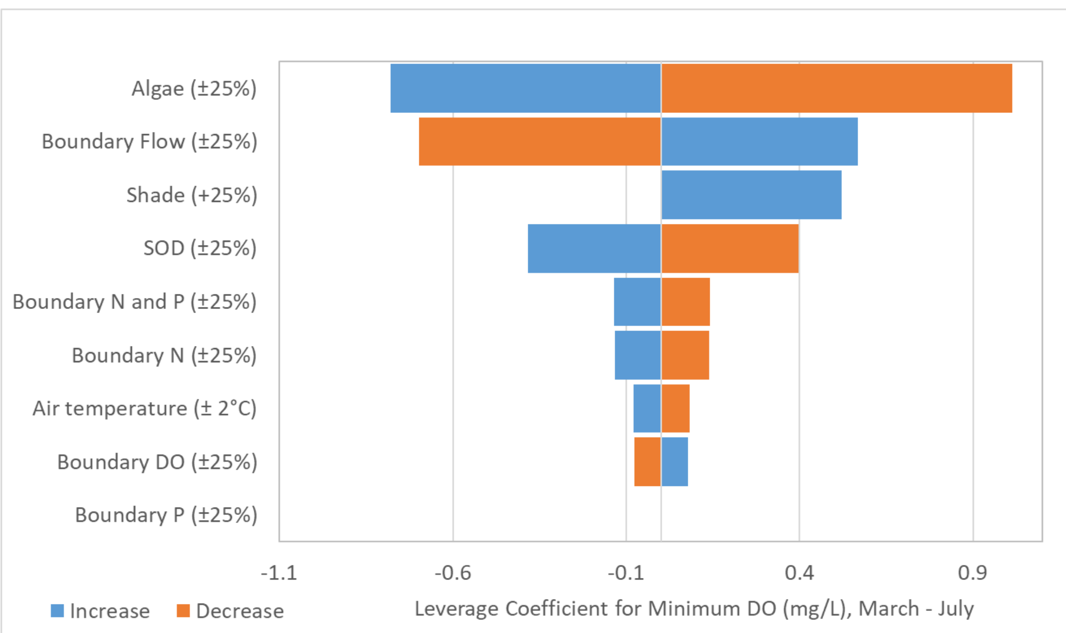


Figure 68. Example QUAL2Kw model sensitivity tornado diagram: leverage coefficients for model parameters relative to minimum DO concentration, Salt Creek above Graue Mill Dam (March–July).

7.2.9 Modeled Point Source Management

The calibrated baseline QUAL2Kw models for each of the four waterways (referenced as Scenario 0) were altered with respect to various management scenarios. The primary focus of these scenarios was on decreasing WWTP TP loading relative to existing conditions due to the percentage of total source loading that is attributable to point sources along each of these rivers. Improvements instream for scenario application were focused on meeting an instream TP threshold of less than or equal to 0.28 mg/L, as identified by MBI using the IPS Tool, to be protective of phosphorus-sensitive aquatic fish species (MBI 2023). Many potential scenarios were modeled, and several were tailored to each waterway, with the primary goal of identifying watershed-specific WWTP TP concentration limits that can achieve the instream TP threshold for these wadeable streams.

All modeling scenarios are summarized based on scenario type as the purpose for simulation (Table 42). Various scenarios were conducted to simulate the impact of systemwide and/or targeted or tiered approaches to compliance with the growing-season instream threshold of 0.28 mg/L TP:

- **Baseline**
  - Calibrated model mainstem models were used as the baseline condition for all additional modeling scenarios.
- **Physical Project**
  - Three watershed-specific scenarios were developed based on physical projects that have already taken place (e.g., removal of Hammel Woods Dam from the Lower DuPage River), are scheduled to be conducted in the near term (e.g., removal of the Fullersburg/Graue Mill Dam from Salt Creek) or have been simulated for future project consideration (e.g., hydromodification/restoration of the Churchill Woods Lake area on the East Branch). The Hammel Woods Dam and Fullersburg Dam removals were considered the new baseline for all subsequent scenarios based on existing project status.
- **TP Limit**
  - The first pass for scenarios based on WWTP TP management included modeling annual average TP discharge limits of 0.35 mg/L for all DRSCW and LDRWC member WWTPs. This limit was simulated with an effective effluent TP concentration of 0.28 mg/L, assuming that typical operations will perform with a 20% margin of safety relative to their permitted maximum. Scenarios were also run for all four models for which the annual TP discharge limit was set to 0.50 mg/L, simulated as an effective effluent of 0.40 mg/L under normal operations. One additional scenario was tested for the East Branch, where the 0.35 mg/L TP limit was modeled at an effective effluent of 0.35 mg/L.
  - **Seasonal**
    - All four models included management scenarios employing seasonally variable TP discharge limits: 0.35 mg/L May–October and 0.50 mg/L November–April.
  - **Targeted**
    - Various management scenarios were conducted for most mainstem models that evaluated the potential for targeted TP reductions at specific member WWTPs. These scenarios included TP limits of 0.10–0.50 mg/L at the largest dischargers on given waterways to explore the possibility of targeted reductions that could provide economy-of-scale relative to the much smaller member facilities with fewer resources and more variable levels of treatment technology. None of the targeted scenario results offered a clear opportunity for TP management between WWTPs.
- **Reference**
  - Various reference scenarios were run for exploratory purposes rather than practical reasons for each mainstem. Two of these scenarios for each mainstem baseline model included one where all existing WWTPs were set to zero-flow, and another where existing WWTP flows were maintained but the discharges had no primary oxygen-demanding substances (CBOD and nitrogen/phosphorus species). These reference scenarios allowed for a better understanding of what the system could be capable of in the absence of the

flow and nutrients coming from the regional WWTPs—to better assess the current condition of the rivers in the absence of point sources.

- Two additional reference scenarios were run for the East Branch where the flows not attributed to point source input were decreased to represent a more average flow condition, given that the model calibration year was a high rainfall year, which potentially created higher dilution. The median flow condition model was run for both WWTP TP management scenarios of limits 0.35 mg/L and 0.50 mg/L. Results from these models indicated relatively small effects of changes to nonpoint source flows relative to instream TP concentrations.
- One scenario was conducted for the Lower DuPage River to evaluate whether LDRWC members would be required to implement any TP limit reductions if the upper East and West Branches of the DuPage River implement TP limits of 0.35 mg/L. In the end, this scenario was not feasible, as TP concentrations within the Lower DuPage River continued to exceed the 0.28 mg/L TP threshold if LDRWC members maintained their current effluent concentrations.

Table 42. Generalized narrative descriptions for each scenario (selected NIP scenarios highlighted)

River	Scen.	Scenario Type	NIP Scenario Description
East Branch DuPage	0	Baseline	Calibrated Model
	1	TP Limit	WWTP Discharge TP 0.35 mg/L
	2	Reference	No WWTP Discharge
	3	Reference	No WWTP Discharge of N/P/CBOD
	4	TP Limit	WWTP Discharge TP 0.50 mg/L
	5	Physical Project	Scenario 1 + Churchill Lake area improved physical channel
	6	Seasonal TP Limit	WWTP discharge seasonal TP: 0.35 mg/L May–Oct, 0.50 mg/L Nov–Apr
	7	TP Limit	WWTP discharge at 0.35 mg/L TP actual (not 0.28 mg/L)
	8	Reference	Median NPS flow conditions, 0.35 (0.28 TP)
	9	Reference	Median NPS flow conditions, 0.50 (0.40 TP)
West Branch DuPage	0	Baseline	Calibrated Model
	1	TP Limit	WWTP Discharge TP 0.35 mg/L
	2	Reference	No WWTP Discharge
	3	Reference	No WWTP Discharge of N/P/CBOD
	4	Targeted TP Limit	Targeted WWTP TP reductions
	5	Seasonal TP Limit	WWTP Discharge TP seasonally: 0.35 mg/L May–Oct, 0.50 mg/L Nov–Apr
	6	TP Limit	WWTP Discharge TP 0.50 mg/L
Salt Creek	0	Baseline	Calibrated Model
	1	Physical Project	Dam Removal
	2	TP Limit	WWTP Discharge TP 0.35 mg/L
	3	Reference	No WWTP Discharge
	4	Reference	No WWTP Discharge of N/P/CBOD
	5	Targeted TP Limit	WWTP Discharge TP no change except Egan TP limit 0.35 mg/L
	6	Targeted TP Limit	WWTP Discharge TP no change except Egan TP limit 0.10 mg/L
	7	Targeted TP Limit	WWTP Discharge TP 1.0 mg/L and Egan TP limit 0.35 mg/L
	8	Seasonal TP Limit	WWTP Discharge seasonal TP: 0.35 mg/L May–Oct, 0.50 mg/L Nov–Apr
	9	TP Limit	WWTP Discharge TP 0.50 mg/L
Lower DuPage [a]	0	Baseline	Calibrated Model
	1	Physical Project	Dam Removal
	2	TP Limit	WWTP Discharge TP 0.35 mg/L
	3	Reference	No WWTP Discharge
	4	Reference	No WWTP Discharge of N/P/CBOD
	5	Targeted TP Limit	Targeted TP reductions for all WWTPs
	6	Reference	West Branch (WB) & East Branch (EB) TP reductions, Lower DuPage (LD) WWTPs held same
	7	Targeted TP Limit	Targeted TP reductions (Naperville & Crest Hill), WB & EB 0.35 mg/L
	8	Seasonal TP Limit	WWTP Discharge seasonal TP: 0.35 mg/L May–Oct, 0.50 mg/L Nov–Apr
	9	TP Limit	WWTP Discharge TP 0.50 mg/L
	10	Targeted TP Limit	WB & EB 0.35, EB median flow, LD WWTPs 0.50 mg/L, Camelot no change
	11	Targeted TP Limit	WB & EB 0.35, EB median flows, LD dischargers at 0.50 mg/L, Camelot no change, Naperville and Bolingbrook at 0.35 mg/L

Note:
[a] Most scenarios include the combined impact of effluent TP reductions along the East and West Branches upstream.

7.2.10 Identifying WWTP Limits to Meet Instream TP Threshold

An essential aspect of this NIP is the identification of a watershed-specific TP concentration to facilitate removal of DO and offensive condition impairments in the DuPage River and Salt Creek watersheds. Using the updated IPS Tool, the DRSCW and LDRWC have derived that an instream TP concentration of 0.106–0.277 mg/L would be conservatively protective of aquatic communities that meet the Illinois General Use standard; therefore, they had set a TP concentration of 0.28 mg/L as the watershed-specific target (or threshold) (Section 5.1). Using the calibrated QUAL2Kw models, the DRSCW and LDRWC simulated instream TP concentrations following the implementation of lower TP effluent limits at all watershed WWTPs. Two TP effluent limit management scenarios were modeled: 0.50 mg/l and 0.35 mg/L (reflecting a 0.40 mg/L and 0.28 mg/L effective effluent concentration).

The 0.50 mg/L effluent limit was included in this analysis because it is an interim effluent level agreed to by the various pertinent partners in Illinois to be achieved by 2030. In 2018, a “three-party agreement” was approved by the Illinois Association of Wastewater Agency (IAWA), the IEPA, and environmental advocacy groups; it sets out a path for most of the major WWTPs in Illinois to meet an effluent limit of 0.50 mg/L TP annual geometric mean on a rolling 12-month basis, beginning January 1, 2030 (unless certain factors are present, including the necessity of chemical removal [in which case the date becomes 2025] or the use of biological nutrient removal (BNR) [in which case the date becomes 2035]). Additionally, an effluent limit of 0.50 mg/L would meet the objectives for point sources set out by the Illinois Nutrient Loss Reduction Strategy (Illinois NLRS). The Illinois NLRS has a goal of a statewide reduction of TP of 25% by 2025 and a long-term reduction of 45% reduction; if all major WWTPs in the state meet an effluent limit of 0.50 mg/L, the goals for point sources set forth in Illinois NLRS would be met. The 0.50 mg/L TP effluent limit was modeled as a concentration of 0.40 mg/L TP with the understanding that each WWTP typically sets a 20% safety factor, thus yielding an effluent limit of 0.50 mg/L TP, which would result in an effective mean concentration of 0.40 mg/L TP..

As a means of determining the reductions in effluent discharges of TP that would be needed to meet the instream watershed-specific TP threshold of 0.277 mg/L, an effluent limit of 0.35 mg/L TP was used in the analysis. The 0.35 mg/L TP effluent limit was modeled as an effective effluent concentration of 0.28 mg/L TP with the understanding that each WWTP typically sets a 20% safety factor. Table 43 illustrates the predicted instream concentrations from water quality modeling at the 75th percentile daily average TP concentrations for both the 0.50 mg/L and the 0.35 mg/L scenarios for May–October. The 75th percentile of daily average concentrations rather than the mean is used to compensate for several factors: the annual variation in background instream TP storm concentrations and flows, the uncertainty about the scale and frequency of TP concentrations above the mean and their impact, and the inherent inaccuracy in modeling ambient systems.

The annual variation in background mean TP concentrations appears relatively small (around 0.05 mg/L based on 2007–2021 bioassessment data) (see Section 6, Existing Phosphorus Conditions and Sources). In all watersheds, and in all years, urban TP means were higher than medians (by an average of 0.05 mg/L), suggesting that a small number of relatively concentrated urban TP spikes were disproportionately important in effecting means. The majority of the variation in instream dilution of effluent is a function of storm flow volume. This is especially important when considering the East Branch calibration year results (2019), when storm flow in the model calibration year was the highest average annual average storm flow observed in the East Branch for the 2000–2021 period. Streamflows in the other waterways for the model calibration years were more representative of mean streamflows. The West Branch and the Lower DuPage were both approximately at the 75th percentile of annual average streamflows, and Salt Creek was slightly less than the median of annual average streamflows (all for the 2000–2020 period). However, even in these cases, caution is warranted. In the Lower DuPage River, for example, dilution from urban flows would have been less in 15 of the last 20 years. As the dilution factor present in the East Branch model was the maximum observed for 2000–2020, the East Branch data presented in Table 43 is from a model run where the urban flow input was modified to match the basin median storm flow figures. In the 2019 calibration run, urban sources accounted for 71% and point sources accounted for 29%. In the median dilution scenario, nonpoint sources are 60% and point sources are 40% of total streamflow.

Table 43. 75th percentile of daily average TP concentrations (May–October) by reach and scenario

75th Percentile of daily average TP concentration from May to October, by reach (for each waterway and key scenario reduction in effluent TP concentrations)												
	East Branch DuPage[1]			West Branch DuPage			Salt Creek			Lower DuPage[2]		
Reach	Baseline	0.50 Scenario	0.35 Scenario[3]	Baseline	0.50 Scenario	0.35 Scenario[3]	Baseline	0.50 Scenario	0.35 Scenario[3]	Baseline	0.50 Scenario[3]	0.35 Scenario
1	1.99	0.29	0.22	0.20	0.20	0.20	2.80	0.33	0.24	1.06	0.22	0.18
2	1.64	0.24	0.19	2.62	0.38	0.27	2.67	0.32	0.23	1.25	0.24	0.21
3	1.50	0.27	0.20	2.74	0.37	0.27	2.09	0.33	0.24	1.14	0.22	0.20
4	1.24	0.22	0.17	2.68	0.36	0.26	1.95	0.29	0.21	1.08	0.22	0.19
5	1.09	0.20	0.16	2.73	0.34	0.25	1.84	0.28	0.21	1.09	0.22	0.19
6	1.09	0.22	0.18	2.47	0.31	0.23	1.76	0.28	0.21	1.07	0.22	0.19
7	1.09	0.22	0.18	2.15	0.29	0.22	1.69	0.27	0.21	1.03	0.21	0.19
8	1.42	0.26	0.20	2.04	0.30	0.22	1.61	0.26	0.20	1.02	0.22	0.19
9	1.38	0.25	0.19	2.02	0.31	0.22	1.43	0.25	0.19	1.00	0.21	0.19
10	1.18	0.22	0.17	1.96	0.30	0.22	1.43	0.25	0.19	0.99	0.21	0.19
11	1.76	0.26	0.20	1.74	0.27	0.20	1.35	0.24	0.19	0.97	0.21	0.19
12	1.69	0.26	0.20	1.72	0.27	0.20	1.34	0.24	0.19	0.96	0.21	0.19
13	1.52	0.25	0.20	1.66	0.27	0.20	1.34	0.24	0.19	0.94	0.21	0.19
14	1.47	0.25	0.20	1.49	0.28	0.22	1.31	0.24	0.19	0.92	0.21	0.19
15	1.45	0.27	0.21	1.48	0.28	0.22	1.30	0.24	0.18	0.92	0.21	0.19
16	1.51	0.27	0.20	1.45	0.28	0.22	1.23	0.22	0.18	0.90	0.20	0.19
17	1.54	0.26	0.20	1.45	0.28	0.22	1.21	0.22	0.18	0.88	0.20	0.19
18	1.46	0.25	0.19	1.43	0.27	0.22	1.19	0.22	0.17	0.88	0.20	0.18
19	1.32	0.24	0.19	1.30	0.26	0.21	1.13	0.23	0.18	0.87	0.20	0.18
20	1.24	0.23	0.19	1.18	0.24	0.20	-	-	-	0.85	0.20	0.18
21	-	-	-	1.00	0.23	0.19	-	-	-	0.82	0.20	0.19

(red)	≥ 0.28 mg/l
(orange)	= 0.27 mg/l
(yellow)	= 0.26 mg/l

Notes:
Colors represent proximity to (yellow or orange) or exceedance of (red) upper limit of IPS threshold. For Lower DuPage, the scenario outcome is also a product of the same scenario being implemented in the upstream branches.
[1] Although streamflows observed during the simulation year for the East Branch were higher than usual, sensitivity testing was conducted to ensure that a median flow year produces negligible difference in model results.
[2] For both the 0.35 mg/L and 0.50 mg/L scenarios for the Lower DuPage, upstream conditions were held at the 0.35 mg/L scenario for both the East and West Branches.
[3] Selected scenario for each respective waterway.

As shown in Table 43, in the East Branch, West Branch, and Salt Creek watersheds, an effluent discharge limit of 0.50 mg/L does not meet the instream threshold of 0.28 mg/L TP in all stream reaches some 75th percentile of the time to allow for an additional margin of safety. Therefore, this management scenario was not developed further for the DRSCW watersheds. Figure 69 to Figure 71 show the simulated instream TP concentrations for the calibrated baseline model and the 0.35 mg/L TP reduction scenario compared on a reach-by-reach basis for East Brach, West Branch, and Salt Creek. The 0.35 mg/L TP scenarios achieve the instream threshold of 0.28 mg/L TP for all reaches as averaged across the growing season in these watersheds. An additional statistical evaluation was conducted to ensure instream TP thresholds were achieved during 75% of the growing season to provide an extra margin of safety.

In the Lower DuPage River watershed, an effluent discharge limit of 0.50 mg/L by WWTPs discharging directly to the mainstem of the Lower DuPage River was simulated to meet the instream threshold of 0.28 mg/L TP in all stream reaches. This is due to the increased dilution from urban flows and assimilation capacity moving downstream, which is attributed to the 0.35 mg/L effluent limit being implemented at the East Branch and West Branch WWTPs located upstream.

Figure 72 shows simulated instream TP concentrations for the calibrated baseline model and the 0.50 mg/L TP reduction scenario on a reach-by-reach basis for the Lower DuPage River watershed. The 0.50 mg/L TP scenario for mainstem WWTPs achieves the instream threshold of 0.28 mg/L TP for all reaches as averaged across the growing season in this watershed.

The Crest Hill West WWTP discharges to a Lower DuPage River tributary, Rock Run. Although Rock Run was not explicitly simulated in QUAL2Kw, in order for Rock Run to meet the instream threshold of 0.28 mg/L TP, it is expected that the Crest Hill West facility would need to meet a 0.35 mg/L TP effluent limit as is the case for all other facilities located on tributaries in these watersheds.

A TP concentration limit of 0.35 mg/L was determined to be applicable for treated effluent from member WWTPs in the East Branch DuPage River, West Branch DuPage River, and Salt Creek. A higher WWTP TP concentration limit of 0.50 mg/L was determined to be appropriate for the mainstem Lower DuPage River due to increased dilution and assimilative capacity moving downstream and the reliance on the aforementioned proposed WWTP TP reductions upstream on the East and West Branches.

Complete documentation for all scenario applications and results can be found in the Scenario Report (Tetra Tech 2023a).[16]

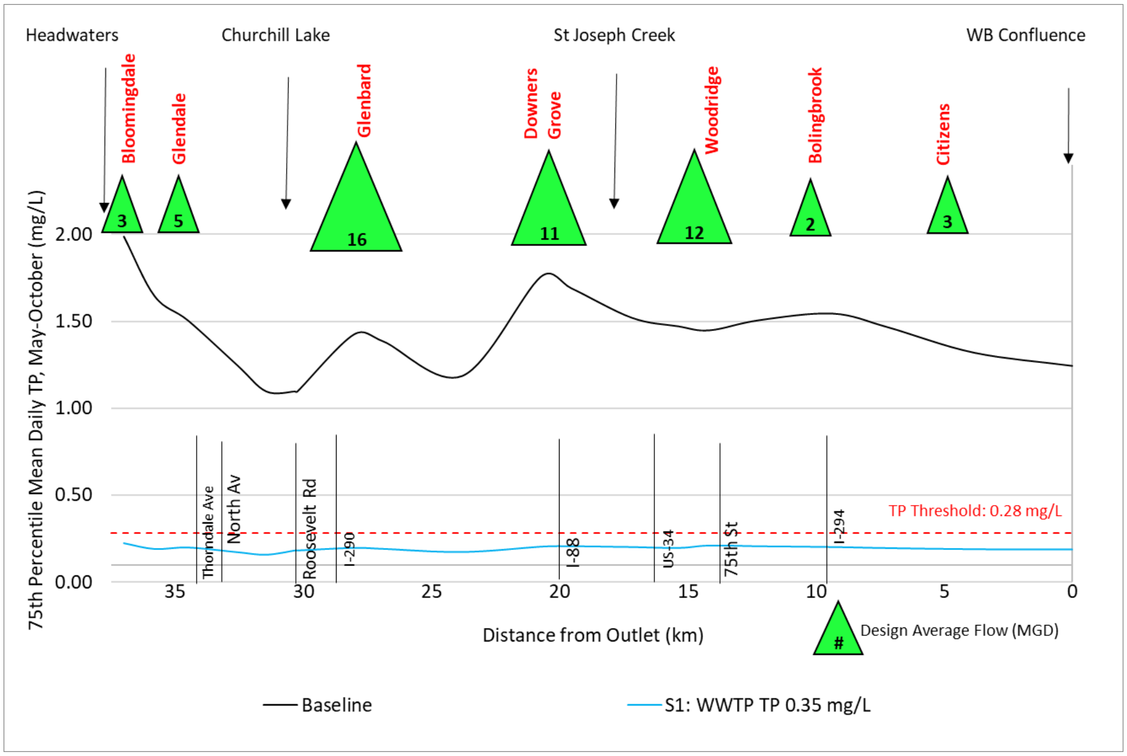


Figure 69. May–October 75th percentile daily average TP concentration longitudinally along East Branch DuPage River for baseline and selected management scenario (WWTP limit of 0.35 mg/L TP).

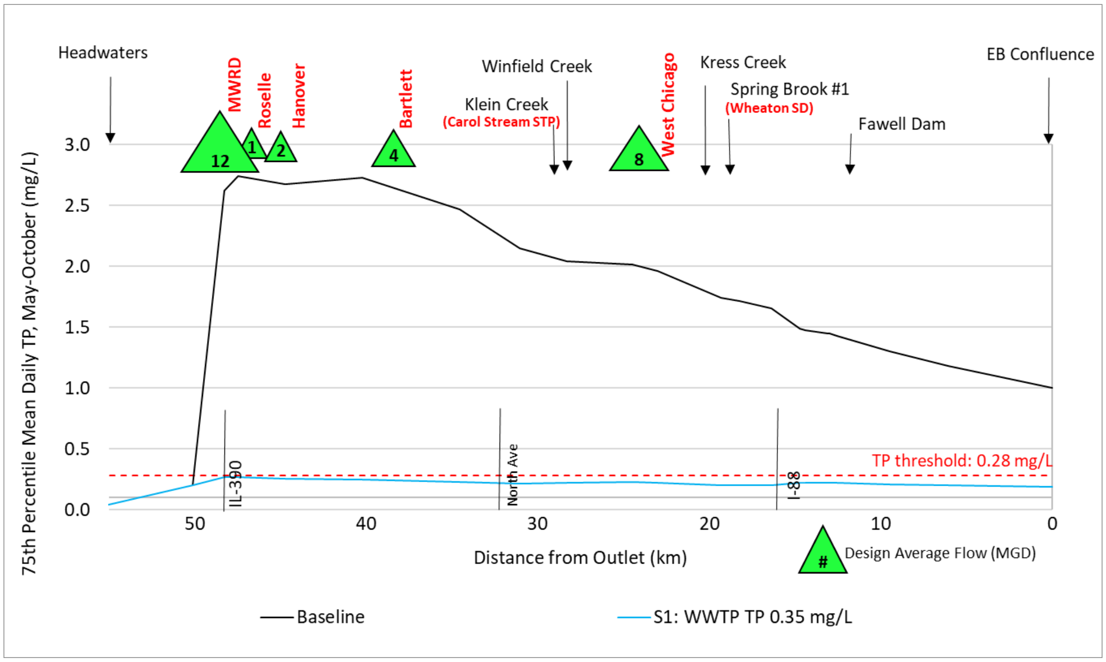


Figure 70. May–October 75th percentile daily average TP concentration longitudinally along West Branch DuPage River for baseline and selected management scenario (WWTP limit of 0.35 mg/L TP).

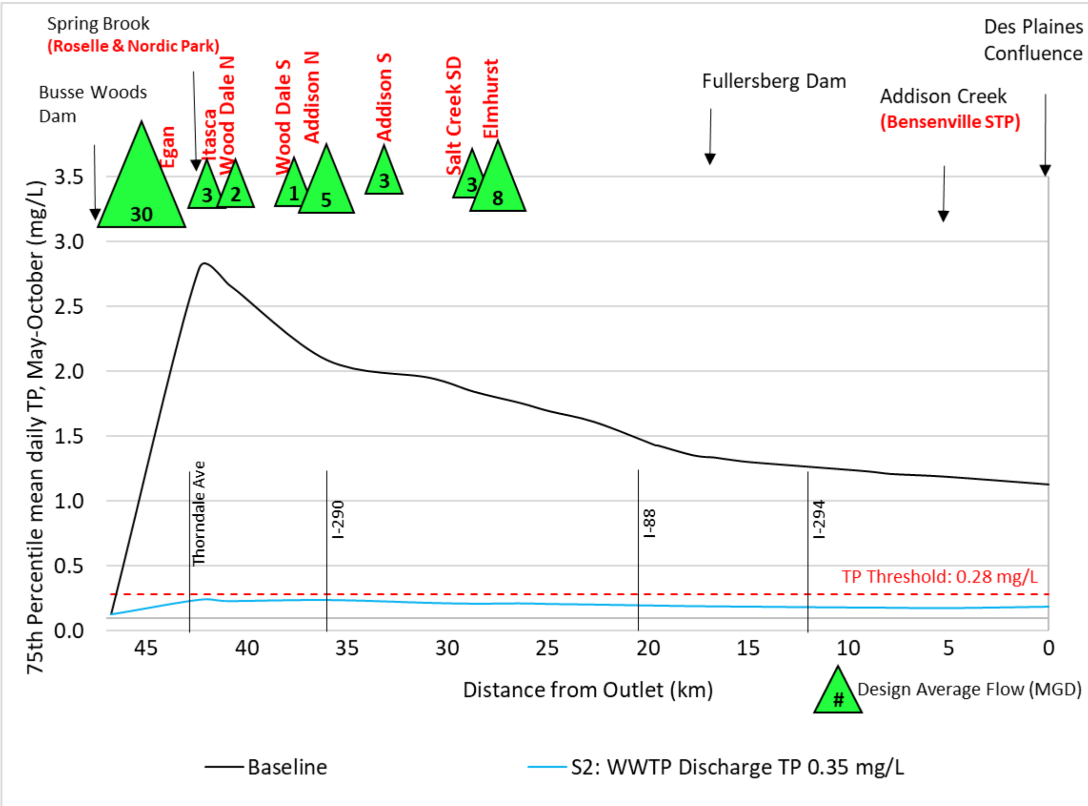


Figure 71. May–October 75th percentile daily average TP concentration longitudinally along Salt Creek for baseline and selected management scenario (WWTP limit of 0.35 mg/L TP).

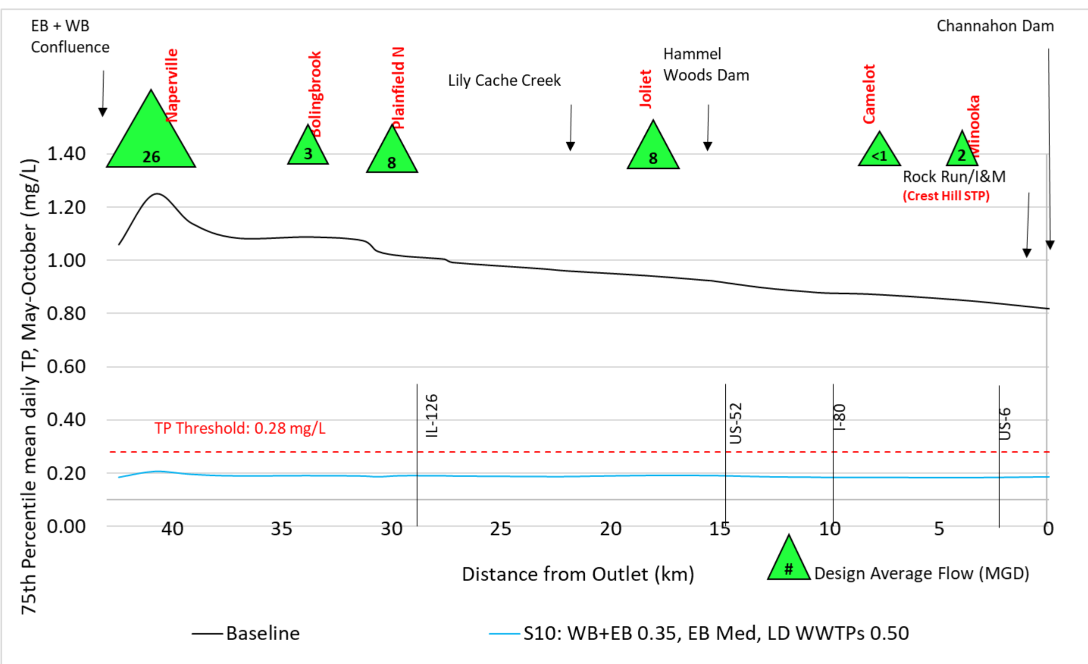


Figure 72. May–October 75th percentile daily average TP concentration longitudinally along Lower DuPage River for baseline and selected management scenario (WWTP limit of 0.50 mg/L TP).

7.3 DOWNSTREAM IMPACTS OF TP MANAGEMENT

As discussed in Section 5.1 (Deriving a TP Threshold Protective of Aquatic Life), the watershed-specific instream threshold of 0.28 mg/L TP was developed to be protective of aquatic communities that meet the Illinois General Use standard. However, the negative impacts of nutrient loading should also be considered downstream of the DuPage River and Salt Creek watersheds in the Illinois River, Mississippi River, and Gulf of Mexico. Consideration of nutrient conditions at the downstream end of the DuPage and Salt watersheds is integral to the larger goals of the USEPA Mississippi River and Gulf of Mexico Hypoxia Task Force. Simulated instream TP concentrations at the terminal reach of each waterway illustrate the decreases from baseline conditions relative to the selected scenario conditions (Table 44). Baseline and selected scenario results show the significant decreases in TP concentrations at the downstream end of each waterway based on TP limit reductions to 0.35 mg/L (East Branch, West Branch, Salt Creek) and 0.50 mg/L (Lower DuPage). Depiction of results at the outlet of each waterway are shown for both the more conservative, 75th percentile of daily average TP concentrations for May–October as well as the more typical conditions of May–October average of daily means.

Table 44. Simulated TP concentrations for each waterway terminal reach for baseline and various selected scenarios (May–October)

Reach Outlet	Baseline		Effluent limit 0.35 mg/L TP		Effluent limit at 0.35 mg/L TP for DRSCW WWTP and 0.50 mg/L TP for LDRWC	
	75th Percentile	Mean	75th Percentile	Mean	75th Percentile	Mean
East Branch	1.24	0.90	0.19	0.17	-	-
West Branch	1.00	0.73	0.19	0.17	-	-
Salt Creek	1.13	0.94	0.18	0.17	-	-
Lower DuPage	0.82	0.66	0.19[a]	0.15[a]	0.20	0.17

Note:
[a] This scenario was not selected, but the results are included to show predicted instream TP concentrations if the Lower DuPage River also adopted the 0.35 mg/L TP limit.

NSAC recommends a 0.113 mg/L instream TP concentration for wadeable north ecoregion waterways with 95% confidence intervals of 0.193 mg/L (upper) and 0.033 mg/L (lower) (Section 2.4.2). The simulated average May–October TP concentrations at the terminus of the Lower DuPage River at its confluence with the Des Plaines River for the selected scenario is 0.17 mg/L, which is within the confidence intervals of the recommended TP limit identified by NSAC. The simulated average May–October TP concentrations at the terminus of Salt Creek, based on the 0.35 mg/L WWTP TP management scenario, are also predicted to be within the confidence intervals recommended by NSAC (at 0.17 mg/L). Based on these management scenario evaluations, it is concluded that the proposed TP limits for WWTP dischargers are sufficiently protective of downstream conditions.

8 FEASIBILITY OF INCREASING TP CAPTURE FROM URBAN STORMWATER WASH-OFF

Ambient TP concentrations resulting from stormwater-driven sources (urban runoff and naturally occurring background conditions) are covered in Section 5.0. This “urban” TP has multiple potential sources, including organic matter (leaves, flowers, pollen, lawn clippings), animal feces, lawn fertilizers, atmospheric dust deposition, and soil erosion (Berretta and Sansalone 2011; Waller 1977). In urban environments, impervious surfaces like roadways decrease natural infiltration capacity while concentrating stormwater runoff, which can increase the speed and total load of TP to storm sewers. Storm sewer systems lead directly to flowing surface waters with little to no pollutant capture or reduction protections. Introducing pollutant capture for TP derived from urban stormwater is complex and difficult to implement on a large scale. Structural BMPs like bioretention cells can have limited application on a large scale because they compete for valuable and limited urban space. Structural BMPs require regular maintenance and may become TP sources themselves (Taguchi et al. 2020; Erickson et al. 2022). Structural BMPs may also be ineffective during periods of high precipitation outside of their design parameters, perhaps most critically during spring and fall, which are seasons of ecological importance for aquatic life egg laying and high stormwater TP loading stormwater, respectively.

Structural BMP applicability faces financial and technical issues (available space, system performance, maintenance, prevalence of dissolved phosphorus). Additionally, structural BMPs address loading that has arrived downstream through conveyance rather than reducing phosphorus loading at the source. DRSCW and LDRWC have elected to focus this NIP on methods for nonpoint source phosphorus load reduction potential which target source loading such as leaf management and street sweeping. This NIP advocates for a practical approach to managing urban TP loading that is not reliant on the constraints and potential issues associated with a large, expensive, diffuse network of structural BMPs.

8.1 STREET SWEEPING AND LEAF LITTER COLLECTION STUDY

DRSCW and LDRWC assisted with funding of USGS studies on urban stormwater wash-off to better understand urban TP loading sources and transport (Selbig 2016). This intensive urban stormwater runoff monitoring from residential areas suggests that nearly 60% of annual warm-weather TP loading occurs in the fall, associated with leaf litter biomass (Figure 73). The study found that 59% of TP leaching from leaf litter biomass was in the dissolved fraction. Dissolved phosphorus is the most bioavailable form of TP for aquatic algae growth, but it is also the most difficult TP form to capture using structural BMPs. The USGS study was conducted to measure the impact of various intervention practices to keep bioavailable dissolved phosphorus out of the stormwater system, as compared to basins where no intervention practices are conducted. For the study, the interventions conducted included complete organic material removal via weekly, pre-precipitation event street sweeping and leaf litter collection from the entire catchment area monitored. While this level of high-intensity leaf litter and street sweeping management is likely not feasible for municipal agencies, results should represent the maximum TP reduction potential for these invention methods for urban stormwater wash-off. After a calibration period in 2013 to establish baseline TP concentrations for the two study basins, interventions of intensive street sweeping and litter collection were conducted in 2014 within the “test” catchment, while no interventions were conducted within the “control” catchment (Figure 74). Results from October indicate that these interventions reduced the mean total and dissolved phosphorus concentrations in the test catchment by approximately 80% (relative to baseline conditions in that catchment measured during the 2013 “calibration” phase in 2013).

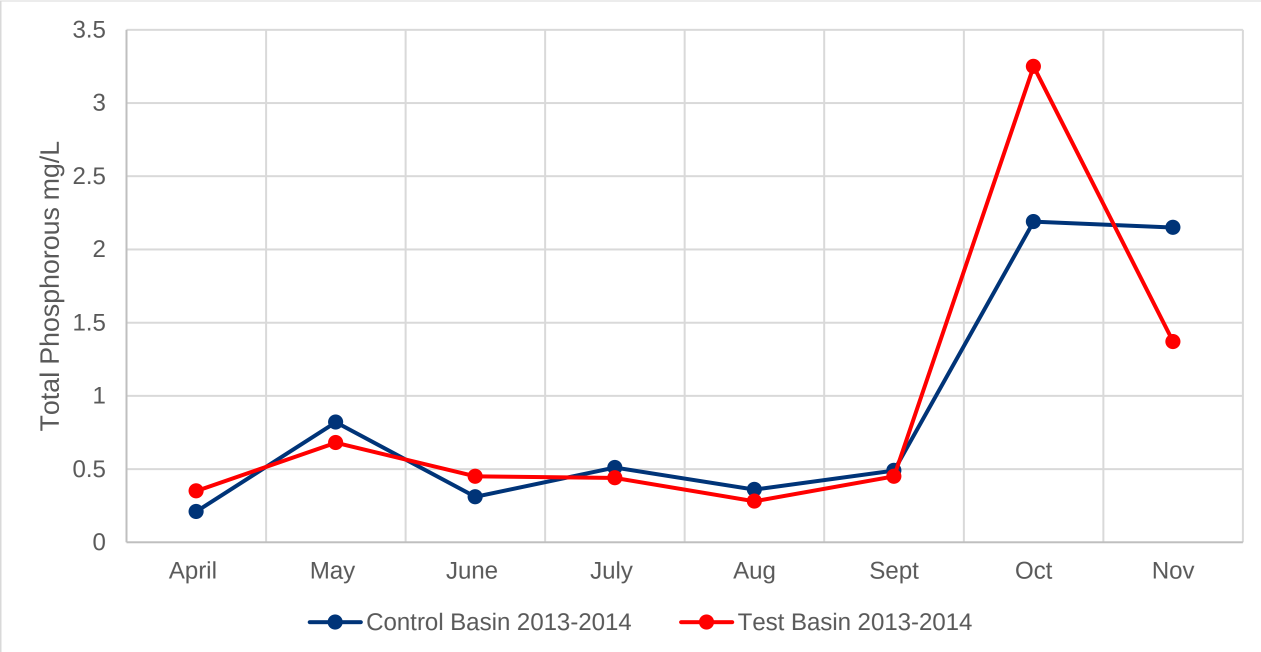


Figure 73. Mean monthly stormwater TP concentrations for two urban drainage areas observed 2013–2014 to establish baseline concentrations before any mitigative measures for TP removal.

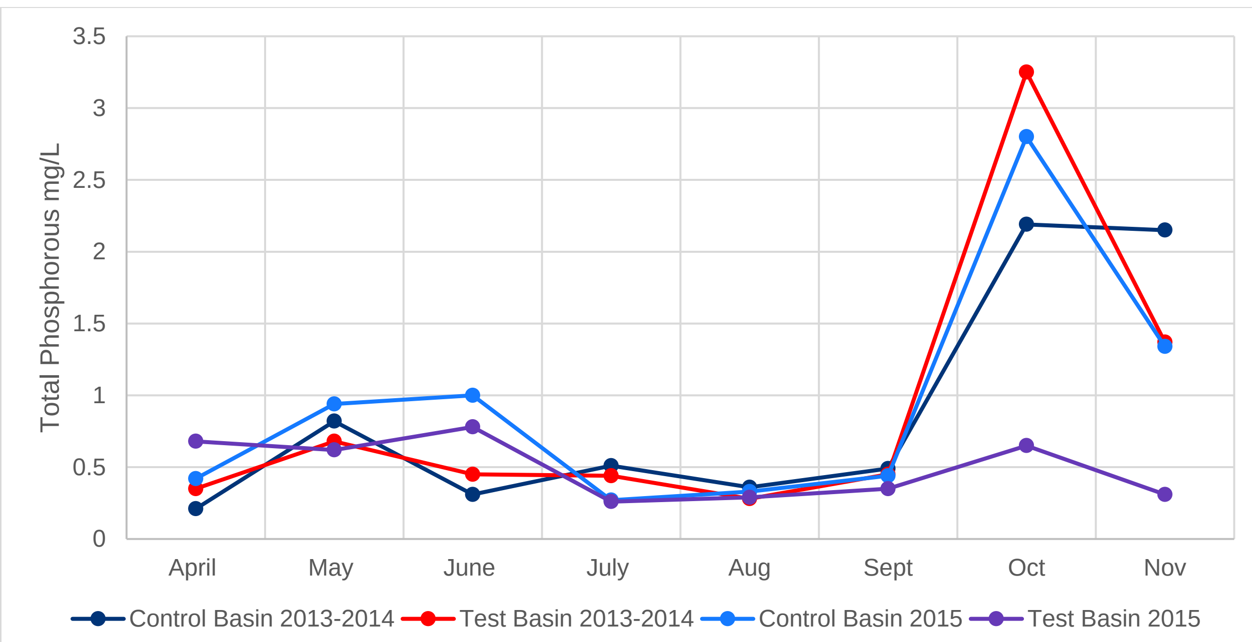


Figure 74. Mean monthly stormwater TP concentrations for two urban drainage areas before (2013–2014) and after (2015) mitigative measures for TP removal were applied to the test basin only.

Urban stormwater TP source-reduction practices like street sweeping and leaf litter collection used in the study are already ubiquitous in the watersheds and municipal budgets. Agencies that manage public road systems often engage in some amount of street sweeping either manually by hand or mechanical broom, or with vehicles such as regenerative air or vacuum filters. Such practices are understood to improve aesthetics, remove potential driving hazards, and keep storm sewer grates free from debris, which can lead to unsafe flooding conditions (per interviews with multiple public works departments). While performing these functions, street sweeping also captures pollutants from the road surface that would otherwise enter surface water.

Street sweeping activities have been identified through research as being critical to TP reduction from stormwater runoff. A 2020 study found that streets swept on a biweekly basis had approximately 21% more TP in stormwater compared to those swept more frequently (weekly basis) (Selbig et al. 2020). In this same study, where only leaf litter collection activities were conducted without street sweeping, there was no significant reduction observed in stormwater TP concentrations. Because leaves can leach phosphorus quickly, the study concluded that the actions of leaf collection and street sweeping on their own or together are less significant than their *frequency of implementation*. More frequent sweeping or leaf pickup meant that leaves did not have as much time to fragment and leach in stormwater wash-off.

8.1.1 Baseline TP Loading from Stormwater Wash-off for DuPage River and Salt Creek Watersheds

To better understand and quantify current conditions in the DuPage River and Salt Creek watersheds, the study developed a high-resolution geospatial dataset of “effective canopy cover.” Effective canopy cover is a measure of tree canopy density and overhang over roadways and has been shown to be a major predictive factor in TP loading from urban areas (Hobbie et al. 2023). The geospatial canopy map allowed for the calculation of effective canopy cover by both location and land use type (Figure 75).

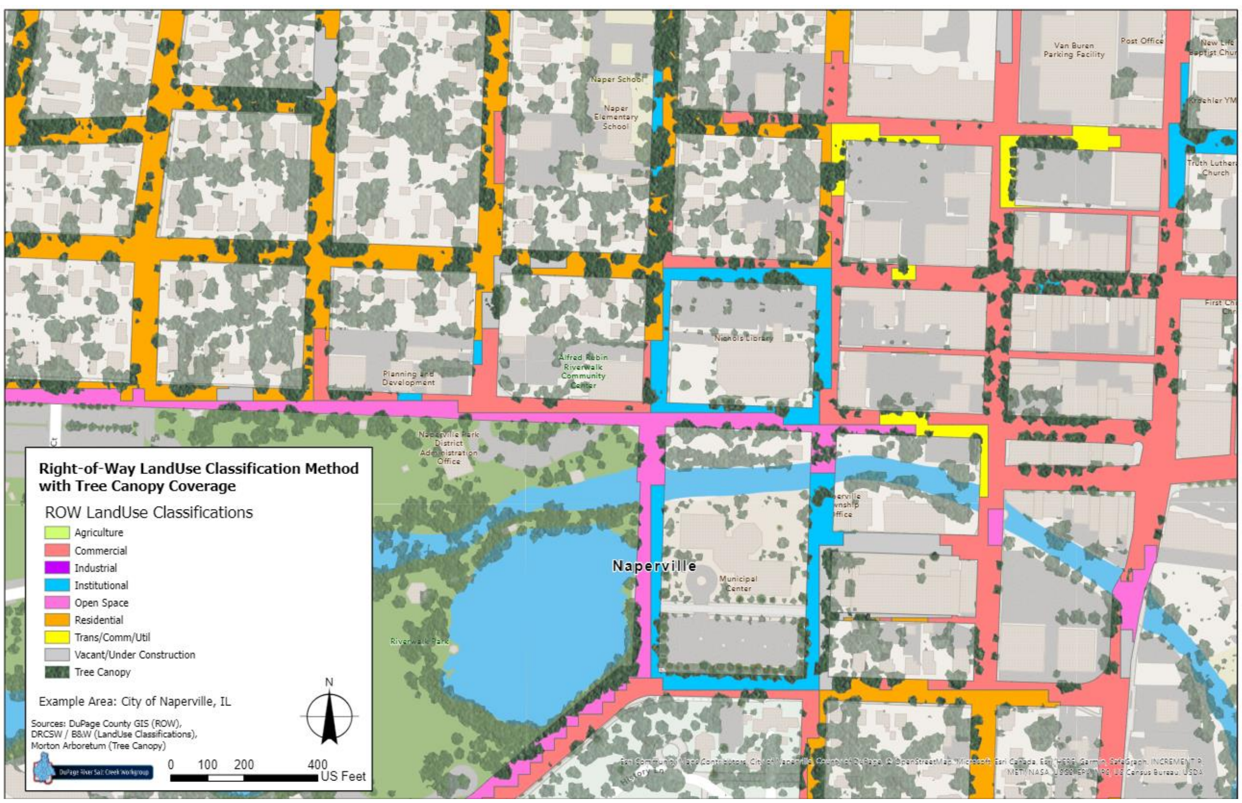


Figure 75. Land use classification and urban tree canopy geospatial data for the city of Naperville, IL.

A total of 95 agencies responsible for roadway maintenance activities were identified in the DuPage River and Salt Creek watersheds, managing a total right-of-way (ROW) area of 82.4 square miles. Of this total ROW area, 19.1 square miles were identified as covered by tree canopy, giving the entire watershed ROW area an average of 23.2% effective canopy cover across all roads, land use types, and communities/townships/agencies. An example of one of the many ways the geospatial canopy data could be analyzed relates to the “residential” land use type. Within residential areas (which account for most of the effective canopy coverage), effective canopy coverage ranges from as high as 62% to as low as 1%. Because of this wide range, the data suggests that effective canopy coverage should be used on a finer scale (such as at the agency level) rather than on a watershed scale when determining the allocation of resources for street sweeping and leaf litter collection. This type of data evaluation was crucial to understanding methods and recommendations to meet the NIP's objective of reducing TP loading to waterways.

8.2 STREET SWEEPING EFFORTS IN DUPAGE RIVER AND SALT CREEK WATERSHEDS

A questionnaire was sent to all 95 communities, townships, and agencies that operate a transportation network (roads) across the DuPage River and Salt Creek watersheds to collect data on the current implementation levels of street sweeping and leaf litter management. Responses to the questionnaire represent 77% of the area in the DuPage River and Salt Creek watersheds. The questionnaire focused on the existence of street sweeping programs and specific information about their data collection methods, routes, and frequencies. The questionnaire responses and effective canopy cover data were used to populate the Minnesota Pollution Control Agency Street Sweeping Tool[17] to estimate total load reductions from street sweeping activities.

Based on results from this evaluation, it is estimated that current practices across the watersheds remove approximately 7,000–12,000 lbs of TP per year at the 25th and 50th percentiles. Except for three agencies, all municipalities that responded to the survey have a street sweeping program in place, whether in-house or contracted out. Routes and frequency of street sweeping vary by agency and throughout the year, with most agencies increasing frequency in the spring, summer, and fall months. The three agencies that do not operate a street sweeping program are townships.

Except for four townships, all municipalities that responded to the questionnaire have an existing leaf litter collection program, whether in-house or contracted out. Routes and frequency of leaf collection vary by agency and throughout the year; however, 15 of the 48 responding communities already time the street sweeping to occur after leaf collection. Additional and specific details on the background, methodology, and recommendations of this study can be found in the *Non-Point Source Phosphorus Reduction Feasibility Analysis* report available on the DRSCW website (DRSCW 2021).

Road agencies in the DuPage River and Salt Creek watersheds already conduct various levels of street sweeping and leaf litter collection activities, which provide TP reduction from urban stormwater wash-off. In total, these two watersheds produce approximately 1,441,000 lbs of TP per year from all potential TP sources. Of that total, 83% of the load (about 1,201,000 lbs) is attributed to WWTPs. Based on the study, street sweeping and other current urban stormwater wash-off interventions capture approximately 7,000–12,000 lbs of TP reduction per year. Even at the 50th percentile, street sweeping and leaf litter collection methods within the DuPage and Salt watersheds capture an amount equal to only 1% of the total annual loading from WWTPs. Given that street sweeping activities are already conducted across these watersheds, this evaluation indicates that additional efforts to increase the capture of urban stormwater-derived TP through street sweeping and leaf litter collection would have a negligible impact on overall watershed TP loading.

Although the effect of watershedwide street sweeping activities on total TP loading is relatively insignificant, a reduction of urban sources of TP may be the best option for tributaries that receive only urban (non-WWTP) flow. As was shown in Section 6.2 and the box plots in Figure 46 through Figure 49, sites that are subject only to urban flow already achieve the protective range of TP concentrations adopted by this NIP. It is assumed for the purposes

[17] https://stormwater.pca.state.mn.us/index.php?title=Street_Sweeping_Phosphorus_Credit_Calculator

of this NIP that existing programs for street sweeping and leaf litter collection practices will continue in these locations at the same approximate intensity in the future.

Although TP load reductions attributed to urban stormwater wash-off mitigation measures are dwarfed by the potential reductions from WWTPs, it is possible that as the total TP load declines over time, the importance of urban stormwater reductions will increase. Both street sweeping and leaf litter collection activities have significant benefits other than TP load mitigation, including reduction of storm drain clogging due to organic and sediment debris, reduction of de-icing material wash-off associated with snow and ice management (upcoming DRSCW report), and reduction in particle-bound heavy metals and petroleum hydrocarbons (Miller et al. 2016), among others.

8.3 OPTIMIZING STREET SWEEPING AND LEAF LITTER COLLECTION.

Prevailing literature indicates that street sweeping can be a multi-benefit practice that could provide even greater reductions in TP and other pollutants when optimized for targeted application both spatially and temporally; many techniques for this are still being developed and improved (Hobbie et al. 2023; Ragazzi et al. 2023; Parsons 2023). Such optimizations are beyond the scope of this NIP, and it is recognized that optimizing for TP alone may degrade other benefits. However, certain optimization steps can be suggested, which may increase TP capture while not increasing cost or creating unforeseen environmental impacts such as more metal or chloride loading. These strategies are given below as suggestions. Implementing these suggestions is not required for NIP to succeed in meeting the goal set out in Section 4.1. Specific recommendations for improving current street sweeping and leaf litter collection efforts in the DuPage River and Salt Creek watersheds are detailed below and include increased use of weather forecasting in fleet deployment, spatial prioritization based on canopy cover, the timing of street sweeping after leaf collection, increased frequency during leaf month months, expansion of leaf litter collection programs, and continued public education and outreach.

8.3.1 Increasing Use of Weather Forecasting

Weather forecasting can be used to manage the timing of leaf collection activities. Collecting leaves before storm events will prevent leaves from washing into storm drains and reduce the total leached TP in runoff. Utilizing weather forecasting also has the added benefit of ensuring storm drains are clear before rainfall events that could cause localized flooding if blocked by debris. While it may be infeasible to sweep all roads in a large community before a storm, areas with higher tree canopy coverage could be generally prioritized at a low cost to the program.

8.3.2 Prioritizing based on Canopy Cover

A geospatial inventory of urban tree canopy cover in the ROW was developed for the DRSCW and LDRWC watersheds and for each community and township therein. Prioritizing street sweeping efforts in areas with relatively high canopy cover would increase the efficiency of removing TP from stormwater runoff. Cost increases from more street sweeping in high-canopy-cover areas could be offset by reducing the sweeping frequency in low-canopy areas. The prioritization of sweeping areas will also need to be balanced with the other objectives of street sweeping.

8.3.3 Timing after Leaf Collection

Street sweeping activities that occur after leaf collection activities remove residual leaf litter remaining the roadway before storm events. Changing the street sweeping schedules to align with leaf collection (both spatially and temporally) may not impact program cost to the extent that it can be performed by existing personnel and budget.

8.3.4 Increasing Frequency in Leaf Collection Months

Increasing the frequency of street sweeping during leaf collection months (spring and fall) would result in higher capture of leaf litter deposited between storm events. Higher frequency would capture more leaf litter volume, thus better preventing leaves and associated TP loading from entering the storm drain system. Increases in seasonal sweeping frequency could be offset by decreased sweeping during summer and winter to reduce cost impacts from modified scheduling.

8.3.5 Expanding Leaf Litter Collection Programs

For agencies without leaf collection programs, it is recommended that such a program be implemented in conjunction with an existing street sweeping program to maximize potential TP reduction from stormwater wash-off with these preventative measures. Where leaf litter collection programs are already present, there may be opportunities to adjust existing practices to better coordinate with street sweeping efforts.

8.3.6 Public Education Outreach

Public outreach materials (social media, emails, and mailers) can educate communities on the combined impacts of leaves and phosphorus on water quality. Outreach materials should provide information tailored to both residential homeowners and landscape maintenance companies regarding proper disposal and handling practices of landscape waste.

9 RECOMMENDATIONS AND IMPLEMENTATION

The following recommendations are made:

A. Target an ambient mean TP concentration of less than 0.277 mg/L during May–October in the basins of the DuPage River and Salt Creek while improving the streams' physical conditions to enhance aquatic life and reduce or eliminate remaining DO sags.

B. Continue the rotating watershed Bioassessment.

C. Update and continue holistic data analysis.

D. Develop proposed refinement of biological endpoints for Illinois urban areas.

E. Update adaptive management plan to reflect implemented NIP recommendations and the phasing out of Projects Assessments.

9.1 IMPLEMENTATION OF RECOMMENDATIONS

9.1.1 Recommendation A

Recommendation A. Target an ambient mean TP concentration of less than 0.277 mg/L during May–October in the basins of the DuPage River and Salt Creek while improving physical conditions to enhance aquatic life (QHEI) and reduce or eliminate remaining DO sags. These goals will be achieved by having:

I. QHEI and physical DO enhancement projects continue to be strategically implemented.

II. WWTPs discharging to the West Branch, East Branch and Salt Creek watersheds and to tributaries on the Lower DuPage (Crest Hill) adopt an NIP permit limit of 0.35 mg/L in May–October to be part of an annual geometric mean of 0.5 mg/L.

III. WWTPs discharging to the mainstem of the Lower DuPage adopt a permit limit of 0.5 mg/L annual geometric mean.

Recommendations A I, II, and III will be implemented simultaneously in the DRSCW and LDRWC watersheds to achieve multiple priorities, including improving QHEI; cost-effectively removing DO and offense condition impairments via physical projects (as predicted by the QUAL2Kw models); and reducing ambient TP concentrations to beneath the NIP threshold described in Section 5.1.

Recommendation A will be accomplished by continuing the DRSCW/LDRWC Special Conditions, with the NIP Special Conditions set out herein starting as the current permit condition ends (2025). Under the Special Conditions, participating WWTPs have the flexibility to temporarily contribute monetary resources (project assessments) rather than meeting the NIP-recommended TP effluent limit immediately. Project assessments will be used to implement physical stream enhancement projects (project assessments generated under the NIP will be referred to as the NIP project assessments).

Funding for implementing the QHEI and DO amelioration projects is in lieu of operations and maintenance (O&M) costs for TP removal, so the physical projects are scheduled to be implemented before implementation of A II and A III. Table 45 (DRSCW) and Table 46 (LDRWC) show the schedule for the generation of the NIP project assessments for funding A I, with assessments being paid between 2026 and 2035 (years vary based on the individual plant) and then being phased out after 2035 as WWTPs move financial resources towards capital upgrades and O&M costs incurred for implementing A II and A III.

Proposed NIP project assessment amounts by agency, year and watershed group are shown in Table 47 and Table 48.

As in previous Implementation Plans (2015 and 2021), project assessment levels are based on O&M expenditures forgone through postponing different levels of TP removal treatment. These levels of treatment forgone are 1 mg/L monthly (2026–2030) and 0.5 mg/L annual geometric mean (2030–2035 inclusive), which are the treatment levels and schedule set out in the "three-party agreement" (Section 7.2.10) for the other major WWTPs in the State. Predicted O&M costs for these levels of treatment were provided in each WWTP's feasibility study. Assessments are calibrated to be no more than 30% of the relevant O&M costs.

Having paid the last year of their 2022 Special Condition Extension in 2025, WWTPs only removing TP on the NIP schedule will start paying NIP project assessments in 2026, based on forgoing treatment to 1 mg/L TP effluent quality. WWTPs currently removing TP or moving to do so under their current permit will start paying assessments in 2030 based on the difference in O&M costs between treating to 1 mg/L TP effluent quality and 0.5 mg/L TP effluent quality. WWTPs only removing TP on the NIP schedule will see their project assessments increase in 2030 to reflect the larger costs forgone to treat to 0.5 mg/L TP effluent quality. The final NIP project assessment for all WWTPs would be paid in 2035, and the WWTPs would move into the Capital Upgrade Period (CUP), which is 2036–2037. The final two rows of Table 47 (DRSCW) and Table 48 (LDRWC) show the annual totals for NIP project assessments by year and the accumulated total. Provisional totals based on full participation of all WWTPs are $25,820,282 for the DRSCW watersheds and $2,202,298 for the LDRWC watersheds. These totals will be reduced if any participating WWTPs implement recommendations A II and III ahead of the schedule. NIP project assessments will fund the development and construction of a new priority list of essential Instream Improvements addressing physical QHEI and DO enhancement projects. Projects drawn from the 2021 IPS Tool will be generated and implemented for each watershed. A draft list of potential projects is given in Table 3 in Section 1.1.1. These will be further reviewed and refined by the DRSCW and LDRWC prior to the issuance of the NIP-based permits described below.

Table 45 shows the implementation schedule for TP limits for DRSCW members. Two DRSCW WWTPs (Bensenville and Itasca) are already operating at 1 mg/L monthly average TP. Per their current permit, Bartlett, Glendale Heights, West Chicago, and Wheaton Sanitary District will start implementing to 1 mg/L monthly average in 2025, 2025, 2025, and 2026, respectively. These plants, denoted by green highlighting in Table 45, will have Special Conditions 1 placed in the permit at their next renewal. All other DRSCW WWTPs not removing TP until 2038 (effective 2040) will have the TP permit limits and schedules in their current permits replaced with recommendation A as set out in Special Condition 1 below immediately.

Table 46 shows the Recommendation A implementation schedule for TP limits for LDRWC members. All LDRWC WWTPs will implement a 1 mg/L monthly average prior to implementing the NIP TP limit. Three LDRWC WWTPs (Joliet Aux Sable WWTP, Plainfield North STP, and Village of Minooka STP) are already operating at 1 mg/L monthly average. Per their permits, Bolingbrook STP #3, Naperville Springbrook WRC, and Crest Hill will move to implement the 1 mg/L monthly average by 2026, 2032, and 2026 respectively. These plants, denoted by green highlighting in Table 46, will have Special Conditions 2 placed in the permit at their next renewal. Paragraph E (see Special Condition 1, the section that sets out the limit, averaging period, and effluent limit) of Crest Hill STP's NIP Special Condition permit would match that set out in the DRSCW Special Condition 1.

Implementation of both NIP recommended TP effluent limit recommendations include:

- The effective date for the NIP recommended effluent limits be May 1, 2040.
- All permits include a two-year CUP and a two-year Treatment System Optimization Period (TSOP).
    - The CUP is designed to allow the construction of facilities to meet the relevant NIP permit limit. The CUP would start no later than 2036.
    - A two-year TSOP is also included. During the TSOP, WWTPs would be actively removing phosphorus but would not be at risk of DMR violations of the effluent target. The TSOP is considered essential as both biological and chemical TP removal have been found to be

significantly influenced by changes in flow, temperature, and operational factors such as pH, hydraulic retention time (HRT), solid retention time (SRT), DO, salinity, and the supply of carbon. A two-year optimization period is recommended to allow feedback from the process and equipment and managerial procedures to be calibrated and practiced, thereby reducing the potential for a violation once the new TP limit becomes effective.

- The recommended reduction in TP loads may be redistributed amongst the WWTPs if modeling demonstrates that it would produce similar load reductions and TP concentration profiles as shown in Section 7.2.10.

The NIP implementation plan set out in Table 45 and Table 46 also maximizes the possibilities for adoption of biological phosphorous removal (BPR) and BNR. When permit limits for TP were broached in 2015, all WWTPs in the NIP area were considering chemical removal. This was partially a function of the proposed limit (1 mg/L monthly) and partially a function of the eminency of the limits. A survey in October 2023 (Figure 76) revealed that under the NIP plan, 13 of the 30 WWTPs covered by this NIP—representing 45% of total NIP design average flow (DAF)—are proposing to use BNR as their primary method of TP removal. Ten WWTPs (36% of total NIP DAF) are planning to use BPR removal, and seven (19% of total NIP DAF) will use chemical phosphorus removal.

Table 45. DRSCW current TP status and schedule for NIP project assessment and TP removal

Agency Members	IL NPDES	Current Permit TP (1.0 mg/L Monthly Average) Implementation Date (for Chemical Treatment)[a]	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
DuPage River Salt Creek Workgroup (DRSCW)																
Addison - AJ LaRocca	IL0027367	1/1/2029	▲	▲	▲	▲	Δ	Δ	Δ	Δ	Δ	Δ				
Addison - North	IL0033812	1/1/2029	▲	▲	▲	▲	Δ	Δ	Δ	Δ	Δ	Δ				
Bartlett	IL0027618	10/1/2025					Δ	Δ	Δ	Δ	Δ	Δ				
Bensenville	IL0021849	Already at 1.0 mg/L					Δ	Δ	Δ	Δ	Δ	Δ				
Bloomingdale	IL0021130	10/1/2028	▲	▲	▲	▲	Δ	Δ	Δ	Δ	Δ	Δ				
Bolingbrook #1	IL0032689	9/23/2028	▲	▲	▲	▲	Δ	Δ	Δ	Δ	Δ	Δ				
Bolingbrook #2	IL0032735	7/2/2029	▲	▲	▲	▲	Δ	Δ	Δ	Δ	Δ	Δ				
Carol Stream	IL0026352	10/1/2028	▲	▲	▲	▲	Δ	Δ	Δ	Δ	Δ	Δ				
Downers Grove Sanitary District	IL0028380	8/1/2028	▲	▲	▲	▲	Δ	Δ	Δ	Δ	Δ	Δ				
DuPage County Greene Valley	IL0031844	9/1/2028	▲	▲	▲	▲	Δ	Δ	Δ	Δ	Δ	Δ				
Elmhurst	IL0028746	8/1/2031	▲	▲	▲	▲	Δ	Δ	Δ	Δ	Δ	Δ				
Glenbard WW Authority	IL0021547	9/23/2028	▲	▲	▲	▲	Δ	Δ	Δ	Δ	Δ	Δ				
Glendale Heights	IL0028967	10/1/2025					Δ	Δ	Δ	Δ	Δ	Δ				
Hanover Park	IL0034479	10/1/2028	▲	▲	▲	▲	Δ	Δ	Δ	Δ	Δ	Δ				
Itasca	IL0026280	Already at 1.0 mg/L					Δ	Δ	Δ	Δ	Δ	Δ				
MWRDGC (Egan WRP)	IL0036340	12/9/2030	▲	▲	▲	▲	Δ	Δ	Δ	Δ	Δ	Δ				
MWRDGC (Hanover Park)	IL0036137	12/9/2030	▲	▲	▲	▲	Δ	Δ	Δ	Δ	Δ	Δ				
Roselle - Botterman	IL0048721	9/23/2028	▲	▲	▲	▲	Δ	Δ	Δ	Δ	Δ	Δ				
Roselle - Devlin	IL0030813	9/23/2028	▲	▲	▲	▲	Δ	Δ	Δ	Δ	Δ	Δ				
Salt Creek Sanitary District	IL0030953	5/2/2029	▲	▲	▲	▲	Δ	Δ	Δ	Δ	Δ	Δ				
West Chicago	IL0023469	10/1/2025					Δ	Δ	Δ	Δ	Δ	Δ				
Wheaton Sanitary District	IL0031739	8/2/2026					Δ	Δ	Δ	Δ	Δ	Δ				
Wood Dale - North	IL0020061	8/1/2031	▲	▲	▲	▲	Δ	Δ	Δ	Δ	Δ	Δ				
Wood Dale - South	IL0034274	1/2/2030	▲	▲	▲	▲	Δ	Δ	Δ	Δ	Δ	Δ				

Note:
[a] Implementation date is one year later, if WWTP uses biological treatment. Date would be suspended under the NIP unless the column to the right is highlighted green.

Legend

TP removal to 1.0 mg/l removed from permit
TP removal to 0.5 mg/l excluded from permit
▲ Assessment paid in lieu of TP treatment to 1.0 mg/l
Δ Assessment paid in lieu of TP treatment to 0.5 mg/l
Capital upgrade period (for construction of facilities to meet lower TP limit)
Treatment system optimization period (TP removal operational and being optimized to meet 0.35 mg/L TP limit by May 1, 2040)
WWTP removing TP to 1.0 mg/l

Table 46. LDRWC current TP status and schedule for NIP project assessment and TP removal

Agency Members	IL NPDES	Current Permit TP (1.0 mg/L monthly average) Implementation Date (for Chemical Treatment)[a]	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
Lower DuPage River Watershed Coalition (LDRWC)																
Bolingbrook STP #3	IL0069744	6/30/2026					Δ	Δ	Δ	Δ	Δ	Δ				
Crest Hill West STP	IL0021121	6/1/2027					Δ	Δ	Δ	Δ	Δ	Δ				
Joliet Aux Sable WWTP	IL0076414	Already at 1.0 mg/L					Δ	Δ	Δ	Δ	Δ	Δ				
Naperville Springbrook WRC	IL0034061	1/1/2032							Δ	Δ	Δ	Δ				
Plainfield North STP	IL0074373	Already at 1.0 mg/L					Δ	Δ	Δ	Δ	Δ	Δ				
Village of Minooka STP	IL0055913	Already at 1.0 mg/L					Δ	Δ	Δ	Δ	Δ	Δ				

Note:
[a] Implementation date is one year later, if WWTP uses biological treatment.

Legend

Δ Assessment paid in lieu of TP treatment to 0.5 mg/l
TP removal to 0.5 mg/l excluded from permit
Capital upgrade period (for construction of facilities to meet lower TP limit 0.35 mg/l for Crest Hill, 0.5 all others)
Treatment system optimization period (TP removal operational and being optimized to meet 0.5 mg/L TP limit by May 1, 2040)
Treatment system optimization period (TP removal operational and being optimized to meet 0.35 mg/L TP limit by May 1, 2040)
WWTP implementing TP removal to 1.0 mg/l
WWTP removing TP to 1.0 mg/l

Table 47. DRSCW proposed NIP project assessments

DuPage River Salt Creek Workgroup Proposed NIP Assessments October 10, 2023	Proposed Assessments based on 1.0 mg/L TP				Proposed Assessments based on 0.5 mg/L TP				NIP		
Current DRSCW Agency members	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	Subtotal
Assessment (as % of O&M costs)	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	-
Addison	$ 86,311	$ 88,900	$ 91,567	$ 94,314	$ 116,969	$ 120,478	$ 124,092	$ 127,815	$ 131,649	$ 135,599	$ 1,117,694
Bartlett	-	-	-	-	26,151	26,936	27,744	28,576	29,433	30,316	169,156
Bensenville	-	-	-	-	22,138	22,802	23,486	24,190	24,916	25,664	143,196
Bloomingdale	38,752	39,914	41,112	42,345	64,322	66,251	68,239	70,286	72,395	74,567	578,183
Bolingbrook (#1 & #2)	101,232	104,269	107,397	110,618	117,345	120,865	124,491	128,226	132,073	136,035	1,182,551
Carol Stream	117,860	121,396	125,038	128,789	135,384	139,446	143,629	147,938	152,376	156,947	1,368,803
Downers Grove SD	223,259	229,956	236,855	243,961	256,110	263,794	271,707	279,859	288,254	296,902	2,590,657
DuPage County	63,093	64,985	66,935	68,943	250,682	258,202	265,948	273,927	282,144	290,609	1,885,468
Elmhurst	151,268	155,806	160,481	165,295	186,262	191,850	197,605	203,533	209,639	215,929	1,837,668
Glenbard WW Authority	325,146	334,900	344,947	355,296	372,990	384,179	395,705	407,576	419,803	432,397	3,772,939
Glendale Heights	-	-	-	-	38,769	39,932	41,130	42,364	43,635	44,944	250,774
Hanover Park	49,117	50,590	52,108	53,671	56,344	58,035	59,776	61,569	63,416	65,318	569,944
Itasca	-	-	-	-	23,953	24,671	25,412	26,174	26,959	27,768	154,937
MWRDGC	609,739	628,031	646,872	666,279	742,715	764,997	787,947	811,585	835,933	861,011	7,355,109
Roselle	19,659	20,249	20,857	21,482	29,473	30,357	31,267	32,205	33,172	34,167	272,888
Salt Creek SD	51,684	53,235	54,832	56,477	64,801	66,745	68,747	70,810	72,934	75,122	635,387
West Chicago	-	-	-	-	127,762	131,595	135,543	139,609	143,798	148,112	826,419
Wheaton SD	-	-	-	-	58,502	60,257	62,065	63,927	65,844	67,820	378,415
Wood Dale	62,918	64,806	66,750	68,753	72,177	74,342	76,572	78,869	81,235	83,672	730,094
Totals	$ 1,900,038	$ 1,957,037	$ 2,015,751	$ 2,076,223	$ 2,762,849	$ 2,845,734	$ 2,931,105	$ 3,019,038	$ 3,109,608	$ 3,202,899	$ 25,820,282
Cumulative totals	$ 1,900,038	$ 3,857,075	$ 5,872,826	$ 7,949,049	$ 10,711,898	$ 13,557,632	$ 16,488,737	$ 19,507,775	$ 22,617,383	$ 25,820,282	$ 25,820,282

Table 48. LDRWC proposed NIP project assessments

Lower DuPage River Watershed Coalition Proposed NIP Assessments December 31, 2023	Proposed Assessments based on 1.0 mg/L				Proposed Assessments based on 0.5 mg/L						NIP
Current LDRWC Agency members	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	Subtotal
Bolingbrook (#3)	0	0	0	0	$ 42,819	$ 44,104	$ 45,427	$ 46,790	$ 48,194	$ 49,640	$ 276,974
Crest Hill	0	0	0	0	30,268	31,176	32,111	33,074	34,066	35,088	195,783
Joliet	0	0	0	0	25,469	26,233	27,020	27,830	28,665	29,525	164,742
Minooka	0	0	0	0	51,222	52,759	54,341	55,972	57,651	59,380	331,325
Naperville	32,978	33,968	34,987	36,036	149,008	153,478	158,083	162,825	167,710	172,741	1,101,814
Plainfield	0	0	0	0	20,354	20,965	21,594	22,242	22,909	23,596	131,660
Totals	$ 32,978	$ 33,968	$ 34,987	$ 36,036	$ 319,140	$ 328,715	$ 338,576	$ 348,733	$ 359,195	$ 369,970	$ 2,202,298
Cumulative totals	$ 32,978	$ 66,946	$ 101,933	$ 137,969	$ 457,109	$ 785,824	$ 1,124,400	$ 1,473,133	$ 1,832,328	$ 2,202,298	$ 2,202,298

Chemical treatment for phosphorus removal involves the addition of trivalent metal salts (e.g., ferric chloride or aluminum sulfate) to react with soluble phosphate (trivalent metal ion and the orthophosphate ion) to form a solid precipitate that physical processes, including clarification and filtration, can then remove. While shown to be reliable and a commonly used phosphorus-treatment option, it has several disadvantages relative to BPR and BNR.

Principally, chemical addition increases WWTP operational costs by increasing sludge production by up to 40% in the primary treatment process and 26% in activated sludge plants (MPCA 2006). It also adversely affects effluent pH and increases solids-handling requirements (Kang et al. 2008; USEPA 2000). The Minnesota Pollution Control Agency (MPCA 2006) concluded that the long-term O&M of BPR systems is generally cost-effective compared to chemical phosphorus removal systems, with cost savings resulting primarily from the reduced chemical and sludge handling costs. This finding is reflected in the feasibility studies drafted by DRSCW and LDRWC members. These additional costs can be estimated, predicted, and accounted for, but chemical treatment also has environmental externalities that are more difficult to quantify but are likely significant. For example, the process of extracting and transporting nonrenewable minerals from the earth (Kang et al. 2008) increases chemical treatment's pollution footprint relative to BPR. The solids generated in chemical treatment are less useful agronomically. BPR solids have a higher phosphorus content (Coats et al. 2011) and provide more agronomic value to crops once land-applied. Foley et al. (2010) wrote that the use of BPR sludge as fertilizer can significantly offset the demand for synthetic fertilizers. In contrast, chemical sludge must often be landfilled or transported off-site for treatment (USEPA 2000). Finally, the caustic substances that come with chemical treatment require additional handling and storage.

Life-cycle analysis (Coats et al. 2011) calculated that to achieve 0.5 mg/L effluent phosphorus, a biological-only process would affect global warming potential 5.2% less than a chemical-only process. At an effluent quality of 0.1 mg/L (full-scale facilities), where a biological process augmented with chemicals was contrasted with a chemical-only process, the relative gap increases to 13.2%. The study also found that the adverse environmental effects increased as chemical usage increased, and it concluded that best practices would focus phosphorus removal first on the biological process, with chemical processes added only as necessary. For these reasons, it is generally accepted that BPR and BNR, if achievable, are economically and environmentally superior processes, and it has been an objective of the Special Conditions to create space, where possible, for their adoption.

The move towards biological-based removal by DRSCW and LDRWC WWTPs is a direct consequence of the extended schedule, which was started with the 2015 Implementation Plan. The longer schedule allows for better financial planning, any capital upgrades necessary to allow BPR and BNR to be integrated with other plant improvements or expansions, and time for new technologies and procedures to be developed and observed. Based on the schedule set out in Table 45 and Table 46, it is reasonable to predict that this trend will continue. Avoiding locking agencies into a chemical treatment pathway has been an ongoing priority for these programs. It is recognized that it might not be possible for all WWTPs to adopt BPR or BNR due to lack of space, tank configuration, or low influent carbon concentrations that limit the production of polyphosphate-accumulating organisms. However, the NIP seeks to maximize this possibility.

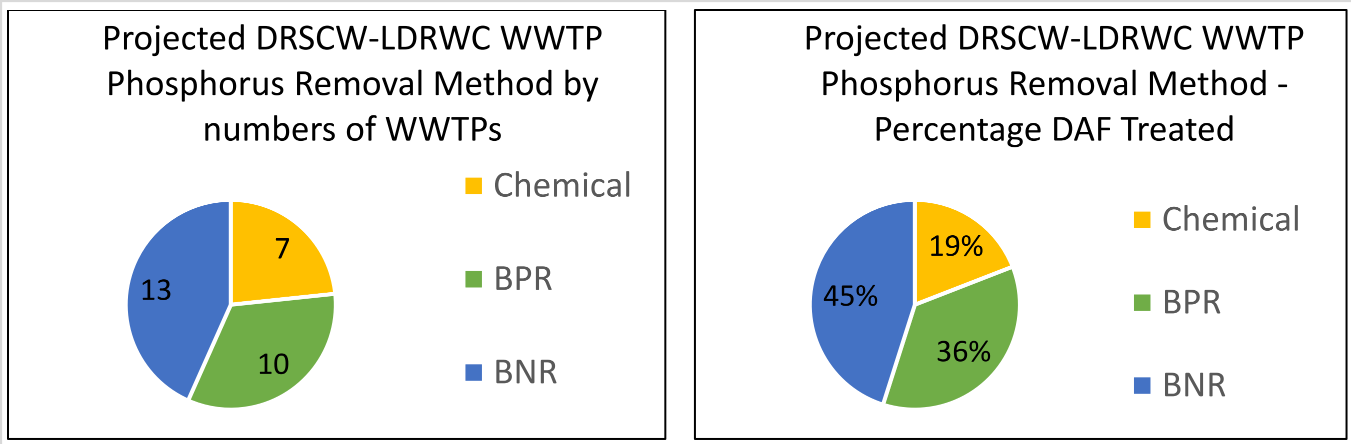


Figure 76. Primary TP removal method by number of WWTPs and by percentage of DAF treated. Results from October 2023 survey of DRSCW and LDRWC WWTP members.

9.1.2 Recommendation B

Recommendation B – The rotating watershed bioassessment is continued. This activity is scheduled to be carried out in each of the NIP basins on a rotating basis. Future bioassessments will allow verification that the watershed instream TP concentrations met expectations and that the biology and DO responded to physical projects implemented under Recommendation A. Bioassessments are funded using the DRSCW and LDRWG watershed group members' dues.

9.1.3 Recommendation C

Recommendation C – Holistic data analysis is continued and updated. This may include updates to water quality models, the IPS Tool, the collection of additional water quality and biological data, and other analysis. This would be funded using the NIP project assessments covered under Recommendation A.

9.1.4 Recommendation D

Recommendation D – Explore the refinement of biological endpoints for Illinois urban areas. The DRSCW and LDRWG watershed groups would work with IEPA and stakeholders to review if the current General Use standards are suitable for use in urban watersheds. This would be funded using the NIP project assessments covered under Recommendation A.

9.1.5 Recommendation E

Recommendation E – Update the adaptive management plan to reflect the implemented NIP recommendations and the phasing out of project assessments. As NIP recommendations are implemented, they will be evaluated alongside the findings of recommendations B, C and D. As NIP project assessments are drawn down, the necessity for identifying other sources of funding for watershed activities will be evaluated and investigated.

9.2 PROPOSED SPECIAL CONDITION 1. DRSCW WWTPS AND (SECTION E) CREST HILL

DRAFT NIP SPECIAL CONDITION FOR PERMIT

A. The Permittee shall participate in the DuPage River Salt Creek Workgroup (DRSCW). The Permittee shall work with other watershed members of the DRSCW to determine the most cost-effective means to remove dissolved oxygen (DO) and offensive condition impairments in the DRSCW watersheds.

B. The Permittee shall ensure that the following projects and activities set out in the Revised DRSCW Implementation Plan (June 2021) and the DRSCW and LDRWC Nutrient Implementation Plan (December 2023) are completed (either by the permittee or through the DRSCW) by the scheduled dates set forth below and that the short-term objectives are assessed for each by the time frames identified below (Table 49).

Table 49. Special Condition 1 project and implementation schedule

Project Name	Completion Date	Short-Term Objectives	Long-Term Objectives
Oak Meadows Golf Course Dam Removal	December 31, 2016 (Completed)	Improve DO	Improve fish passage
Oak Meadows Golf Course Stream Restoration	December 31, 2017 (Completed)	Improve aquatic habitat (QHEI), reduce inputs of nutrients and sediment	Raise miBI
Fawell Dam Modification	December 31, 2024	Modify dam to allow fish passage	Raise fiBi upstream of structure
Spring Brook Restoration and Dam Removal	December 31, 2020 (Completed)	Improve aquatic habitat (QHEI), reduce inputs of nutrients and sediment	Raise miBi and flBi
Fullersburg Woods Dam Modification Concept Plan Development	December 31, 2016 (Completed)	Identify conceptual plan for dam modification and stream restoration	Build consensus among plan stakeholders
Fullersburg Woods Dam Modification	December 31, 2024	Improve DO, improve aquatic habitat (QHEI)	Raise miBi and fiBi
Fullersburg Woods Dam Modification Area Stream Restoration	December 31, 2024	Improve aquatic habitat (QHEI), reduce inputs of nutrients and sediment	Raise miBi and fiBi
West Branch Physical Enhancement (Klein Creek)	December 31, 2023 (Completed)	Improve aquatic habitat (QHEI)	Raise miBi and fiBi
Southern East Branch Stream Enhancement (Phase I)	December 31, 2027[a]	Improve aquatic habitat (QHEI), reduce inputs of nutrients and sediment	Raise miBi and fiBi
QUAL 2w West Branch, East Branch and Salt Creek	December 31, 2023 (Completed)	Collect new baseline data and update model	Quantify improvements in watershed. Prioritize DO Improvement projects for years beyond 2024
NPS Phosphorus Feasibility Analysis	December 31, 2021 (Complete)	Assess NPS performance from reductions leaf litter and street sweeping	Reduce NPS contributions to lowest practical levels
East Branch Phase II	December 31, 2028	Improve aquatic habitat (QHEI), reduce Inputs of nutrients and sediment	Raise miBi andFiBi
Salt Creek Phase II	December 31, 2028	Improve aquatic habitat (QHEI), Remove fish barrier, reduce inputs of nutrients and sediment	Raise miBi and fiBi
West Branch Restoration Project	December 31, 2028	Improve aquatic habitat (QHEI), reduce inputs of nutrients and sediment	Raise miBi and fiBi
Additional Project TBD	TBD	TBD	TBD
Additional Project TBD	TBD	TBD	TBD
Additional Project TBD	TBD	TBD	TBD

Note:
[a] This date is provisional pending approval by IEPA

C. The Permittee shall participate in implementation of a watershed Chloride Reduction Program, either directly or through the DRSCW. The program shall work to decrease DRSCW watershed public agency chloride application rates used for winter road safety, with the objective of decreasing watershed chloride loading. An annual report on the annual implementation of the program identifying the practices deployed, chloride application rates, estimated reductions achieved, analyses of watershed chloride loads, precipitation, air temperature conditions and relative performance compared to a baseline condition shall be submitted electronically to EPA.PrmtSpecCondtns@illinois.gov with "Permit Number Special Condition 16.C" as the subject of the email and posted to the DRSCW's website by March 31 of each year. The annual report shall reflect the Chloride Reduction Program performance for the preceding year (example: 2019-20 winter season report shall be submitted no later than March 31, 2021). The Permittee may work cooperatively with the DRSCW to prepare a single annual progress report that is common among DRSCW permittees and may be submitted as part of a combined annual report with paragraph D below.

D. An annual progress report on the projects listed in the table of paragraph B above shall be submitted electronically to EPA.PrmtSpecCondtns@illinois.gov with "Permit Number Special Condition 16.D" as the subject of the email and posted to the DRSCW's website by March 31 of each year. The report shall include project implementation progress. The Permittee may work cooperatively with the DRSCW to prepare a single annual progress report that is common among DRSCW Permittees.

E. Total phosphorus in the effluent shall be limited as follows:

1. The Permittee shall meet the phosphorus limit identified in the 2023 DRSCW & LDRWC Nutrient Implementation Plan, in accordance with the schedule set out therein.

2. The effluent limitation shall be 0.35 mg/L seasonal geometric mean, May to October (to be reported once annually on the October DMR) with a 0.5 mg/L annual geometric mean, rolling 12-month basis (to first be reported on the DMR 12 full months from the effective date of the permit and monthly thereafter), effective May 1, 2040, unless the Agency approves and reissues or modifies the permit to include an alternate phosphorus reduction program or limit pursuant to paragraphs E.3 thru E.7 below. Phosphorus removal facilities shall be constructed and placed into operation no later than May 1, 2038, after which the Permittee will operate the facilities to optimize the treatment system performance.

3. The Permittee demonstrates that the Limit is not technologically feasible; or

4. The Permittee demonstrates the Limit would result in substantial and widespread economic or social impact. Substantial and widespread economic impacts must be demonstrated using applicable USEPA guidance, including but not limited to any of the following documents: 1. Interim Economic Guidance for Water Quality Standards, March 1995, EPA-823-95-002; 2. Combined Sewer Overflows - Guidance for Financial Capability Assessment and Schedule Development, February 1997, EPA-832- 97-004; 3. Financial Capability Assessment Framework for Municipal Clean Water Act Requirements, November 24, 2014; or

5. If the DRSCW has developed and implemented a cost optimization program for POTWs in the DRSCW watersheds, providing for reallocation of allowed phosphorus loadings between two or more POTWs in the DRSCW and Lower DuPage Watershed Coalition watersheds, that delivers the same results of overall watershed phosphorus point-source reduction and loading anticipated from the uniform, application of paragraph G.2 among the POTW permits in the Nutrient Implementation Plan area as modelled by the groups QUAL2kW model referenced in the Nutrient Implementation Plan; or

6. If the DRSCW has demonstrated and implemented an alternate means of reducing watershed phosphorus loading to a comparable result that removes DO and offensive condition impairments and meets the applicable dissolved oxygen criteria in 35 Ill. Adm. Code 302.206 and the narrative offensive aquatic algae criteria in 35 Ill. Adm. Code 302.203; or

7. If the Limit is demonstrated not to be technologically (e.g., no space available) or economically feasible, which shall be determined by an economic feasibility analysis by the date herein stipulated, but is feasible within a long timeline, then the permit shall include a compliance schedule requiring the discharger to comply with the phosphorus effluent limit as soon as possible, consistent with 40 C.F.R. § 122.47 (1), made applicable to Illinois at 40 C.F.R. § 123.25 (a)(18).

F. The Permittee shall monitor the wastewater effluent, consistent with the monitoring requirements on Page 2 of this permit, for total phosphorus, dissolved phosphorus, nitrate/nitrite, total Kjeldahl nitrogen (TKN), ammonia, total nitrogen (calculated), alkalinity and temperature at least once a month. The Permittee shall monitor the wastewater influent for total phosphorus and total nitrogen at least once a month. The results shall be submitted on electronic DMRs (NetDMRs) to the Agency unless otherwise specified by the Agency.

9.3 PROPOSED SPECIAL CONDITION 2. LDRWC WWTPS, FOR CREST HILL SECTION E, SEE PROPOSED SPECIAL CONDITION 1 (DRSCW AND (SECTION E) CREST HILL)

<u>DRAFT NIP SPECIAL CONDITION FOR PERMIT</u>

A. The Permittee shall participate in the DuPage River Salt Creek Workgroup (DRSCW). The Permittee shall work with other watershed members of the DRSCW to determine the most cost-effective means to remove dissolved oxygen (DO) and offensive condition impairments in the DRSCW watersheds.

B. The Permittee shall ensure that the following projects and activities set out in the Revised DRSCW Implementation Plan (June 2021) and the DRSCW & LDRWC Nutrient Implementation Plan (December 2023) are completed (either by the permittee or through the DRSCW) by the scheduled dates set forth below and that the short-term objectives are assessed for each by the time frames identified below (Table 50).

Table 50. Special Condition 2 project and implementation schedule

Project Name	Completion Date	Short-Term Objectives	Long-Term Objectives
Oak Meadows Golf Course Dam Removal	December 31, 2016 (Completed)	Improve DO	Improve fish passage
Oak Meadows Golf Course Stream Restoration	December 31, 2017 (Completed)	Improve aquatic habitat (QHEI), reduce Inputs of nutrients and sediment	Raise miBI
Fawell Dam Modification	December 31, 2024	Modify dam to allow fish passage	Raise fiBi upstream of structure
Spring Brook Restoration and Dam Removal	December 31, 2020 (Completed)	Improve aquatic habitat (QHEI), reduce inputs of nutrients and sediment	Raise miBi and flBi
Fullersburg Woods Dam Modification Concept Plan Development	December 31, 2016 (Completed)	Identify conceptual plan for dam modification and stream restoration	Build consensus among plan stakeholders
Fullersburg Woods Dam Modification	December 31, 2024	Improve DO, improve aquatic habitat (QHEI)	Raise miBi and fiBi
Fullersburg Woods Dam Modification Area Stream Restoration	December 31, 2024	Improve aquatic habitat (QHEI), reduce inputs of nutrients and sediment	Raise miBi and fiBi
West Branch Physical Enhancement (Klein Creek)	December 31, 2023 (Completed)	Improve aquatic habitat (QHEI)	Raise miBi and fiBi
Southern East Branch Stream Enhancement (Phase I)	December 31, 2027[a]	Improve aquatic habitat (QHEI), reduce inputs of nutrients and sediment	Raise miBi and fiBi
QUAL 2w West Branch, East Branch and Salt Creek	December 31, 2023 (Completed)	Collect new baseline data and update model	Quantify improvements in watershed. Prioritize DO Improvement projects for years beyond 2024.
NPS Phosphorus Feasibility Analysis	December 31, 2021 (Complete)	Assess NPS performance from reductions leaf litter and street sweeping	Reduce NPS contributions to lowest practical levels
East Branch Phase II	December 31, 2028	Improve aquatic habitat (QHEI), reduce Inputs of nutrients and sediment	Raise miBi and fiBi
Salt Creek Phase II	December 31, 2028	Improve aquatic habitat (QHEI), Remove fish barrier, reduce inputs of nutrients and sediment	Raise miBi and fiBi
West Branch Restoration Project	December 31, 2028	Improve aquatic habitat (QHEI), reduce inputs of nutrients and sediment	Raise miBi and fiBi
Additional Project TBD	TBD	TBD	TBD
Additional Project TBD	TBD	TBD	TBD
Additional Project TBD	TBD	TBD	TBD

Note:
[a] Note this date is provisional pending approval by IEPA

C. The Permittee shall participate in implementation of a watershed Chloride Reduction Program, either directly or through the DRSCW. The program shall work to decrease DRSCW watershed public agency chloride application rates used for winter road safety, with the objective of decreasing watershed chloride loading. An annual report on the annual implementation of the program identifying the practices deployed, chloride application rates, estimated reductions achieved, analyses of watershed chloride loads, precipitation, air temperature conditions and relative performance compared to a baseline condition shall be submitted electronically to EPA.PrmtSpecCondtns@illinois.gov with "Permit Number Special Condition 16.C" as the subject of the email and posted to the DRSCW's website by March 31 of each year. The annual report shall reflect the Chloride Reduction Program performance for the preceding year (example: 2019-20 winter season report shall be submitted no later than March 31, 2021). The Permittee may work cooperatively with the DRSCW to prepare a single annual progress report that is common among DRSCW permittees and may be submitted as part of a combined annual report with paragraph D below.

D. An annual progress report on the projects listed in the table of paragraph B above shall be submitted electronically to EPA.PrmtSpecCondtns@illinois.gov with "Permit Number Special Condition 16.D" as the subject of the email and posted to the DRSCW's website by March 31 of each year. The report shall include project implementation progress. The Permittee may work cooperatively with the DRSCW to prepare a single annual progress report that is common among DRSCW Permittees.

E. Total phosphorus in the effluent shall be limited as follows:

1. The Permittee shall meet the phosphorus limit identified in the 2023 DRSCW & LDRWC Nutrient Implementation Plan, in accordance with the schedule set out therein.
2. The effluent limitation shall be 0.35 mg/L seasonal geometric mean, May to October (to be reported once annually on the October DMR) with a 0.5 mg/L annual geometric mean, rolling 12-month basis (to first be reported on the DMR 12 full months from the effective date of the permit and monthly thereafter), effective May 1, 2040, unless the Agency approves and reissues or modifies the permit to include an alternate phosphorus reduction program or limit pursuant to paragraphs E.3 thru E.7 below. Phosphorus removal facilities shall be constructed and placed into operation no later than May 1, 2038, after which the Permittee will operate the facilities to optimize the treatment system performance.
3. The Permittee demonstrates that the Limit is not technologically feasible; or
4. The Permittee demonstrates the Limit would result in substantial and widespread economic or social impact. Substantial and widespread economic impacts must be demonstrated using applicable USEPA guidance, including but not limited to any of the following documents: 1. Interim Economic Guidance for Water Quality Standards, March 1995, EPA-823-95-002; 2. Combined Sewer Overflows - Guidance for Financial Capability Assessment and Schedule Development, February 1997, EPA-832- 97-004; 3. Financial Capability Assessment Framework for Municipal Clean Water Act Requirements, November 24, 2014; or
5. If the DRSCW has developed and implemented a cost optimization program for POTWs in the DRSCW watersheds, providing for reallocation of allowed phosphorus loadings between two or more POTWs in the DRSCW and Lower DuPage Watershed Coalition watersheds, that delivers the same results of overall watershed phosphorus point-source reduction and loading anticipated from the uniform, application of paragraph G.2 among the POTW permits in the Nutrient Implementation Plan area as modelled by the groups QUAL2kW model referenced in the Nutrient Implementation Plan; or

6. If the DRSCW has demonstrated and implemented an alternate means of reducing watershed phosphorus loading to a comparable result that removes DO and offensive condition impairments and meets the applicable dissolved oxygen criteria in 35 Ill. Adm. Code 302.206 and the narrative offensive aquatic algae criteria in 35 Ill. Adm. Code 302.203; or
7. If the Limit is demonstrated not to be technologically (e.g., no space available) or economically feasible, which shall be determined by an economic feasibility analysis by the date herein stipulated, but is feasible within a long timeline, then the permit shall include a compliance schedule requiring the discharger to comply with the phosphorus effluent limit as soon as possible, consistent with 40 C.F.R. § 122.47 (1), made applicable to Illinois at 40 C.F.R. § 123.25 (a)(18).

F. The Permittee shall monitor the wastewater effluent, consistent with the monitoring requirements on Page 2 of this permit, for total phosphorus, dissolved phosphorus, nitrate/nitrite, total Kjeldahl nitrogen (TKN), ammonia, total nitrogen (calculated), alkalinity and temperature at least once a month. The Permittee shall monitor the wastewater influent for total phosphorus and total nitrogen at least once a month. The results shall be submitted on electronic DMRs (NetDMRs) to the Agency unless otherwise specified by the Agency.

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DOWNERS GROVE S.D. - WASTEWATER TREATMENT CENTER
Wastewater Report, December 2023

For updates on your plant in-between these monthly reports, please visit our wastewater dashboard https://iwss.uillinois.edu

LOCATION: DOWNERS GROVE S.D. - WASTEWATER TREATMENT CENTER (DuPage County)

Catchment Information	
Population Served	65,000
NPDES	IL0028380
zipcode	60515
IL Covid Region	8

SARS-CoV-2 LEVELS IN WASTEWATER

Wastewater is analyzed using digital PCR (dPCR) to determine the concentration of the SARS-CoV-2 virus in a sample. The nucleocapsid protein (N) gene of the virus is targeted in the assay, and results are reported in gene copies per liter of starting wastewater.

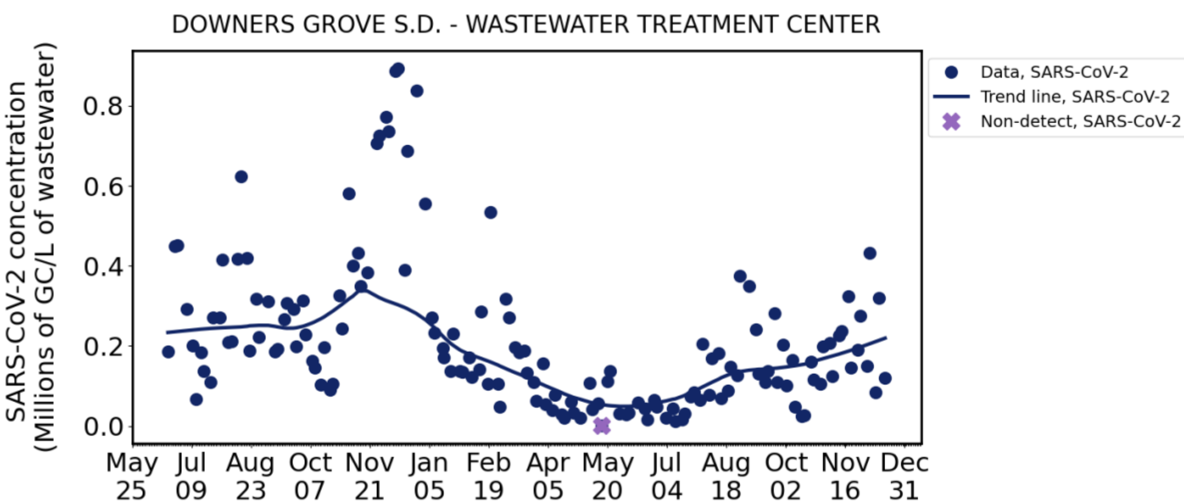

Figure 1. Time series plot of SARS-CoV-2 viral concentrations in millions of gene copies per liter (GC/L) of wastewater.

SARS-CoV-2 SAMPLING RESULTS - LAST 8 SAMPLES

Date	SARS-CoV-2 (GC/L)
2023-12-17	120,975

2023-12-12	320,550
2023-12-10	83,400
2023-12-05	431,175
2023-12-03	149,775
2023-11-28	274,500
2023-11-26	191,025
2023-11-21	145,200

SARS-CoV-2 LINEAGES IN WASTEWATER

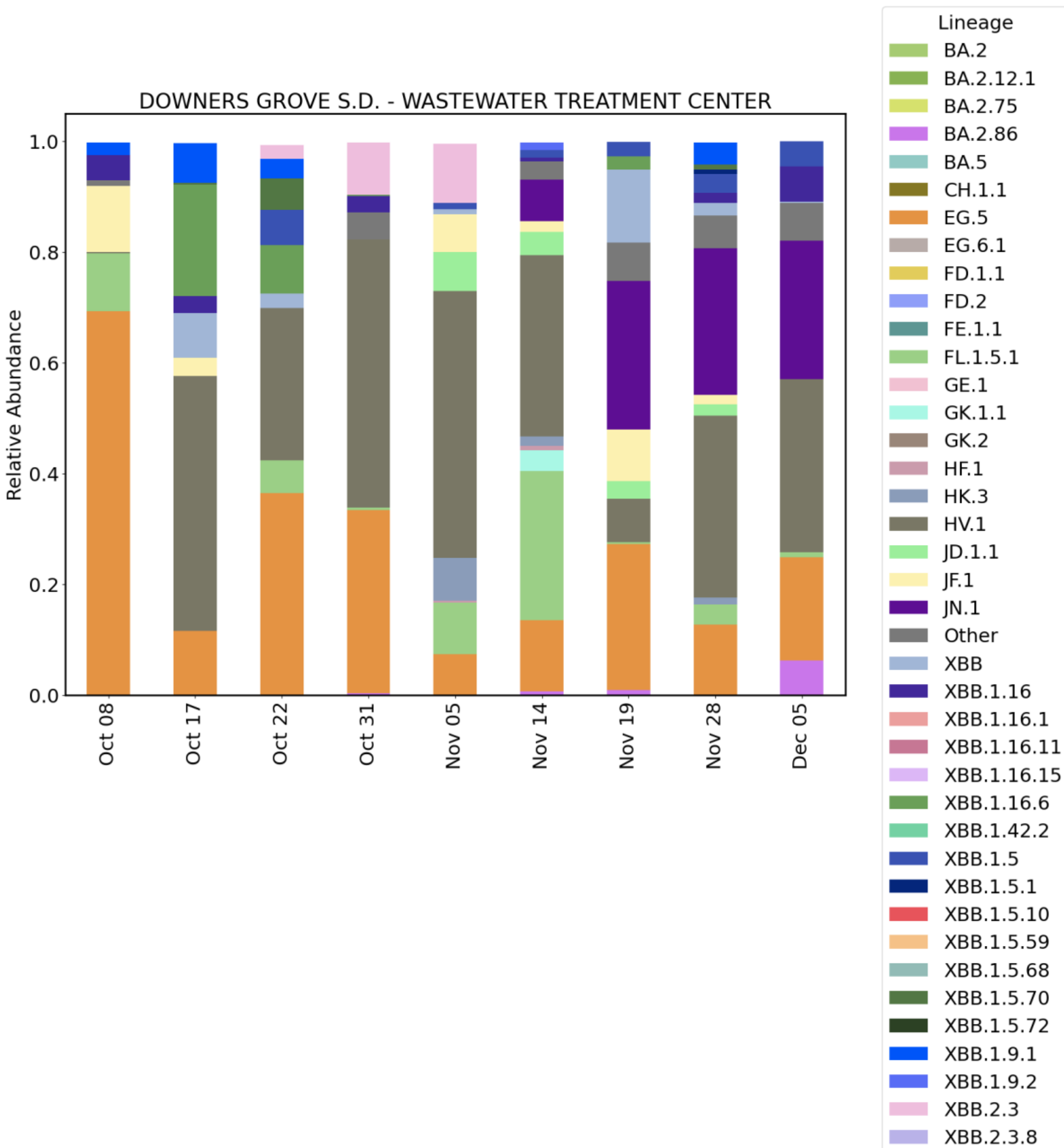

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Figure 2. Stacked barplot showing the relative abundances of SARS-CoV-2 lineages in wastewater samples. All lineages in the legend, excluding "Other," are associated with Omicron. The most recently available two months worth of data are shown.

INFLUENZA A/B LEVELS IN WASTEWATER

Wastewater is analyzed using digital PCR (dPCR) to determine the concentration of influenza A and influenza B viruses in a sample. Results are reported in gene copies per liter of starting wastewater.

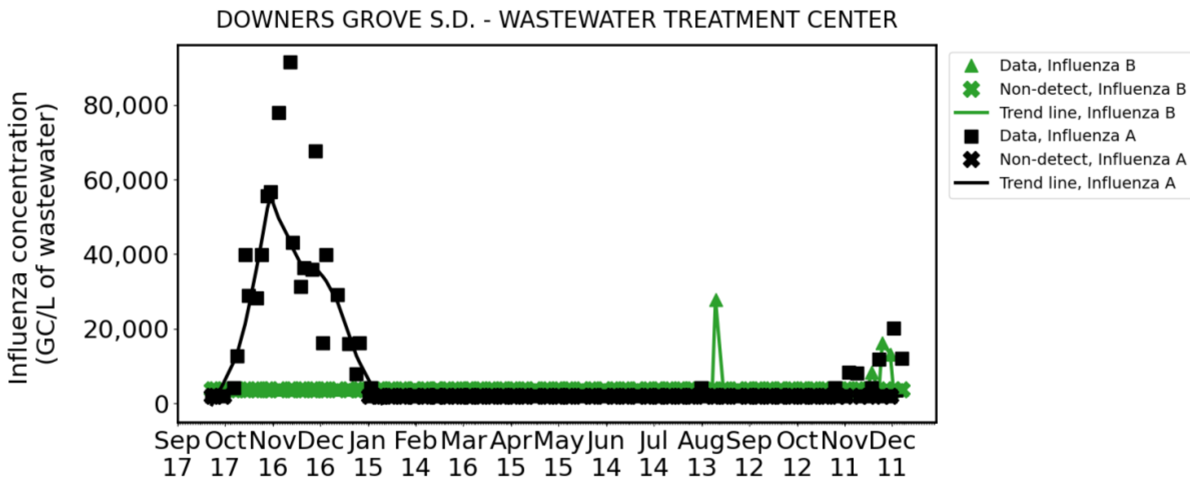

Figure 3. Time series plot of Influenza A/B viral concentrations in gene copies per liter (GC/L) of wastewater.

INFLUENZA A/B SAMPLING RESULTS - LAST 8 SAMPLES

Date	Influenza A (GC/L)	Influenza B (GC/L)
2023-12-17	12,075	Non-detect
2023-12-12	20,250	Non-detect
2023-12-10	Non-detect	13,200
2023-12-05	Non-detect	16,275
2023-12-03	11,925	Non-detect
2023-11-28	4,125	8,325
2023-11-26	Non-detect	Non-detect
2023-11-21	Non-detect	Non-detect

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RSV LEVELS IN WASTEWATER

Wastewater is analyzed using digital PCR (dPCR) to determine the concentration of Respiratory Syncytial Virus (RSV) in a sample. Results are reported in gene copies per liter of starting wastewater.

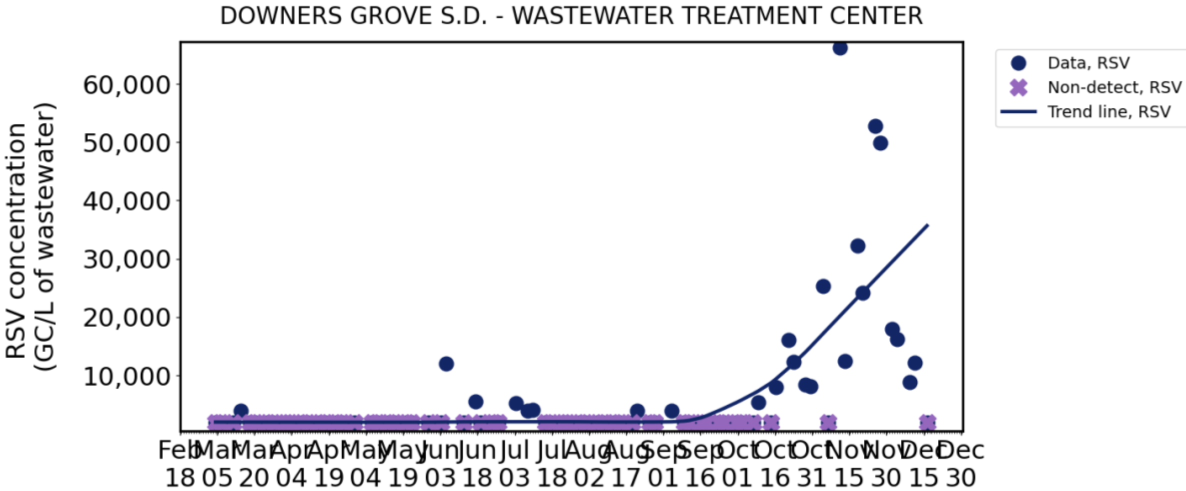

Figure 4. Time series plot of RSV viral concentrations in gene copies per liter (GC/L) of wastewater.

RSV SAMPLING RESULTS - LAST 8 SAMPLES

Date	RSV (GC/L)
2023-12-17	Non-detect
2023-12-12	12,150
2023-12-10	8,775
2023-12-05	16,275
2023-12-03	17,925
2023-11-28	49,875
2023-11-26	52,800
2023-11-21	24,150

Guide to Interpreting Data on SARS-CoV-2, Influenza, & Respiratory Syncytial Virus (RSV) Gene Copies in Wastewater Samples

What do the results mean?

There are several factors to consider when interpreting viral data in wastewater. The rate, magnitude, and duration of shedding may vary from one person to another and from virus to virus, thus how or even whether it is possible to translate viral levels in wastewater into precise community health metrics is an open scientific question. It is only appropriate to monitor and observe the trends of viral gene copies detected in a community over time. The data presented in tables, graphs, and trend assessments show the concentration of RNA copies in the wastewater area from the community where the wastewater was collected. A significant increase in viral gene copies over time is an indicator that cases may be increasing in the community. Wastewater data should not be interpreted in isolation but rather considered alongside other public health metrics.

What does the number that is reported on a sample day mean?

It is a measure of how many gene copies are present in a sample, typically reported as gene copies per liter of wastewater (GC/L). Samples are typically obtained from municipal wastewater treatment plants and reflect inputs of viral material shed by the community served by the treatment plant. This number does not indicate gene copies per person or population.

How are the gene copies measured in the wastewater?

Wastewater samples are first processed to concentrate and isolate genetic material (RNA) that is present in the sample. RNA sequences specific to SARS-CoV-2, influenza A & B, and RSV are then detected and quantified using a molecular biology tool called digital polymerase chain reaction (dPCR). During dPCR, a targeted segment of the RNA is converted to DNA and then amplified (copied many times) so it can be detected by laboratory instruments. Specific methods for sample processing and PCR-based quantification differ among wastewater monitoring projects and analytical laboratories.

What does it mean if a data point for a sample is 0 or a non-detect?

A non-detect means that the amount of SARS-CoV-2, influenza, or RSV RNA in the wastewater sample is below the level that can be reliably detected by the quantification methods used in a given laboratory. A determination of non-detect does not necessarily mean that no viral RNA is present in the sample or in the system – rather that the levels are low enough that they cannot be reliably determined. In some cases, other components of wastewater may interfere with individual measurements, leading to an incorrect non-detection similar to false negatives that can occur from at-home and clinical testing. A non-detect does not necessarily mean that there are no infected individuals within the associated community.

What is the viral gene copy trend line?

The trend line is calculated using Locally Weighted Scatterplot Smoothing (LOWESS), a local regression analysis. It allows us to see the change in trend over time by fitting a curve to the data. This method is useful because it reduces the influence of outliers, and wastewater data can be highly variable. LOWESS is a more complex extension of the moving average.

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Does the number of gene copies in a sample tell us how many people are sick?

There are not presently agreed-upon methods for translating concentration of SARS-CoV-2, influenza, or RSV genetic material in wastewater into a measure of how many people, or even what percentage of a community, have COVID-19, flu, or RSV, respectively. Variability between different wastewater sources, treatment facilities, and communities makes it difficult to translate the SARS-CoV-2, influenza, or RSV concentrations into a measure of how many people are infected in the community. However, an upward or downward trend in viral gene copies per liter of wasterwater generally suggests a similar trend in the number of people infected within a given community.

Can I compare the number of gene copies in a sample from site to site?

Because each community has a different mix of wastewater inputs, different populations, and different wastewater systems, it is not appropriate to compare viral gene copy numbers among communities. Instead, trends in SARS-CoV-2, influenza, or RSV concenentrations from a specific community over time can be used to help understand whether cases or hospitalizations are likely to increase or decrease in the community. Sample collection methods and mechanisms, collection times, and sample variability are other factors that discourage cross-site comparison.

Can I compare the gene copies of different pathogens to one another?

Because each pathogen is distinct, it is not appropriate to compare their viral gene copy numbers, even at the same site. Instead, trends in SARS-CoV-2, influenza, or RSV concentrations (increasing/decreasing) can be used to understand if cases or hospitalizations for each pathogen are likely to increase or decrease in the community.

Guide to Interpreting Data on SARS-CoV-2 Lineages in Wastewater Samples

What are lineages and how are they determined?

Wastewater is sequenced to determine the variants of SARS-CoV-2 virus present in a sample, a proxy for circulating variants in the community. Our sequencing strategy utilizes the entire genome of SARS-CoV-2 to identify mutations that are diagnostic of variants of the virus. Full genome coverage gives us better resolution for distinguishing variants, especially those very similar to each other. Variant names and lineage relationships are determined by the World Health Organization (WHO).

Variant: A genome that contains a particular set of mutations.

Mutation: A change in the genetic information introduced during viral replication.

Lineage: A collection of variants all related to each other based on analysis of the virus genomic sequence.

What is the sequencing plot showing me?

This plot is displaying the relative abundance, or proportion, of lineages found in a wastewater sample collected on a particular date. This plot was generated after comparing sample sequences to a SARS-CoV-2 reference genome and identifying characteristic mutations that are associated with different variants. We then calculate the percentage of each variant present in the sample. This plot summarize the variant detections; lineages are displayed, as there are often many variants detected that are in the same lineage.

What do the results mean?

The SARS-CoV-2 variants identified in a particular plant's wastewater can provide insight into the variants circulating in the population that the plant serves. This information can be useful, as there tend to be fewer clinical sequences, and those might only reflect a small proportion of the community feeling sick enough to pursue testing. The wastewater samples passively capture the virus shed in wastewater from the community where the wastewater was collected, not just those who are symptomatic. Wastewater data is not interpreted in isolation but rather considered alongside other public health metrics.

Does the number or type of lineages tell us how many people are sick?

We cannot tell how many people are sick from the lineages observed in the wastewater. We can only see relative proportions of the variants that are present in the community served by the wastewater treatment plant. We do pay attention to specific mutations that have been identified as having clinical implications (e.g., for effectiveness of medications or disease severity).

Can I compare the lineages in a sample from site to site?

Yes. We often detect variants in a particular plant first, and then see the relative abundance change over time, with certain lineages becoming more prevalent across the state from plant to plant. We compare these detections to sequence data from across the United States and the world.

Why are the dates of the sequencing data not as current as the gene copies data?

Sequencing results are available about two weeks after sample collection. This is because the quantification of SARS-CoV-2 levels by dPCR happens first, and then genetic material (RNA) is sent for sequencing. Additionally, samples then take multiple days to run on the sequencer and computational processing of sequences takes additional time before results are available.

Why do the lineages in the legend change periodically?

The lineages shown in the sequencing plot of this report are in alignment with the CDC's national genomic surveillance system. As the SARS-CoV-2 virus mutates, new variants emerge. This means there are regularly new variants that contribute to the spread of COVID-19. Some variants will disappear while others will continue to spread and even replace others as the dominant variant. These monthly reports reflect those changes as we continue to monitor for emerging variants of concern.

MIDWEST BIOSOLIDS ASSOCIATION

Emerging Issues Quarterly Report-December 2023

Legislative Developments

Federal

Senate PFAS Legislation:

Senate Committee on Environment and Public Works (EPW) continues development of bipartisan PFAS legislation. On November 6-7, 2023, EPW Committee staff convened discussions among NGOs and two passive receivers groups (wastewater sector, and solid waste sector) to solicit fact-based arguments and real-world scenarios on the merits of PFAS CERCLA liability relief. The passive receivers believe that this was a good opportunity to help debunk some of the misinformation shared by other groups regarding the merits of relief of liability under CERCLA. The representatives of the receivers indicate that it is still important for stakeholders to continue to reach out to their respective congressional representatives.

MBA States

Wisconsin:

SB 312 (2023 Senate Bill 312 (wisconsin.gov)) passed the Senate in November, 2023 This bill creates new grant programs inclusive of public and private PFAS receivers and provides enforcement protections for grant program recipients such as PFAS receivers.

Regulatory Developments

Federal

USEPA Regulatory Agenda:

USEPA advances efforts in line with its PFAS Strategic Roadmap including:

- In November, finalized PFAS Reporting Rule under TSCA 8(a)(7) as required by NDAA 2020
  - Requires all manufacturers (including importers) of PFAS and PFAS-containing articles in any year since 2011 to report information related to chemical identity, uses, volumes made and processed, byproducts, environmental and health effects, worker exposure, and disposal to EPA.
  - Expands on the definition of PFAS in the proposed rule to include 41 additional PFAS that were identified as being of concern; EPA determined that at least 1,462 PFAS that are known to have been made or used in the U.S. since 2011 will be subject to the final rule
  - Data is due to EPA within 18 months of the effective date of the final rule – Nov. 13, 2023 – with an additional six months for reports from small businesses that are solely reporting data on importing PFAS contained in articles.
  - Finalized Toxic Release Inventory (TRI) Rule eliminating a reporting exemption for de minimis amounts of PFAS. The Rule applies for reporting year beginning January 1, 2024.

- Opened solicitation for grants on PFAS agriculture uptake research in plants and animals
    - Five grants to be awarded; $1.6M over 4 years for each
    - Request for applications closed Dec 6, 2023
    - MBA provided letter of support to one proposal submitted by an MBA member state academic institution.

- Released second set of nationwide monitoring data for 29 PFAS compounds under the fifth Unregulated Contaminant Monitoring Rule (UCMR5) representing ~15% of the total results EPA expects to receive between 2023-2026
    - Data can be found at EPA's National Contaminant Occurrence Database (Occurrence Data from the Unregulated Contaminant Monitoring Rule | US EPA)
    - EPA also released its new UCMR5 Data Finder (Fifth Unregulated Contaminant Monitoring Rule Data Finder | US EPA), allowing for easier search, summary, and download of results
    - Of the ~3,000 water systems tested, roughly 10.0% contained levels of PFOS and PFOA above EPA's proposed drinking water limit.

- Advancing draft design of ELG Plan 15 national POTW influent PFAS sampling study
    - EPA to send proposed Information Collection Request to the Office of Management and Budget (OMB) for interagency review by early 2024
    - The draft scope could include the largest ~400 POTWs and also include sampling of biosolids
    - Sampling to potentially commence in 2025
    - National Association of Clean Water Agencies (NACWA) has been leading the water sector's efforts on working with EPA on refining the scope of the study to minimize the cost to utilities.

USEPA published it's second annual progress report on PFAS Strategic Roadmap

- Final actions on MCLs for six PFAS, and CERCLA designations for PFOA and PFOS expected in early 2024.
- The report also notes other impending actions, including the proposed RCRA rules and the updated destruction and disposal guidance (both at OMB), and the proposed approval of Method 1633 during 2024.
- The progress report is available here: https://www.epa.gov/system/files/documents/2023-12/epas-pfas-strategic-roadmap-dec-2023508v2.pdf

MBA States

Michigan:

Michigan Department of Environment, Great Lakes and Energy (EGLE) established new surface water quality values (WQVs) for two additional PFAS compounds (EGLE establishes new surface water values for two additional PFAS chemicals (michigan.gov))

- New human health WQVs were set for PFNA and PFHxS at 30 ppt and 210 ppt for surface water, and 19 ppt and 59 ppt for surface water specifically protected as a drinking water source, respectively.
- Existing levels set for PFOS (12 ppt and 11 ppt), PFOA (170 ppt and 66 ppt), and PFBS (670,000 ppt and 8,300 ppt)

- Subsequently, EGLE also updated its Cleanup Criteria Requirements for Response Activities based on the WQVs for these 5 PFAS related to groundwater-surface water interface.

Minnesota:

Minnesota Pollution Control Agency (MPCA) released notice of request for comments for proposed PFAS in Products Reporting Rule.

- Rulemaking is to establish a program for MPCA to collect information about products containing intentionally added PFAS; final rule expected by Jan. 1, 2026
- Comments were due Nov. 28, 2023

Wisconsin:

- Wisconsin Department of Natural Resources (DNR) released a draft NR 140 Economic Impact Analysis pertaining to development of revisions to the state's groundwater quality rules in NR 140 intended to add new state groundwater quality standards for four PFAS –PFOA, PFOS, PFBS, GenX (NR 140 Groundwater Quality Standards Update | | Wisconsin DNR)
    - DNR i solicited public comments during September 28 through October 28, 2023 for additional information or advice on the economic effect of the proposed rules
    - A separate public comment period on the rule itself will be held during winter 2023/2024
- DNR released results of statewide PFAS sampling in private wells (Results Of Statewide PFAS Sampling In Private Wells Now Available | Wisconsin DNR)
    - 450 samples were collected voluntarily from private wells; most private wells sampled had PFAS concentrations below current WI DHS health recommendations; overall, areas in WI with significant PFAS contamination were limited.
    - Study shows that 7 in 10 private wells contain one or more PFAS, but only 1 in 100 contain PFAS above Wisconsin Department of Health Services' (DHS) current health guidelines

Legal Actions

PFAS Lawsuit:

Maine's York Sewer District announced on October 25th that it has filed a lawsuit against 3M, DuPont and other manufacturers for the presence of PFAS in the district's wastewater. This is one of the first wastewater related lawsuits filed.

MBA Activities

PFAS Receivers Group:

MBA is a member of the PFAS Receivers Coalition, which includes over three dozen entities representing drinking water, wastewater treatment, stormwater management, and water recycling facilities, municipal solid waste landfills, composting facilities and other biosolids associations. The Coalition held a virtual meeting on November 14th and some of the key takeaways from the discussion were as follows:

- Senate EPW Committee continues development of bipartisan PFAS legislation.
- EPA advances efforts in line with its PFAS Strategic Roadmap including.

- White House OMB began an interagency review of EPA's Updated Interim PFAS Destruction and Disposal Guidance which was required by Congress by the end of 2023.
- Government Accounting Office (GOA) released new report on detecting, limiting exposure to, and treating PFAS contamination, entitled "Persistent Chemicals: Detecting, Limiting Exposure To, and Treating PFAS Contamination"

Member Spotlight

As regulatory and scientific developments related to PFAS unfold, utilities will begin to take actions such as monitoring required in permits, research and source control projects. As MBA members take on projects, it will be good to share some of these with the entire membership so that we learn from others' experience. For each quarterly report, the EIC will send out a request to members for anyone who would like to share information about what they are doing. This section of the report is reserved for this purpose.

Amy Underwood

From: Stephen McCracken <smccracken@theconservationfoundation.org>
Sent: Tuesday, January 2, 2024 9:47 PM
Subject: FW: DRSCW and LDRWC Special Condition

See below for IEPA receipt for our NIP submittal. Chris Davis and Scott Twait also sent receipts.
Thanks
Stephen

From: EPA.PrmtSpecCondtns <EPA.PrmtSpecCondtns@Illinois.gov>
Sent: Tuesday, January 2, 2024 5:03 PM
To: Stephen McCracken <smccracken@theconservationfoundation.org>
Cc: Sigrist, Alicia <Alicia.Sigrist@Illinois.gov>
Subject: RE: DRSCW and LDRWC Special Condition NIP

Stephen,

Hello. Your email has been received.

With thanks,
Christina

From: Stephen McCracken <smccracken@theconservationfoundation.org>
Sent: Friday, December 29, 2023 3:19 PM
To: EPA.PrmtSpecCondtns <EPA.PrmtSpecCondtns@Illinois.gov>; Haile, Abel <Abel.Haile@Illinois.gov>; Davis, Christine L. <Christine.Davis@Illinois.gov>; Fleming, Brant <Brant.Fleming@Illinois.gov>; LeCrone, Darin <Darin.LeCrone@Illinois.gov>; Twait, Scott <Scott.Twait@Illinois.gov>; Deanna Doohaluk <DDoohaluk@theconservationfoundation.org>
Subject: [External] FW: DRSCW and LDRWC Special Condition

To whom it may concern,

Please find attached the DRSCW and LDRWC NIP. This document is submitted to fulfill the Permit Special Condition calling for the production of a Nutrient Implementation Plan for the agencies in the Table below. The document has also been posted to the DRSCW's website. A second e-mail containing a link to the document was sent previously. **Please supply an acknowledgement that the document has been received**. Do not hesitate to contact me with any questions.

Table 1. Agencies Covered by the NIP

Agency Name	Facility Name	NPDES Permit Number
Addison, Village of	A. J. LaRocca WTF	IL0027367
Addison, Village of	Addison - North STP	IL0033812
Bartlett, Village of	Bartlett WWTP	IL0027618
Bensenville, Village of	South STP	IL0021849
Bloomingdale, Village of	Reeves WRF	IL0021130
Bolingbrook, Village of	Bolingbrook #1	IL0032689

Bolingbrook, Village of	Bolingbrook #2	IL0032735
Bolingbrook, Village of	Bolingbrook #3	IL0069744
Carol Stream, Village of	Carol Stream WRC	IL0026352
Crest Hill, City of	Crest Hill STP	IL0021121
Downers Grove Sanitary District	Downers Grove S.D. – Wastewater Treatment Center	IL0028380
DuPage County	Green Valley	IL0031844
Elmhurst, City of	Elmhurst WRF	IL0028746
Glenbard Waste Water Authority	Glenbard WWTP	IL0021547
Glendale Heights, Village of	Glendale Heights WWTP	IL0028967
Hanover Park, Village of	Hanover Park STP	IL0034479
Itasca, Village of	Itasca STP	IL0079073
Joliet, City of	Aux Sable WWTP	IL0076414
Minooka, Village of	Minooka STP	IL0055913
Metropolitan Water Reclamation District of Greater Chicago	Egan WRP	IL0036340
Metropolitan Water Reclamation District of Greater Chicago	Hanover WRP	IL0036137
Naperville, City of	Springbrook WRP	IL0034061
Plainfield, Village of	Plainfield STP	IL0074373
Roselle, Village of	J. Botterman WWTP	IL0048721
Roselle, Village of	J. L. Devlin WWTP	IL0030813
Salt Creek Sanitary District	Salt Creek Sanitary District STP	IL0030953
West Chicago, City of and Winfield, Village of	West Chicago/Winfield Wastewater Authority RWTP	IL0023469
Wheaton Sanitary District	Wheaton Sanitary District WWTF	IL0031739
Wood Dale, City of	City of Wood Dale - North STP	IL0020061
Wood Dale, City of	Wood Dale - South STP	IL0034274

DRSCW Member
LDRWC Member

Thanks
Stephen McCracken

Stephen McCracken
Director DuPage River Salt Creek Workgroup
The Conservation Foundation
10s404 Knoch Knolls Rd.

Naperville, IL 60565
p630-428-4500, x 118
c630-768-7427
f630-428-4599
www.theconservationfoundation.org
www.DRSCW.org

Connect With Us:
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Village of DOWNERS GROVE FOUNDED IN 1832

www.downers.us

Village Hall
801 Burlington Ave.
Downers Grove, IL
60515-4782
630.434.5500

Fire Department Administration
5420 Main St.
Downers Grove, IL
60515-4834
630.434.5980

Police Department
825 Burlington Ave.
Downers Grove, IL
60515-4783
630.434.5600

Public Works
5101 Walnut Ave.
Downers Grove, IL
60515-4046
630.434.5460

January 5, 2024

Dear Ogden TIF District Taxing Bodies,

I am pleased to inform you that the Village of Downers Grove has extended the Ogden Avenue Tax Increment Financing District. Enclosed, please find the official notice of the extension.

The Ogden Avenue TIF was set to expire on December 31, 2024. At their January 2, 2024 meeting the Village Council approved a 12-year extension resulting in a new expiration date of December 31, 2036. The extension will allow the Village to invest TIF revenues received prior to the original expiration date in redevelopment projects that result in new and expanded automobile dealerships and new restaurants that will generate sales tax and food & beverage tax, create and retain jobs and enhance the property tax base. TIF revenues generated during the extension period (from January 1, 2025 until the expiration of the district) will be declared surplus and distributed to the taxing bodies.

The Ogden TIF District has been an unmitigated success. Over the past two decades over 30 redevelopment projects have been completed increasing the taxable value of the properties from $29.3 million (2000 EAV) to $55.0 million and transforming the appearance of the corridor.

With this extension, the Village will build on the success of the TIF District. With the support of the Downers Grove Economic Development Corporation, the Village is currently pursuing Redevelopment Agreements for multiple locations. The extension will allow the Village to invest the TIF revenues received prior to the original expiration date in these economic development projects.

The Village of Downers Grove appreciates your support in this important economic development initiative. Please let me know if you have any questions or comments.

Sincerely,

David Fieldman
Village Manager

c. Interested Parties

Enclosure

<u>VILLAGE OF DOWNERS GROVE</u>

NOTICE OF TIF EXTENSION:
OGDEN AVENEUE CORRIDOR TIF DISTRICT

NOTICE IS HEREBY GIVEN that, pursuant to Ordinance No. 6036 adopted by the Village of Downers Grove on January 2, 2024, the Village of Downers Grove, DuPage County, Illinois (the "Village") extended the term of the Ogden Avenue Corridor TIF District, related Ogden Avenue Corridor Redevelopment Project Area and the tax increment financing of the same to 35 years. The Ogden Avenue Corridor TIF District, related Ogden Avenue Corridor Redevelopment Project Area and tax increment financing of the same were initially approved by the Village in 2001 pursuant to Ordinance No. 4247, Ordinance No. 4248 and Ordinance No. 4249. The Village was granted this authority to extend the term of the Ogden Avenue Corridor TIF District to 35 years under Illinois Public Act 103-0575. A copy of Ordinance No. 6036 can be obtained by contacting the Office of the Village Clerk for the Village of Downers Grove.

Downers Grove Sanitary District

2710 Curtiss Street
P.O. Box 1412
Downers Grove, IL 60515-0703
Phone: 630-969-0664
Fax: 630-969-0827
www.dgsd.org

Providing a Better Environment for South Central DuPage County

General Manager
Amy R. Underwood

Legal Counsel
Dan McCormick

VIA EMAIL: sheryl.markay@dupageco.org

January 10, 2024

Chair Deb Conroy
DuPage County
Attn: Sheryl Markay, Chief Policy and Program Officer
421 N. County Farm Road
Wheaton, IL 60187

Re: Downers Grove Sanitary District Updates

Dear Chair Conroy:

In accordance with County Ordinance OCB-001-11, enclosed are copies of the following updated Downers Grove Sanitary District documents:

- Organization Chart (as of January 1, 2024)
- Personnel Roster with titles and salary information (as of January 1, 2024)
- Schedule of regular meetings for 2024 for the Board of Trustees
- Changes to Employee Policy Manual, approved by the Board of Trustees at their regular December 19, 2023 meeting.
- Credit Card and Line of Credit Use Policy and Procedures, approved by the Board of Trustees at their regular December 19, 2023 meeting.

Sincerely,

DOWNERS GROVE SANITARY DISTRICT

Amy R. Underwood
General Manager

Enclosures

cc: Board of Trustees