Illinois Environmental Protection Agency

Bureau of Water • 1021 N. Grand Avenue E. • P.O. Box 19276 • Springfield • Illinois • 62794-9276

Division of Water Pollution Control
ANNUAL FACILITY INSPECTION REPORT
for NPDES Permit for Storm Water Discharges from Separate Storm Sewer Systems (MS4)

This fillable form may be completed online, a copy saved locally, printed and signed before it is submitted to the Compliance Assurance Section at the above address. Complete each section of this report.

Report Period: From March, 2016 To March, 2017

Permit No. ILR40 ______

MS4 OPERATOR INFORMATION: (As it appears on the current permit)

Name: Village of Bartlett | Mailing Address 1: 228 S. Main Street

Mailing Address 2: ______ | County: DuPage

City: Bartlett | State: IL | Zip: 60103 | Telephone: 630-837-0811

Contact Person: Robert Allen, PE - Village Engineer | Email Address: rallen@vbartlett.org
(Person responsible for Annual Report)

Name(s) of governmental entity(ies) in which MS4 is located: (As it appears on the current permit)

Village of Bartlett

THE FOLLOWING ITEMS MUST BE ADDRESSED.

A. Changes to best management practices (check appropriate BMP change(s) and attach information regarding change(s) to BMP and measurable goals.)

1. Public Education and Outreach ☐
2. Public Participation/Involvement ☐
3. Illicit Discharge Detection & Elimination ☐
4. Construction Site Runoff Control ☐
5. Post-Construction Runoff Control ☐
6. Pollution Prevention/Good Housekeeping ☐

B. Attach the status of compliance with permit conditions, an assessment of the appropriateness of your identified best management practices and progress towards achieving the statutory goal of reducing the discharge of pollutants to the MEP, and your identified measurable goals for each of the minimum control measures.

C. Attach results of information collected and analyzed, including monitoring data, if any during the reporting period.

D. Attach a summary of the storm water activities you plan to undertake during the next reporting cycle (including an implementation schedule.)

E. Attach notice that you are relying on another government entity to satisfy some of your permit obligations (if applicable).

F. Attach a list of construction projects that your entity has paid for during the reporting period.

Any person who knowingly makes a false, fictitious, or fraudulent material statement, orally or in writing, to the Illinois EPA commits a Class 4 felony. A second or subsequent offense after conviction is a Class 3 felony. (415 ILCS 5/44(h))

Rob Allen | 5-19-17
Owner Signature: | Date:

Robert Allen | Village Engineer
Printed Name: | Title:

EMAIL COMPLETED FORM TO: epa.ms4annualinsp@illinois.gov

or Mail to: ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
WATER POLLUTION CONTROL
COMPLIANCE ASSURANCE SECTION #19
1021 NORTH GRAND AVENUE EAST
POST OFFICE BOX 19276
SPRINGFIELD, ILLINOIS 62794-9276

2016 BARTLETT SOIL AND EROSION CONTROL INSPECTIONS					
PROJECT NAME	PROJECT ADDRESS	DURATION	SITE INSPECTIONS		
Bartlett Ridge	Naperville Rd	from 9/16 to 11/6	16 inspections		
Ridge BCI	Brewster Creek Business Park	from 3/16 to 11/16	36 inspections		
1580 Hecht Ct	Brewster Creek Business Park	from 3/16 to 9/16	27 inspections		
1543 Hecht Rd	Brewster Creek Business Park	from 3/16 to 9/16	29 inspections		
Artis Senior Living	1035 S Rt 59	from 8/16	16 inspections		
Forest Veiw	Lot 7	from 3/16 to 11/16	33 inspections		
Sanzeri's Sub	W. Railroad	from 3/16 to 11/16	41 inspections		
Country Creek Unit 1	S. Bartlett rd	from 3/16 to 11/16	43 inspections		
Lot 9B	Brewster Creek Business Park	from 7/16 to 11/16	21 inspections		
Exeter Lot 9C	Brewster Creek Business Park	from 7/16 to 11/16	21 inspections		
550 Rana USA	Brewster Creek Business Park	from 7/16 to 11/16	21 inspections		
784 Duxbury	784 Duxbury	from 9/16 to 11/6	16 inspections		
		TOTAL	320		

DRSCW NPDES Activities
March 2016 – February 2017

PART I. COVERAGE UNDER GENRAL PERMITS ILR40

Not applicable to the work of the DRSCW.

PART II. NOTICE OF INTENT (NOI) REQUIREMENTS

Not applicable to the work of the DRSCW.

PART III. SPECIAL CONDITIONS

Not applicable to the work of the DRSCW.

PART IV. STORM WATER MANAGEMENT PROGRAMS

A. Requirements

Not applicable to the work of the DRSCW.

B. Minimum Control Measure

1. Public Education and Outreach on Stormwater Impacts

DRSCW outreach activities for the year ending 2017 included:

- The DRSCW website was maintained during the reporting period and periodically updated with presentations and material (www.drscw.org).
- A searchable database with information on local aquatic biodiversity (IBIs), habitat (QHEI), and sediment and water column chemistry was maintained and periodically updated.
- The DRSCW created a "Water Resource Manager's Guide to Aquatic Bioassessment," to be finalized in 2017.
- Public information available on the website includes:
  - Chloride Fact Sheets aimed at mayors and managers, public works staff, commercial operators, and homeowners.
  - Model salt Storage and Handling Ordinances and Policies.
  - Model Facilities Plan for Snow and Ice Control.
  - A fact sheet summarizing alternative deicing products.
  - Information of effective operating parameters for commonly used anti icing compounds.
  - Parking lots chloride application rate guidance example sheet and aide memoire.

- A brochure on coal tar sealants as a source of Polycyclic Aromatic Hydrocarbons (PAHs) aimed at homeowners (produced by the University of New Hampshire Stormwater Center).
- Detailed reports on the biolocal and chemical conditions of area waterways.

Technical Presentations

Workgroup meetings: The Workgroup hosts bimonthly meetings where technical presentations are made on a variety of water quality topics and surface water management subjects. The audience consists of mainly stormwater and wastewater professionals but the public is welcome to attend. Presentations made during the period March 1, 2016 to February 28, 2017 are listed below. Selected presentations are made available on the DRSCW website and upon request.

April 27, 2016 – Reducing Urban Phosphorus Load: Identifying Sources and Controls Update. Presenter: Bill Selbig, Research Hydrologist, USGS - Wisconsin Water Science Center

April 27, 2016 – Cold-Weather Chloride Toxicity. Presenter: Jim Huff, P.E., Huff & Huff, Inc.

June 22, 2016 – Meet the Hickory Creek Watershed Planning Group. Presenter: Dr. Lindsay Birt, Assistant Project Manager/Project Engineer II, Huff & Huff, a subsidiary of GZA, and watershed coordinator for HCWPC

June 22, 2016 – Plans to Meet New ILR-40 Stormwater Requirements. Presenters: Robert Swanson, and Mary Beth Falsey, DuPage County Stormwater Management, Stephen McCracken, TCF/DRSCW

August 31, 2016 – Nutrient Implementation Plan Kick-off. Presenter: Stephen McCracken, The Conservation Foundation/ DRSCW.

October 26, 2016 – Winter Level of Service in Carol Stream. Presenters: Phil Modaff, Director of Public Works, Village of Carol Stream.

October 26, 2016 – Oak Meadows Project Overview. Presenter: Stephen McCracken, The Conservation Foundation/ DRSCW.

December 14, 2016 – Incorporating the Critical Discharge for Stream Erosion into Stormwater Management. Presenter: Robert J. Hawley, Ph.D., P.E., Principal Scientist at Sustainable Streams and a Part-Time Instructor at the University of Kentucky.

December 14, 2016 – Stormwater Dissolved Oxygen. Presenter: Stephen McCracken, The Conservation Foundation/ DRSCW.

Other Water Quality Presentations or Workshops by the DRSCW

March 8, 2016 – FPDDC Board of Commissioners and Staff. Introduction to the DRSCW. Presenter: Stephen McCracken, The Conservation Foundation/ DRSCW.

April 7, 2016 – Northwest Indiana Urban Waters Partnership. How the DRSCW prioritized and funded its watershed priorities. Presenter: Stephen McCracken, The Conservation Foundation/ DRSCW.

May 2, 2016 – Audubon Society. Watershed Management in the Upper DuPage and Salt Creek. Stephen McCracken, TCF/DRSCW. Presenter: Stephen McCracken, The Conservation Foundation/ DRSCW.

May 19, 2016 – APWA Conference, Schaumburg, IL. Chloride Management in the Upper DuPage and Salt Creek. Presenters: Antonio Quintanilla, MWRD-GC and Presenter: Stephen McCracken, The Conservation Foundation/ DRSCW.

May 26, 2016 – DuPage Advisory Council. Watershed Management in the Upper DuPage and Salt Creek. Presenter: Stephen McCracken, The Conservation Foundation/ DRSCW.

June 7, 2016 – Chicago Wildernesses Confluence 2016. Rethinking Implementation of the Clean Water Act. Presenter: Stephen McCracken, The Conservation Foundation/ DRSCW.

September 14, 2016 – Beyond the Basics Stormwater Best Management Practices Conference, Woodridge, IL. Safety Stripes and Other Winter Deicing Techniques. Presenter: Stephen McCracken, The Conservation Foundation/ DRSCW and John Kawka.

September 26, 2016 – Levels of Service Workshop with DuPage Mayors and Managers Conference, Oak Brook, IL. Presenter: Stephen McCracken, The Conservation Foundation/ DRSCW.

September 22, 2016 – Parking Lots & Sidewalks Deicing Workshop at DuPage County DOT.

September 27, 2016 – Public Roads Deicing Workshop at DuPage County DOT. • October 4, 2016 – Public Roads Deicing Workshop at Billie Limacher Bicentennial Park, Joliet, IL.

November 2, 2016 – Chicago Wilderness Conference, Chicago, IL. FRSG, DRSCW & Hickory Creek Forming and Running Watershed Planning Groups."

November 7-8, 2016 – South Suburban College, Oak Forest, IL. Chloride Management in Northeastern Illinois and the environmental impacts of salt. Presenter: Stephen McCracken, The Conservation Foundation/ DRSCW.

November 11th, 2016 –Public Works Department, Orland Park, Illinois. Chloride Management in Northeastern Illinois and the environmental impacts of salt. Presenter: Stephen McCracken, The Conservation Foundation/ DRSCW.

November 12, 2016 –Wheaton College, Wheaton, Illinois. Chloride Management in Northeastern Illinois and the environmental impacts of salt. Presenter: Stephen McCracken, The Conservation Foundation/ DRSCW.

November 15, 2016 – Wisconsin Section of the Central States Environment Association Webinar. Adaptive Implementation, Biodiversity, and TMDLs. Presenter: Stephen McCracken, The Conservation Foundation/ DRSCW.

February 9, 2017 – Presentation on chloride management at Stormwater Drainage Conference at Purdue University. Presenter: Stephen McCracken, The Conservation Foundation/ DRSCW.

February 16, 2017: Presentation on the DRSCW at the Des Plaines River Watershed Working Group's Annual Meeting. Presenter: Stephen McCracken, The Conservation Foundation/ DRSCW.

2. Public Involvement and Participation – no activities

3. Illicit Discharge Detection and Elimination – no activities

4. Construction Site Storm Water Runoff Control - no activities

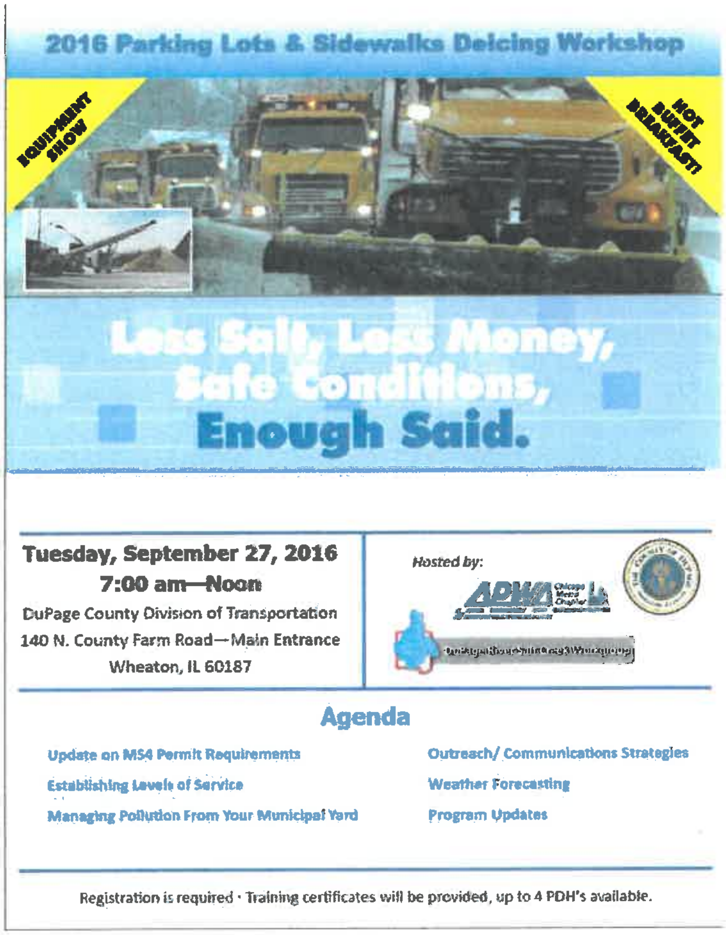
5. Post-Construction Storm Water Management in New Development and Redevelopment - no activities

6. Pollution Prevention/Good Housekeeping for Municipal Operations

Chloride Questionnaires- 2016 saw an update to the chloride management BMP tracking. A copy of the 2014 and 2016 chloride questionnaire responses are included in Attachment A.

Two chloride reduction workshops were held during the reporting period ending March 2017.

The Public Roads deicing workshop was held on September 27, 2016 with the following agenda:



7:00 – 7:25 Registration and Breakfast

7:25 – 7:30 Welcome - John Kawka, DuPage County DOT, Manager of Highway Operations

7:30 – 7:50 DuPage River Salt Creek Workgroup (DRSCW) Update - Stephen McCracken, TCF/ DRSCW, Director of Watershed Protection

7:50 – 8:50 Establishing Levels of Service – Wilf Nixon, Salt Institute, VP Science and the Environment

8:50 – 9:00 Break

9:05 – 9:35 Weather Forecasting – Mike Adams, Wisconsin DOT, Weather Systems Program Manager

9:35 – 10:15 Village of Oswego's Anti-Icing Initiatives – Jennifer Hughes, Village of Oswego, Public Works Director

10:15 – 10:50 New MS4 Requirements and How to Meet Them: Managing Pollution from your Municipal Yard – Mary Beth Falsey, DuPage County Stormwater Management, Water Quality Supervisor; John Kawka, DuPage County DOT

10:50 – 11:00 Break

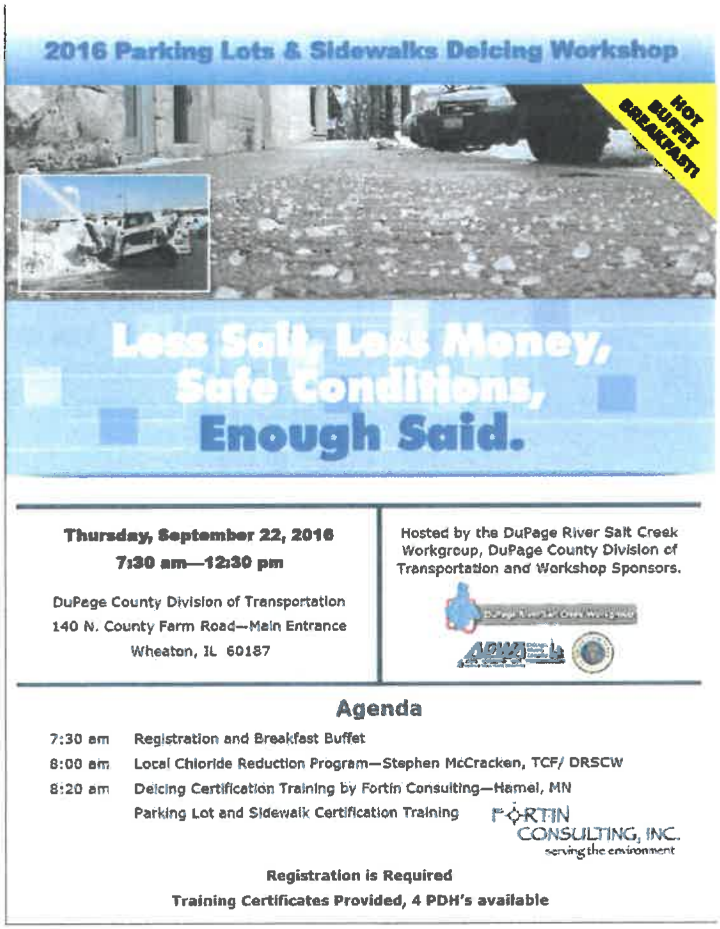
11:00 – 11:25 Contractor Perspective: Communication Strategies – Steve Pearce, Serbert, VP of Operations

11:25 – 11:55 Municipal Perspective: Communications Strategies – Chris Walsh, City of Beloit, Director of Operations (Retired)

11:55 – 12:00 Wrap Up, Bass Pro Shop Jacket Drawing, Equipment Show

Attendance – 145 registered, 9 presenters, 11 exhibitors/staff = 165 total. All participants received a certificate of attendance. We received 94 feedback forms from participants.

The Parking Lot and Sidewalk deicing workshop was held on September 22, 2016 with the following agenda:



- Local Chloride Reduction Program. Presenter: Stephen McCracken, The Conservation Foundation/DRSCW
- Impact of salt from winter snow fighting operations on our rivers and streams. Information on developing efficient and cost-effective snow fighting operations, appropriate product selection, application rates, equipment calibration. Presenters: Connie Fortin, Fortin Consulting and Chis Walsh, City of Beloit, WI
- Test on presented material.

Attendance - 68 registrations, 3 presenters, 10 exhibitors/staff = 81 total. All participants received a training certificate and participants who passed the test are recognized on the DuPage County Stormwater Management Division's Water Quality – Pollution Prevention/Good Housekeeping web page. We received 55 program evaluations from participants.

C. Qualifying State, Country or Local Program

Not applicable to the work of the DRSCW.

D. Sharing Responsibility

This report outlines the activities conducted by the DRSCW on behalf of its' members related to the implementation of the ILR40 permit. It is the responsibility of the individual ILR40 permit holders to utilize this information to fulfill the reporting requirements outlined in Part V.C. of the permit.

E. Reviewing and Updating Stormwater Management Programs

Not applicable to the work of the DRSCW.

PART V. MONITORING, RECORDKEEPING, AND REPORTING

A. Monitoring

The ILR40 permit states that permit holders "must develop and implement a monitoring and assessment program to evaluate the effectiveness of the BMPs being implemented to reduce pollutant loadings and water quality impacts". The DRSCW monitoring program meets the following monitoring objectives and requirements outlined in the permit:

- Measuring pollutants over time (Part V. A. 2. b. ii)
- Sediment monitoring (Part V. A. 2. b. iii)
- Assessing physical and habitat characteristics such as stream bank erosion caused by storm water discharges ((Part V. A. 2. b. vi)
- Collaborative watershed-scape monitoring (Part V. A. 2. b. x)
- Ambient monitoring of total suspended solids, total nitrogen, total phosphorus, fecal coliform, chlorides, and oil and grease (Part V. A. 2. c.)

The DRSCW water quality monitoring program is made up of two components: 1) Bioassessment and 2) DO monitoring.

BIOASSESSMENT

Overview and Sampling Plan

A biological and water quality survey, or "biosurvey", is an interdisciplinary monitoring effort coordinated on a waterbody specific or watershed scale. This may involve a relatively simple setting focusing on one or two small streams, one or two principal stressors, and a handful of sampling sites or a much more complex effort including entire drainage basins, multiple and overlapping stressors, and tens of sites. The DRSCW bioassessment is the latter. The DRSCW bioassessment program began in 2007 with sampling in the West Branch DuPage River, East Branch DuPage River and Salt Creek watersheds. From 2009-2016, each watershed was sampled on a 3-year rotation beginning with the West Branch DuPage River watershed in 2006. Beginning in 2017, watershed will be sampled in a 5-year rotation ensuring that each watershed will be sampled during the effective period of the ILR40 permit. The bioassessment program functions under a quality assurance plan agreed on with the Illinois Environmental Protection Agency (http://drscw.org/wp/bioassessment/). Table 1 details the bioassessment sampling dates for each DRSCW watershed.

Table 1. Bioassessment sampling dates for the DRSWC watershed

Watershed	Sampling Completed (year)	Sampling Scheduled (year)
West Branch DuPage River	2007, 2009, 2012, 2015	2020
East Branch DuPage River	2007, 2011, 2014	2019
Salt Creek	2007, 2010, 2013, 2016	2021

The DRSCW bioassessment program utilizes 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; and,
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 collects 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 containing a summary of major findings and recommendations for future monitoring, follow-up investigations, and any immediate actions that are needed to resolve readily diagnosed impairments is prepared following each bioassessment. The bioassessment reports are posted on the DRSCW at http://drscw.org/wp/bioassessment/. It is not the role of the bioassessments to identify specific remedial actions on a site specific or watershed basis. However, the baseline data provided by the bioassessments contributes to the Integrated Priority System that was developed to help determine and prioritize remedial projects (http://drscw.org/wp/project-identification-and-prioritization-system/).

Sampling sites for the bioassessment were determined systematically using a geometric design supplemented by the bracketing of features likely to exude an influence over stream resource quality, such as CSOs, dams and wastewater outfalls. The geometric site selection process starts at the downstream terminus or "pour point" of the watershed (Level 1 site), then continues by deriving each subsequent "panel" at descending intervals of one-half the drainage area (D.A.) of the preceding level. Thus, the drainage area of each successive level decreases geometrically. This results in in seven drainage area levels in each of the three watersheds, starting at the largest (150 sq. mi) and continuing through successive panels of 75, 38, 19, 9, 5 and 2 sq. mi. Targeted sites are then added to fill gaps left by the geometric design and assure complete spatial coverage in order to capture all significant pollution gradients including reaches that are impacted by wastewater treatment plants (WWTPs), major stormwater sources, combined sewer overflows (CSOs) and dams. The number of sampling sites by method/protocol and watershed are listed in Table 2 and illustrated in Figure 1.

Representativeness – Reference Sites

Data is collected from selected regional reference sites in northeastern Illinois preferably to include existing Illinois EPA and Illinois DNR reference sites, potentially being supplemented with other sites that meet the Illinois EPA criteria for reference conditions. One purpose of this data will be to index the biological methods used in this study that are different from Illinois EPA and/or DNR to the reference condition and biological index calibration as defined by Illinois EPA.

In addition, the current Illinois EPA reference network does not yet include smaller headwater streams, hence reference data is needed to accomplish an assessment of that data. Presently thirteen (13) reference sites have been established.

Table 2. Number of sampling sites in the DRSCW project area.

Method/Protocol	West Branch DuPage River (2013)	East Branch DuPage River (2014)	Salt Creek (2016)	Reference Sites (2006-2016)	Total Sites
Biological sampling					
Fish	44	36	51	13	144
Macroinvertebrates	44	36	51	13	144
QHEI	44	36	51	13	144
Water Column Chemical/Physical Sampling					
Nutrients*	44	36	51	6	137
Water Quality Metals	44	36	51	6	137
Water Quality Organics	18	11	16	6	51
Sediment Sampling	18	11	16	6	51

*Also included indicators or organic enrichment and ionic strength, total suspended solids (TSS), DO, pH and temperature

The bioassessment sampling includes four (4) 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.

FISH

Methodology

Methods for the collection of fish at wadeable sites was performed using a tow-barge or longline pulsed D.C. electrofishing apparatus (MBI 2006b). A Wisconsin DNR battery powered backpack electrofishing unit was used as an alternative to the long line in the smallest streams (Ohio EPA 1989). A three-person crew carried out the sampling protocol for each type of wading equipment sampling in an upstream direction. Sampling effort was indexed to lineal distance and ranged from 150-200 meters in length. Non-wadeable sites were sampled with a raft-mounted pulsed D.C. electrofishing device in a downstream direction (MBI 2007). Sampling effort was indexed to lineal distance over 0.5 km. Sampling was conducted during a June 15-October 15 seasonal index period.

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

Results

The fish sampling results presented in this report summarize the findings for the mainstem reaches of the East Branch DuPage River, the West Branch DuPage River and Salt Creek. Information on the tributaries and detailed analysis of all results can be found at http://drscw.org/wp/bioassessment/.

The fish and macroinvertebrate results are presented as Index of Biotic Integrity (IBI) scores. IBI is an evaluation of a waterbodies biological community in a manner that allows the identification, classification and ranking of water pollution and other stressors. IBIs allow the statistical association of various anthropogenic influences on a water body with the observed biological activity in said water body and in turn the evaluation of management interventions in a process of adaptive management. Chemical testing of water samples produce only a snapshot of chemical concentrations while an IBI allows an evaluation of the net impact of chemical, physical and flow variables on a biological community structure. Dr. James Karr formulated the IBI concept in 1981.

East Branch DuPage River

Fish assemblage conditions throughout the East Branch DuPage River watershed a in the poor and fair ranges (Figure 1). However, the mainstem assemblages show similar quality or modest improvement at nearly all sites when 2014 data is compare to 2011 and approach 2007 levels.

Prior to the modification of the Churchill Woods dam in 2001, fish assembles upstream of the dam, were essentially that of a pond and dominated by sunfish, bullheads, golden shiner, and mosquito fish. Downstream of the dam, the fish assemblage reflected more lotic, stream like conditions with populations of sand shiner, johnny darter, horneyhead chub and rock bass. Since the modification of the Churchill Woods dam, eight new species have been recorded and other populations have expanded their ranges above the former dam site. Additionally, in 2014, two new species (banded darter and round goby) were recorded in the lower reaches of the East Branch. The appearance of the banded darter, a sensitive species, is a sign of improved quality in the lower nine miles of the main stem.

West Branch DuPage River

All survey sites fell consistently in the poor or lower fair ranges with slightly higher scores downstream from RM 8.1 and the Fawell Dam (Figure 2). No West Branch sites met the 41-point criterion synonymous with a good quality assemblage.

It should be noted that the Fawell dam is a barrier to several fish species. The DRSCW in cooperation with DuPage County and Forest Preserve District of DuPage County plans to modify the Fawell Dam to allow for fish passage. This project is expected to be completed by 2018.

Figure 1. Fish IBI scores in the East Branch DuPage River, 2014, 2011-12 and 2007 in relation to municipal POTW dischargers. Bars along the x-axis depict mainstem dams or weirs (only black bars impede fish passage). The shaded area demarcates the "fair" narrative range.

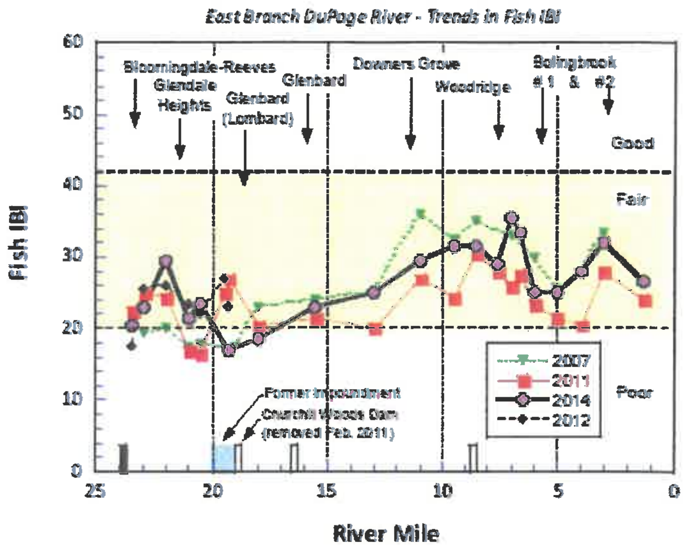
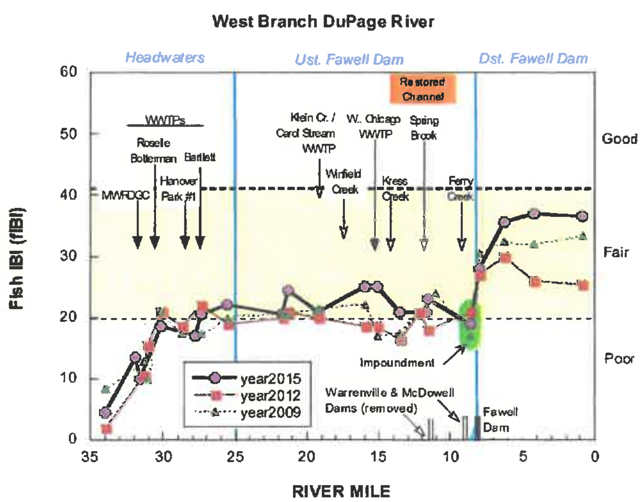


Figure 2. Fish IBI scores in the West Branch DuPage River, 2015, 2011-12 and 2007 in relation to municipal POTW dischargers. Bars along the x-axis depict mainstem dams or weirs (only black bars impede fish passage). The shaded area demarcates the "fair" narrative range.



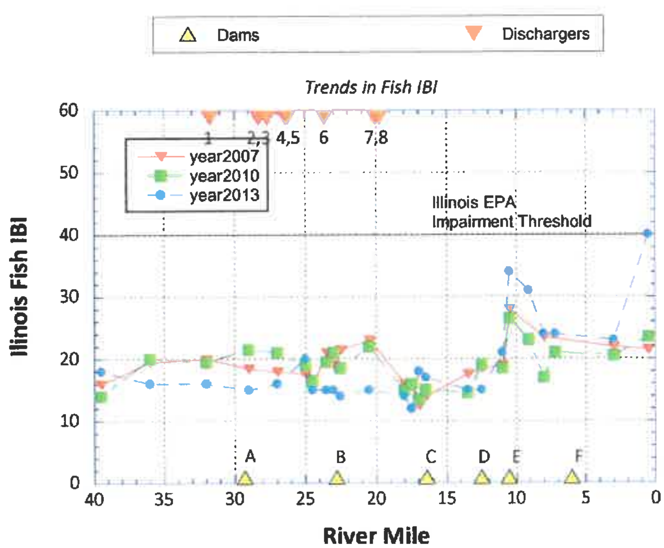
Salt Creek

With the exception of the site located at River Mile 0.5, fish assemblages sampled in Salt Creek were in poor to fair condition throughout the mainstem (Figure 3). In 2013, the site near the mouth of Salt Creek (river mile 0.5) was rated "good". The increase in fish iBi is attributed to the removal of the Hoffman Dam on the main stem of the Des Plaines River in June 2012.

It should be noted that the Fullersburg Woods Dam (dam E on Figure 4) is a barrier to several fish species, notably johnny darters and hornyhead chubs, two species that should be found throughout most of the mainstem. The DRSCW in cooperation with DuPage County and Forest Preserve District of DuPage County plans to modify the Fullersburg Woods Dam to allow for fish passage. This project is expected to be completed by 2023.

Fish assemblage data from the 2016 Salt Creek bioassessment was not available at the time of the 2016-2017 MS4 Annual Report and will be included in the 2017-2018 MS4 Annual Report due on June 1, 2018.

Figure 3. Fish IBI scores in Salt Creek, 2013, 2010, and 2007 in relation to municipal POTW dischargers. Triangles along the x-axis depict mainstem dams or weirs. The back line demarcates the IEPA impairment threshold.



MACROINVERTEBRATES

Methodology

The macroinvertebrate assemblage is sampled using the Illinois EPA (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, calculation of the macroinvertebrate IBI followed IEPA methods in using genera as the lowest level of taxonomy for mIBI calculation and scoring.

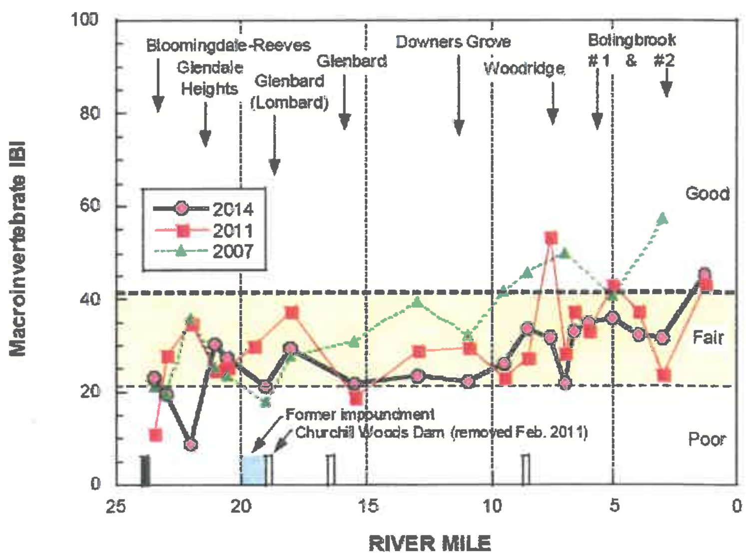
Results

The macroinvertebrate sampling results presented in this report summarize the findings for the mainstem reaches of the East Branch DuPage River, the West Branch DuPage River and Salt Creek. Information on the tributaries and detailed analysis of all results can be found at http://drscw.org/wp/bioassessment/.

East Branch DuPage River

Macroinvertebrate collections from the 2014 East Branch watershed survey fell entirely within the fair or poor quality ranges with the exception of a single "good" site on the lower mainstem (Figure 4). Assemblages throughout the study area are predominated by facultative and tolerant organisms most often associated with elevated nutrients, dissolved solids and low DO.

Figure 4. Macroinvertebrate IBI scores in the East Branch DuPage River, 2014, 2011-12 and 2007 in relation to municipal POTW dischargers. Bars along the x-axis depict mainstem dams or weirs (only black bars impede fish passage). The shaded area demarcates the "fair" narrative range.

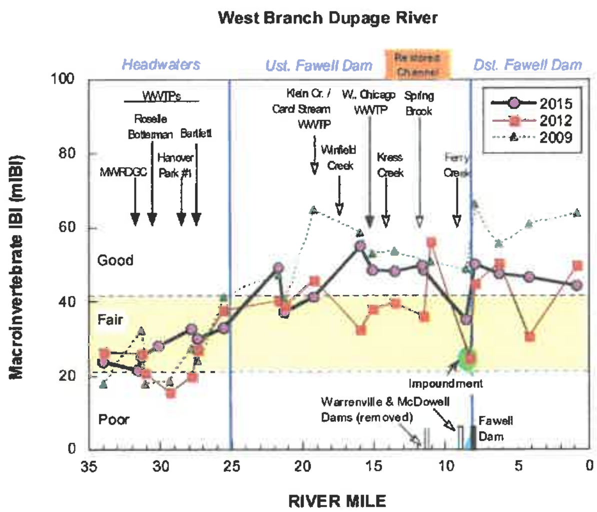


West Branch DuPage River

With few exceptions, West Branch macroinvertebrate assemblages from the upper, headwater reach reflected degraded but similar quality between 2007, 2009, 2012 and 2015 (Figure 5). The combination urban drainage, marginal habitat quality and a series of four major WWTP discharges in the small drainage were considered major contributors.

In both 2009 and 2015, major improvement in mIBI scores and clearly good mIBI ratings were detected upstream from Klein Creek and the Carol Stream WWTP (Figure 5). In 2009 and 2015, consistently good quality was maintained along the remaining length of the West Branch downstream to the mouth. In 2006, this downstream improving trend was more erratic; still 5 of the 8 sites between Klein Creek and the mouth exceeded Illinois criteria. In contrast, the 2012 trend was much less distinct as narrative ratings vacillated between a fair or lower good range status through most of the lower 20 mainstem river miles.

Figure 5. Macroinvertebrate IBI scores in the West Branch DuPage River, 2015, 2011-12 and 2007 in relation to municipal POTW dischargers. Bars along the x-axis depict mainstem dams or weirs (only black bars impede fish passage). The shaded area demarcates the "fair" narrative range.



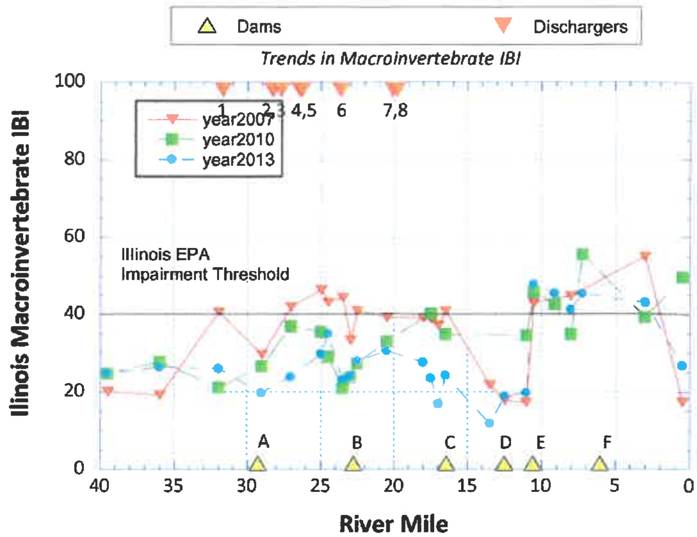
Salt Creek

In 2013, macroinvertebrate communities sampled from the mainstem of Salt Creek were rated as Fair upstream from the Fullersburg Woods Dam, and rated good at five of six sites sampled downstream from the dam, and Fair at the other site (Figure 6). Longitudinally, scores decreased downstream from Spring Brook relative to those upstream. The confluence with Spring Brook marks the reach where several POTWs discharge in short succession. Otherwise, no clear longitudinal pattern was evident

In the 2016, the Oak Meadows Dam (dam B on Figure 4) was removed in a project sponsored by the Forest Preserve District of DuPage County, DuPage County Stormwater Management, and the DRSCW. Macroinvertebrate sampling to document the effects of this dam removal is scheduled for 2017.

Macroinvertebrate data from the 2016 Salt Creek bioassessment was not available at the time of the 2016-2017 MS4 Annual Report and will be included in the 2017-2018 MS4 Annual Report due on June 1, 2018.

Figure 6. Macroinvertebrate IBI scores in Salt Creek, 2013, 2010, and 2007 in relation to municipal POTW dischargers. Triangles along the x-axis depict mainstem dams or weirs. The back line demarcates the IEPA impairment threshold.



HABITAT

Methodology

Physical habitat was evaluated using the Qualitative Habitat Evaluation Index (QHEI) developed by the Ohio EPA for streams and rivers in Ohio (Rankin 1989, 1995; Ohio EPA 2006b) and as modified by 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 used to determine the QHEI score which generally ranges from 20 to less than 100. QHEI scores and physical habitat attribute were recorded in conjunction with fish collections.

Results

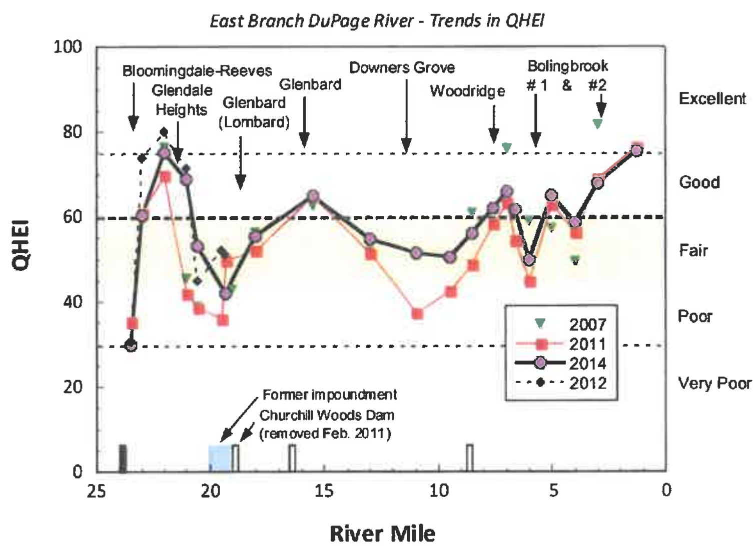
The QHEI data presented in this report summarize the findings for the mainstem reaches of the East Branch DuPage River, the West Branch DuPage River and Salt Creek. Information on the tributaries and detailed analysis of all results can be found at http://drscw.org/wp/bioassessment/.

The physical habitat of a stream is a primary determinant of biological quality. Streams in the glaciated Midwest, left in their natural state, typically possess riffle-pool-run sequences, high sinuosity, and well-developed channels with deep pools, heterogeneous substrates and cover in the form of woody debris, glacial tills, and aquatic macrophytes. The QHEI categorically scores the basic components of stream habitat into ranks according to the degree to which those components are found in a natural state, or conversely, in an altered or modified state.

East Branch DuPage River
Based on QHEI scores, mainstem habitat quality fell mostly in the fair to good ranges, but varied by location (Figure 7). Substrate embeddedness was a common characteristic of the mainstem as riffle or pool embeddedness was recorded at all but one location (EB23/RM 22.0).

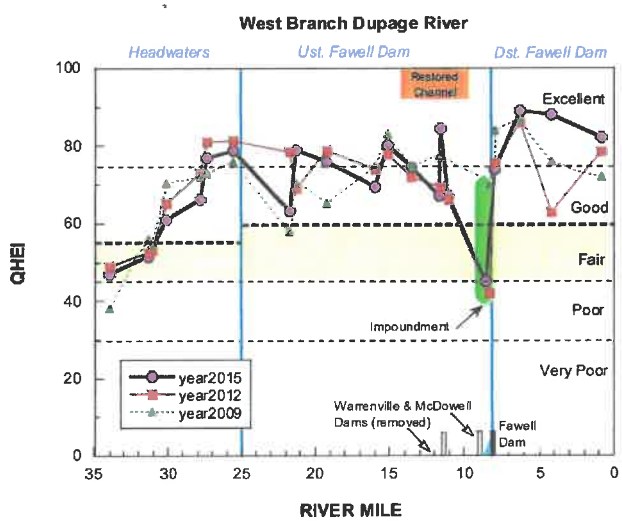
Since the modification of the Churchill Woods dam in 2011, QHEI scores within and upstream of the former dam have increased by reflecting the appearance of riffles and increased habitat heterogeneity.

Figure 7. Qualitative Habitat Evaluation Index (QHEI) scores for the E. Branch DuPage River in 2007, 2011-12, and 2014 in relation to municipal WWTP discharges. Bars along the x-axis depict mainstem dams or weirs (black bars are dams that impede fish passage). The shaded region depicts the range of QHEI scores where habitat quality is marginal and limiting to aquatic life. QHEI scores less than 45 are typical of highly modified habitat.



West Branch DuPage River
Mainstem habitat quality in 2012 was good to excellent throughout most of its length and, with the exception of the extreme headwaters (upstream RM 30.1) and Fawell Dam pool (RM 8.3) (Figure 8).

Figure 8. Qualitative Habitat Evaluation Index (QHEI) scores for the W. Branch DuPage River in 2009, 2012, and 2015. Bars along the x-axis depict mainstem dams or weirs (black bars are dams that impede fish passage). The shaded region depicts the range of QHEI scores where habitat quality is marginal and limiting to aquatic life. QHEI scores less than 45 are typical of highly modified habitat

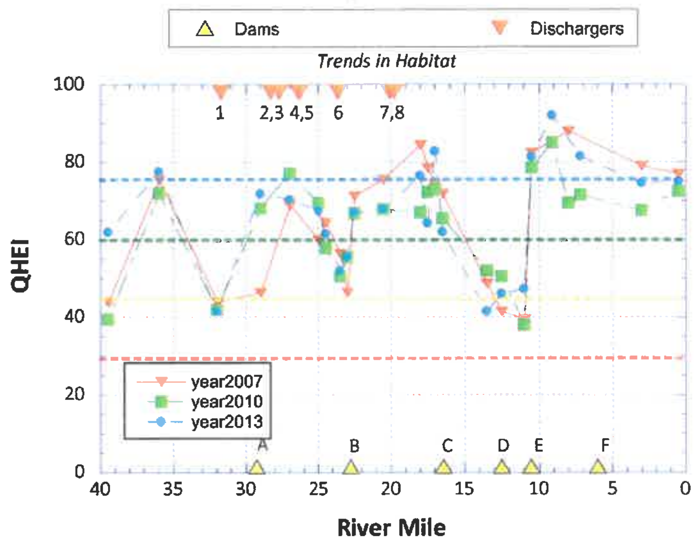


Salt Creek

In Salt Creek, the majority of the sites possessed the types and amounts of habitat features necessary to support aquatic life consistent with beneficial uses (Figure 49 a), with QHEI scores in the good and excellent range (Figure 9). Perhaps more telling, 19 of the sites possessed none of the attributes that characterized stream channels highly modified either directly or indirectly by anthropogenic modifications, and only one site, the most upstream site, possessed more than one highly modified attribute.

QHEI data from the 2016 Salt Creek bioassessment was not available at the time of the 2016-2017 MS4 Annual Report and will be included in the 2017-2018 MS4 Annual Report due on June 1, 2018.

Figure 9. Qualitative Habitat Evaluation Index (QHEI) scores for Salt Creek in 2007, 2010 and 2013 in relation to municipal WWTP discharges. Triangles along the x-axis depict mainstem dams or weirs. The shaded region depicts the range of QHEI scores where habitat quality is marginal and limiting to aquatic life. QHEI scores less than 45 are typical of highly modified habitat.



WATER QUALITY CHEMISTRY

Methodology

Water column and sediment samples are collected as part of the DRSCW bioassessment programs. The total number of sites sampled is detailed in Table 2. Total number of collected samples by watershed typical for a full assessment by watershed are given in Table 3. The number of samples collected at each site is largely a function of the sites drainage area with the frequency of sampling increasing as drainage size increases (Table 4). Organics sampling is a single sample done at a subset of sites. Sediment sampling is done at a subset of 66 sites using the same procedures as IEPA.

The parameters sampled for are included in Table 6 and can be grouped into demand parameters, nutrients, demand, metals and organics. Locations of organic and sediment sites are shown on Figure 2. All sampling occurs between June and October of the sample year. The Standard Operating Procedure for water quality sampling can be found at http://drscw.org/wp/bioassessment/.

Table 3. Total number of samples by watershed typical for a full assessment by watershed

Watershed	Approximate # Sites	Demand Samples	Nutrients Samples	Metals Samples	Organics Samples
Salt Creek	51	280	280	149	16
West Branch DR	44	218	218	110	18
East Branch DR	36	196	196	100	11

Table 4. Approximate distribution of sample numbers by drainage area across the monitoring area.

Drainage Area and site numbers	>100 sq mi (n=12)	>75 sq mi (n=25)	>38 sq mi (n=11)	>19 sq mi (n=11)	>8 sq mi (n=15)	>5 sq mi (n=24)	>2 sq mi (n= 46)
Mean # Samples demand /nutrients	12	9	6	6	4	4	2
Mean # Samples metals	6	6	4	4	2	2	0

Table 6. Water Quality and sediment Parameters sampled as part of the DRSCW Bioassessment Program.

Water Quality Parameters	Sediment Parameters
Demand Parameters	**Sediment Metals**
5 Day BOD	Arsenic
Chloride	Barium
Conductivity	Cadmium
Dissolved Oxygen	Chromium
pH	Copper
Temperature	Iron
Total Dissolved Solids	Lead
Total Suspended Solids	Manganese
	Nickel
Nutrients	Potassium
Ammonia	Silver
Nitrogen/Nitrate	Zinc
Nitrogen – Total Kjeldahl	
Phosphorus, Total	
	Sediment Organics
Metals	Organochlorine Pesticides
Cadmium	PCBS
Calcium	Percent Moisture
Copper	Semivolatile Organics
Iron	Volatile Organic Compounds
Lead	
Magnesium	
Zinc	
Organics – Water	
PCBS	
Pesticides	
Semivolatile Organics	
Volatile Organics	

Results

The discussion presented below focuses on the constituents listed in the MS4 permit: total suspended solids, total nitrogen, total phosphorus, fecal coliform, chlorides, and oil and grease. Total nitrogen is presented as ammonia, nitrate, and total kjeldahl nitrogen (TKN). Prior to the 2016 sampling period, fecal coliform and oil and grease sampling was not conducted. Oil and grease sampling was added to the bioassessment sampling for Salt Creek in 2016. Fecal coliform and oil and grease sampling will be added to all future bioassessment sampling for the East Branch DuPage River (2019), West Branch DuPage River (2020), and Salt Creek (2021) ensuring that each watershed will be sampled for that parameter during the effective period of the ILR40 permit.

Detailed analysis and results for the other water quality constituents is located at http://drscw.org/wp/bioassessment/.

East Branch DuPage River

East Branch mainstem flows are effluent dominated during the late summer-early fall months. As such, chemical water quality is highly influenced by the concentration and composition of chemical constituents in WWTP effluents (Figures 10-13). The results in 2014 were consistent with 2011 during low flow periods with respect to observing no exceedances of Illinois water quality criteria for regulated parameters (i.e. TSS, NH_3-N).

West Branch DuPage River

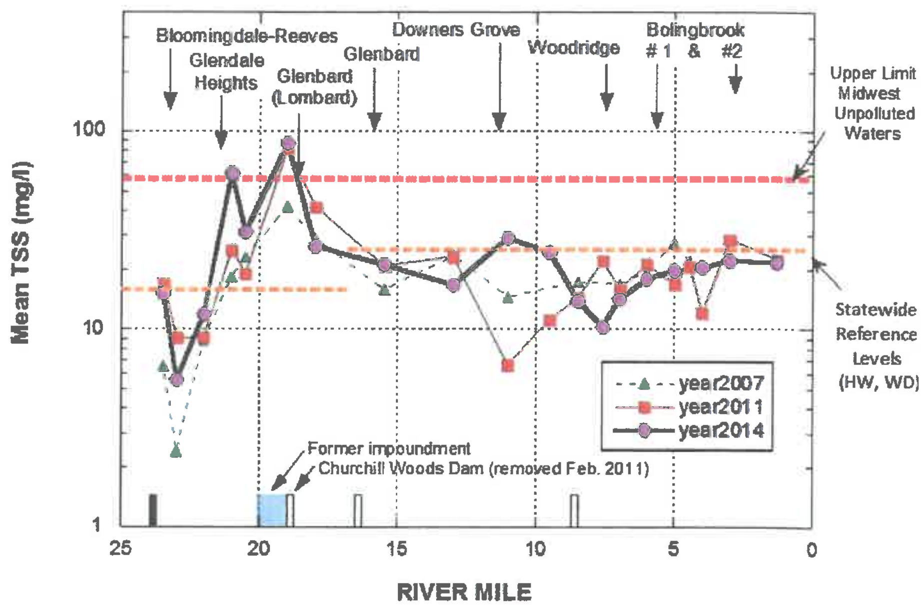
Stream flow in the West Branch DuPage River is effluent dominated during summer months. As such, its water quality is highly influenced by the concentrations and composition of chemical constituents in the effluent as well as runoff from the urban and developed land cover in the watershed. Water quality sampling in 2012 during the summer low-flow periods suggest that the quality of treated effluent, with respect to regulated parameters (i.e., cBOD5, TSS, NH3), was generally good. Effluents did not result directly in exceedances of water quality standards for these parameters. However, increasingly elevated nutrient levels and their attendant influence on mainstem D.O. regimes remain problematic.

Salt Creek

Salt Creek drains a highly urbanized landscape with a high population density. The increase in Pollutants associated with urbanized landscapes have been documented. Given the high population density in the watershed, treated municipal effluent comprises a significant fraction of the total flow in Salt Creek and strongly influences water quality, especially with respect to nitrogen and phosphorus. The results in 2013 were consistent with 2010.

Water chemistry data from the 2016 Salt Creek bioassessment was not available at the time of the 2016-2017 MS4 Annual Report and will be included in the 2017-2018 MS4 Annual Report due on June 1, 2018.

Figure 10. Concentrations of total suspended solids (top panel) and TKN (lower panel) from E. Branch DuPage River samples in 2007, 2011 and 2014 in relation to municipal WWTP discharges. Bars along the x-axis depict mainstem dams or weirs (black bars are dams that impede fish passage). Red dashed lines shows the upper limits of concentrations typical for relatively unpolluted waters for TSS (McNeeley et al. 1979). Orange dashed line in TSS plot is the Ohio reference threshold for headwater (HW) and wadeable (WD) streams. For TKN, the orange dashed line represents the IPS threshold (1.0 mg/l). IPS is a tool developed by the DRSCW and MBI.



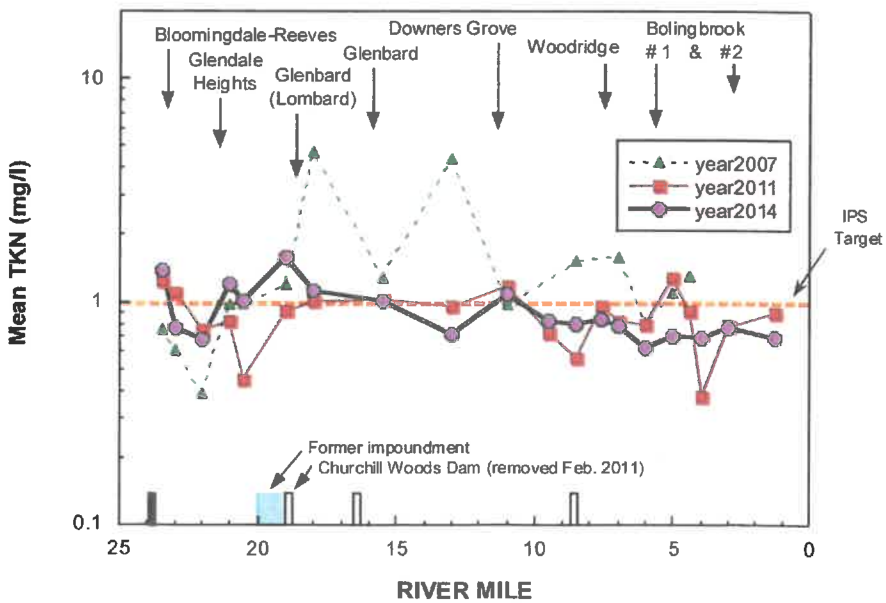
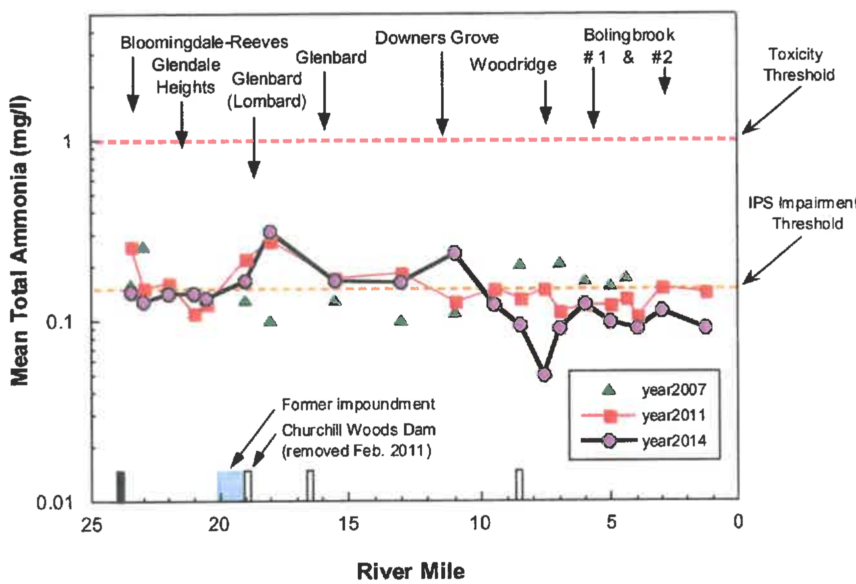


Figure 11. Concentrations of ammonia-N (top panel) and nitrate+nitrite-N (lower panel) from E. Branch DuPage River samples in 2007, 2011 and 2014 in relation to municipal WWTP discharges. Bars along the x-axis depict mainstem dams or weirs (only black bars for dams that impede fish passage). For ammonia-N, the red dashed line (1.0 mg/l) represents a threshold concentration beyond which acute toxicity is likely; the orange dashed line (0.15 mg/l) is correlated with impaired biota in the IPS study. For nitrate+nitrite-N, orange dashed lines represent target concentrations for ecoregion 54 (1.8 mg/l) and the Illinois EPA non-standard based criteria (7.8 mg/l). The red dashed line is the Illinois water quality criterion for public water supplies (10 mg/l).



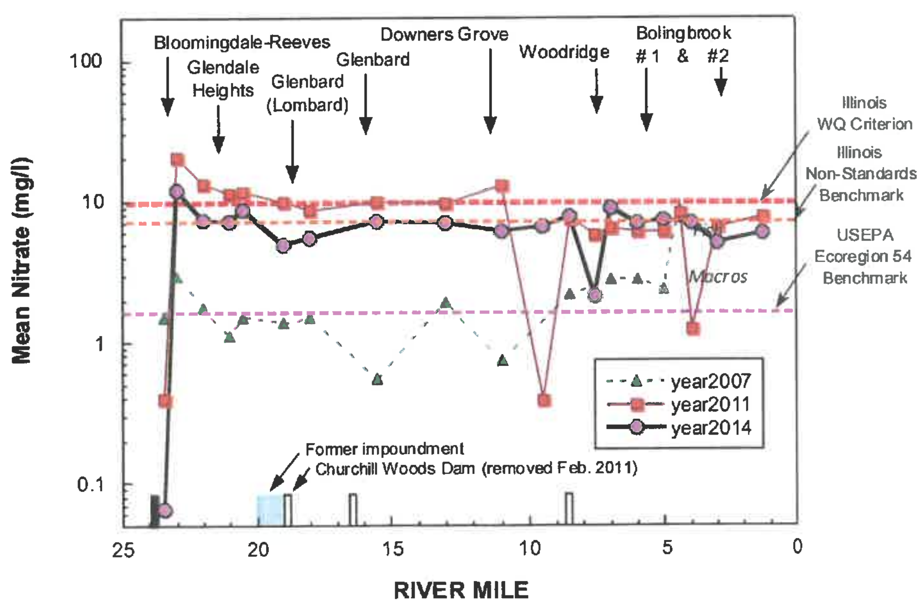


Figure 12. Concentrations total phosphorus from E. Branch DuPage River samples in 2007, 2011 and 2014 in relation to municipal WWTP discharges. Bars along the x-axis depict mainstem dams or weirs (black bars are dams that impede fish passage). For phosphorus, orange dashed lines represent target concentrations for ecoregion 54 (0.07 mg/l) and the Illinois EPA non-standard based criterion (0.61 mg/l). The 1.0 mg/l dashed red line is the suggested effluent limit.

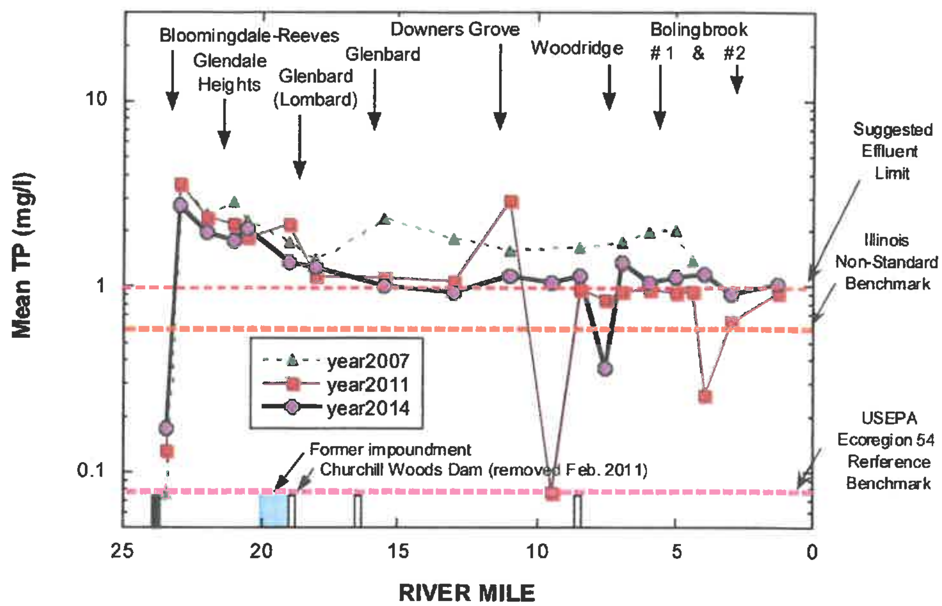


Figure 13. Chloride concentrations from the East Branch DuPage River in the summer of 2007, 2011 and 2014.

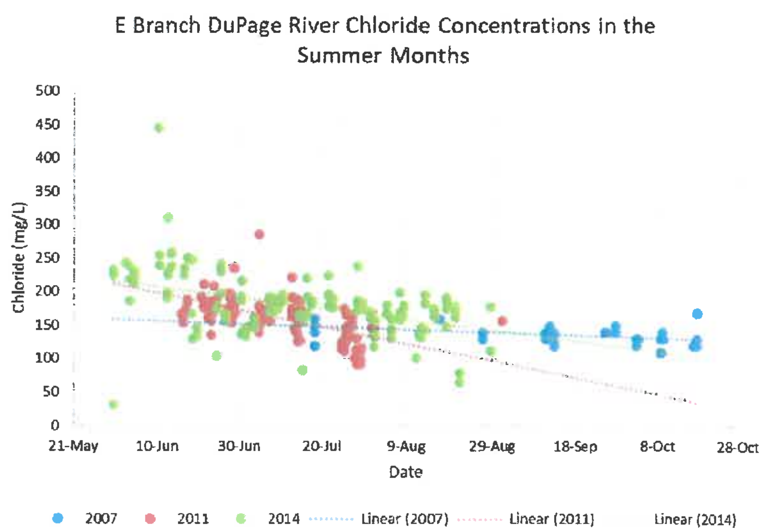
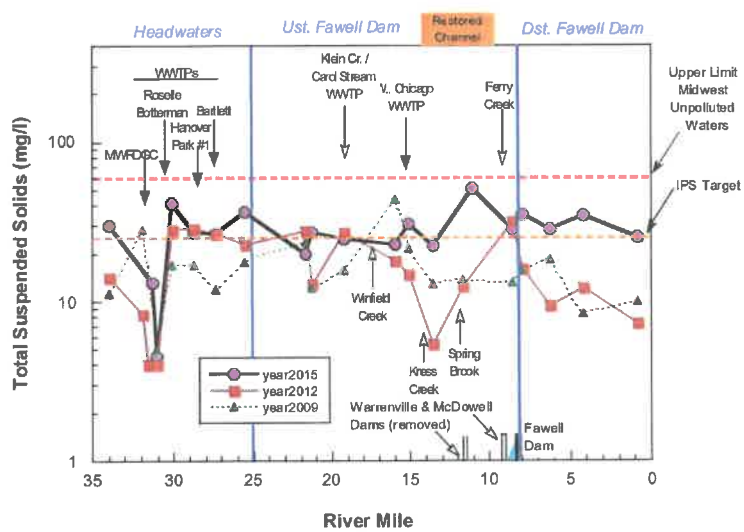


Figure 14. Concentrations of total suspended solids (top panel) and TKN (lower panel) from W. Branch DuPage River samples in 2008, 2012 and 2015 in relation to municipal WWTP discharges. Bars along the x-axis depict mainstem dams or weirs (black bars are dams that impede fish passage). Red dashed lines shows the upper limits of concentrations typical for relatively unpolluted waters for TSS (McNeeley et al. 1979). Orange dashed line in TSS plot is the Ohio reference threshold for headwater (HW) and wadeable (WD) streams. For TKN, the orange dashed line represents the IPS threshold (1.0 mg/l). IPS is a tool developed by the DRSCW and MBI.



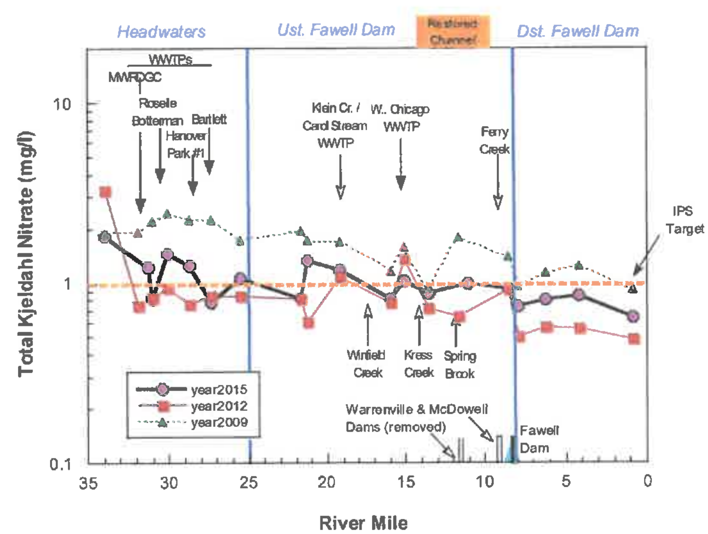
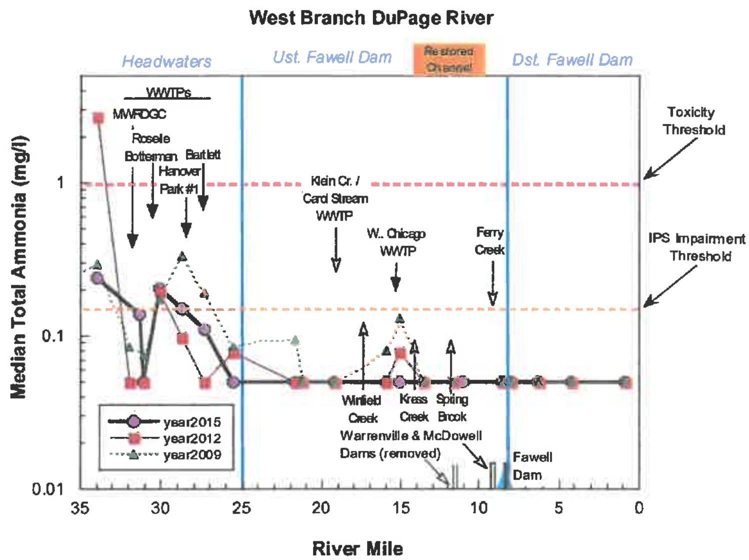


Figure 15. Concentrations of ammonia-N (top panel) and total nitrate (lower panel) from W. Branch DuPage River samples in 2008, 2012 and 2015 in relation to municipal WWTP discharges. Bars along the x-axis depict mainstem dams or weirs (only black bars for dams that impede fish passage). For ammonia-N, the red dashed line (1.0 mg/l) represents a threshold concentration beyond which acute toxicity is likely; the orange dashed line (0.15 mg/l) is correlated with impaired biota in the IPS study. For total nitrate, red line represents the Illinois Water Quality Criterion, orange dashed line represents the Illinois Non-Standards Benchmark, and purple line represents the US Ecoregion 54 Benchmark.



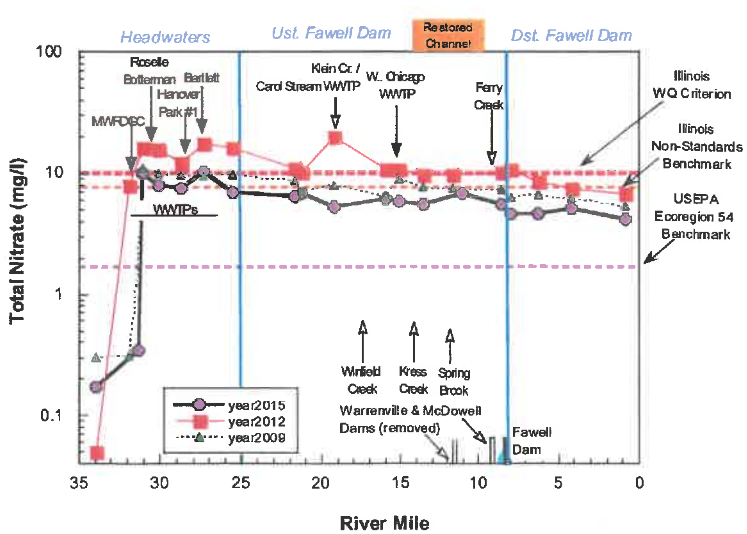
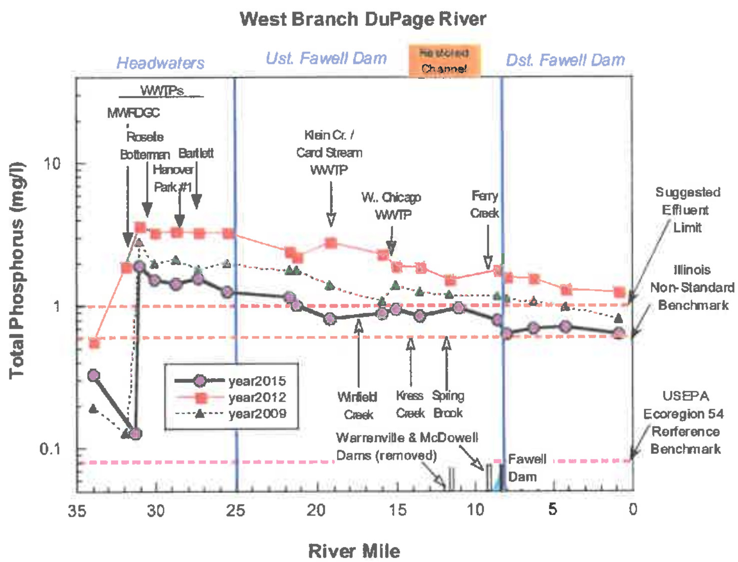


Figure 16. Concentrations total phosphorus (top panel) and chloride (lower panel) from W. Branch DuPage River samples in 2008, 2012 and 2015 in relation to municipal WWTP discharges. Bars along the x-axis depict mainstem dams or weirs (black bars are dams that impede fish passage). For phosphorus, orange dashed lines represent target concentrations for ecoregion 54 (0.07 mg/l) and the Illinois EPA non-standard based criterion (0.61 mg/l). The 1.0 mg/l dashed red line is the suggested effluent limit. For chloride, red dashed line represents the Illinois Water Quality Criterion (500 mg/L) and orange dashed lines represent the IPS threshold for fish and macroinvertebrates. IPS is a tool developed by the DRSCW and MBI.



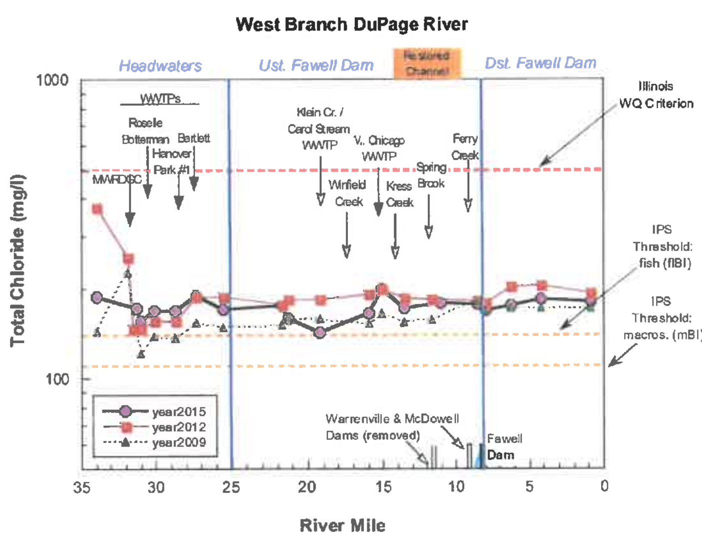
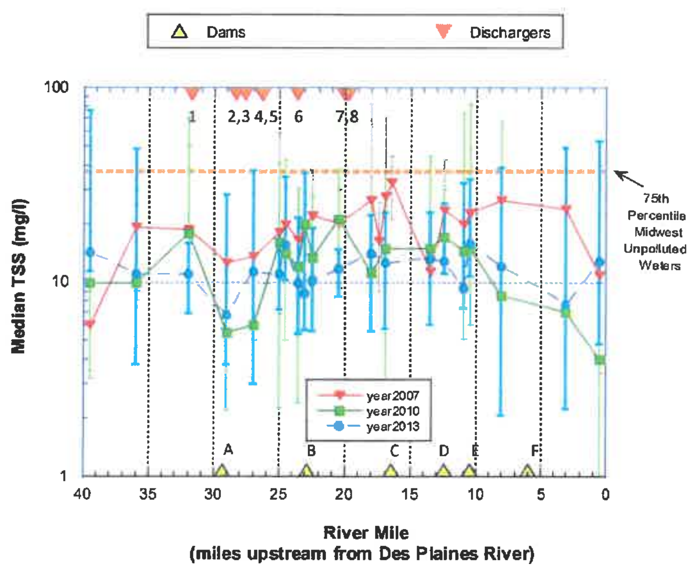


Figure 17. Concentrations of total suspended solids (top panel) and TKN (lower panel) from Salt Creek samples in 2007, 2010 and 2013 in relation to municipal WWTP discharges. Yellow triangles along the x-axis depict mainstem dams or weirs. Orange dashed lines shows the upper limits of concentrations typical for relatively unpolluted waters for TSS (McNeeley et al. 1979). Blue dashed line in TSS plot is the Ohio reference threshold for headwater (HW) and wadeable (WD) streams. For TKN, orange dashed line represents the IPS threshold (1.0 mg/l). IPS is a tool developed by the DRSCW and MBI.



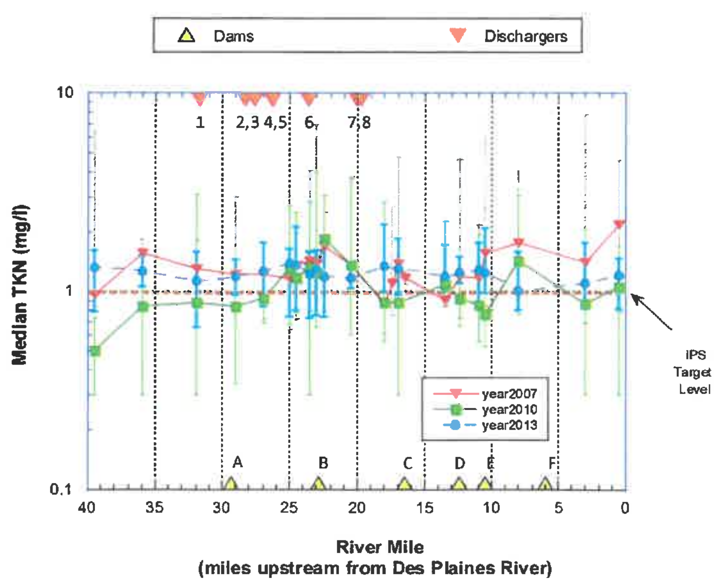
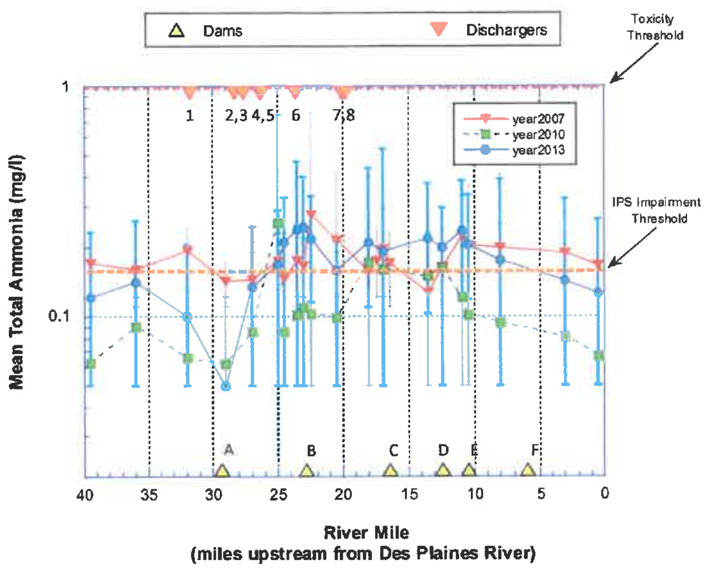


Figure 18. Concentrations of ammonia-N (top panel) and total nitrate (lower panel) from Salt Creek samples in 2007, 2010 and 2013 in relation to municipal WWTP discharges. Yellow triangles along the x-axis depict mainstem dams or weirs. For ammonia-N, the blue dashed line (1.0 mg/l) represents a threshold concentration beyond which acute toxicity is likely; the orange dashed line (0.15 mg/l) is correlated with impaired biota in the IPS study. For total nitrate, red line represents the Illinois Water Quality Criterion, orange dashed line represents the Illinois Non-Standards Benchmark, and purple line represents the US Ecoregion 54 Benchmark.



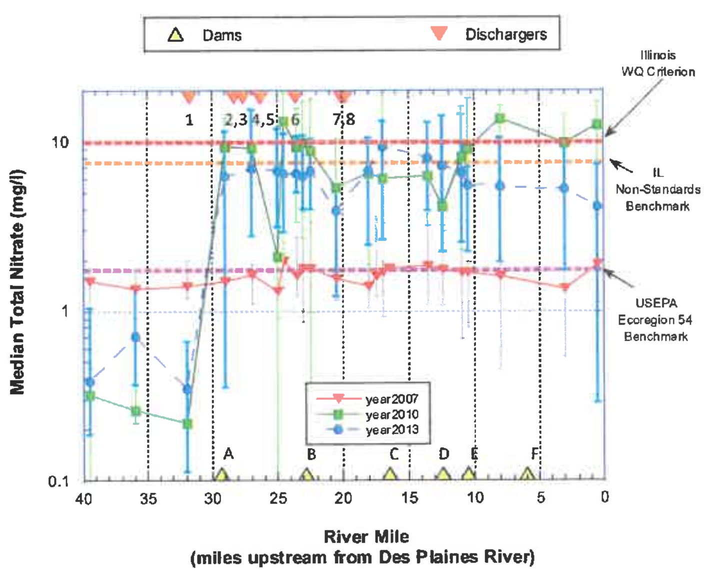
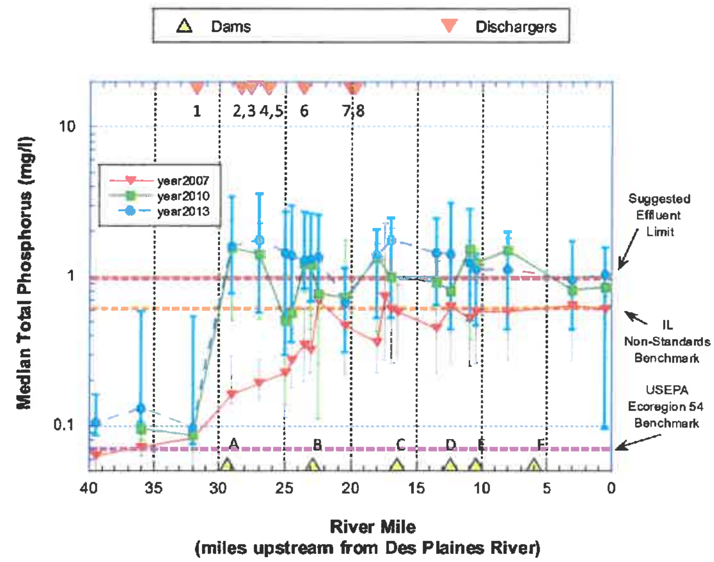
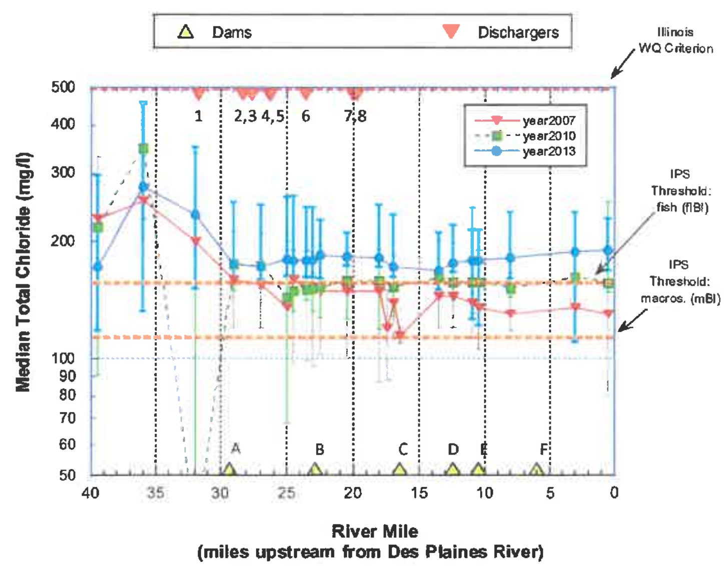


Figure 19. Concentrations total phosphorus (top panel) and chloride (lower panel) from Salt Creek samples in 2007, 2010, and 2013 in relation to municipal WWTP discharges. Yellow triangles along the x-axis depict mainstem dams or weirs. For phosphorus, purple dashed lines represent target concentrations for ecoregion 54 (0.07 mg/l) and orange dashed line represents the Illinois EPA non-standard based criterion (0.61 mg/l). The 1.0 mg/l dashed red line is the suggested effluent limit. For chloride, red dashed line represents the Illinois Water Quality Criterion (500 mg/L) and orange dashed lines represent the IPS threshold for fish and macroinvertebrates. IPS is a tool developed by the DRSCW and MBI.





Sediment Chemistry Results

Detailed analysis and results for sediment chemistry is located at http://drscw.org/wp/bioassessment/.

DISSOLVED OXYGEN (DO) MONITORING

Background and Methodology

The Illinois Environmental Protection Agency (IEPA) report, Illinois 2004 Section 303(d) List, listed dissolved oxygen (DO) as a potential impairment in Salt Creek, and the East and West Branches of the DuPage River. The report suggested that the DO levels in selected reaches of these waterways might periodically fall to levels below those required by healthy aquatic communities.

All rivers and creeks in DuPage County are classified as General Use Waters. The present water quality standards for dissolved oxygen in General Use Waters is:

1. During the period of March through July
   a. 5.0 mg/L at any time; and
   b. 6.0 mg/L as a daily mean averaged over 7 days.

2. During the period of August through February,
   a. 3.5 mg/L at any time;
   b. 4.0 mg/L as a daily minimum averaged over 7 days; and
   c. 5.5 mg/L as a daily mean averaged over 30 days.

Following listing on the 303 (d) list three TMDLs were prepared by the IEPA for Salt Creek and the East Branch of the DuPage River. In response to the TMDLs, the DRSCW committed to develop and manage a continuous long-term DO monitoring plan for the project area in order to assess the nature and extent of the DO impairment and to allow the design of remedial projects. The continuous DO data is also used to assess the impact of DO improvement projects such as the Churchill Woods and Oak Meadow dam removals.

Typically, the continuous DO monitoring project includes two to three (2-3) sites on the West Branch DuPage River, four to five (4-5) sites of the East Branch DuPage River, and three to four (3-4) sites on Salt Creek. The program began in 2006 and data has been collected each year since. Each site is equipped with a HydroLab DS 5X which collects data on DO, pH, conductivity and water temperature. Stations have a sample interval of one hour and collect data from June through to October (the seasonal period recognized as containing the lowest annual levels of stream DO). The continuous DO monitoring program functions under a quality assurance plan agreed on with the Illinois Environmental Protection Agency (http://drscw.org/wp/dissolved-oxygen/). Details on the site location are included in Table 1 and site locations are included on Map 5.

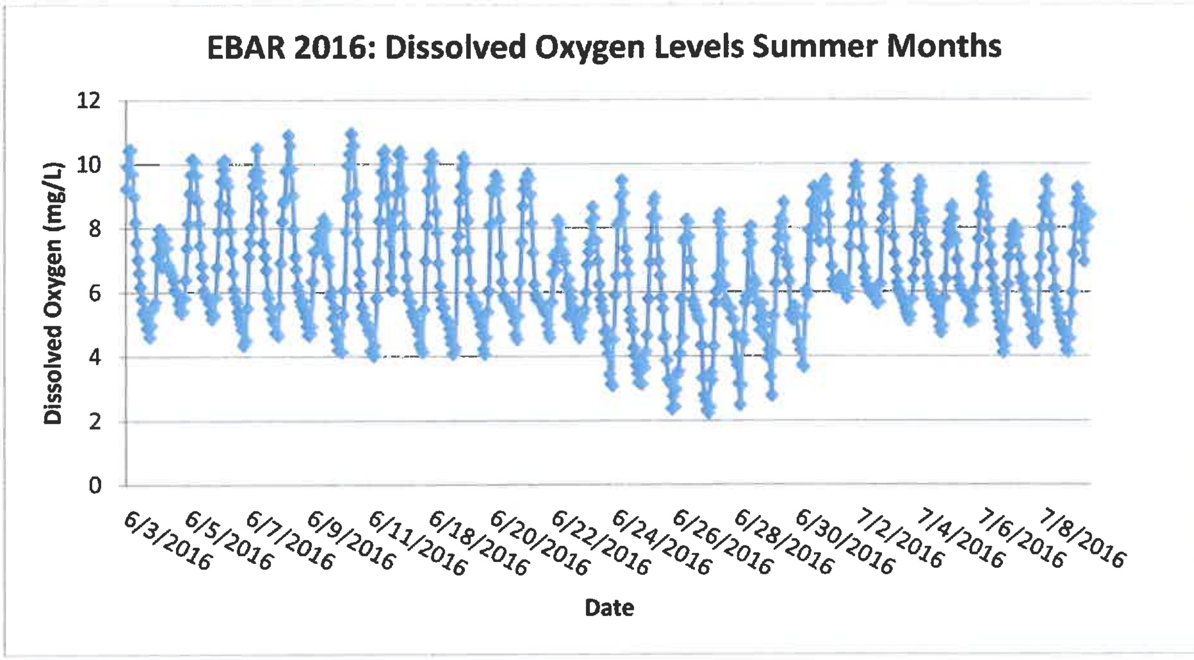
Table 5. Continuous DO monitoring locations in the DRSCW watersheds

Site ID	Stream Name	River Mile	Latitude	Longitude	Location
WBAD	W. Br. DuPage R.	29.9	41.9750	-88.1386	Arlington Drive
WBBR	W. Br. DuPage R.	11.7	41.825268	-88.179456	Butterfield Road
WBWD	W. Br. DuPage R.	11.1	41.82027	-88.17212	Downstream of Warrenville Grove Dam
EBAR	E. Br. DuPage R.	23.0	41.935171	-88.05843	Army Trail Road
EBCB	E. Br. DuPage R.	18.8	41.88510	-88.04110	Former Churchill Woods pool (Crescent Blvd)
EBHL	E. Br. DuPage R.	14.0	41.82570	-88.05316	Hidden Lake Preserve
EBHR	E. Br. DuPage R.	8.5	41.76800	-88.07160	Upstream Hobson Rd
EBWL	E. Br. DuPage R.	4.0	41.71230	-88.09160	Downstream of 2nd mine discharge
SCOM			41.941279	-87.983363	Oak Meadows Golf Course upstream of former Dam
SCBR	Salt Creek	16.1	41.864686	-87.95073	Butterfield Road
SCFW	Salt Creek	11.1	41.825493	-87.93158	Fullersburg Woods upstream of Dam
SCYR	Salt Creek	10.6	41.820552	-87.92658	York Road

Results

Results of the continuous DO monitoring conducted in the summer of 2016 is included in Figures 20-24.

Figure 20. Dissolved Oxygen plots for East Branch DuPage River sites EBAR (top panel) and EBCB (lower panel).



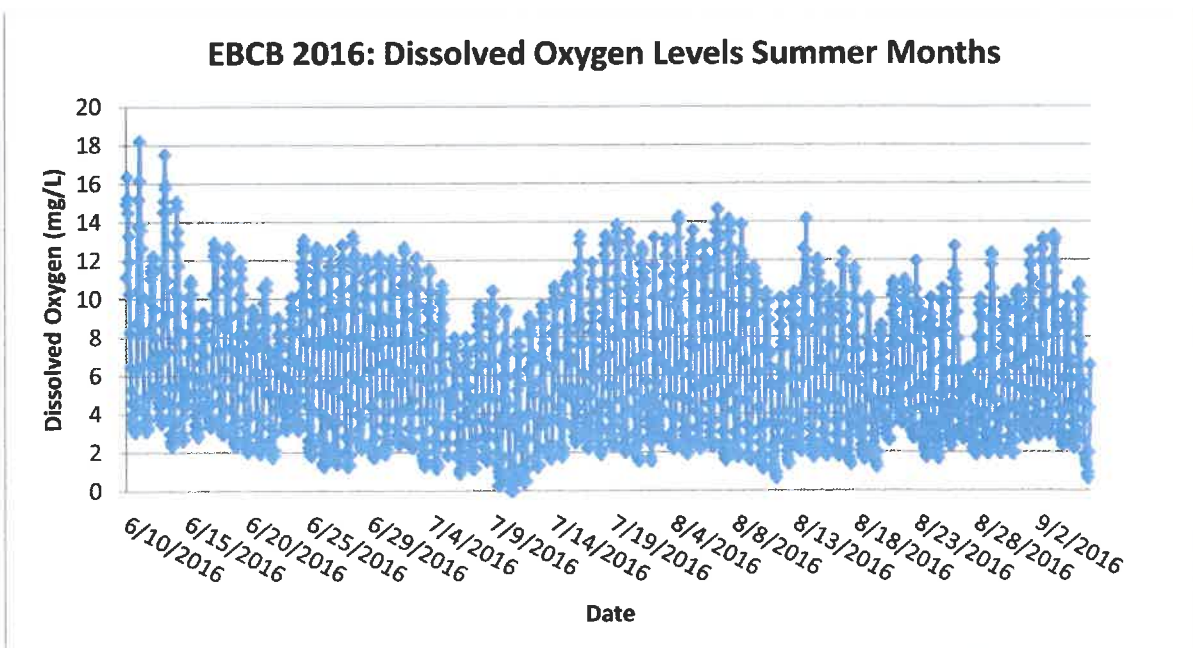
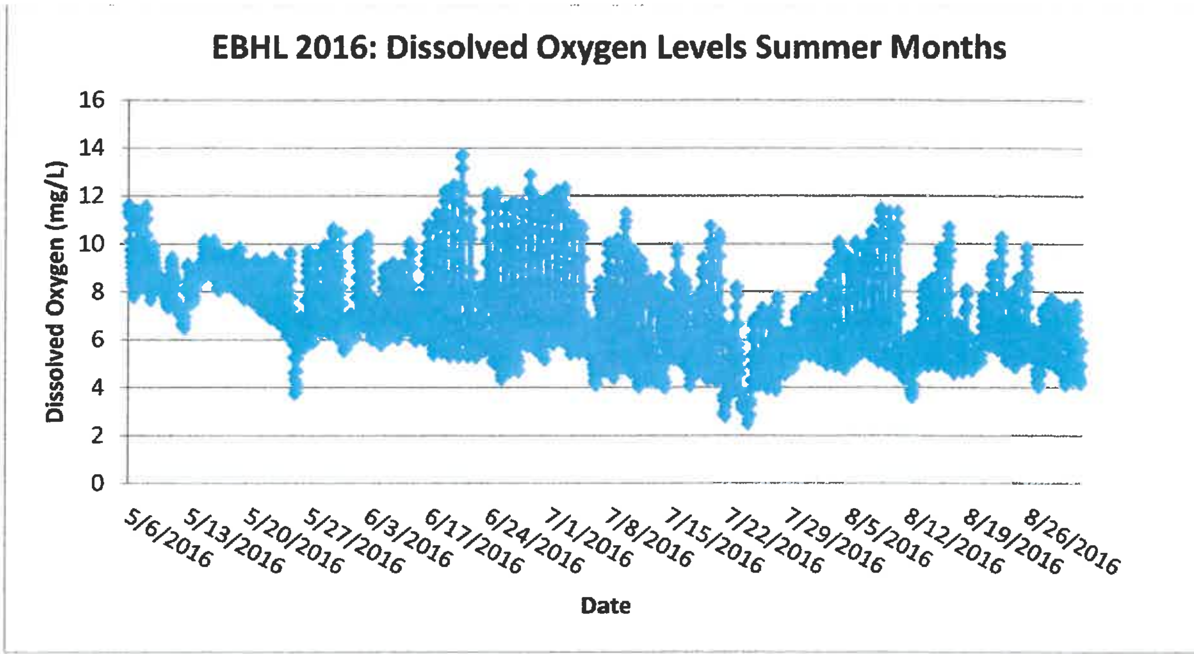


Figure 21. Dissolved Oxygen plots for East Branch DuPage River sites EBHL (top panel) and EBHR (lower panel).



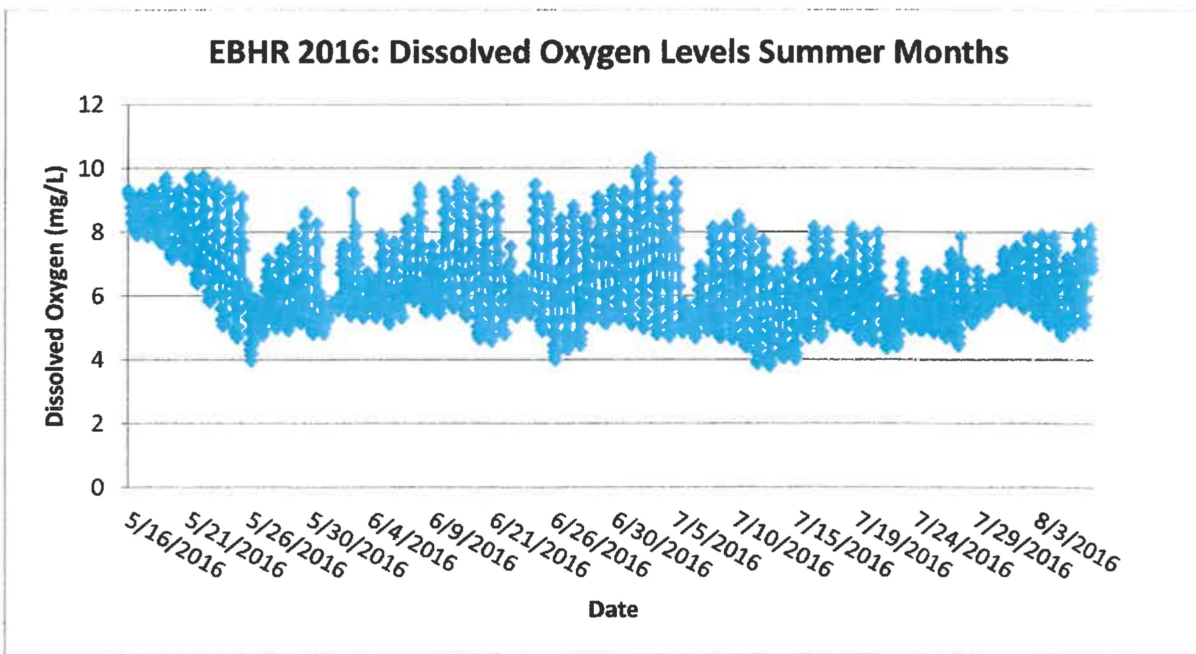
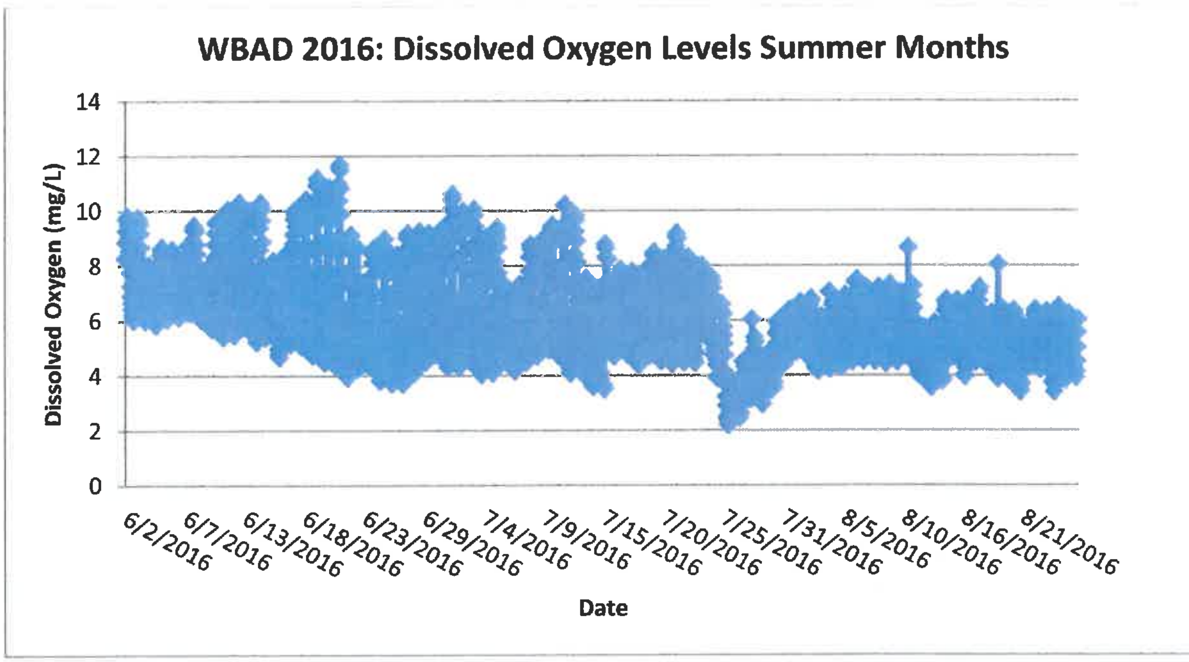


Figure 22. Dissolved Oxygen plots for West Branch DuPage River sites WBAD (top panel) and WBBR (lower panel).



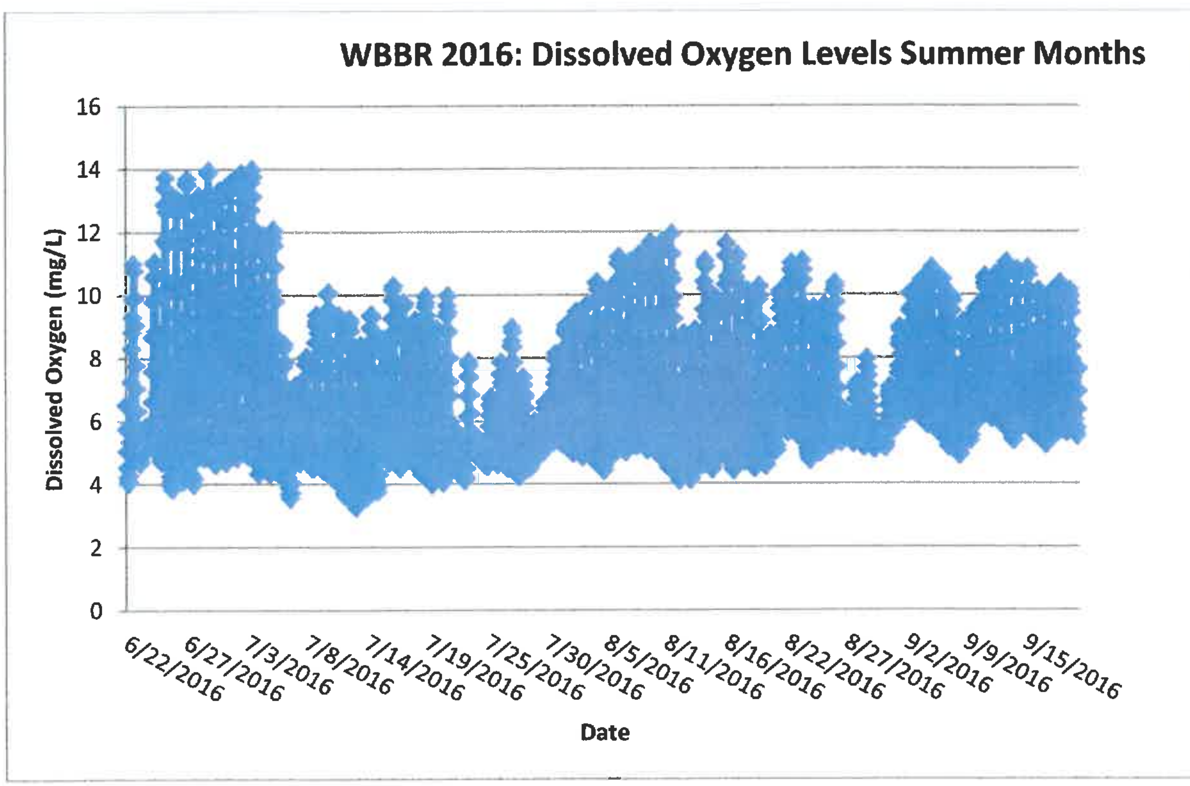
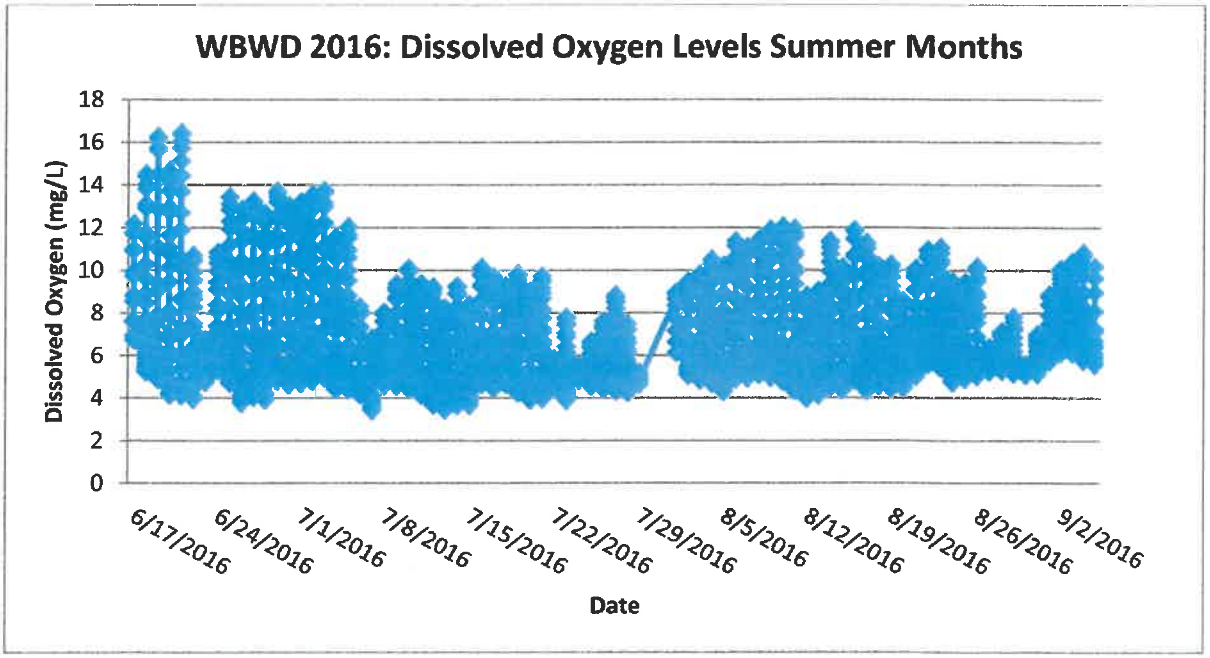


Figure 23. Dissolved Oxygen plots for West Branch DuPage River sites WBWD (top panel) and WBMG (lower panel).



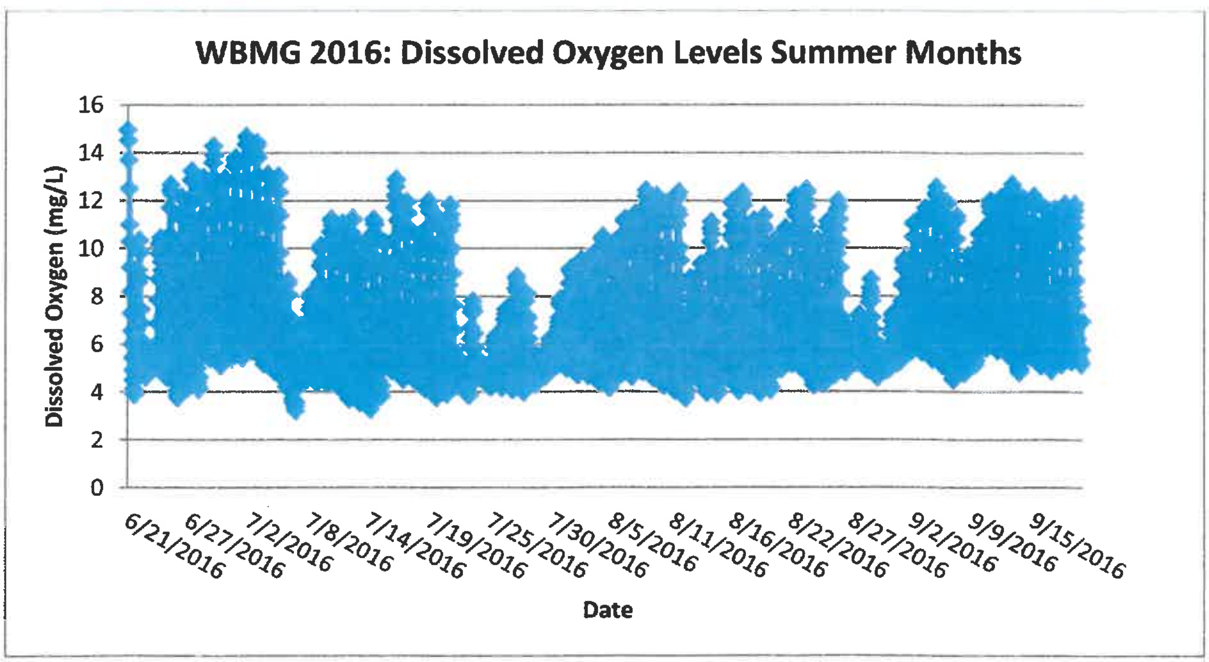
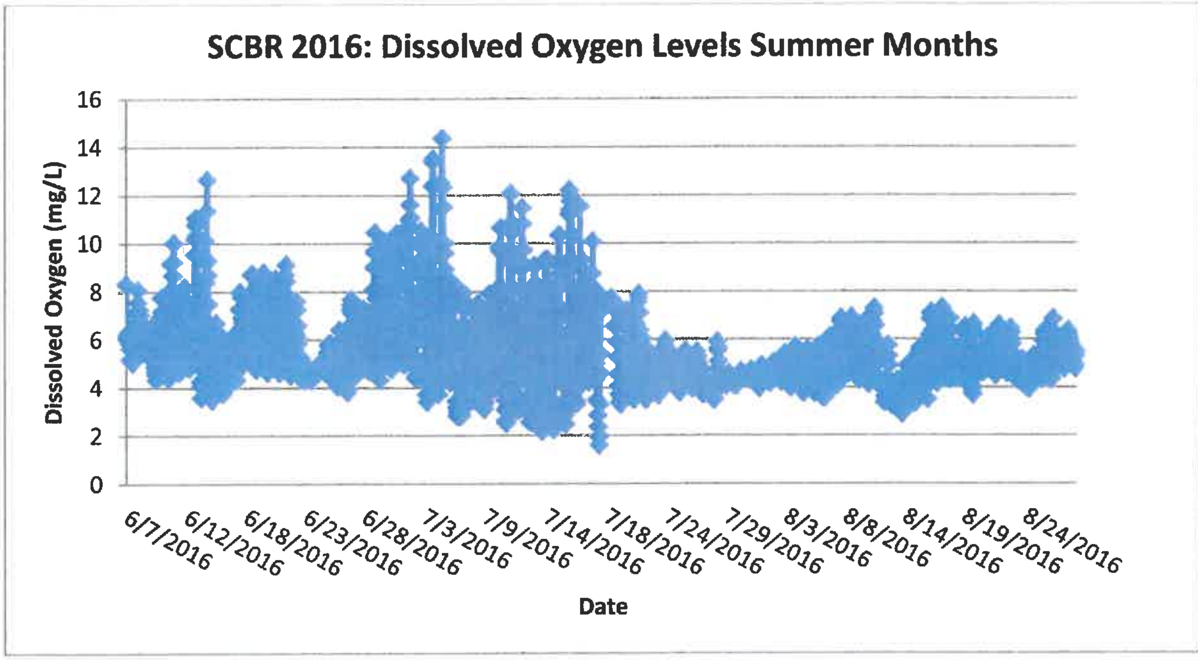
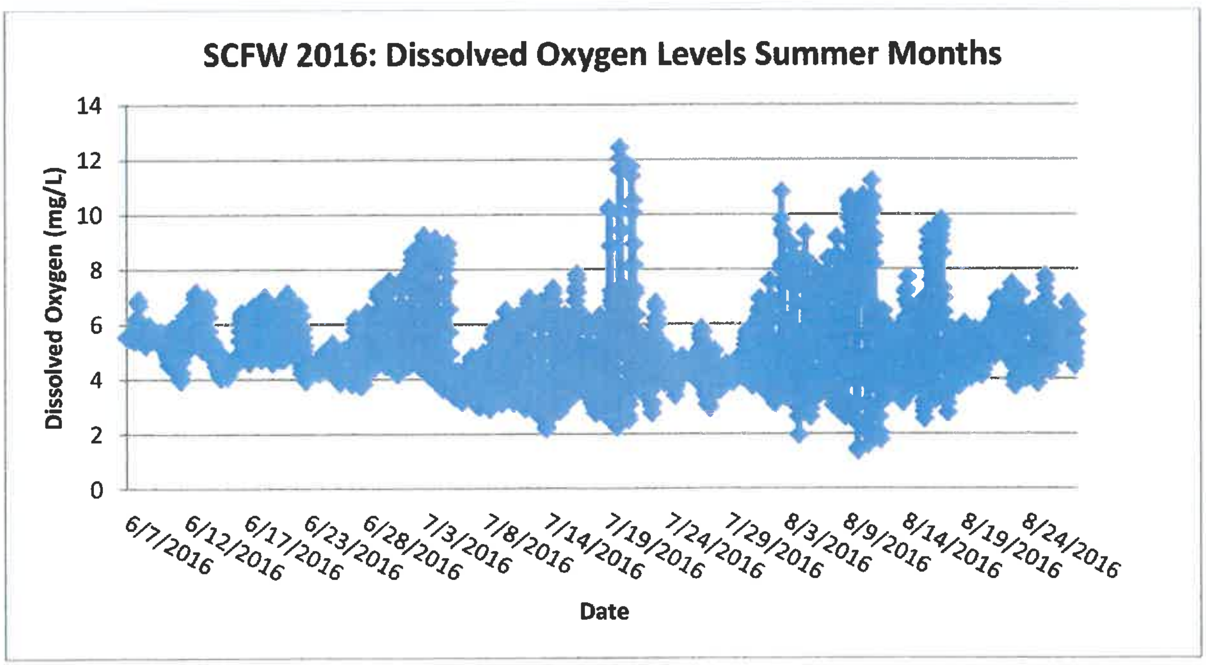


Figure 24. Dissolved Oxygen plots for Salt Creek sites SCBR (top panel) and SCFW (lower panel).



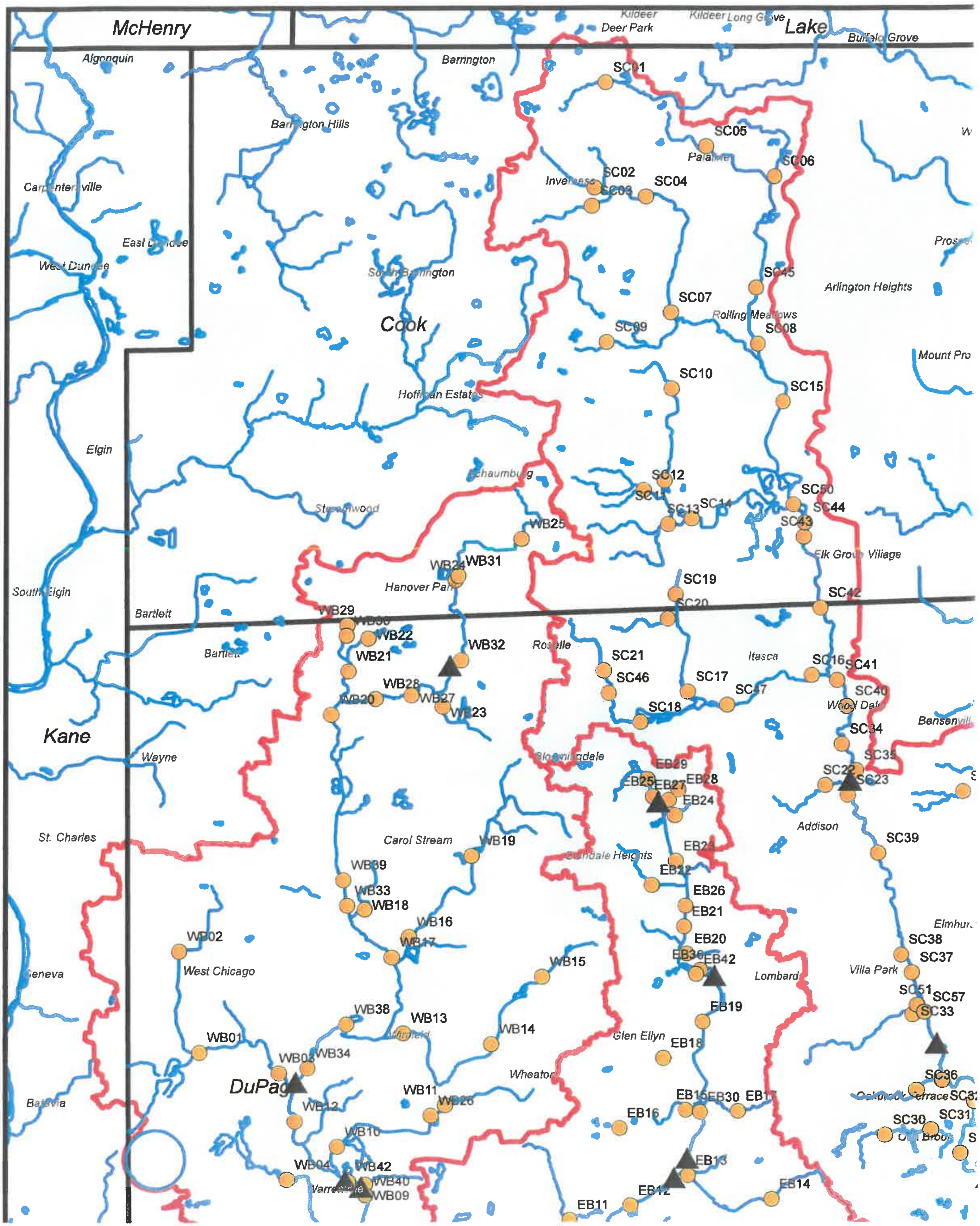


B. Recordkeeping

All monitoring data including by not limited to laboratory results, chain of custodies (COCs), and quality assurance protection plans (QAPP) will be maintained by the DRSCW for a minimum of 5 years after the expiration of the ILR40 (effective on 03/01/2016). The records are maintained at the DRSCW office located at The Conservation Foundation, 10S404 Knock Knolls Road, Naperville, Illinois 60656 and are accessible to the IEPA for review.

C. Reporting

The DRSCW is not responsible for preparing and submitting an Annual Report to the IEPA by the first day of June for each year that the permit is in effect. It is the responsibility of the individual ILR40 permit holders to utilize the information provided in this report to fulfill the reporting requirements outlined in the permit.


McHenry
Lake
Kildeer
Deer Park
Barrington
Algonquin
Buffalo Grove
SC01
SC05
SC06
SC02
SC03
SC04
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Carpentersville
East Dundee
West Dundee
Cook
Arlington Heights
SC45
SC07
Rolling Meadows
SC09
SC08
SC10
SC15
Elgin
SC12
SC50
SC44
SC13
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SC43
WB25
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WB31
South Elgin
Bartlett
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SC19
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SC46
SC17
Itasca
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Wayne
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Villa Park
West Chicago
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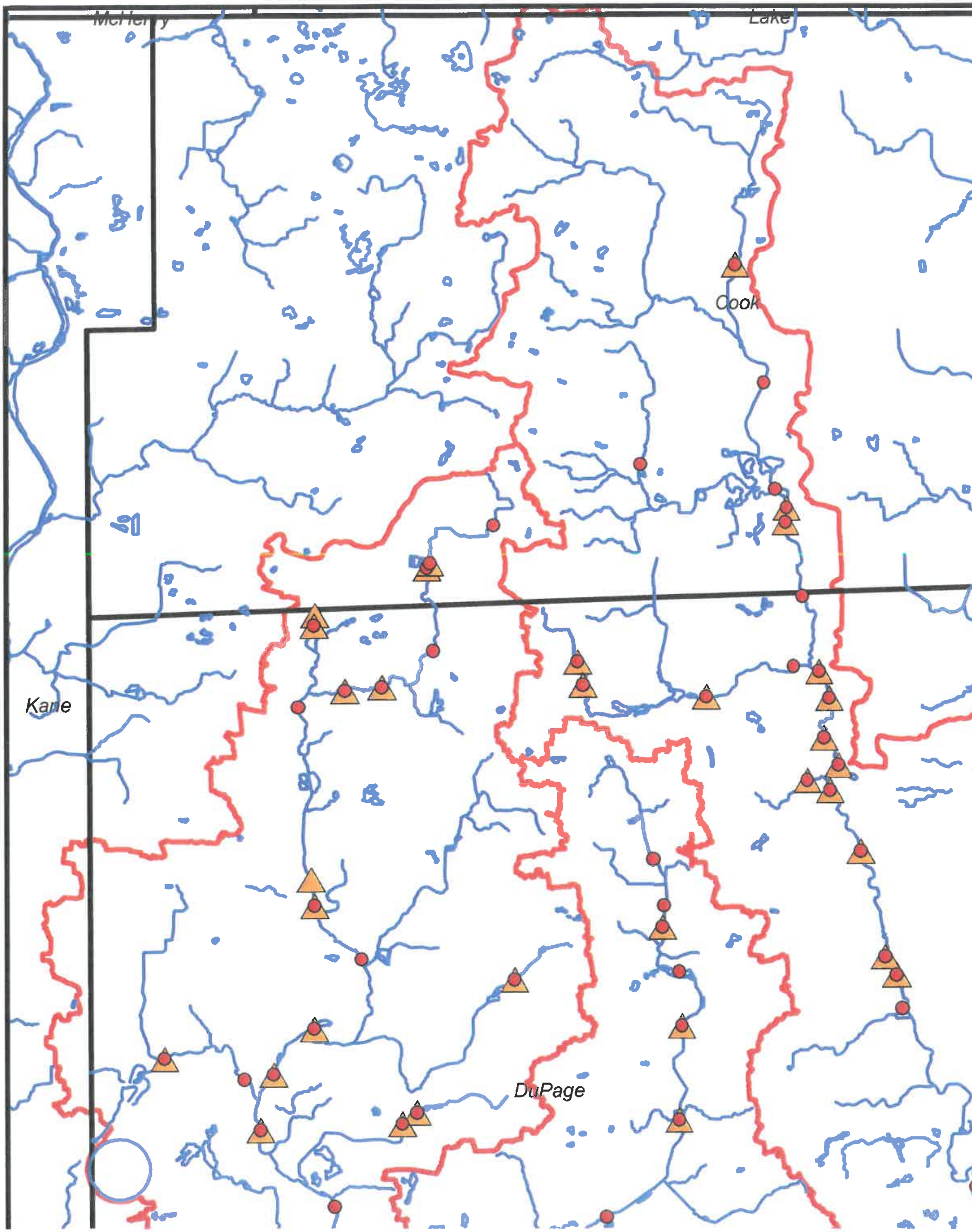
McHenry
Lake
Cook
Kane
DuPage

Attachment A

2014 Deicing Program Survey Results and
2016 DRAFT 2016 Deicing Program Survey Results

DuPage River Salt Creek Workgroup

CDM Smith

DuPage River Salt Creek Workgroup

Chloride Education and Reduction Program
2014 Deicing Program Survey

REPORT

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Appendices

Figures

Section 1
Background and Purpose

The DuPage River Salt Creek Workgroup (DRSCW) is a coalition of communities, sanitary districts, environmental organizations, and professionals working to improve the ecological health of Salt Creek and the Upper DuPage River. DRSCW is responding to water quality requirements for chloride as the East and West Branch of the DuPage River and Salt Creek have been identified as having chloride related impairments. Total Maximum Daily Load (TMDL) analysis performed by the Illinois Environmental Protection Agency recommended significant reductions in chloride loading for each of the streams to meet the water quality standard for chloride (500 mg/L).

DRSCW formed a Chloride Committee and the Chloride Education and Reduction Program to develop and promote alternatives to conventional roadway deicing practices and guide the implementation of the alternatives. An element of the program is gathering information from municipal deicing programs via survey questionnaires to benchmark municipal activities and identify positive changes in protocols. This report serves to summarize the responses received from the 2014 deicing program survey.

Funding for the program and this report is provided in part by the Illinois Environmental Protection Agency through Section 319 of the Clean Water Act and DRSCW member dues.

1.1 Background Information

Municipal road salting was identified as a source of chloride loading to DRSCW watersheds. As a result, DRSCW distributed a survey questionnaire to about 80 municipalities and public works agencies in November 2006 and April 2007 to obtain baseline information about deicing practices throughout the watersheds. Thirty-nine responses to the survey were received, forming an informed baseline of the deicing programs implemented in the watersheds. A similar survey was distributed in 2010. Thirty-two public agencies responded to the 2010 survey which helped to note positive changes in local deicing practices. In 2012, the survey generated 34 responses which further documented the chloride reduction practices.

1.2 Goals of the Questionnaires

The 2014 Deicing Program Survey was conducted in the fall of 2014 to follow up with the agencies on any changes and/or improvements in their deicing programs, potentially as a result of DRSCW Chloride Reduction Program efforts, and any resulting effects on salt application rates.

The 2014 survey questionnaire asked for information about deicing practices and strategies per the following categories:

- General deicing and snow removal information

- Deicing and snow removal equipment
- Salt storage
- Equipment maintenance and calibration
- Management and record-keeping
- Willingness to participate in a potential pilot study of alternative deicing practices

The responses to the survey are summarized in Section 2 of this report. The responses are compared to those received in earlier surveys to determine if any changes or improvements related to chloride loading have occurred. The survey and response data are included in **Appendix A**.

Section 2
Survey Responses

2.1 Survey Responses

Survey questionnaires were distributed to 40 municipal agencies. Twenty-seven responses were received. The following subsections summarize the responses in each of the categories described in Section 1. The questionnaire and all responses are included in **Appendix A** of this report. Note that not all agencies provided responses to all questions, and some agencies answered some questions in different ways, resulting in some inconsistencies in survey results.

2.1.1 General Deicing and Snow Removal Information

The questionnaire asked agencies for general deicing and snow removal information. All responding agencies provided some information. Survey responses indicated approximately 3,500 lane miles of road serviced by deicing programs throughout the watersheds.

2.1.1.1 Salt Application and Price

The majority of agencies indicated an average salt application rate of 200-300 pounds per lane mile (lbs/lm). **Figure 2-1 shows** the respondent's salt application rate distribution from 2010 to 2014.

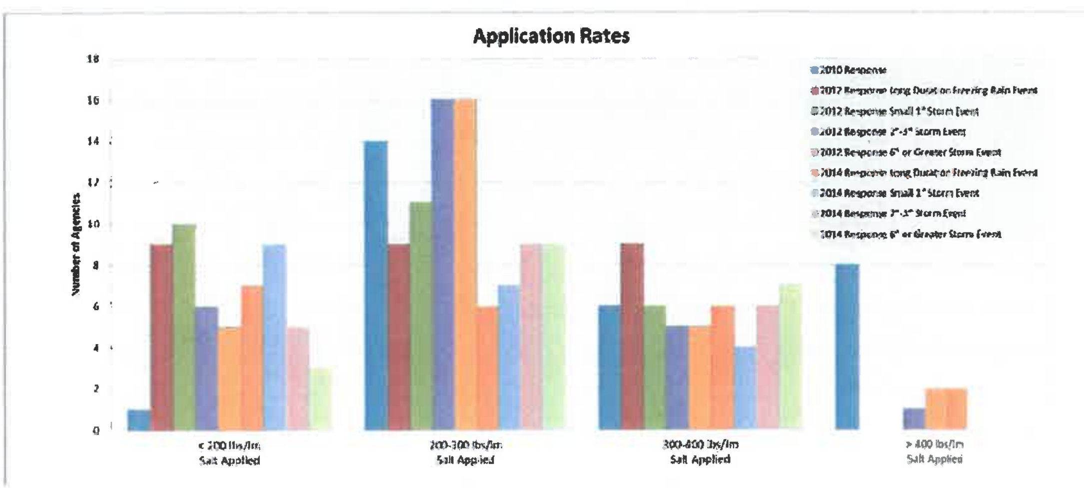


Figure 2-1 – Average Salt Application Rates

Regarding salt prices, fifteen of the twenty-four agencies responding (3 agencies did not answer) indicated an increase in salt or deicing product prices over the past few years. Four agencies reported a decrease in salt or deicing product price over the past few years. Five agencies indicated that product prices have remained the same.

2.1.1.2 Deicing, Anti-Icing, Pre-Wetting, and Deicing Agents

Information about deicing, pre-wetting, and anti-icing practices, as well as the deicing agents used was requested. The following is a list of deicing agents used by respondents:

- Each of the 27 responding agencies reported the use of salt
- Twenty-one agencies reported the use of dry rock salt
- Sixteen agencies used liquid calcium chloride
- Thirteen agencies reported the use of beet juice or a pre-manufactured liquid product

From the 27 respondents, 17 mentioned implementing anti-icing practices; in most cases the anti-icing program included occasional pre-salting or liquid application in priority locations. The 2014 survey asked about the anti-icing mix, and in general, most respondents using liquids make a home-made liquid mix of 70% - 90% salt brine and 10% - 30% beet juice, pre-manufactured liquid, and/or calcium chloride. The survey determined pre-wetting practices are implemented by 19 of the responding agencies.

Fourteen out of 27 responses reported changes made to their program due to local deicing program workshops. The 2014 survey asked how changes in winter maintenance policy are communicated to residents. The following list shows some of the methods:

- City or township website
- Newsletter
- Social media
- Press release

The 2014 survey results indicated that that the majority of respondents are considering adjusting their winter maintenance policies. Some changes include:

- Salt reduction
- Increase use of liquid deicers
- Purchase of equipment for liquid application

2.1.1.3 Weather and Pavement Temperature Forecasting

Out of 26 provided responses (1 agency did not answer), 17 agencies use a weather forecasting service. The survey also reported 14 of the 25 respondents (2 agencies did not answer) made use of a pavement temperature forecast report or similar service.

2.1.2 Deicing and Snow Removal Equipment

All agencies use snow plows or similar equipment. Twenty agencies have mechanically controlled spreading equipment, and 18 have computer-controlled equipment. Equipment for spreading liquids is used by 18 agencies. End loaders and skid steers were frequently mentioned as other equipment implemented.

2.1.3 Salt Storage

Twenty-six of the provided responses indicated the following salt storage practices:

- Twenty agencies indicated that they store salt in a single storage area
- Nineteen agencies store salt in an enclosed area
- Twenty-five agencies store salt on an impervious pad
- Sixteen reported that residual salt in loading areas is swept up
- Eighteen responded that salt storage areas are fully enclosed storage structure or have impervious storage pads
- Twenty-two agencies indicated that drainage from their storage area(s) is controlled or collected

2.1.4 Equipment Maintenance, Cleaning, and Calibration

Twenty-two agencies responded that equipment is washed at an indoor station draining to a sanitary sewer. One agency indicated washing equipment outside where wash water can drain to a sanitary sewer, and five indicated outdoor washing in areas not drained to a sanitary sewer. No respondents reported collecting and reusing wash water for brine making.

Twenty-six agencies responded to the survey regarding equipment calibration. Twenty-two agencies indicated that they calibrate their de-icing equipment. Of the 22 agencies, one agency calibrates three times per season and another agency calibrates after major maintenance or repairs.

2.1.5 Management and Record-Keeping

Twenty-one agencies indicated that operators are trained annually (or more often). Three of the remaining agencies train at the start of employment and two agencies did not specify a training schedule.

From a management standpoint, the rate of salt application is established by the director or supervisor in 23 agencies, and solely by the operators in two agencies. During spreading, the rate of product application is controlled by the operator in 17 agencies, controlled automatically in 3 agencies and set at a fixed rate in 2 agencies.

Eleven agencies keep records of salt usage per truck, 16 keep records for each storm event, and 12 keep records for each winter season.

2.1.6 Participation in a Potential Pilot Study

Seventeen agencies indicated a willingness to participate in future pilot studies or demonstration projects for alternative deicing equipment or practices.

2.2 Survey Analysis

The following subsections provide survey conclusions developed by comparing information from the 2014 survey to responses received from the 2012 survey.

2.2.1 Weather Conditions from 2007 to 2014

The amount of snowfall during the winter season from 2007 to 2014 has varied, including both the number of snowfall events and the total number of inches of snow. The amount of chloride (and other deicers) necessary for deicing during these winter seasons has varied accordingly. The DuPage County Division of Transportation (DOT) provided the following snowfall and deicing event callout data (**Figure 2-2**).

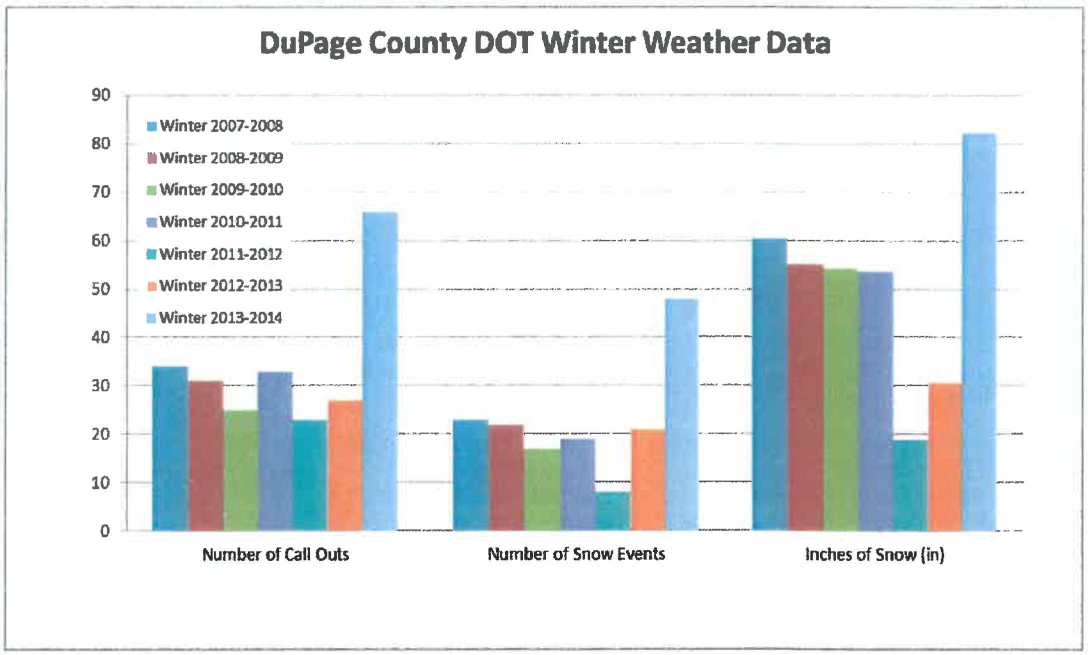


Figure 2-2 – DuPage County DOT Winter Weather Data

Snowfall in DuPage County from the 2013-2014 winter seasons reached near record setting levels, greater than any snowfall experienced since the first program survey was distributed. The 2011-12 and 2012-13 seasons experienced below average and near average snowfall, respectively. Snowfall events, totals, and callouts in the 2013-2014 season far exceeded the previous seasons. The number of callouts labeled on the graph refers to the number of times staff and trucks were called out to perform deicing operations.

2.2.2 Alternative Methods and Practices Analysis

Many of the questions in the surveys focused on the use of alternative deicing agents, methods, and practices such as pre-wetting and anti-icing. **Figure 2-3** illustrates the percentage of respondents that use various deicing agents as reported on the 2007, 2010, 2012, and 2014 questionnaires.

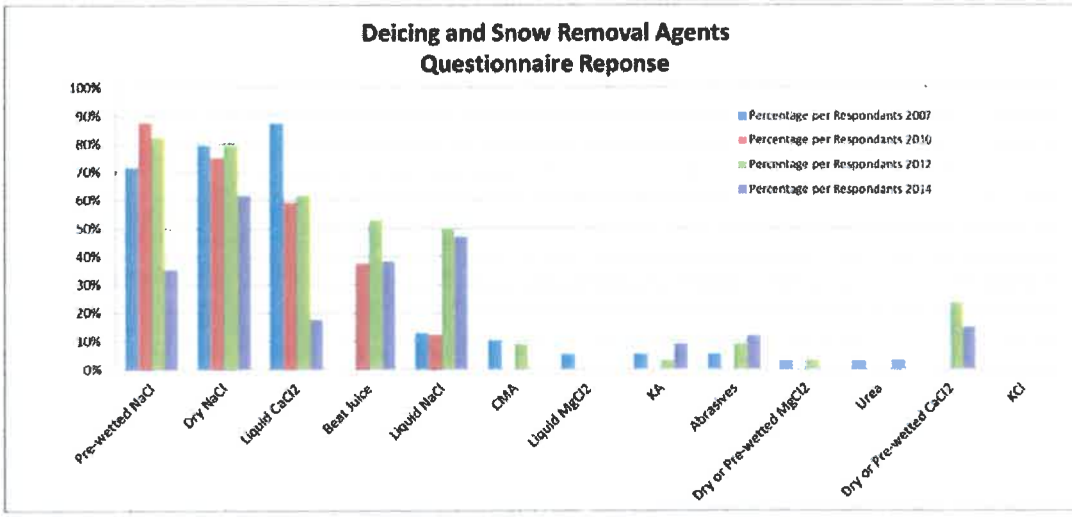


Figure 2-3 – Deicing and Snow Removal Agents

Responses show a continued popularity in the use of liquid salt (NaCl) and beet juice. There appears to be a slight increase in the use of abrasives and potassium acetate (KA) since 2012. The survey results also indicated that the use of dry rock salt (NaCl) has decreased. A noticeable decrease was also seen regarding the use of pre-wetted salt (NaCl). It is important to note that fewer agencies responded to the survey in comparison to previous years, which affects these results / percentages.

Information provided about anti-icing practices that agencies may be employing indicated in 2007 that 14 agencies reported the use of anti-icing practices. In 2010, 20 agencies reported using anti-icing practices. In 2012, 20 agencies reported using anti-icing practices, and in 2014, 13 of the reporting 26 agencies used anti-icing practices. There has been an approximate 25 percent increase in the implementation of anti-icing practices from 2007 to 2010, which remained consistent through 2012. Based on the 2014 survey responses, it appears that approximately 50 percent of local agencies are implementing some form of anti-icing practices.

Fourteen of 25 respondents indicated that a change, an implementation of alternative deicing practices in their deicing programs, has occurred due to local deicing workshops such as those conducted by the DRSCW Chloride Education and Reduction Program.

2.2.3 Salt Application Rates

The 2014 survey responses indicated that the use of salt in the 2013-14 winter was higher than in previous years due to the increase in both the amount of snow and number of callout events.

In 2007, survey respondents were asked about their average annual salt usage. In 2012, and again in 2014, respondents were asked about annual salt usage data over the past five years. Some respondents gave their annual usage for each winter season which provides a good benchmark for how weather has affected salt application rates. Other respondents provided a five year average. **Figure 2-4** shows the annual salt usage in lbs/lane mile for each watershed in the study area reported from the 2007, 2012, and 2014 surveys. Annual salt application rates generally decreased from 2007 – 2012 in the watersheds, and increased from 2012-2014, as a result of snowfall and event frequency variation.

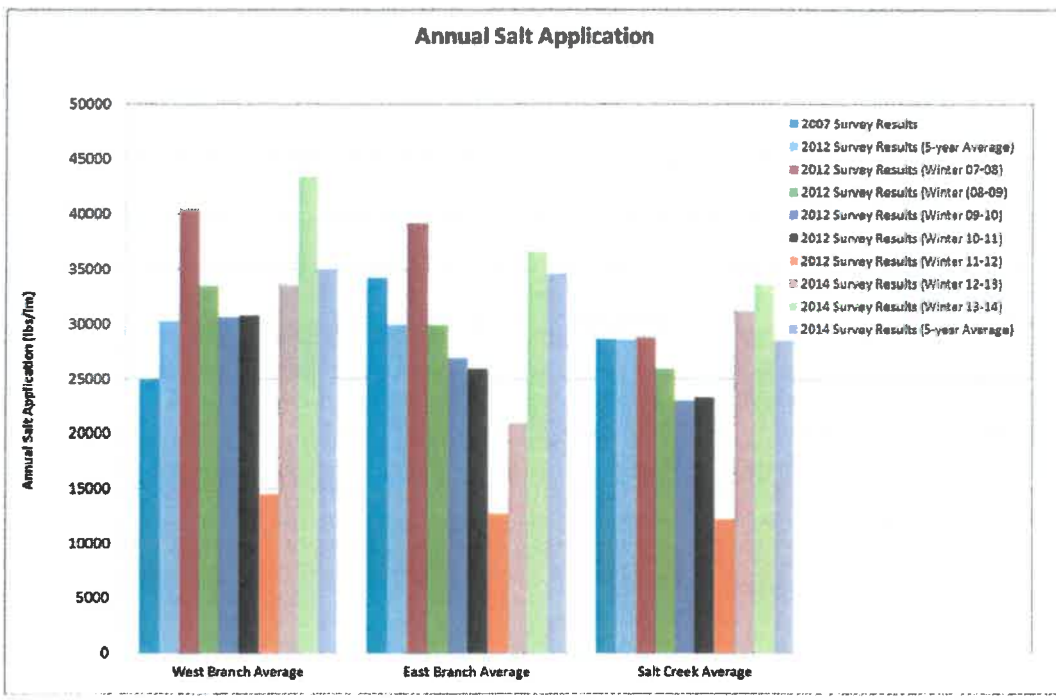


Figure 2-4 – Annual Salt Application Reported in 2007, 2012, and 2014

Survey respondents were asked about the average salt application rate per lane mile based on specific storm events. This information more comparably describes a community's salt usage, or application rate. **Figure 2-1** shows salt application rates reported from the 2010, 2012, and 2014 surveys. In general the number of agencies applying less than 300 lbs/lm has increased from 2010 to 2014. The other reported application rates have stayed relatively constant over the period.

Three of the responding agencies reported that they ran out of salt in the 2013-2014 winter, as the region experienced near record snow fall. The shortage of salt supply may have provided added emphasis to measures that reduce salt usage, such as anti-icing liquids usage, and changes in winter operations polices.

Both annual salt usage data and salt application rates provide insight into individual agency programs and salt application across watersheds, as well as a valuable benchmark for future survey and Chloride Reduction Program efforts. Both of the above values will continue to be requested of agencies in future surveys to compare and report deicing program improvements, and presumed water quality improvements.

2.3 Survey Conclusions

The purpose of the 2014 survey was to gather follow-up information to determine if alternative deicing practices are being implemented in the DuPage River/Salt Creek watersheds and any resulting effects on salt application rates. Forty surveys were sent out to various agencies throughout the DRSCW, and 27 survey responses were completed and submitted. In comparison, 34 agencies responded and completed surveys in 2012. Survey responses indicate that the use of alternative deicing practices has increased since 2007 and remained relatively constant since 2010.

The amount of salt used in the 2013-2014 winter season increased from previous years, while the application rates reported remained fairly constant. Three of the reporting agencies ran out of salt this year, as the region experienced near record snow fall.

- Fifteen of the twenty-four agencies responding (3 agencies did not answer) indicated an increase in salt or deicing product prices over the past few years.

- Of the agencies that responded, 61 percent reported implementing anti-icing practices before a forecasted snowfall of 2" or greater.

- Ninety percent of reporting agencies used pre-wetted salt for 2" or greater snowfall events.

- Twenty-two agencies indicated that they calibrate their de-icing equipment.

- The reported use of liquid calcium chloride has decreased since 2012.

- None of the responding agencies reuse vehicle wash-water for making brine solutions.

- Only one agency reported that salt is not stored on an impervious pad. Nine agencies reported that salt in not stored in a fully enclosed structure.

- Out of 26 provided responses (1 agency did not answer), 17 agencies use a weather forecasting service. The survey also indicated 14 of 25 respondents (2 agencies did not answer) make use of a pavement temperature forecast report or similar service.

- Fourteen out of 27 responses reported changes made to their program due to local deicing program workshops. Common methods of informing the public of policy changes include the use of: city or township website, newsletter, social media, and press releases.

Improvements in deicing practices and lower application rates could be the result of a shortage in supply, an increase in the price of salt, improved education and information provided by local deicing program workshops, or a combination of factors.

In order to perform a more definitive trend analysis of program improvements and reductions in salt usage, additional information will need to be collected over time. Information should continue to be collected to characterize deicing program improvements and resulting reductions in salt usage occurring within the DRSCW watersheds, and indicate water quality improvements.

DuPage River Salt Creek Workgroup

BAXTER & WOODMAN
Consulting Engineers

DuPage River Salt Creek Workgroup

Chloride Education and Reduction Program
2016 Deicing Program Survey

DRAFT

March 16, 2017

Section 1
Background and Purpose

The DuPage River Salt Creek Workgroup (DRSCW) is a coalition of communities, sanitary districts, environmental organizations, and professionals working to improve the ecological health of Salt Creek and the Upper DuPage River. DRSCW is responding to water quality requirements for chloride as the East and West Branch of the DuPage River and Salt Creek have been identified as having chloride related impairments. Total Maximum Daily Load (TMDL) analysis performed by the Illinois Environmental Protection Agency recommended significant reductions in chloride loading for each of the streams to meet the water quality standard for chloride (500 mg/L).

DRSCW formed a Chloride Committee and the Chloride Education and Reduction Program to develop and promote alternatives to conventional roadway deicing practices and guide the implementation of the alternatives. An element of the program is gathering information from municipal deicing programs via survey questionnaires to benchmark municipal activities and identify positive changes in protocols. This report serves to summarize the responses received from the 2016 deicing program survey.

Funding for the program and this report is provided in part by the Illinois Environmental Protection Agency through Section 319 of the Clean Water Act and DRSCW member dues.

1.1 Background Information

Municipal road salting was identified as a source of chloride loading to DRSCW watersheds. As a result, DRSCW distributed a survey questionnaire to about 80 municipalities and public works agencies in November 2006 and April 2007 to obtain baseline information about deicing practices throughout the watersheds. Thirty-nine responses to the survey were received, forming an informed baseline of the deicing programs implemented in the watersheds. A similar survey was distributed in 2010. Thirty-two public agencies responded to the 2010 survey which helped to note positive changes in local deicing practices. In 2012 and 2014, the survey generated 34 and 27 responses respectively, which further documented the chloride reduction practices. Forty-three (43) agencies responded to the 2016 survey, the most agencies ever responding to a program survey.

1.2 Goals of the Questionnaires

The 2016 Deicing Program Survey was conducted in the spring of 2016 to follow up with the agencies on any changes and/or improvements in their deicing programs, potentially because of DRSCW Chloride Reduction Program efforts, and any resulting effects on salt application rates.

The 2016 survey questionnaire asked for information about deicing practices and strategies per the following categories:

- General deicing and snow removal information
- Deicing and snow removal equipment

- Application rates
- Salt storage
- Equipment maintenance and calibration
- Management and record-keeping

The responses to the survey are summarized in Section 2 of this report. The responses are compared to those received in earlier surveys to determine if any changes or improvements have occurred. The survey and response data are included in **Appendix A**.

Section 2
Survey Responses

2.1 Survey Responses

Forty-three agencies responded to the 2016 survey. The following subsections summarize the responses in each of the categories described in Section 1. The survey and all responses are included in **Appendix A** of this report. Note that not all agencies provided responses to all questions, and some agencies answered some questions in different ways, resulting in some inconsistencies in survey results.

2.1.1 General Deicing and Snow Removal Information

The survey asked agencies for general deicing and snow removal information. All responding agencies provided some information. Survey responses indicated approximately 10,800 lane miles of road serviced by deicing programs throughout the watersheds.

2.1.1.1 Salt Application and Price

The majority of agencies indicated an average salt application rate of 200-300 pounds per lane mile (lbs/lm). **Figure 2-1 shows** the respondent's salt application rate distribution from 2010 to 2016.

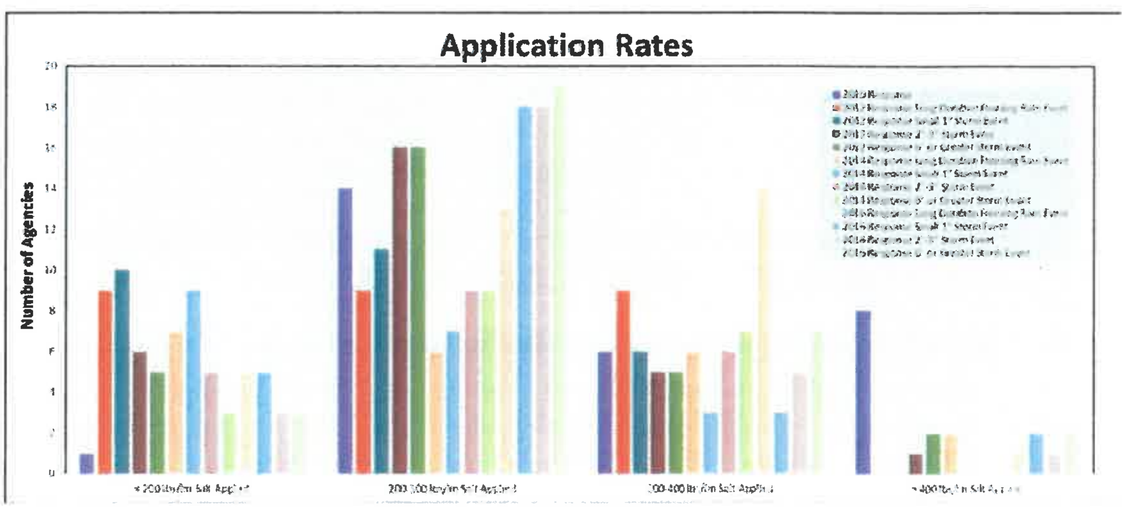


Figure 2-1 – Average Salt Application Rates

Regarding salt prices, 26 of the 43 agencies responding indicated an increase in salt or deicing product prices over the past few years. Eleven agencies reported a decrease in salt or deicing product price over the past few years. Nine agencies indicated that product prices have remained the same.

2.1.1.2 Deicing, Anti-Icing, Pre-Wetting, and Deicing Agents

Information about deicing, pre-wetting, and anti-icing practices, as well as the deicing agents used was requested by the survey. The following is a list of deicing agents used by respondents:

- Each of the 43 responding agencies reported the use of salt
- Thirty-two agencies reported the use of dry rock salt
- Twenty-two agencies used liquid calcium chloride, a significant increase from previous surveys
- Thirteen agencies reported the use of pre-manufactured liquid products

From the 43 respondents, 25 agencies indicated that they implement anti-icing practices; in most cases the anti-icing program included occasional pre-salting or liquid application in priority locations. This suggests an increase in the number of agencies implementing anti-icing practices watershed wide.

The 2016 survey asked about liquid anti-icing mixes, and in general, most respondents using liquids make a home-made mix of 70% - 90% salt brine and 10% - 30% beet juice, pre-manufactured liquid, and/or calcium chloride.

2.1.1.3 Weather and Pavement Temperature Forecasting

Out of the agencies responding, 30 agencies use a weather forecasting service (1 agency did not answer). This suggests a significant increase in the use of weather forecasting services watershed wide.

Additionally, 30 of 41 respondents are making use of a pavement temperature forecast report or similar service (2 agencies did not answer). This suggests a significant increase in the use of pavement temperature information throughout the watershed, an improvement in best management practices implementation.

2.1.2 Deicing and Snow Removal Equipment

All agencies use snow plows or similar equipment. Thirty-two agencies have mechanically controlled spreading equipment, and 33 have computer-controlled equipment. Equipment for spreading liquids is used by 25 agencies.

2.1.3 Salt Storage

The provided responses indicated the following salt storage practices:

- Forty-three responded that salt storage areas are fully enclosed storage structure or have impervious storage pads
- Forty agencies store salt on an impervious pad
- Thirty-four agencies indicated that drainage from their storage area(s) is controlled or collected

- Twenty-seven agencies indicated that they store salt in a single storage area
- Thirty-five agencies store salt in an enclosed area
- Sixteen reported that residual salt in loading areas is swept up

2.1.4 Equipment Maintenance, Cleaning, and Calibration

Forty agencies responded that equipment is washed at an indoor station draining to a sanitary sewer. Five agencies indicated outdoor washing in areas not drained to a sanitary sewer. Two respondents reported collecting and reusing wash water for brine making.

Forty-two agencies responded to the survey regarding equipment calibration. Thirty-five agencies indicated that they calibrate their de-icing equipment, an increase in the number of agencies performing calibration as a best management practice. Most of the 35 agencies providing calibration information perform calibration annually, with 1 agency calibrating 2 times per season, and 3 agencies calibrating after major maintenance or repairs.

2.1.5 Management and Record-Keeping

Twenty-one agencies indicated that operators are trained annually (or more often). Eleven of the remaining agencies train at the start of employment and one agency did not specify a training schedule.

From a management standpoint, the rate of salt application is established by the director or supervisor in 37 agencies, and solely by the operators in four agencies. This indicates a significant increase in the director or supervisor level of control over application rates from previous surveys.

During spreading, the rate of product application is controlled by the operator in 31 agencies, controlled automatically in 9 agencies and set at a fixed rate in 4 agencies.

The 2016 survey responses indicate a significant increase in record keeping best management practices in recent years. Twenty-three agencies keep records of salt usage per truck, 34 keep records for each storm event, and twenty keep records for each winter season.

2.2 Survey Analysis

The following subsections provide survey conclusions developed by comparing information from the 2016 survey to responses received from the 2014 survey or previous surveys. Forty-three (43) agencies responded to the 2016 survey, while 27 agencies responded to the 2014 survey. The number of new agencies responding to the survey is a positive for the amount of information provided for study and program participation overall, but results in some changes or inconsistencies in information trends.

2.2.1 Alternative Methods and Practices Analysis

Many of the questions in the survey focused on the use of alternative deicing agents, methods, and practices such as pre-wetting and anti-icing. **Figure 2-2** illustrates the percentage of respondents that use various deicing agents as reported on the 2007, 2010, 2012, 2014, and 2016 questionnaires.

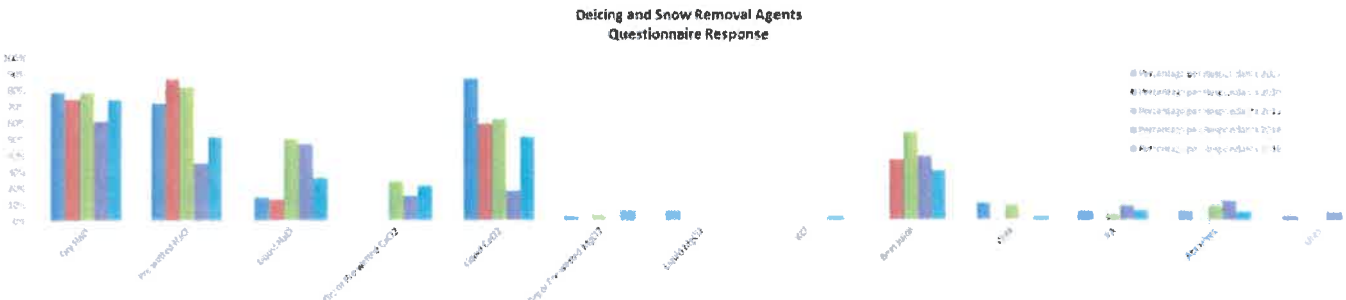


Figure 2-2 – Deicing and Snow Removal Agents

The survey results indicated that the use of dry and pre-wetted salt (NaCl) has increased. While 50% of agencies reported using pre-wetted salt, previous program information suggests that the level of pre-wetting is much higher than this throughout the watershed. The 2016 survey percentages may be skewed by the new agencies providing information this year, and inexperience with the type of information being asked by the survey. Follow up with individual agencies for future surveys may be needed.

Similarly, the 2016 survey results indicate an increase in the amount of agencies using dry salt. Previous program information suggests that fewer agencies use dry salt (not pre-wetted), and follow up with individual agencies may be needed to further detail the information being requested by the survey. The apparent decrease in the use of liquid NaCl (brine) may also be a result of the new respondent's inexperience with the survey, or may be an opportunity for the Chloride Committee to investigate further expansion of the use of brine as a BMP.

Other analysis observations include:

- Results show an increase in the use of all forms of Calcium chloride ($CaCl_2$). The increase in liquid CaCl2 is significant, roughly 30% higher.
- Results show an increase in the use of dry or prewetted Magnesium chloride ($MgCl_2$).
- No 2016 responders used liquid $MgCl_2$ and Urea.
- A few respondents used Potassium Chloride (KCl) compared to none in previous years.

- Calcium Magnesium Acetate (CMA), Potassium acetate (KA), and Abrasives have decreased since 2014.
- Beet juice as an additive continued in popularity.

Information provided about anti-icing practices that agencies may be employing indicated in 2007 that 14 agencies reported the use of anti-icing practices. In 2010, 20 agencies reported using anti-icing practices. In 2012, 20 agencies reported using anti-icing practices, and in 2014, 13 agencies used anti-icing practices. In 2016, 26 agencies used anti-icing practices. Compared to 50 percent in 2014, 60 percent of local agencies are implementing some form of anti-icing practices in 2016. This trend suggests improvement in the use of anti-icing BMPs over time, with the most widespread use in 2016.

Two of the responding agencies reuse vehicle wash-water for making brine solutions compared to none from the 2014 survey.

2.2.2 Salt Application Rates

In 2007, survey respondents were asked about their average annual salt usage. In 2012, 2014, and again in 2016, respondents were asked about annual salt usage. Respondents gave their annual usage for each winter season which provides a good benchmark for how weather has affected salt application rates. **Figure 2-3** shows an approximated annual salt usage in lbs/lane mile for each watershed in the study area reported from the 2007, 2012, 2014, and 2016 surveys. Annual salt application rates generally decreased from 2007 – 2012 in the watersheds, and increased from 2012-2014 as a result of snowfall and storm event frequency variation. The 2016 survey responses indicated that the per lane mile use of salt in the 2015-16 winter has decreased from that in most previous years. The number and type of winter storm events occurring each year and the different number of agencies providing usage information for each survey make developing direct usage trends or correlations difficult.

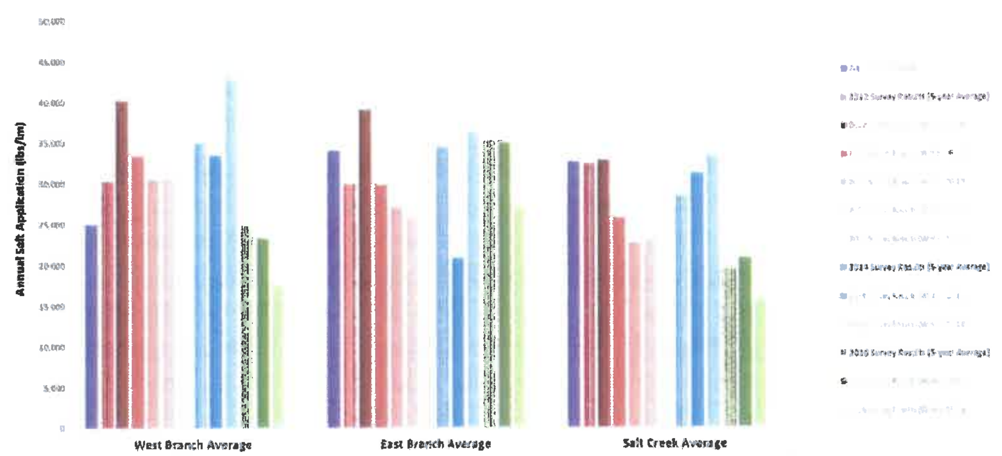


Figure 2-3 – Annual Salt Application Reported from 2007 - 2016

Survey respondents were asked about the average salt application rate per lane mile based on specific storm events. This information more comparably describes a community's salt usage, or application rate. **Figure 2-1** shows salt application rates reported from the 2010, 2012, 2014, and 2016 surveys. In general the number of agencies applying 200-300 lbs/lm has increased from 2010 to 2016. The other reported application rates have stayed relatively constant over the period. The majority of increases shown for 2016 are due to the increase in the number of agencies providing information for the 2016 survey.

Both annual salt usage data and salt application rates provide insight into individual agency programs and salt application across watersheds, as well as a valuable benchmark for future survey and Chloride Reduction Program efforts. Both of the above values will continue to be requested of agencies in future surveys to compare and report deicing program improvements, and presumed water quality improvements.

2.3 Survey Conclusions

The purpose of the 2016 survey was to gather follow-up information to determine if alternative deicing practices are being implemented in the DuPage River/Salt Creek watersheds and any resulting effects on salt application rates. Forty-three (43) agencies responded to the 2016 survey, the highest number of agencies ever responding to a program survey. As there were several new agencies providing information, the 2016 survey results may be skewed by the new agencies providing information this year, and inexperience with the type of information being asked by the survey. Follow up with individual agencies for future surveys may be needed.

Almost all agencies in the program area have covered permanent salt storage facilities; however there are still some opportunities for storage and salt handling improvements across the watersheds.

ATTACHMENT 1

Storm Drain Markers

(https://www.youtube.com/watch?v=VQDmh0bbrZ8)

CLICK HERE FOR THE SHOPPING CART (https://stormdrainmarkerstore.com/)

(https://stormdrainmarkerstore.com/)

(https://stormdrainmarkerstore.com/)

(/our-products/our-products/storm-drain/sdm-360)

Storm Drains are commonly misused by the public for the disposal of waste such as paint, motor oil, antifreeze, pesticides and other pollutants. This improper disposal can seriously damage water quality and the environment. Help put an end to water pollution in your community - mark all storm drains with Almetek's Permanent Markers.

Why choose Almetek Storm Drain Markers?

There are several marking options, but none offer the durability and longevity of an Almetek Storm Drain Marker:

Stenciling: Uses toxic paints that fade quickly and wash directly into the storm drains.

Plastic Markers: Made of plastic which is terrible for the environment. Deteriorate rapidly, often flaking off into storm drains.

Photo shows failed plastic markers sent to Almetek by a customer who removed them from their community storm drains.

Glass Markers: $$Expensive. Can be shattered, spray painted by vandals, and accumulate dirt on their flat surfaces, making them illegible.

Almetek's embossed *METAL* Storm Drain Markers are Eco-Friendly and warranted for up to <u>30 years!</u> They are legible even when spray painted, vandal resistant, and priced to fit within your budget. In fact, the money you save on repeatedly replacing other types of markers makes Almetek's Storm Drain Markers **the most cost effective solution by far!**

Don't be fooled by cheap copycat markers - invest your money wisely on markers that last! Show us your quotes for comparable markers and we'll beat the price.

<u>WE WON'T BE UNDERSOLD!</u>

Features & Options:

- 4" Round Disc
- Wide Choice of Symbols & Legends
- Virtually Indestructable
- Install On Any Surface
- Theft Resistant
- Up To 30-Year Warranty on marker
- Easy to Install
- Custom Designs Available
- High Visibility
- All Metal, Deep 3-D Embossed
- Sand-Blasted Matte Finish
- U.V. Baked Enamel Paint
- 1-2 Color Option or Natural
- Optional Deep Stamped Sequential
- Numbering or Name of Town/City
- UV Clear Multicolor Graphics
- Dome or Laser Engraved Aluminum Center Disc are available
- Stamped Sequential Numbers
- Custom Stamped Town/City
- Square Punched Center Hole
- Welded Male Stud External Thread

CUSTOM DEEP STAMPED

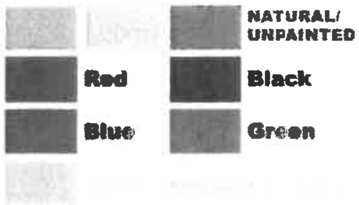
BACK VIEW - SAND-BLASTED

MALE WELDED STUD

(http://www.almetek.com/)

Note: Center hole allows for bolt-on grate installations as well as drive rivet theft Proof installations.

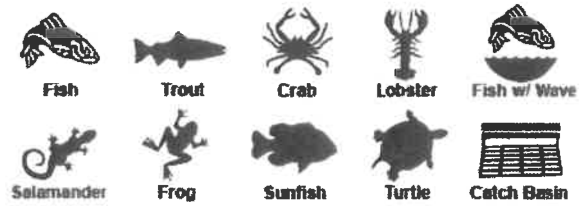
Color



Materials:

- Stainless Steel
- Aluminum
- Anodized Aluminum
- Brass

Symbols:



Legends:

- Drains to Bay
- Drains to River
- Drains to Lake
- Drains to Ocean
- Drains to Stream
- Drains to Creek
- Drains to Waterway
- Drains to Wetlands
- Drains to Pond
- Drains to Gulf
- Only Rain in the Drain (Avail. in Spanish)
  AND MORE!

  Custom Legends and Symbols are available by our in-house Art & Die Departments.

Additional Metal Markers:

SURVEY

arly delinate boundaries
n Custom Survey Markers!

TRAIL

Mark the trails in your community parks!

MANHOLE

Brand Manhole Covers

UTILITY

Mark above and underground utilities

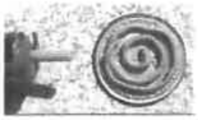
SANITARY

Keep parks, trails and playgrounds debris free!

AND MORE!

Have an idea for a marker? Call our Customer Service Dept!

Adhesives:



Use tube adhesive for either surface or sub-surface installation

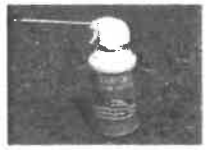
Sub-Surface Installation with 4" Diameter Drill
Snow Plow Proof Installation

Item No. DCG:
Dripless caulking tube gun

Item No. SIKS-ADH:
Sikaflex adhesive - 10.1 oz. tube.
Must be used in caulking tube gun

Item No. AAD4 Awesome Adhesive™:
Pressure sensitive circles for surface mount only. Easy to apply, just press into exact position. Highest initial bond (never hardens). Apply in all weather and temp. 0°-120°F Packed 20 per carton.

Item No. SD-WB-1:
Wire Brush with Handle



Item No. SD-AC Air in a Can:
Non-Flammable
Zero Ozone Depletion

Rivet Fastener:

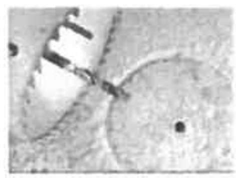
Theft-Proof/Surface Mount - 30-Year Warranty on Installation

SURFACE MOUNT

Use rivet for either surface or sub-surface installation.

Item No. DR250:
1/4" x 3/4" Drive Rivet-STDM

Item No. DB250:
Drill 1/4" x 1" deep hole, insert rivet and drive with a hammer. A small amount of tube adhesive may be used.



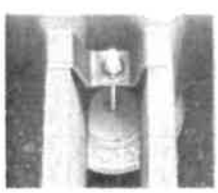
Item No. CDB
Carbide Drill Bit:
With this bit, drill a hole approximately 1/8" into the surface, brush area insert Storm Drain Marker and rivet. Drive flush with a hammer. Tube adhesive may also be used.

Wet Concrete Installation:
Stainless Steel, Male Welded Stud & Nut
2" x 1/4" x 20
(Back View)

Bolt-On:

Theft-Proof - 30-Year Warranty on Installation

Stainless Steel
Grate Fastener Option
For use with GM-4" Set



GM-4" set
Carriage bolt, washer,
nut & forged steel backing plate.

Note: For road bed or grate installations where heavy traffic is expected, choose one of our low cost Stainless Steel markers in unpainted finish.

CLICK HERE FOR THE SHOPPING CART (https://stormdrainmarkerstore.com/)
(h

Testimonials (/images/testimonial4page.pdf)

ATTACHMENT 2

7.3.1.2 Specific Road Salting BMPs–West Branch DuPage River Watershed

Local communities, IDOT, and the Illinois Tollway Authority are the primary parties responsible for the removal of snow and the application of road salt within the West Branch DuPage River watershed. While specific practices may vary from community to community, the following typical general description is applicable. This information is based on responses given during telephone interviews of officials from several of the communities located in the watershed, IDOT, and the Illinois Tollway Authority.

IDOT is responsible for the maintenance of state highways and roads, including snow removal and road salt application operations. These roadways typically have a U. S. or Illinois state highway route number assigned to them. While IDOT has agreements with some municipalities in the state under which the local municipality conducts the maintenance operations in place of IDOT, these agreements are rare in DuPage County.

The Illinois Tollway Authority is responsible for the maintenance of tollways, including snow removal and road salt application operations. The I-88 Tollway is located within the West Branch DuPage River watershed. The Tollway Authority typically dispatches snow removal and road salt application crews during or immediately after a snow event. Snow that is cleared is deposited in the Tollway right-of-way off the road shoulder or within the Tollway median. The Tollway Authority uses digitally-calibrated spreader trucks at an application rate of either 200, 300, or 500 lb/road-mile for its salting operations. The application rate used depends on several factors, including the severity of the storm and present road conditions. The spreader trucks are automated to spread salt at the selected rate regardless of vehicle speed. Operators are required to participate in a yearly training program.

DuPage County and local communities and townships located within the watershed are responsible for maintaining all county roadways and local streets, including local collector and arterial streets. Municipal Public Works Departments typically dispatch snow removal and road salt application crews during or immediately after a snow event. In most cases, snow that is cleared is deposited on the side of the road. In certain locations, such as downtown areas, the snow that is cleared may be hauled away and stored at a central location. With the possible exception of snow storage sites located upstream of a local stormwater detention basin, such sites typically do not have erosion and sediment control practices or structural or non-structural water quality BMPs in place. Some communities are in the process of phasing in new salt spreader trucks which tend to have automated salt spreader controls that are connected to the vehicle's speedometer and which automatically apply salt at a standard rate regardless of vehicle speed. Newer salt spreader trucks are digitally calibrated and do not need to be calibrated yearly, as is generally required for older salt spreader trucks. Those communities which use older salt spreader trucks typically instruct drivers to stop spreading salt when the truck is stationary at a stoplight or in traffic. Training procedures vary by municipality, but all drivers are trained upon hiring, and most communities have some type of annual meeting or annual training requirements.

The following agencies or communities within the West Branch DuPage River watershed were contacted to provide information about their snow removal and salt application activities: DuPage County, Illinois Tollway Authority, Illinois Department of Transportation, Wheaton, Carol Stream, Bartlett, West Chicago, and Milton Township.

Information on whether the agency/community has a written snow plan, conducts yearly training, and/or owns digitally-calibrated salt spreading equipment is presented below.

TABLE 7-3
Summary of Snow Removal and Salt Application Information Collected from Selected Agencies and Municipalities

Agency/Community	Written Plan	Yearly Training	Digital Spreaders
IDOT	Yes	No	"Vast Majority"
Tollway	Yes	Yes	Yes
DuPage County	No	No	8 of 40
Bartlett	No	Yes	Yes
Carol Stream	Yes	No	No
West Chicago	Yes	No	No
Wheaton	Yes	Yes	No
Milton Township	No	No	No

The following is a list of municipal, government, and other entities which are likely to conduct snow removal and salt application operations within the West Branch DuPage River watershed (see Appendix F for the list of MS4 permittees):

Aurora
Bartlett
Batavia
Bloomingdale
Bolingbrook
Carol Stream
Geneva
Glen Ellyn
Glendale Heights
Hanover Park
Hoffman Estates
Lisle
Naperville
Roselle
Schaumburg
St. Charles
Streamwood
Warrenville
Wayne
West Chicago
Wheaton
Winfield
Bloomingdale Township
Lisle Township
Milton Township
Schaumburg Township
Wayne Township
Winfield Township
Cook County
DuPage County
Fermilab
Illinois Department of Transportation
Illinois Tollway Authority

7.3.1.3 Recommended Management Actions and Institutional Arrangements

It is recognized that road deicing is necessary for public safety. Thus, the implementation of the chloride TMDL by MS4s should be based on prudent and practicable road salting BMPs to the extent that public safety is not compromised.

Section III C. of IEPA General Permit No. ILR40, *General NPDES Permit for Discharges from Small Municipal Separate Storm Sewer Systems,* identifies the specific actions and schedule that each permittee will be required to follow to comply with TMDLs. If it is determined that a permittee will need to implement additional BMPs beyond those already in place, then the general road salting BMPs identified should be evaluated for their applicability and effectiveness as a part of that permittee's plan to comply with TMDLs.

The General Permit requires each permittee to notify IEPA if it does not currently meet the WLA for a TMDL. For the chloride TMDL, separate WLAs were not identified according to each individual jurisdiction that conducts road deicing activities. Instead, a single allocation was made for a category of discharges, namely deicing-related discharges. Thus, permittees should have the option of either: 1) demonstrating to IEPA that their activities do not cause or contribute to chloride exceedances, 2) using prudent and practicable BMPs already in place, or 3) proceeding to implement the remaining TMDL provisions of the General Permit.

7.3.1.4 Cost Considerations

It is anticipated that many of the general BMPs identified above for road salting, if not already in place, can be implemented over time by the appropriate jurisdictions. For example, the controlled application of salt is a reasonable and prudent step that is commonly used to avoid over-salting. However, the use of alternative deicing agents will have to be carefully considered by each permittee in relation to cost, applicability, practicability, and public safety. As shown above, costs for alternatives to sodium chloride-based rock salt are substantially higher, and these alternatives cannot be used in all conditions or locations. In addition, each of the alternatives poses its own adverse water quality impacts which must be taken into consideration.

7.4 Adaptive Management

7.4.1 Chloride TMDL

The chloride criteria exceedances for the West Branch DuPage River, both monitored and modeled, are infrequent (less than 0.5 percent of the time). For example, USEPA guidance recommends that water bodies should only be considered impaired if exceedances occur more than a given percent of time, depending on such factors as pollutant type and data distribution (see USEPA July 2002 Consolidated Assessment and Listing Methodology guidance). For acute and chronic chemical criteria for conventional pollutants, USEPA guidance identifies a greater than 10 percent exceedance threshold for non-attainment of standards and 305(b) and 303(d) listings. In addition, it may be possible to identify which specific hydrologic and salt application conditions lead to elevated instream chloride concentrations through further discussion with permittees, or through additional monitoring and/or modeling activities. It may be possible to target control actions specific to these conditions. If successful, it would not be necessary to achieve an overall annual salt application reduction of the magnitude indicated in the TMDL.

7.4.2 Recommended Elements of Adaptive TMDL Implementation

The following discussion summarizes adaptive management language included in the Tualatin River TMDL, as approved by USEPA (source: Oregon DEQ. August 2001).

As a goal of the CWA and associated administrative rules for Illinois, water quality standards shall be met or all feasible steps should be taken toward achieving the highest quality water attainable. This is a long-term goal in many watersheds. The TMDLs developed for the West Branch DuPage River watershed are based on mathematical models and other analytical methods that are designed to simulate complicated physical, chemical, and biological processes. They are, to a certain extent, simplifications of the actual processes, and thus do not produce an exact prediction of a particular system response to pollutants. These uncertainties have been recognized and conservative assumptions have been used to address them, as acknowledged in the margin of safety considerations. Subject to available resources, IEPA should review, and, if necessary, modify the TMDLs if IEPA determines that new scientific information is available that indicates significant changes are warranted.

This watershed plan is designed to reduce pollutant loads to meet TMDL targets. However, it should be recognized that it may take some period of time from full implementation before management practices identified become fully effective in reducing and controlling certain pollutants. In addition, technology for controlling some pollutant sources such as NPS and stormwater, are still in the development stages and will take one or more iterations to develop effective techniques. Finally, it is possible that after application of all reasonable BMPs, some of these TMDLs cannot be achieved as originally established.

When developing WQBELs for NPDES permits, IEPA should ensure that the limits are consistent with the assumptions of the WLA (40 CFR 122.44(d)(1)(vii)(B)) and work with stormwater permittees in developing management plans that are consistent with the TMDLs.

IEPA should regularly review progress towards achievement of the TMDLs. If and when IEPA determines that the plan has been fully implemented, that all feasible practices have reached maximum effectiveness, and that a TMDL or its target have not been achieved, the TMDL should be reopened to adjust the targets and associated water quality standards as necessary. The determination that all feasible steps have been taken should be based on site-specific balancing of (1) protection of designated uses, (2) appropriateness to local conditions, (3) use of best treatment technologies or BMPs, and (4) cost of compliance.

ATTACHMENT 3

ADOPT-A-STREAM

Another way you can help preserve our streams is through DuPage County's Adopt-A-Stream program. Volunteer groups can work to keep our streams clean and attractive by removing debris and trash in and along our waterways, removing invasive vegetation and by monitoring the quality of the water.

DuPage County Stormwater Management will provide guidance to help coordinate your group's efforts and publically acknowledge groups for their continued service.

For more information, contact Jan Roehll by email at jroehll@theconservationfoundation.org or by phone at (630) 428-4500 ext. 121. The Conservation Foundation is a Stormwater Management partner in preserving and improving DuPage County's streams and rivers.

DUPAGE COUNTY

STORMWATER MANAGEMENT

DUPAGE COUNTY
STORMWATER MANAGEMENT

421 North County Farm Road
Wheaton, IL 60187

(630) 407-6673

Email: stormwatermgmt@dupageco.org

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Tag your BMPs! #LoveBlueDuPage

Love Blue. Live Green.

DuPage County

www.dupageco.org/swm

BE

BEST MANAGEMENT PRACTICES

T(

Visit

WHAT ARE BEST MANAGEMENT PRACTICES?

Stormwater best management practices (BMPs) are techniques, measures or structural controls used to manage the quantity and improve the quality of stormwater runoff. The goal of BMPs is to mimic the natural way water moved through an area before development by using design techniques to infiltrate, evaporate, and reuse runoff close to its source. BMPs help reduce the amount of and improve the quality of stormwater runoff. Please preserve our streams by utilizing these BMPs.

QUICK FIXES

Rain barrels are an easy and inexpensive way to capture and store runoff falling from gutters. The stored water can later be used to water gardens and lawns. You can make your own barrels or purchase them locally with simple installation. Another easy fix is adding a rain garden to your property. This attractive BMP is effective in reducing the amount of runoff leaving your property. Rain gardens utilize native plants with deep roots to absorb runoff, filter pollutants and promote groundwater recharge. Even simple changes in habit can be a BMP. For example, using phosphate-free products when washing your car or fertilizing your lawn go a long way in reducing pollutants in stormwater runoff. Something as small as cleaning up after your pet and ensuring litter is properly disposed of can also help.

CONSTRUCTION SOLUTIONS

Some BMPs require more involvement, but should be considered when building or renovating homes. For example, green roofs are an excellent way to decrease the amount of runoff leaving your property. Green roofs not only utilize water where it falls, but help prevent urban heat islands. Green roofs are a more expensive upgrade to your property, but they save money on heating and cooling costs. They can also be constructed on flat and sloped surfaces. A permeable paver is another BMP used as an alternative to traditional concrete or asphalt paving. The pavers decrease runoff by allowing water to seep into cracks that are filled with an aggregate. Remember, anything you can do to reduce pollutants in DuPage County streams helps everyone!

REME

- Use p concr
- Plant
- Mix c fertiliz
- Install and la
- Don't
- Build
- Keep of lea
- Use p
- Put lit
- Use a drivev
- Clean
- Prope
- Wash
- Repor

WHEN IT RAINS
IT DRAINS

After t

For more information contact:

or visit
www.epa.gov/npdes/stormwater
www.epa.gov/nps

EPA United States Environmental Protection Agency

EPA 833-B-03-002
January 2003

THE YEAR OF CLEAN WATER
Celebration + Recommitment

A Citizen's Guide
Understanding S

What is stormwater runoff?

Stormwater runoff occurs when precipitation from rain or snowmelt flows over the ground. Impervious surfaces like driveways, sidewalks, and streets prevent stormwater from naturally soaking into the ground.

Why is stormwater runoff a problem?

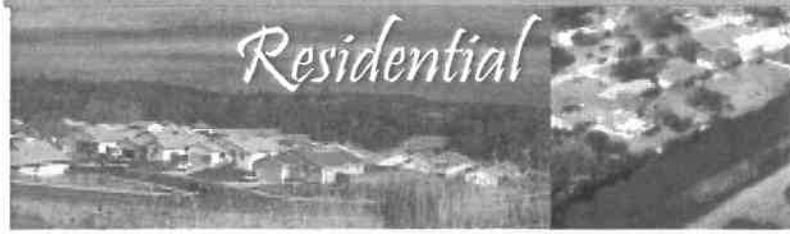
Stormwater can pick up debris, chemicals, dirt, and other pollutants and flow into a storm sewer system or directly to a lake, stream, river, wetland, or coastal water. Anything that enters a storm sewer system is discharged untreated into the waterbodies we use for swimming, fishing, and providing drinking water.

The effects of pollu

Polluted stormwater runoff can have many adverse effects on plants, fish animals, and people.

- Sediment can cloud the water and make it difficult or impossible for aquatic plants tc grow. Sediment also can destroy aquatic habitats.
- Excess nutrients can cause algae blooms. When algae die, they sink to the bottom and de in a process that removes oxyg the water. Fish and other aquat organisms can't exist in water v dissolved oxygen levels.
- Bacteria and other pathogens c into swimming areas and create hazards, often making beach cl necessary.
- Debris—plastic bags, six-pack r cigarette butts—washed into w disable aquatic life like ducks, f
- Household hazardous wastes li solvents, used motor oil, and o Land animals and people can b fish and shellfish or ingesting p

Stormwater Pollution Solutions



Recycle or properly dispose of household products that contain chemicals, such as insecticides, pesticides, paint, solvents, and used motor oil and other auto fluids. Don't pour them onto the ground or into storm drains.

Lawn care

Excess fertilizers and pesticides applied to lawns and gardens wash off and pollute streams. In addition, yard clippings and leaves can wash into storm drains and contribute nutrients and organic matter to streams.

- Don't overwater your lawn. Consider using a soaker hose instead of a sprinkler.
- Use pesticides and fertilizers sparingly. When use is necessary, use these chemicals in the recommended amounts. Use organic mulch or safer pest control methods whenever possible.
- Compost or mulch yard waste. Don't leave it in the street or sweep it into storm drains or streams.
- Cover piles of dirt or mulch being used in landscaping projects.

Auto care

Washing your car and degreasing auto parts at home can send detergents and other contaminants through the storm sewer system. Dumping automotive fluids into storm drains has the same result as dumping the materials directly into a waterbody.

- Use a commercial car wash that treats or recycles its wastewater, or wash your car on your yard so the water infiltrates into the ground.
- Repair leaks and dispose of used auto fluids and batteries at designated drop-off or recycling locations.

Septic systems

Leaking and poorly maintained septic systems release nutrients and pathogens (bacteria and viruses) that can be picked up by stormwater and discharged into nearby waterbodies. Pathogens can cause public health problems and environmental concerns.

- Inspect your system every 3 years and pump your tank as necessary (every 3 to 5 years).
- Don't dispose of household hazardous waste in sinks or toilets.

Pet waste

Pet waste can be a major source of bacteria and excess nutrients in local waters.

- When walking your pet, remember to pick up the waste and dispose of it properly. Flushing pet waste is the best disposal method. Leaving pet waste on the ground increases public health risks by allowing harmful bacteria and nutrients to wash into the storm drain and eventually into local waterbodies.

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Dirt, oil, and debris that collect in parking lots and paved areas can be washed into the storm sewer system and eventually enter local waterbodies.

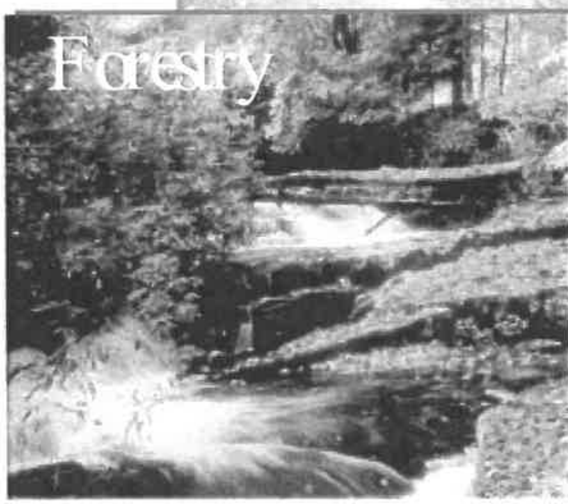
- ♦ Sweep up litter and debris from sidewalks, driveways and parking lots, especially around storm drains.
- ♦ Cover grease storage and dumpsters and keep them clean to avoid leaks.
- ♦ Report any chemical spill to the local hazardous waste cleanup team. They'll know the best way to keep spills from harming the environment.

Erosion controls that aren't maintained ca excessive amounts of sediment and debri carried into the stormwater system. Const vehicles can leak fuel, oil, and other harm that can be picked up by stormwater and deposited into local waterbodies.

- ♦ Divert stormwater away from disturbed exposed areas of the construction site.
- ♦ Install silt fences, vehicle mud removal a vegetative cover, and other sediment ar erosion controls and properly maintain especially after rainstorms.
- ♦ Prevent soil erosion by minimizing distu areas during construction projects, and and mulch bare areas as soon as possib

Lack of vegetation on streambanks can lead to erosion. Overgrazed pastures can also contribute excessive amounts of sediment to local waterbodies. Excess fertilizers and pesticides can poison aquatic animals and lead to destructive algae blooms. Livestock in streams can contaminate waterways with bacteria, making them unsafe for human contact.

- ♦ Keep livestock away from streambanks and provide them a water source away from waterbodies.
- ♦ Store and apply manure away from waterbodies and in accordance with a nutrient management plan.
- ♦ Vegetate riparian areas along waterways.
- ♦ Rotate animal grazing to prevent soil erosion in fields.
- ♦ Apply fertilizers and pesticides according to label instructions to save money and minimize pollution.



Improperly managed logging operations can result in erosion and sedimentation.

- ♦ Conduct preharvest planning to prevent erosion and lower costs.
- ♦ Use logging methods and equipment that minimize soil disturbance.
- ♦ Plan and design skid trails, yard areas, and truck access roads to minimize stream crossings and avoid disturbing the forest floor.
- ♦ Construct stream crossings so that they minimize erosion and physical changes to streams.
- ♦ Expedite revegetation of cleared areas.

STORM DRAIN STENCILING

Volunteers can also work to keep our streams clean and attractive by engaging in Storm Drain Stenciling. Stenciling the outside of storm drains helps to raise the community's awareness of nonpoint source pollution and reduce the incidence of illicit discharge into the drains.

Nonpoint source pollution results from everyday activities and those pollutants oftentimes are swept directly into storm drains and waterways with stormwater runoff. Some examples include fertilizers, motor oil, litter and animal waste.

For more information, contact Jan Roehll by email at jroehll@theconservationfoundation.org or by phone at (630) 428-4500 ext. 121. The Conservation Foundation is a Stormwater Management partner in preserving and improving DuPage County's streams and rivers.

DUPAGE COUNTY

Stormwater Management

DUPAGE COUNTY
STORMWATER MANAGEMENT

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(630) 407-6673

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Love Blue. Live Green.

DuPage County

www.dupageco.org/swm

ILLICIT DISCHARGE
DETECTION & ELIMINATION

WHY SHOULD I CARE ABOUT ILLICIT DISCHARGE?

The Clean Water Act requires municipalities with separate storm sewer systems to adopt an Illicit Discharge Detection and Elimination (IDDE) Ordinance. Storm sewer systems collect stormwater runoff and distribute it directly to DuPage County streams and rivers. In order to ensure the health, safety and general welfare of its residents, the DuPage County IDDE Ordinance prohibits the discharge of pollutants into the storm drain system.

WHAT IS ILLICIT DISCHARGE?

An Illicit Discharge is any substance other than stormwater being released into a storm sewer system. Oil, paint, organic materials and animal waste are examples of illicit discharges. These contaminants have a negative effect on the health of our local waterways and the surrounding communities.

HOW DO I SPOT ILLICIT DISCHARGE?

In addition to witnessing an act of illicit discharge—such as someone throwing animal waste into a storm drain—certain signs may also signify an illicit discharge reaching a stream or river. Pipes in disrepair or hoses that lead to a storm drain or body of water are all signs of an illicit discharge. Stains, suds, unusual odors, abnormal vegetative growth and structural damage to streets or inlets usually signifies a problem as well.

A more obvious way to spot an illicit discharge is when there are materials flowing into streams and rivers from storm sewer pipes during dry weather. In the absence of stormwater runoff, these systems are relatively quiet unless there is unnatural discharge draining through them.

HOW DO I REPORT ILLICIT DISCHARGE?

Report suspicious discharge by calling (630) 407-6796, by emailing stormwatermgmt@dupageco.org or online at:

http://gis.dupageco.org/CitizenReporter/

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“Send Only Rain Down the Drain!”

In order to protect the water quality of local streams, DuPage County Stormwater Management has made car wash kits available to organizations holding car wash activities for various purposes, including fundraisers. The kits can be obtained from the COUNTY, from SCARCE, a local environmental education non-profit, and at a number of high school districts throughout the County.

For more information on the kits, please visit our website:

www.dupageco.org/swm

DUPAGECOUNTY

DUPAGE COUNTY

STORMWATER MANAGEMENT

DUPAGE COUNTY
STORMWATER MANAGEMENT

421 North County Farm Road
Wheaton, IL 60187

(630) 407-6673

stormwatermgmt@dupageco.org

@lovebluedupage

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DuPage County

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CAR WASH GUIDELINES

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OVERVIEW

Washing your car at home or at a local a fundraiser can wreak havoc on nearby bodies of water, simply by sending pollutants like dirt, soap, oil, grease and metals, along with the wash water, into streams and river. Ideally, waste water from car washes should be emptied into a sanitary sewer (the system that transports wastewater to a treatment facility) if allowed by local jurisdiction.

The following suggestions are some other ways to make your car washes friendly to our local waterways.

REMEMBER: Only rain goes down the storm drain!

AT HOME:

- Pull your car onto the lawn before washing. You can water your lawn at the same time you wash your car.
- Use phosphate-free, biodegradable cleaning products.
- Avoid using degreasers, solvents and tire cleaning products.
- Wring out sponges and rags in a bucket, then empty the bucket into the sanitary sewer system, via sinks or toilets. You can also empty the bucket onto pervious landscaped areas where wastewater can be absorbed.
- Use a low-flow nozzle for your hose and turn it off when you're not using the water.
- Sweep up any debris (rather than hosing it to the street) and dispose of it in the garbage.
- If possible, take your car to a commercial car wash. These facilities use technology to achieve minimal water usage and discharge their water in a regulated and safe manner. Some car washes reuse water and even employ environmentally friendly soaps!
- ***Bonus Tip:*** Ensure you're regularly changing your oil to prevent excessive oil leakage.

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Storm Drain Stenciling

Volunteers can also work to keep our streams clean and attractive by engaging in Storm Drain Stenciling. Stenciling the outside of storm drains helps to raise the community's awareness of nonpoint source pollution and reduce the incidence of illicit discharge into the drains.

Nonpoint source pollution results from everyday activities and those pollutants oftentimes are swept directly into storm drains and waterways with stormwater runoff. Some examples include fertilizers, motor oil, litter and animal waste.

For more information, materials or to schedule a storm drain stenciling outing, contact The Conservation Foundation (TCF) at 630.428.4500 ext. 121. TCF is a Stormwater Management partner in preserving and improving DuPage County's streams and rivers.

DUPAGECOUNTY

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STORMWATER MANAGEMENT

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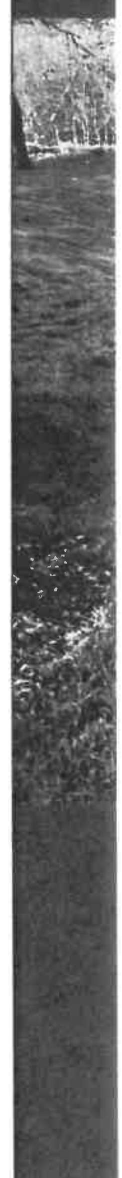

PROPER PET CARE

Pet Waste As Stormwater Pollution

Proper pet care is an *essential*—especially when considering the effects that improper pet care can have on our environment. For example, if you fail to pick up your dog waste, it is then a contributor to stormwater pollution. Dog waste is full of bacteria and parasites that may be a threat to human health and the environment as a whole.

Beyond feces, there are other ways in which improper pet care can have negative effects on our environment. *Dumping fish* from the pet store into waterways or stormwater drains is not only harmful—but it can also result in a fine under certain ordinances. It is also harmful to try to dump *plants* that were meant for your aquarium into waterways, as they can displace native plants.

Small Efforts Make Big Changes

Merely picking up after your dog can prevent up to 23 million fecal coliform bacteria. It can also decrease the amount of disease spread through contaminated water sources. This seems trivial, but it is a serious risk, considering dog waste is said to be the *3rd or 4th* largest contributor of pollution in urban watersheds. A small effort, such as carrying around a bag to pick up after your dog, can make a big change in eliminating the number of pollutants in our waterways.

More Information

Here is some information on the harmful effects of improperly caring for pet waste:

- The water in your aquarium could contain fish eggs, larvae or diseases. These contaminants pose a threat to other lifeforms currently in our waterways.
- When walking your dog in urban areas, it does not matter whether you are on a lawn, beach or a sidewalk, all of those surfaces can drain into a water body and pollute the water.

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How a Rain Barrel Can Help Your Lawn

Rain barrels are built to capture rainwater that goes through the downspout. Not only do rain barrels prevent contaminants from running down the drain into our local waterways, but they also capture healthy water that can be used to give water to your garden or other plants on your lawn!

DUPAGE COUNTY

STORMWATER MANAGEMENT

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@lovebluedupage

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@lovebluedupage

Tag your lawn! #LoveBlueDuPage

SUSTAINABLE LAWN CARE PRACTICES

What You Should Know About Pesticides

- Weed killers that promise to "magically" wipe out weeds will sometimes try to market their products as natural—but be wary, *they are far from it.*
- A lot of fertilizers will try to push the importance of their product onto consumers. This contradicts what has been researched about fertilizers with a synthetic makeup, which highlights how unnecessary chemicals are to lawns.
- Pesticides can be harmful to integral parts of soil, such as *earth worms.*
- Pesticides are found in a number of fertilizers and they are not only dangerous directly to you but to the world at large.

Simple Steps in Achieving the Ideal Lawn

- A ***soil test*** should be conducted every five years at the very least. Evaluating how your soil might have changed throughout the years and different seasons will give you a sense of how to continue to keep your soil healthy and thriving.
- When it comes to fertilizing, it is best to go organic. ***Organic fertilizers*** are made from plant or animal materials so they prove to be safe and just as effective as fertilizers with potentially dangerous additives.
- Consider planting ***native plants*** that do not require fertilizer and do not harm or degrade ecosystems.
- Be sure to ***avoid overwatering***. About an inch of water should be distributed across your lawn every week.
- When ***mowing your lawn***, try to set your mower to have it cut your grass down to 3 inches.

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ATTACHMENT 4

EJSCREEN Report (Version 2016)

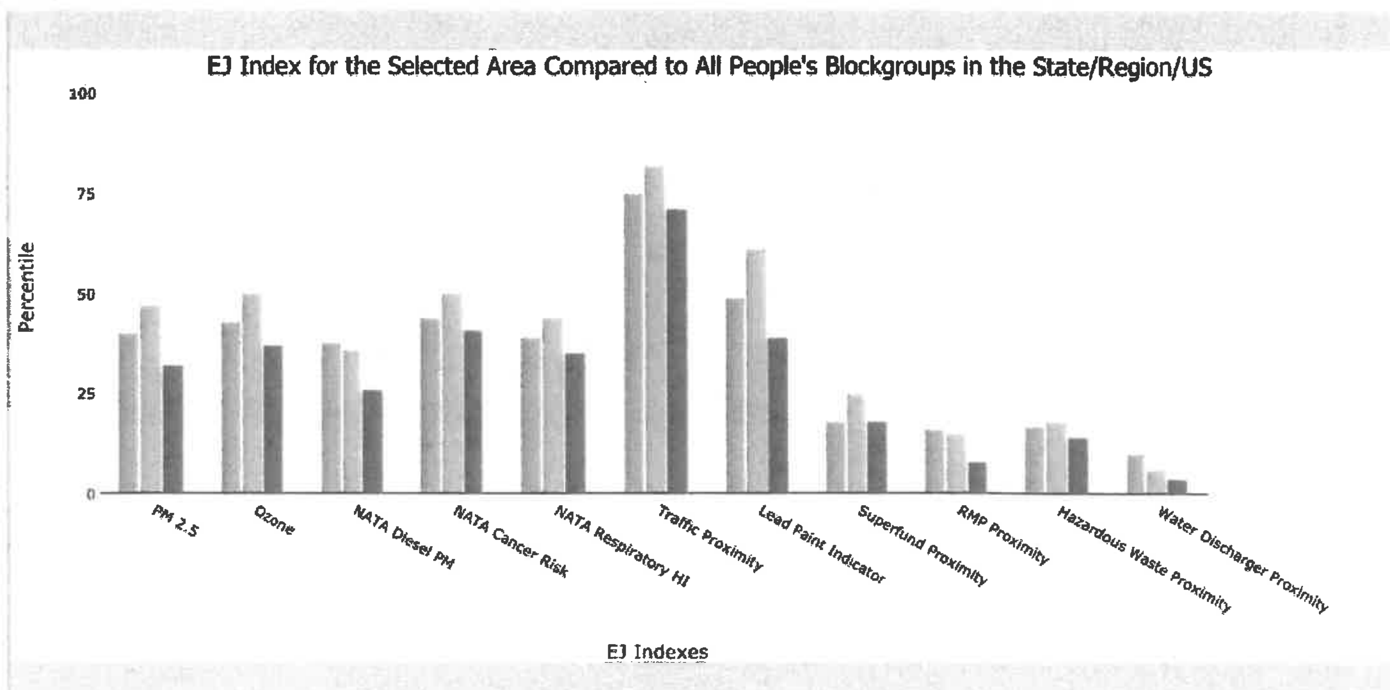
1 mile Ring Centered at 41.992075,-88.184590, ILLINOIS, EPA Region 5

Approximate Population: 9,379

Input Area (sq. miles): 3.14

Bartlett

Selected Variables	State Percentile	EPA Region Percentile	USA Percentile
EJ Indexes			
EJ Index for PM2.5	40	47	32
EJ Index for Ozone	43	50	37
EJ Index for NATA* Diesel PM	38	36	26
EJ Index for NATA* Air Toxics Cancer Risk	44	50	41
EJ Index for NATA* Respiratory Hazard Index	39	44	35
EJ Index for Traffic Proximity and Volume	75	82	71
EJ Index for Lead Paint Indicator	49	61	39
EJ Index for Superfund Proximity	18	25	18
EJ Index for RMP Proximity	16	15	8
EJ Index for Hazardous Waste Proximity+	17	18	14
EJ Index for Water Discharger Proximity	10	6	4



This report shows the values for environmental and demographic indicators and EJSCREEN indexes. It shows environmental and demographic raw data (e.g., the estimated concentration of ozone in the air), and also shows what percentile each raw data value represents. These percentiles provide perspective on how the selected block group or buffer area compares to the entire state, EPA region, or nation. For example, if a given location is at the 95th percentile nationwide, this means that only 5 percent of the US population has a higher block group value than the average person in the location being analyzed. The years for which the data are available, and the methods used, vary across these indicators. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSCREEN documentation for discussion of these issues before using reports.

EPA United States Environmental Protection Agency

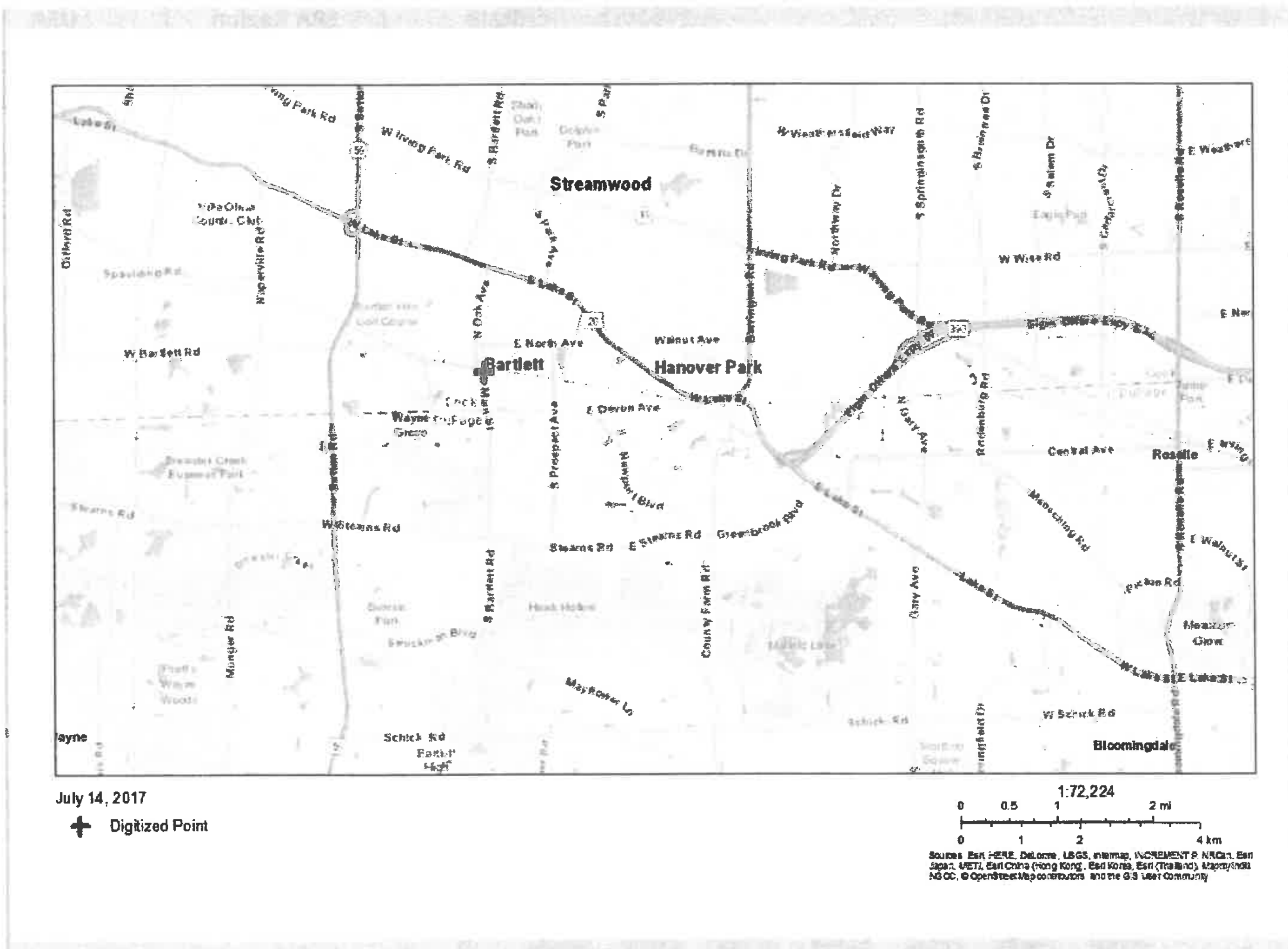
EJSCREEN Report (Version 2016)

1 mile Ring Centered at 41.992075,-88.184590, ILLINOIS, EPA Region 5

Approximate Population: 9,379

Input Area (sq. miles): 3.14

Bartlett



Sites reporting to EPA	
Superfund NPL	0
Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDF)	0
National Pollutant Discharge Elimination System (NPDES)	1

EJSCREEN Report (Version 2016)

1 mile Ring Centered at 41.992075,-88.184590, ILLINOIS, EPA Region 5

Approximate Population: 9,379

Input Area (sq. miles): 3.14

Bartlett

Selected Variables	Value	State Avg.	%ile in State	EPA Region Avg.	%ile in EPA Region	USA Avg.	%ile in USA
Environmental Indicators							
Particulate Matter (PM 2.5 in $\mu g/m^3$)	11.4	11.2	51	10.6	73	9.32	89
Ozone (ppb)	49.7	50.8	30	50.3	32	47.4	58
NATA* Diesel PM ($\mu g/m^3$)	1.11	1.28	44	0.931	60-70th	0.937	70-80th
NATA* Cancer Risk (lifetime risk per million)	32	36	31	34	<50th	40	<50th
NATA* Respiratory Hazard Index	1.6	1.8	46	1.7	50-60th	1.8	<50th
Traffic Proximity and Volume (daily traffic count/distance to road)	260	500	66	370	71	590	67
Lead Paint Indicator (% Pre-1960 Housing)	0.13	0.42	25	0.39	24	0.3	40
Superfund Proximity (site count/km distance)	0.14	0.095	87	0.12	79	0.13	76
RMP Proximity (facility count/km distance)	1.1	0.69	82	0.51	87	0.43	90
Hazardous Waste Proximity+ (facility count/km distance)	0.19	0.12	87	0.11	88	0.11	87
Water Discharger Proximity (facility count/km distance)	0.98	0.38	90	0.31	93	0.31	93
Demographic Indicators							
Demographic Index	22%	35%	41	29%	50	36%	35
Minority Population	27%	37%	50	24%	70	37%	49
Low Income Population	17%	32%	29	33%	25	35%	24
Linguistically Isolated Population	4%	5%	67	2%	82	5%	69
Population With Less Than High School Education	9%	12%	51	11%	54	14%	46
Population Under 5 years of age	5%	6%	33	6%	35	6%	34
Population over 64 years of age	11%	13%	44	14%	37	14%	41

* The National-Scale Air Toxics Assessment (NATA) is EPA's ongoing, comprehensive evaluation of air toxics in the United States. EPA developed the NATA to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that NATA provides broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. More information on the NATA analysis can be found at: https://www.epa.gov/national-air-toxics-assessment.

+ The hazardous waste environmental indicator and the corresponding EJ index will appear as N/A if there are no hazardous waste facilities within 50 km of a selected location.

For additional information, see: www.epa.gov/environmentaljustice

EJSCREEN is a screening tool for pre-decisional use only. It can help identify areas that may warrant additional consideration, analysis, or outreach. It does not provide a basis for decision-making, but it may help identify potential areas of EJ concern. Users should keep in mind that screening tools are subject to substantial uncertainty in their demographic and environmental data, particularly when looking at small geographic areas. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSCREEN documentation for discussion of these issues before using reports. This screening tool does not provide data on every environmental impact and demographic factor that may be relevant to a particular location. EJSCREEN outputs should be supplemented with additional information and local knowledge before taking any action to address potential EJ concerns.

ATTACHMENT 5

PART V. MONITORING, RECORDKEEPING, AND REPORTING

A. Monitoring

The ILR40 permit states that permit holders "must develop and implement a monitoring and assessment program to evaluate the effectiveness of the BMPs being implemented to reduce pollutant loadings and water quality impacts". The DRSCW monitoring program meets the following monitoring objectives and requirements outlined in the permit:

- Measuring pollutants over time (Part V. A. 2. b. ii)
- Sediment monitoring (Part V. A. 2. b. iii)
- Assessing physical and habitat characteristics such as stream bank erosion caused by storm water discharges ((Part V. A. 2. b. vi)
- Collaborative watershed-scape monitoring (Part V. A. 2. b. x)
- Ambient monitoring of total suspended solids, total nitrogen, total phosphorus, fecal coliform, chlorides, and oil and grease (Part V. A. 2. c.)

The DRSCW water quality monitoring program is made up of two components: 1) Bioassessment and 2) DO monitoring.

BIOASSESSMENT

Overview and Sampling Plan

A biological and water quality survey, or "biosurvey", is an interdisciplinary monitoring effort coordinated on a waterbody specific or watershed scale. This may involve a relatively simple setting focusing on one or two small streams, one or two principal stressors, and a handful of sampling sites or a much more complex effort including entire drainage basins, multiple and overlapping stressors, and tens of sites. The DRSCW bioassessment is the latter. The DRSCW bioassessment program began in 2007 with sampling in the West Branch DuPage River, East Branch DuPage River and Salt Creek watersheds. From 2009-2016, each watershed was sampled on a 3-year rotation beginning with the West Branch DuPage River watershed in 2006. Beginning in 2017, watershed will be sampled in a 5-year rotation ensuring that each watershed will be sampled during the effective period of the ILR40 permit. The bioassessment program functions under a quality assurance plan agreed on with the Illinois Environmental Protection Agency (http://drscw.org/wp/bioassessment/). Table 1 details the bioassessment sampling dates for each DRSCW watershed.

Table 1. Bioassessment sampling dates for the DRSWC watershed

Watershed	Sampling Completed (year)	Sampling Scheduled (year)
West Branch DuPage River	2007, 2009, 2012, 2015	2020
East Branch DuPage River	2007, 2011, 2014	2019
Salt Creek	2007, 2010, 2013, 2016	2021

The DRSCW bioassessment program utilizes 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; and,
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 collects 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 containing a summary of major findings and recommendations for future monitoring, follow-up investigations, and any immediate actions that are needed to resolve readily diagnosed impairments is prepared following each bioassessment. The bioassessment reports are posted on the DRSCW at http://drscw.org/wp/bioassessment/. It is not the role of the bioassessments to identify specific remedial actions on a site specific or watershed basis. However, the baseline data provided by the bioassessments contributes to the Integrated Priority System that was developed to help determine and prioritize remedial projects (http://drscw.org/wp/project-identification-and-prioritization-system/).

Sampling sites for the bioassessment were determined systematically using a geometric design supplemented by the bracketing of features likely to exude an influence over stream resource quality, such as CSOs, dams and wastewater outfalls. The geometric site selection process starts at the downstream terminus or "pour point" of the watershed (Level 1 site), then continues by deriving each subsequent "panel" at descending intervals of one-half the drainage area (D.A.) of the preceding level. Thus, the drainage area of each successive level decreases geometrically. This results in in seven drainage area levels in each of the three watersheds, starting at the largest (150 sq. mi) and continuing through successive panels of 75, 38, 19, 9, 5 and 2 sq. mi. Targeted sites are then added to fill gaps left by the geometric design and assure complete spatial coverage in order to capture all significant pollution gradients including reaches that are impacted by wastewater treatment plants (WWTPs), major stormwater sources, combined sewer overflows (CSOs) and dams. The number of sampling sites by method/protocol and watershed are listed in Table 2 and illustrated in Figure 1.

Representativeness – Reference Sites

Data is collected from selected regional reference sites in northeastern Illinois preferably to include existing Illinois EPA and Illinois DNR reference sites, potentially being supplemented with other sites that meet the Illinois EPA criteria for reference conditions. One purpose of this data will be to index the biological methods used in this study that are different from Illinois EPA and/or DNR to the reference condition and biological index calibration as defined by Illinois EPA.

In addition, the current Illinois EPA reference network does not yet include smaller headwater streams, hence reference data is needed to accomplish an assessment of that data. Presently thirteen (13) reference sites have been established.

Table 2. Number of sampling sites in the DRSCW project area.

Method/Protocol	West Branch DuPage River (2013)	East Branch DuPage River (2014)	Salt Creek (2016)	Reference Sites (2006-2016)	Total Sites
Biological sampling					
Fish	44	36	51	13	144
Macroinvertebrates	44	36	51	13	144
QHEI	44	36	51	13	144
Water Column Chemical/Physical Sampling					
Nutrients*	44	36	51	6	137
Water Quality Metals	44	36	51	6	137
Water Quality Organics	18	11	16	6	51
Sediment Sampling	18	11	16	6	51

*Also included indicators or organic enrichment and ionic strength, total suspended solids (TSS), DO, pH and temperature

The bioassessment sampling includes four (4) 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.

FISH

Methodology

Methods for the collection of fish at wadeable sites was performed using a tow-barge or longline pulsed D.C. electrofishing apparatus (MBI 2006b). A Wisconsin DNR battery powered backpack electrofishing unit was used as an alternative to the long line in the smallest streams (Ohio EPA 1989). A three-person crew carried out the sampling protocol for each type of wading equipment sampling in an upstream direction. Sampling effort was indexed to lineal distance and ranged from 150-200 meters in length. Non-wadeable sites were sampled with a raft-mounted pulsed D.C. electrofishing device in a downstream direction (MBI 2007). Sampling effort was indexed to lineal distance over 0.5 km. Sampling was conducted during a June 15-October 15 seasonal index period.

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

Results

The fish sampling results presented in this report summarize the findings for the mainstem reaches of the East Branch DuPage River, the West Branch DuPage River and Salt Creek. Information on the tributaries and detailed analysis of all results can be found at http://drscw.org/wp/bioassessment/.

The fish and macroinvertebrate results are presented as Index of Biotic Integrity (IBI) scores. IBI is an evaluation of a waterbodies biological community in a manner that allows the identification, classification and ranking of water pollution and other stressors. IBIs allow the statistical association of various anthropogenic influences on a water body with the observed biological activity in said water body and in turn the evaluation of management interventions in a process of adaptive management. Chemical testing of water samples produce only a snapshot of chemical concentrations while an IBI allows an evaluation of the net impact of chemical, physical and flow variables on a biological community structure. Dr. James Karr formulated the IBI concept in 1981.

East Branch DuPage River

Fish assemblage conditions throughout the East Branch DuPage River watershed a in the poor and fair ranges (Figure 1). However, the mainstem assemblages show similar quality or modest improvement at nearly all sites when 2014 data is compare to 2011 and approach 2007 levels.

Prior to the modification of the Churchill Woods dam in 2001, fish assembles upstream of the dam, were essentially that of a pond and dominated by sunfish, bullheads, golden shiner, and mosquito fish. Downstream of the dam, the fish assemblage reflected more lotic, stream like conditions with populations of sand shiner, johnny darter, horneyhead chub and rock bass. Since the modification of the Churchill Woods dam, eight new species have been recorded and other populations have expanded their ranges above the former dam site. Additionally, in 2014, two new species (banded darter and round goby) were recorded in the lower reaches of the East Branch. The appearance of the banded darter, a sensitive species, is a sign of improved quality in the lower nine miles of the main stem.

West Branch DuPage River

All survey sites fell consistently in the poor or lower fair ranges with slightly higher scores downstream from RM 8.1 and the Fawell Dam (Figure 2). No West Branch sites met the 41-point criterion synonymous with a good quality assemblage.

It should be noted that the Fawell dam is a barrier to several fish species. The DRSCW in cooperation with DuPage County and Forest Preserve District of DuPage County plans to modify the Fawell Dam to allow for fish passage. This project is expected to be completed by 2018.

Figure 1. Fish IBI scores in the East Branch DuPage River, 2014, 2011-12 and 2007 in relation to municipal POTW dischargers. Bars along the x-axis depict mainstem dams or weirs (only black bars impede fish passage). The shaded area demarcates the "fair" narrative range.

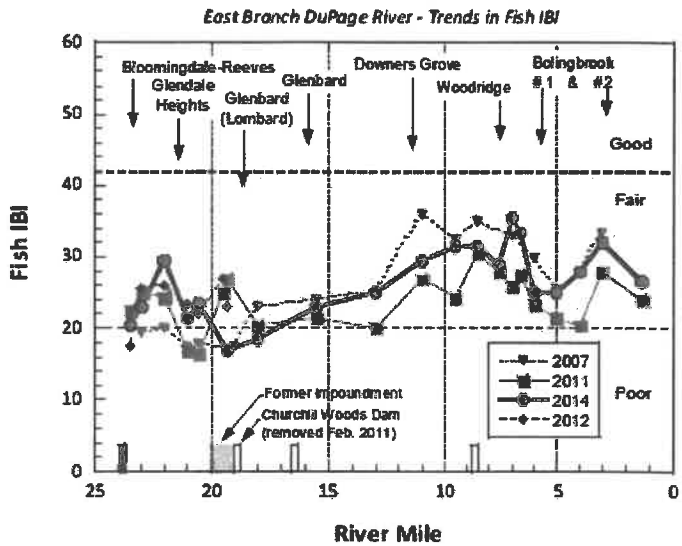
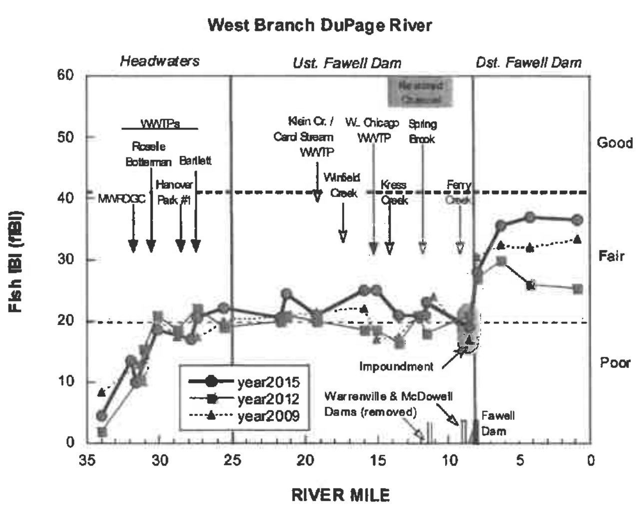


Figure 2. Fish IBI scores in the West Branch DuPage River, 2015, 2011-12 and 2007 in relation to municipal POTW dischargers. Bars along the x-axis depict mainstem dams or weirs (only black bars impede fish passage). The shaded area demarcates the "fair" narrative range.



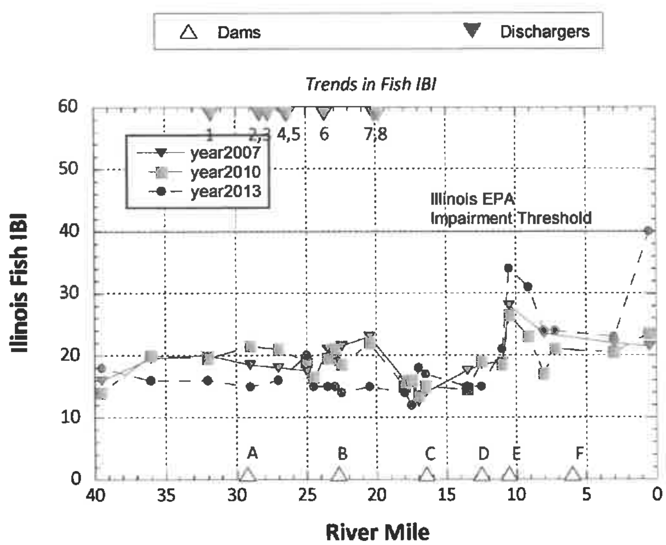
Salt Creek

With the exception of the site located at River Mile 0.5, fish assemblages sampled in Salt Creek were in poor to fair condition throughout the mainstem (Figure 3). In 2013, the site near the mouth of Salt Creek (river mile 0.5) was rated "good". The increase in fish iBi is attributed to the removal of the Hoffman Dam on the main stem of the Des Plaines River in June 2012.

It should be noted that the Fullersburg Woods Dam (dam E on Figure 4) is a barrier to several fish species, notably johnny darters and hornyhead chubs, two species that should be found throughout most of the mainstem. The DRSCW in cooperation with DuPage County and Forest Preserve District of DuPage County plans to modify the Fullersburg Woods Dam to allow for fish passage. This project is expected to be completed by 2023.

Fish assemblage data from the 2016 Salt Creek bioassessment was not available at the time of the 2016-2017 MS4 Annual Report and will be included in the 2017-2018 MS4 Annual Report due on June 1, 2018.

Figure 3. Fish IBI scores in Salt Creek, 2013, 2010, and 2007 in relation to municipal POTW dischargers. Triangles along the x-axis depict mainstem dams or weirs. The back line demarcates the IEPA impairment threshold.



MACROINVERTEBRATES

Methodology

The macroinvertebrate assemblage is sampled using the Illinois EPA (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, calculation of the macroinvertebrate IBI followed IEPA methods in using genera as the lowest level of taxonomy for mIBI calculation and scoring.

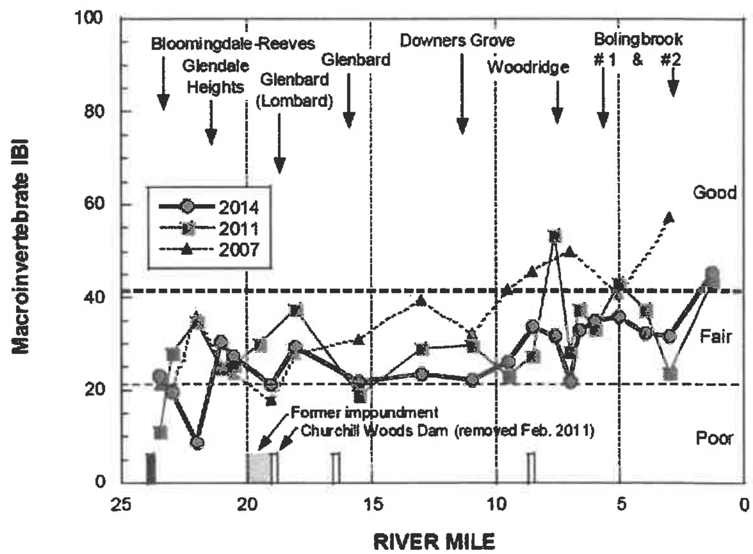
Results

The macroinvertebrate sampling results presented in this report summarize the findings for the mainstem reaches of the East Branch DuPage River, the West Branch DuPage River and Salt Creek. Information on the tributaries and detailed analysis of all results can be found at http://drscw.org/wp/bioassessment/.

East Branch DuPage River

Macroinvertebrate collections from the 2014 East Branch watershed survey fell entirely within the fair or poor quality ranges with the exception of a single "good" site on the lower mainstem (Figure 4). Assemblages throughout the study area are predominated by facultative and tolerant organisms most often associated with elevated nutrients, dissolved solids and low DO.

Figure 4. Macroinvertebrate IBI scores in the East Branch DuPage River, 2014, 2011-12 and 2007 in relation to municipal POTW dischargers. Bars along the x-axis depict mainstem dams or weirs (only black bars impede fish passage). The shaded area demarcates the "fair" narrative range.

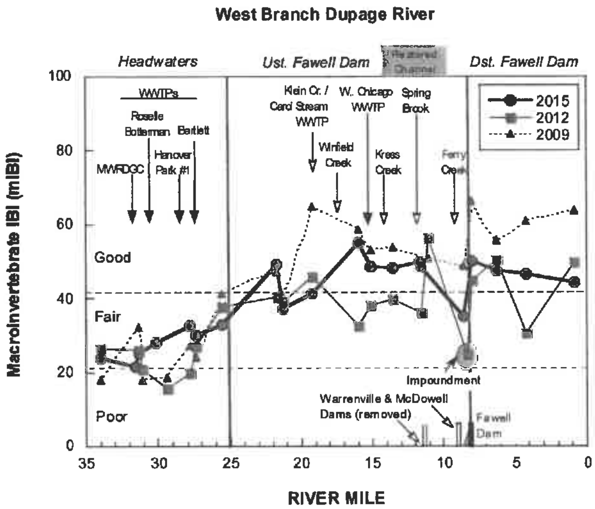


West Branch DuPage River

With few exceptions, West Branch macroinvertebrate assemblages from the upper, headwater reach reflected degraded but similar quality between 2007, 2009, 2012 and 2015 (Figure 5). The combination urban drainage, marginal habitat quality and a series of four major WWTP discharges in the small drainage were considered major contributors.

In both 2009 and 2015, major improvement in mIBI scores and clearly good mIBI ratings were detected upstream from Klein Creek and the Carol Stream WWTP (Figure 5). In 2009 and 2015, consistently good quality was maintained along the remaining length of the West Branch downstream to the mouth. In 2006, this downstream improving trend was more erratic; still 5 of the 8 sites between Klein Creek and the mouth exceeded Illinois criteria. In contrast, the 2012 trend was much less distinct as narrative ratings vacillated between a fair or lower good range status through most of the lower 20 mainstem river miles.

Figure 5. Macroinvertebrate IBI scores in the West Branch DuPage River, 2015, 2011-12 and 2007 in relation to municipal POTW dischargers. Bars along the x-axis depict mainstem dams or weirs (only black bars impede fish passage). The shaded area demarcates the "fair" narrative range.



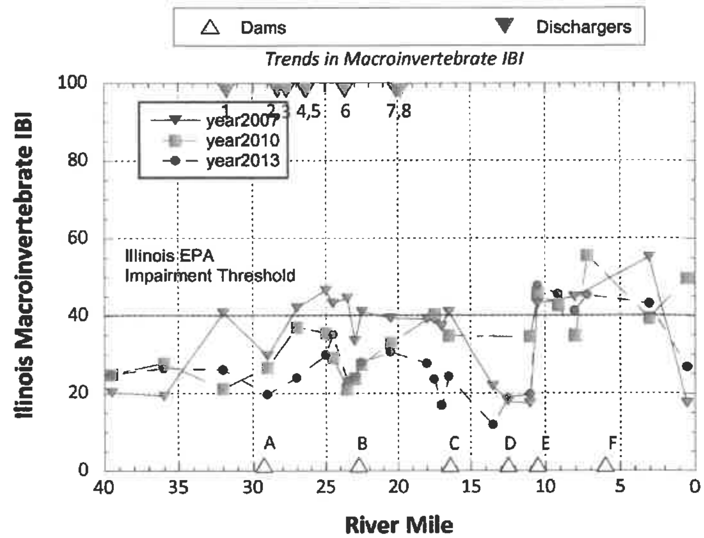
Salt Creek

In 2013, macroinvertebrate communities sampled from the mainstem of Salt Creek were rated as Fair upstream from the Fullersburg Woods Dam, and rated good at five of six sites sampled downstream from the dam, and Fair at the other site (Figure 6). Longitudinally, scores decreased downstream from Spring Brook relative to those upstream. The confluence with Spring Brook marks the reach where several POTWs discharge in short succession. Otherwise, no clear longitudinal pattern was evident

In the 2016, the Oak Meadows Dam (dam B on Figure 4) was removed in a project sponsored by the Forest Preserve District of DuPage County, DuPage County Stormwater Management, and the DRSCW. Macroinvertebrate sampling to document the effects of this dam removal is scheduled for 2017.

Macroinvertebrate data from the 2016 Salt Creek bioassessment was not available at the time of the 2016-2017 MS4 Annual Report and will be included in the 2017-2018 MS4 Annual Report due on June 1, 2018.

Figure 6. Macroinvertebrate IBI scores in Salt Creek, 2013, 2010, and 2007 in relation to municipal POTW dischargers. Triangles along the x-axis depict mainstem dams or weirs. The back line demarcates the IEPA impairment threshold.



HABITAT

Methodology

Physical habitat was evaluated using the Qualitative Habitat Evaluation Index (QHEI) developed by the Ohio EPA for streams and rivers in Ohio (Rankin 1989, 1995; Ohio EPA 2006b) and as modified by 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 used to determine the QHEI score which generally ranges from 20 to less than 100. QHEI scores and physical habitat attribute were recorded in conjunction with fish collections.

Results

The QHEI data presented in this report summarize the findings for the mainstem reaches of the East Branch DuPage River, the West Branch DuPage River and Salt Creek. Information on the tributaries and detailed analysis of all results can be found at http://drscw.org/wp/bioassessment/.

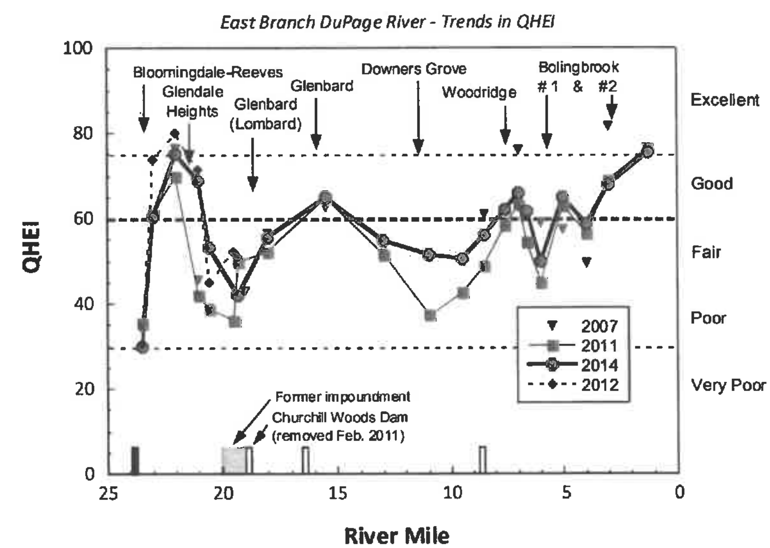
The physical habitat of a stream is a primary determinant of biological quality. Streams in the glaciated Midwest, left in their natural state, typically possess riffle-pool-run sequences, high sinuosity, and well-developed channels with deep pools, heterogeneous substrates and cover in the form of woody debris, glacial tills, and aquatic macrophytes. The QHEI categorically scores the basic components of stream habitat into ranks according to the degree to which those components are found in a natural state, or conversely, in an altered or modified state.

East Branch DuPage River

Based on QHEI scores, mainstem habitat quality fell mostly in the fair to good ranges, but varied by location (Figure 7). Substrate embeddedness was a common characteristic of the mainstem as riffle or pool embeddedness was recorded at all but one location (EB23/RM 22.0).

Since the modification of the Churchill Woods dam in 2011, QHEI scores within and upstream of the former dam have increased by reflecting the appearance of riffles and increased habitat heterogeneity.

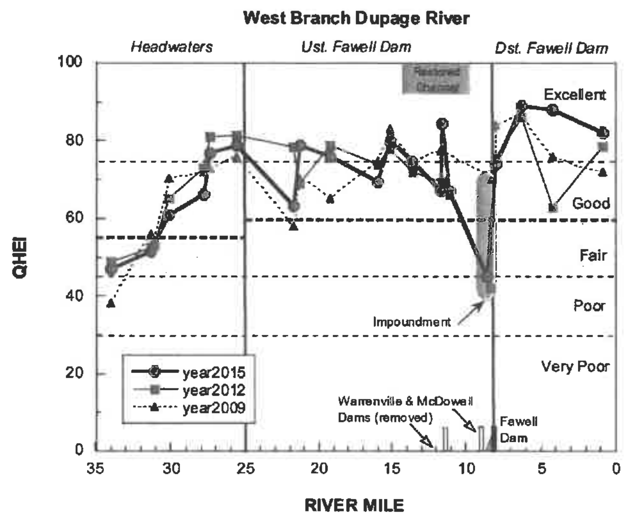
Figure 7. Qualitative Habitat Evaluation Index (QHEI) scores for the E. Branch DuPage River in 2007, 2011-12, and 2014 in relation to municipal WWTP discharges. Bars along the x-axis depict mainstem dams or weirs (black bars are dams that impede fish passage). The shaded region depicts the range of QHEI scores where habitat quality is marginal and limiting to aquatic life. QHEI scores less than 45 are typical of highly modified habitat.



West Branch DuPage River

Mainstem habitat quality in 2012 was good to excellent throughout most of its length and, with the exception of the extreme headwaters (upstream RM 30.1) and Fawell Dam pool (RM 8.3) (Figure 8).

Figure 8. Qualitative Habitat Evaluation Index (QHEI) scores for the W. Branch DuPage River in 2009, 2012, and 2015. Bars along the x-axis depict mainstem dams or weirs (black bars are dams that impede fish passage). The shaded region depicts the range of QHEI scores where habitat quality is marginal and limiting to aquatic life. QHEI scores less than 45 are typical of highly modified habitat

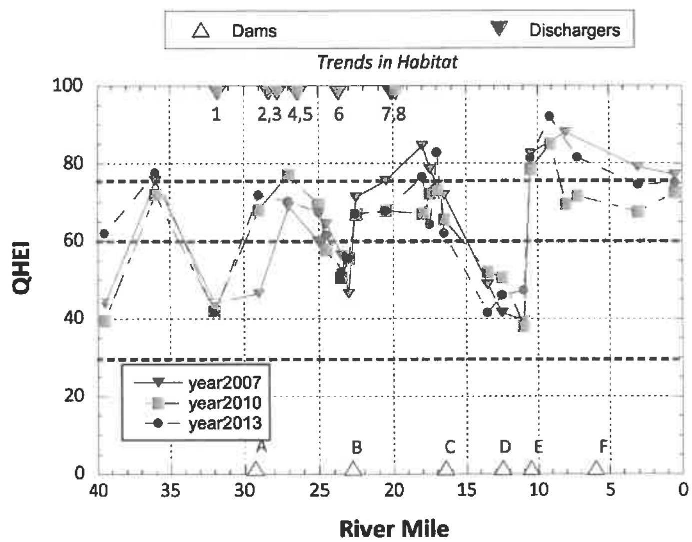


Salt Creek

In Salt Creek, the majority of the sites possessed the types and amounts of habitat features necessary to support aquatic life consistent with beneficial uses (Figure 49 a), with QHEI scores in the good and excellent range (Figure 9). Perhaps more telling, 19 of the sites possessed none of the attributes that characterized stream channels highly modified either directly or indirectly by anthropogenic modifications, and only one site, the most upstream site, possessed more than one highly modified attribute.

QHEI data from the 2016 Salt Creek bioassessment was not available at the time of the 2016-2017 MS4 Annual Report and will be included in the 2017-2018 MS4 Annual Report due on June 1, 2018.

Figure 9. Qualitative Habitat Evaluation Index (QHEI) scores for Salt Creek in 2007, 2010 and 2013 in relation to municipal WWTP discharges. Triangles along the x-axis depict mainstem dams or weirs. The shaded region depicts the range of QHEI scores where habitat quality is marginal and limiting to aquatic life. QHEI scores less than 45 are typical of highly modified habitat.



WATER QUALITY CHEMISTRY

Methodology

Water column and sediment samples are collected as part of the DRSCW bioassessment programs. The total number of sites sampled is detailed in Table 2. Total number of collected samples by watershed typical for a full assessment by watershed are given in Table 3. The number of samples collected at each site is largely a function of the sites drainage area with the frequency of sampling increasing as drainage size increases (Table 4). Organics sampling is a single sample done at a subset of sites. Sediment sampling is done at a subset of 66 sites using the same procedures as IEPA.

The parameters sampled for are included in Table 6 and can be grouped into demand parameters, nutrients, demand, metals and organics. Locations of organic and sediment sites are shown on Figure 2. All sampling occurs between June and October of the sample year. The Standard Operating Procedure for water quality sampling can be found at http://drscw.org/wp/bioassessment/.

Table 3. Total number of samples by watershed typical for a full assessment by watershed

Watershed	Approximate # Sites	Demand Samples	Nutrients Samples	Metals Samples	Organics Samples
Salt Creek	51	280	280	149	16
West Branch DR	44	218	218	110	18
East Branch DR	36	196	196	100	11

Table 4. Approximate distribution of sample numbers by drainage area across the monitoring area.

Drainage Area and site numbers	>100 sq mi (n=12)	>75 sq mi (n=25)	>38 sq mi (n=11)	>19 sq mi (n=11)	>8 sq mi (n=15)	>5 sq mi (n=24)	>2 sq mi (n= 46)
Mean # Samples demand /nutrients	12	9	6	6	4	4	2
Mean # Samples metals	6	6	4	4	2	2	0

Table 6. Water Quality and sediment Parameters sampled as part of the DRSCW Bioassessment Program.

Water Quality Parameters	Sediment Parameters
Demand Parameters 5 Day BOD Chloride Conductivity Dissolved Oxygen pH Temperature Total Dissolved Solids Total Suspended Solids **Nutrients** Ammonia Nitrogen/Nitrate Nitrogen – Total Kjeldahl Phosphorus, Total **Metals** Cadmium Calcium Copper Iron Lead Magnesium Zinc **Organics – Water** PCBS Pesticides Semivolatile Organics Volatile Organics	**Sediment Metals** Arsenic Barium Cadmium Chromium Copper Iron Lead Manganese Nickel Potassium Silver Zinc **Sediment Organics** Organochlorine Pesticides PCBS Percent Moisture Semivolatile Organics Volatile Organic Compounds

Results
The discussion presented below focuses on the constituents listed in the MS4 permit: total suspended solids, total nitrogen, total phosphorus, fecal coliform, chlorides, and oil and grease. Total nitrogen is presented as ammonia, nitrate, and total kjeldahl nitrogen (TKN). Prior to the 2016 sampling period, fecal coliform and oil and grease sampling was not conducted. Oil and grease sampling was added to the bioassessment sampling for Salt Creek in 2016. Fecal coliform and oil and grease sampling will be added to all future bioassessment sampling for the East Branch DuPage River (2019), West Branch DuPage River (2020), and Salt Creek (2021) ensuring that each watershed will be sampled for that parameter during the effective period of the ILR40 permit.

Detailed analysis and results for the other water quality constituents is located at http://drscw.org/wp/bioassessment/.

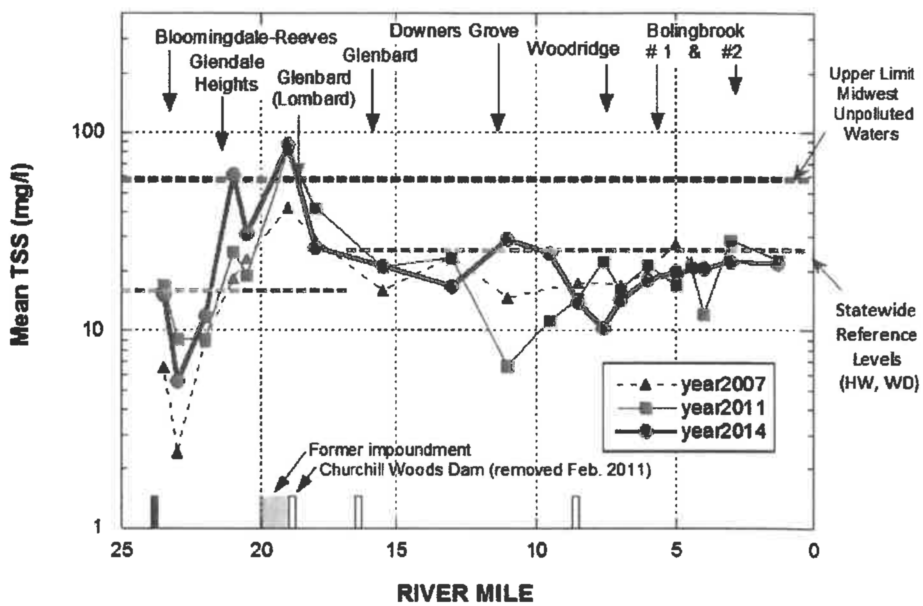
East Branch DuPage River
East Branch mainstem flows are effluent dominated during the late summer-early fall months. As such, chemical water quality is highly influenced by the concentration and composition of chemical constituents in WWTP effluents (Figures 10-13). The results in 2014 were consistent with 2011 during low flow periods with respect to observing no exceedances of Illinois water quality criteria for regulated parameters (i.e. TSS, NH_3-N).

West Branch DuPage River
Stream flow in the West Branch DuPage River is effluent dominated during summer months. As such, its water quality is highly influenced by the concentrations and composition of chemical constituents in the effluent as well as runoff from the urban and developed land cover in the watershed. Water quality sampling in 2012 during the summer low-flow periods suggest that the quality of treated effluent, with respect to regulated parameters (i.e., cBOD5, TSS, NH3), was generally good. Effluents did not result directly in exceedances of water quality standards for these parameters. However, increasingly elevated nutrient levels and their attendant influence on mainstem D.O. regimes remain problematic.

Salt Creek
Salt Creek drains a highly urbanized landscape with a high population density. The increase in Pollutants associated with urbanized landscapes have been documented. Given the high population density in the watershed, treated municipal effluent comprises a significant fraction of the total flow in Salt Creek and strongly influences water quality, especially with respect to nitrogen and phosphorus. The results in 2013 were consistent with 2010.

Water chemistry data from the 2016 Salt Creek bioassessment was not available at the time of the 2016-2017 MS4 Annual Report and will be included in the 2017-2018 MS4 Annual Report due on June 1, 2018.

Figure 10. Concentrations of total suspended solids (top panel) and TKN (lower panel) from E. Branch DuPage River samples in 2007, 2011 and 2014 in relation to municipal WWTP discharges. Bars along the x-axis depict mainstem dams or weirs (black bars are dams that impede fish passage). Red dashed lines shows the upper limits of concentrations typical for relatively unpolluted waters for TSS (McNeeley et al. 1979). Orange dashed line in TSS plot is the Ohio reference threshold for headwater (HW) and wadeable (WD) streams. For TKN, the orange dashed line represents the IPS threshold (1.0 mg/l). IPS is a tool developed by the DRSCW and MBI.



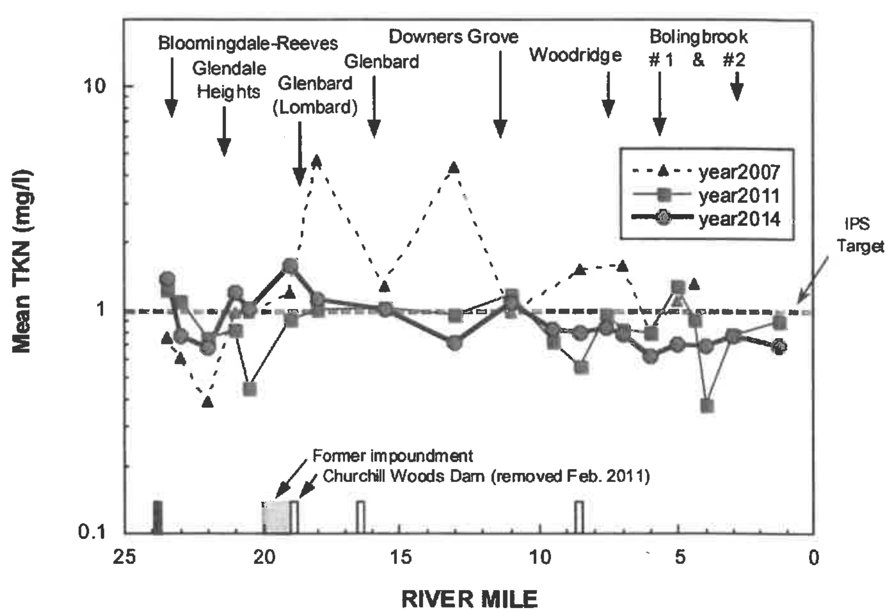
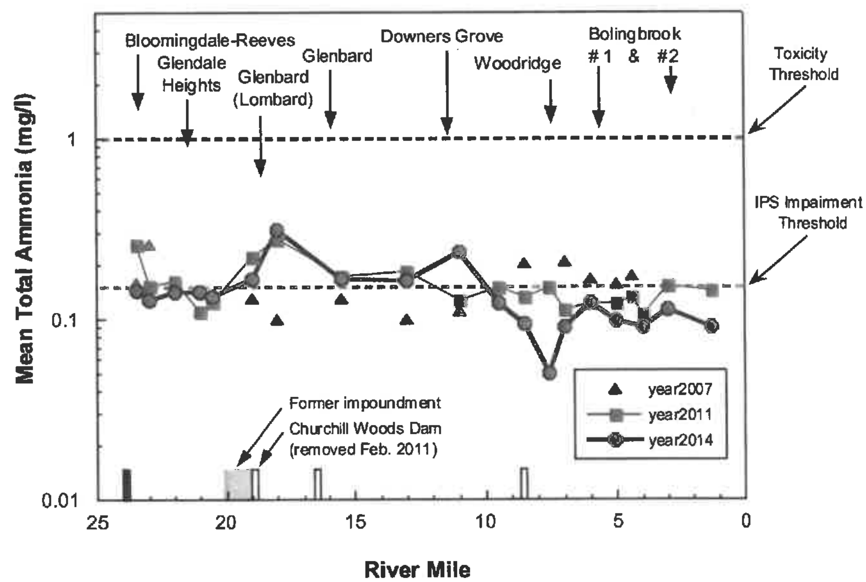


Figure 11. Concentrations of ammonia-N (top panel) and nitrate+nitrite-N (lower panel) from E. Branch DuPage River samples in 2007, 2011 and 2014 in relation to municipal WWTP discharges. Bars along the x-axis depict mainstem dams or weirs (only black bars for dams that impede fish passage). For ammonia-N, the red dashed line (1.0 mg/l) represents a threshold concentration beyond which acute toxicity is likely; the orange dashed line (0.15 mg/l) is correlated with impaired biota in the IPS study. For nitrate+nitrite-N, orange dashed lines represent target concentrations for ecoregion 54 (1.8 mg/l) and the Illinois EPA non-standard based criteria (7.8 mg/l). The red dashed line is the Illinois water quality criterion for public water supplies (10 mg/l).



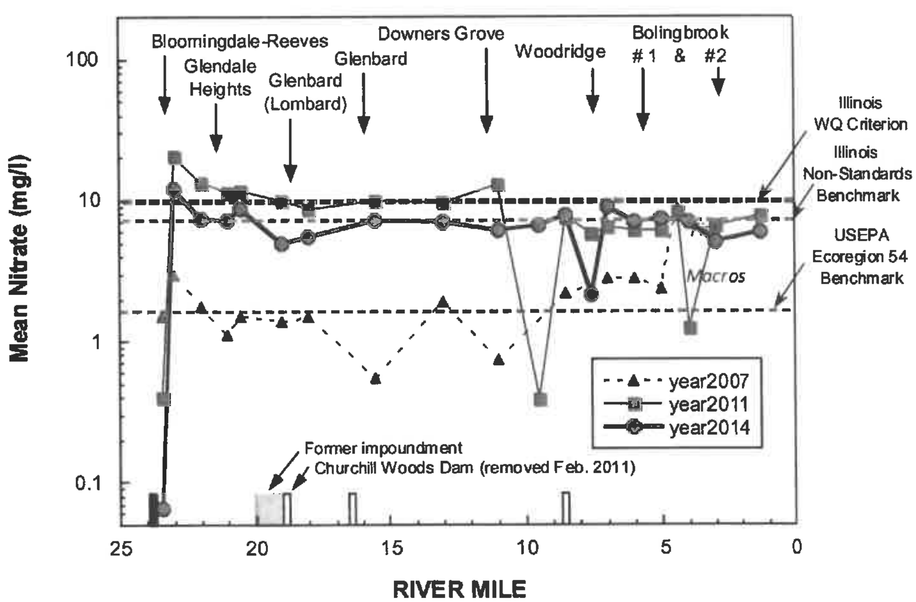


Figure 12. Concentrations total phosphorus from E. Branch DuPage River samples in 2007, 2011 and 2014 in relation to municipal WWTP discharges. Bars along the x-axis depict mainstem dams or weirs (black bars are dams that impede fish passage). For phosphorus, orange dashed lines represent target concentrations for ecoregion 54 (0.07 mg/l) and the Illinois EPA non-standard based criterion (0.61 mg/l). The 1.0 mg/l dashed red line is the suggested effluent limit.

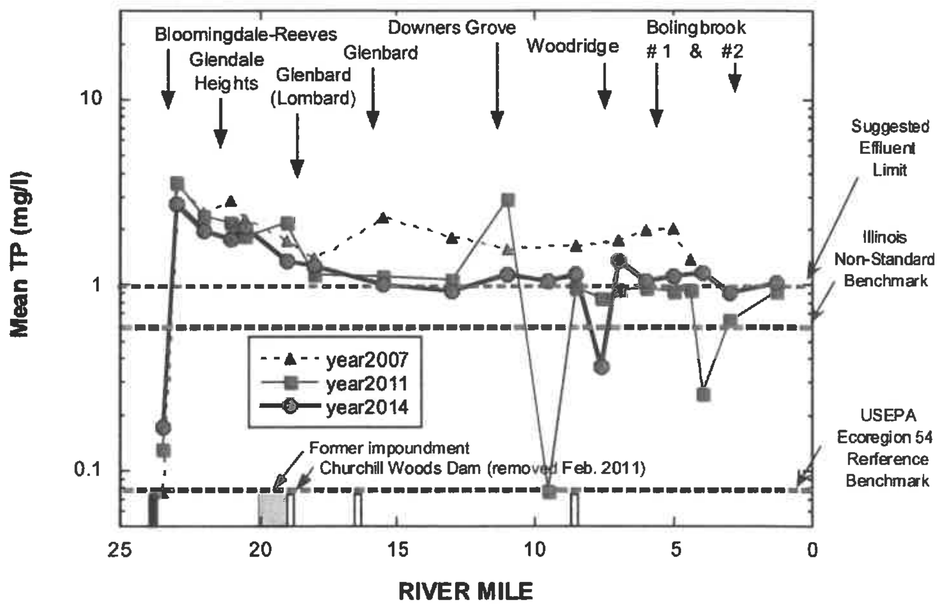


Figure 13. Chloride concentrations from the East Branch DuPage River in the summer of 2007, 2011 and 2014.

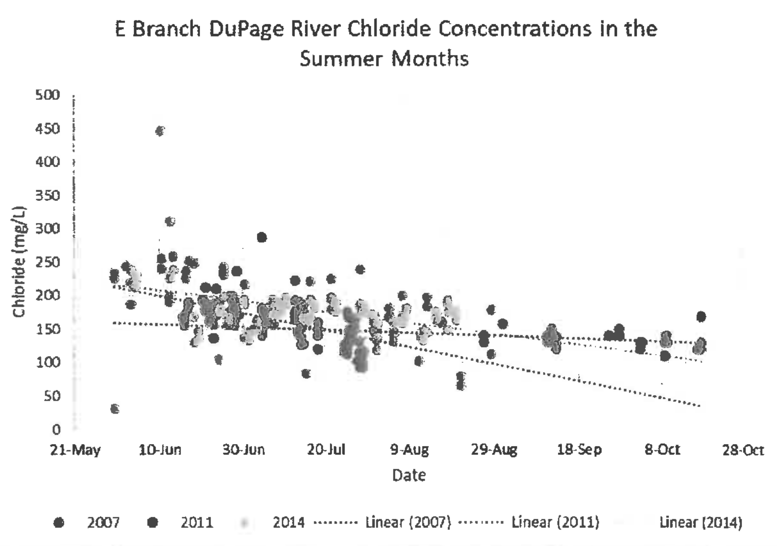
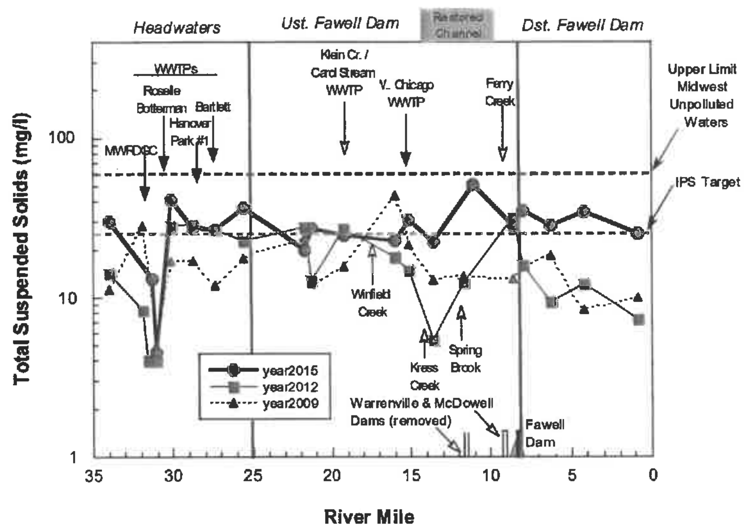


Figure 14. Concentrations of total suspended solids (top panel) and TKN (lower panel) from W. Branch DuPage River samples in 2008, 2012 and 2015 in relation to municipal WWTP discharges. Bars along the x-axis depict mainstem dams or weirs (black bars are dams that impede fish passage). Red dashed lines shows the upper limits of concentrations typical for relatively unpolluted waters for TSS (McNeeley et al. 1979). Orange dashed line in TSS plot is the Ohio reference threshold for headwater (HW) and wadeable (WD) streams. For TKN, the orange dashed line represents the IPS threshold (1.0 mg/l). IPS is a tool developed by the DRSCW and MBI.



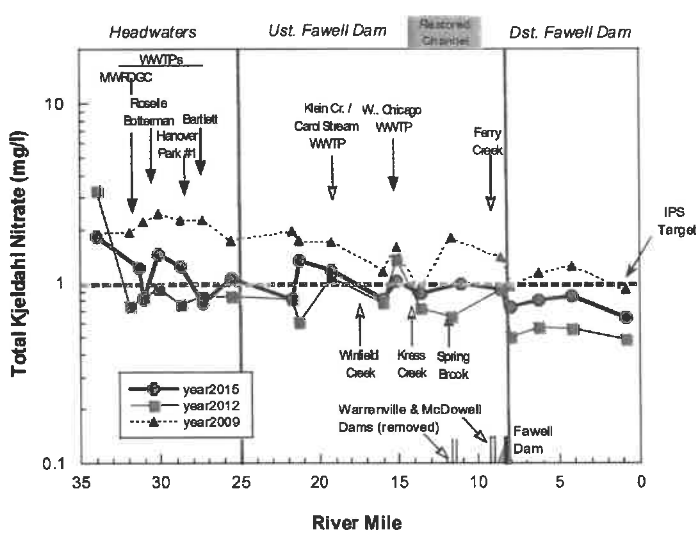
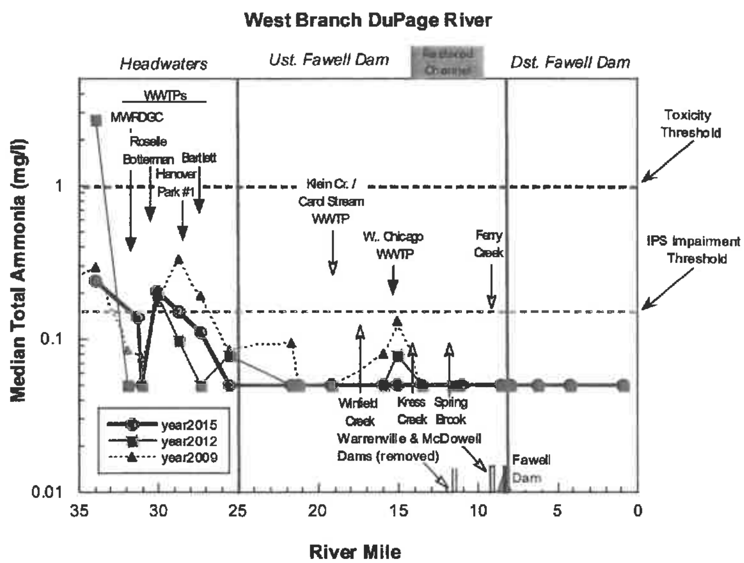


Figure 15. Concentrations of ammonia-N (top panel) and total nitrate (lower panel) from W. Branch DuPage River samples in 2008, 2012 and 2015 in relation to municipal WWTP discharges. Bars along the x-axis depict mainstem dams or weirs (only black bars for dams that impede fish passage). For ammonia-N, the red dashed line (1.0 mg/l) represents a threshold concentration beyond which acute toxicity is likely; the orange dashed line (0.15 mg/l) is correlated with impaired biota in the IPS study. For total nitrate, red line represents the Illinois Water Quality Criterion, orange dashed line represents the Illinois Non-Standards Benchmark, and purple line represents the US Ecoregion 54 Benchmark.



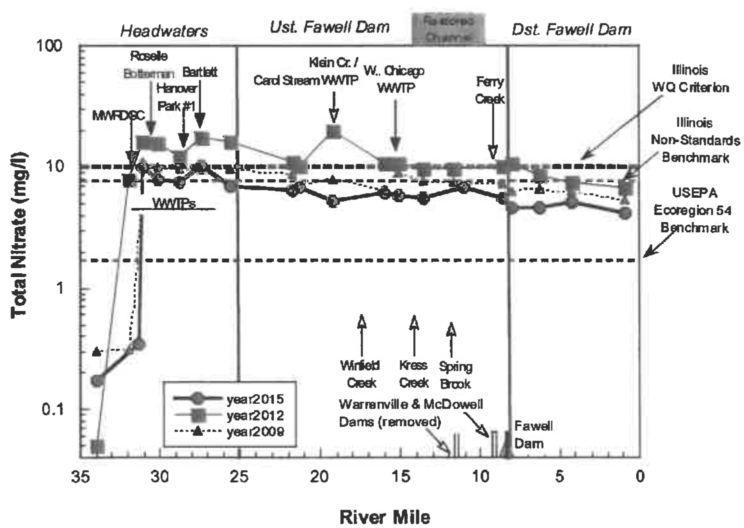
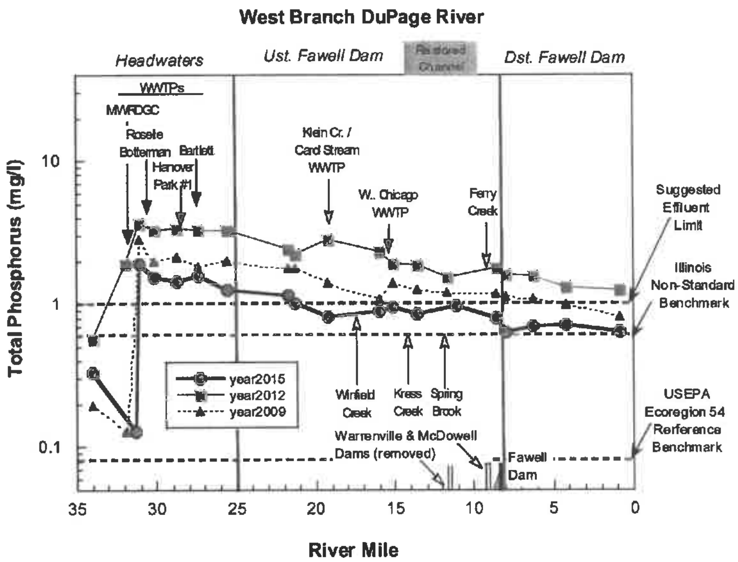


Figure 16. Concentrations total phosphorus (top panel) and chloride (lower panel) from W. Branch DuPage River samples in 2008, 2012 and 2015 in relation to municipal WWTP discharges. Bars along the x-axis depict mainstem dams or weirs (black bars are dams that impede fish passage). For phosphorus, orange dashed lines represent target concentrations for ecoregion 54 (0.07 mg/l) and the Illinois EPA non-standard based criterion (0.61 mg/l). The 1.0 mg/l dashed red line is the suggested effluent limit. For chloride, red dashed line represents the Illinois Water Quality Criterion (500 mg/L) and orange dashed lines represent the IPS threshold for fish and macroinvertebrates. IPS is a tool developed by the DRSCW and MBI.



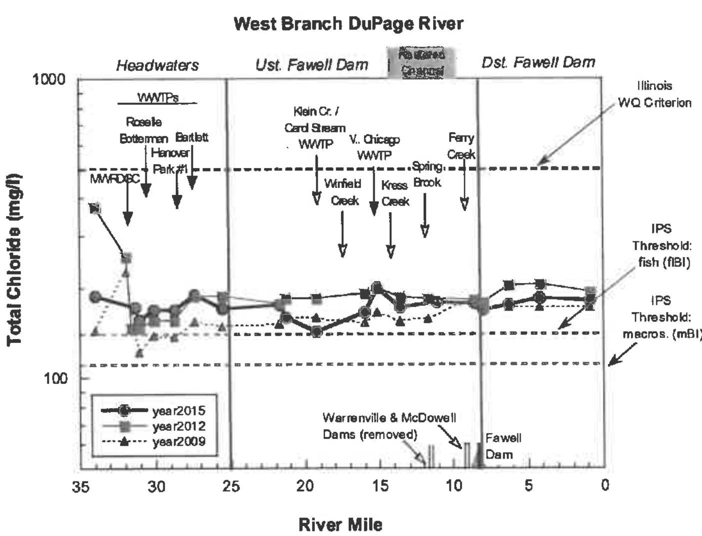
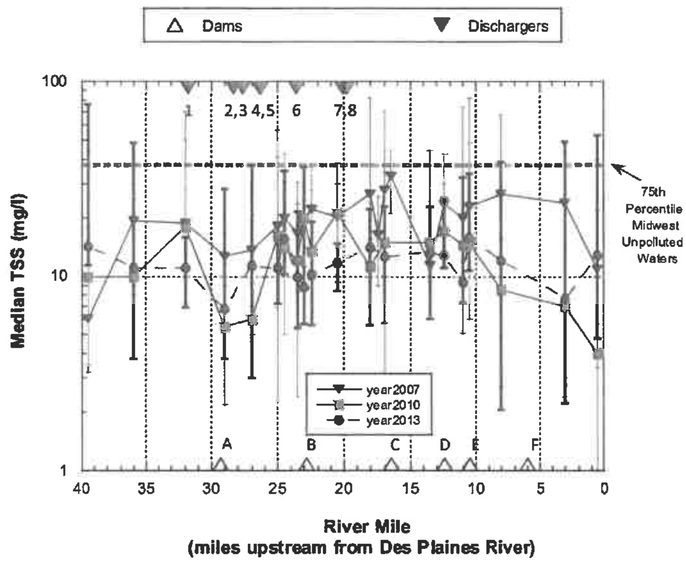


Figure 17. Concentrations of total suspended solids (top panel) and TKN (lower panel) from Salt Creek samples in 2007, 2010 and 2013 in relation to municipal WWTP discharges. Yellow triangles along the x-axis depict mainstem dams or weirs. Orange dashed lines shows the upper limits of concentrations typical for relatively unpolluted waters for TSS (McNeeley et al. 1979). Blue dashed line in TSS plot is the Ohio reference threshold for headwater (HW) and wadeable (WD) streams. For TKN, orange dashed line represents the IPS threshold (1.0 mg/l). IPS is a tool developed by the DRSCW and MBI.



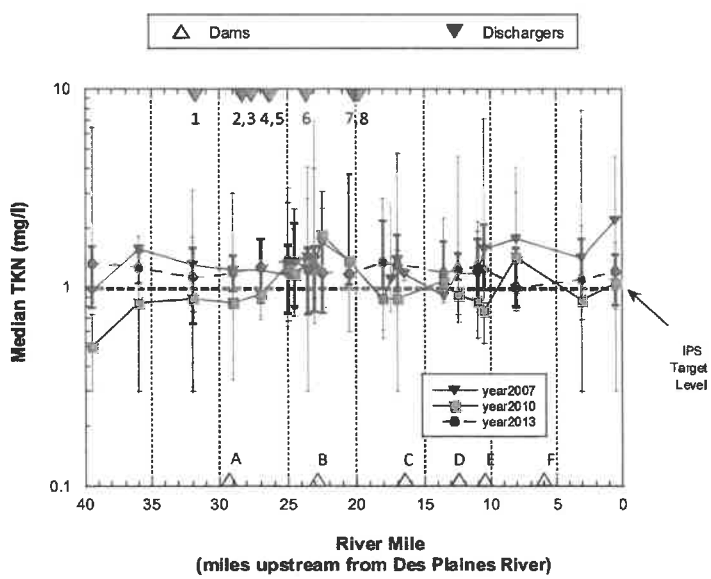
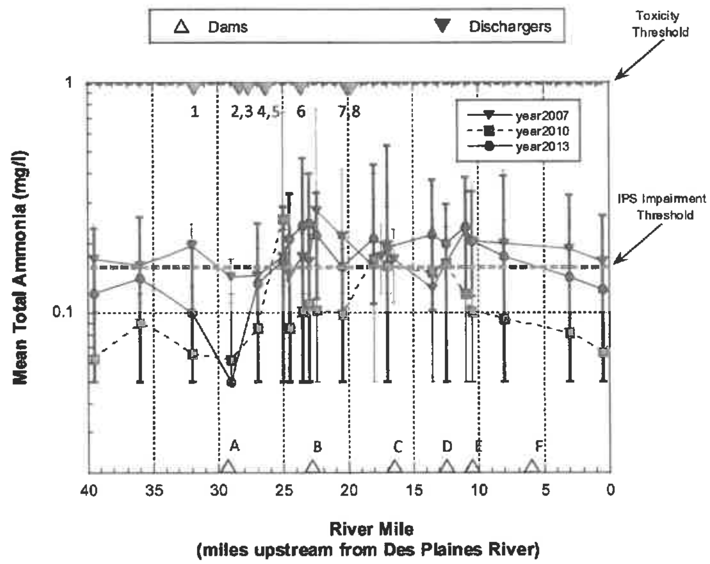


Figure 18. Concentrations of ammonia-N (top panel) and total nitrate (lower panel) from Salt Creek samples in 2007, 2010 and 2013 in relation to municipal WWTP discharges. Yellow triangles along the x-axis depict mainstem dams or weirs. For ammonia-N, the blue dashed line (1.0 mg/l) represents a threshold concentration beyond which acute toxicity is likely; the orange dashed line (0.15 mg/l) is correlated with impaired biota in the IPS study. For total nitrate, red line represents the Illinois Water Quality Criterion, orange dashed line represents the Illinois Non-Standards Benchmark, and purple line represents the US Ecoregion 54 Benchmark.



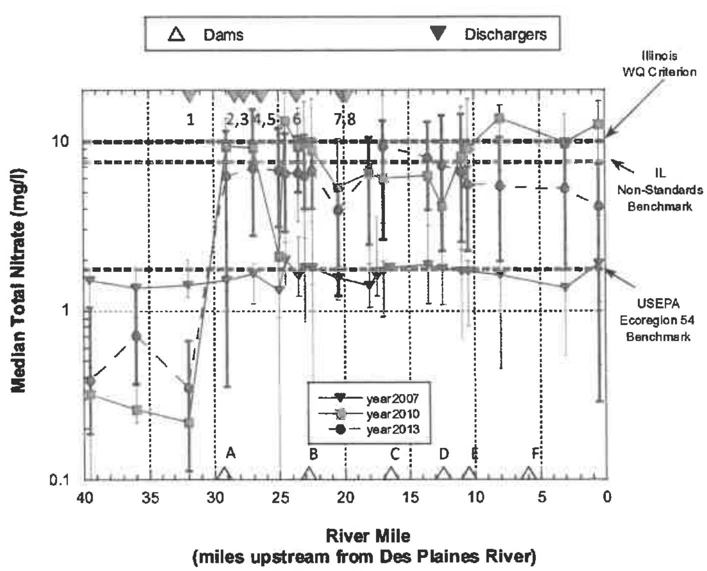
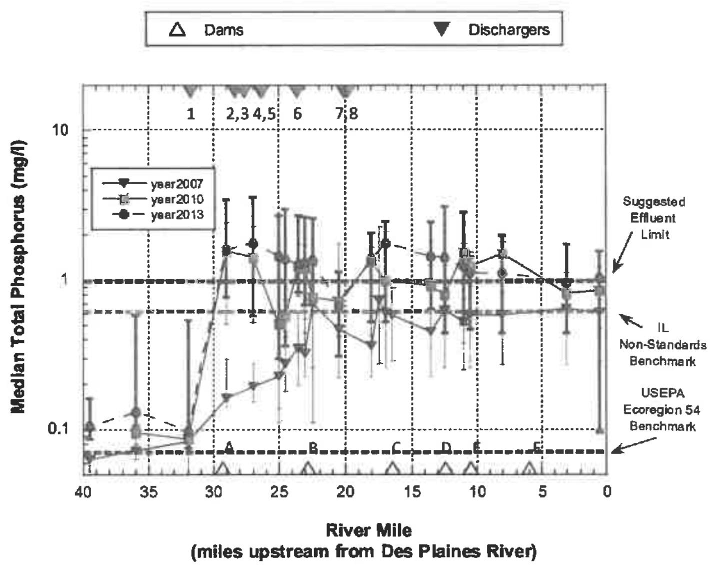
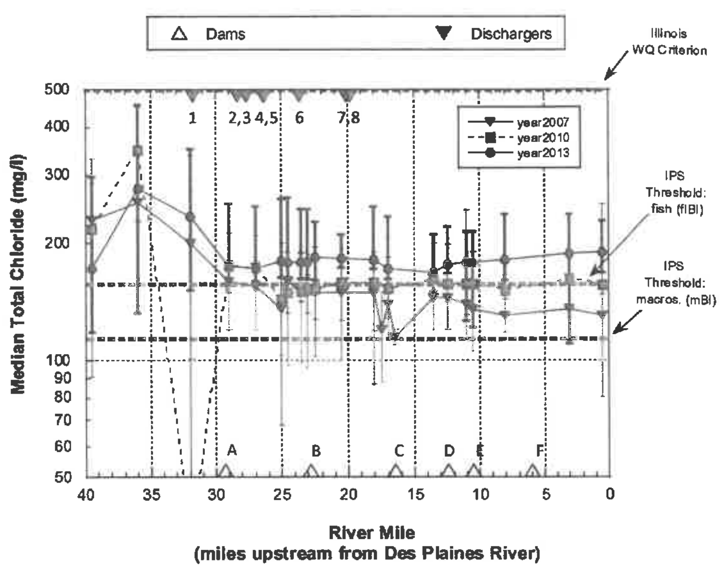


Figure 19. Concentrations total phosphorus (top panel) and chloride (lower panel) from Salt Creek samples in 2007, 2010, and 2013 in relation to municipal WWTP discharges. Yellow triangles along the x-axis depict mainstem dams or weirs. For phosphorus, purple dashed lines represent target concentrations for ecoregion 54 (0.07 mg/l) and orange dashed line represents the Illinois EPA non-standard based criterion (0.61 mg/l). The 1.0 mg/l dashed red line is the suggested effluent limit. For chloride, red dashed line represents the Illinois Water Quality Criterion (500 mg/L) and orange dashed lines represent the IPS threshold for fish and macroinvertebrates. IPS is a tool developed by the DRSCW and MBI.





Sediment Chemistry Results
Detailed analysis and results for sediment chemistry is located at http://drscw.org/wp/bioassessment/.

Dissolved Oxygen (DO) Monitoring

Background and Methodology

The Illinois Environmental Protection Agency (IEPA) report, Illinois 2004 Section 303(d) List, listed dissolved oxygen (DO) as a potential impairment in Salt Creek, and the East and West Branches of the DuPage River. The report suggested that the DO levels in selected reaches of these waterways might periodically fall to levels below those required by healthy aquatic communities.

All rivers and creeks in DuPage County are classified as General Use Waters. The present water quality standards for dissolved oxygen in General Use Waters is:

1. During the period of March through July
    a. 5.0 mg/L at any time; and
    b. 6.0 mg/L as a daily mean averaged over 7 days.

2. During the period of August through February,
    a. 3.5 mg/L at any time;
    b. 4.0 mg/L as a daily minimum averaged over 7 days; and
    c. 5.5 mg/L as a daily mean averaged over 30 days.

Following listing on the 303 (d) list three TMDLs were prepared by the IEPA for Salt Creek and the East Branch of the DuPage River. In response to the TMDLs, the DRSCW committed to develop and manage a continuous long-term DO monitoring plan for the project area in order to assess the nature and extent of the DO impairment and to allow the design of remedial projects. The continuous DO data is also used to assess the impact of DO improvement projects such as the Churchill Woods and Oak Meadow dam removals.

Typically, the continuous DO monitoring project includes two to three (2-3) sites on the West Branch DuPage River, four to five (4-5) sites of the East Branch DuPage River, and three to four (3-4) sites on Salt Creek. The program began in 2006 and data has been collected each year since. Each site is equipped with a HydroLab DS 5X which collects data on DO, pH, conductivity and water temperature. Stations have a sample interval of one hour and collect data from June through to October (the seasonal period recognized as containing the lowest annual levels of stream DO). The continuous DO monitoring program functions under a quality assurance plan agreed on with the Illinois Environmental Protection Agency (http://drscw.org/wp/dissolved-oxygen/). Details on the site location are included in Table 1 and site locations are included on Map 5.

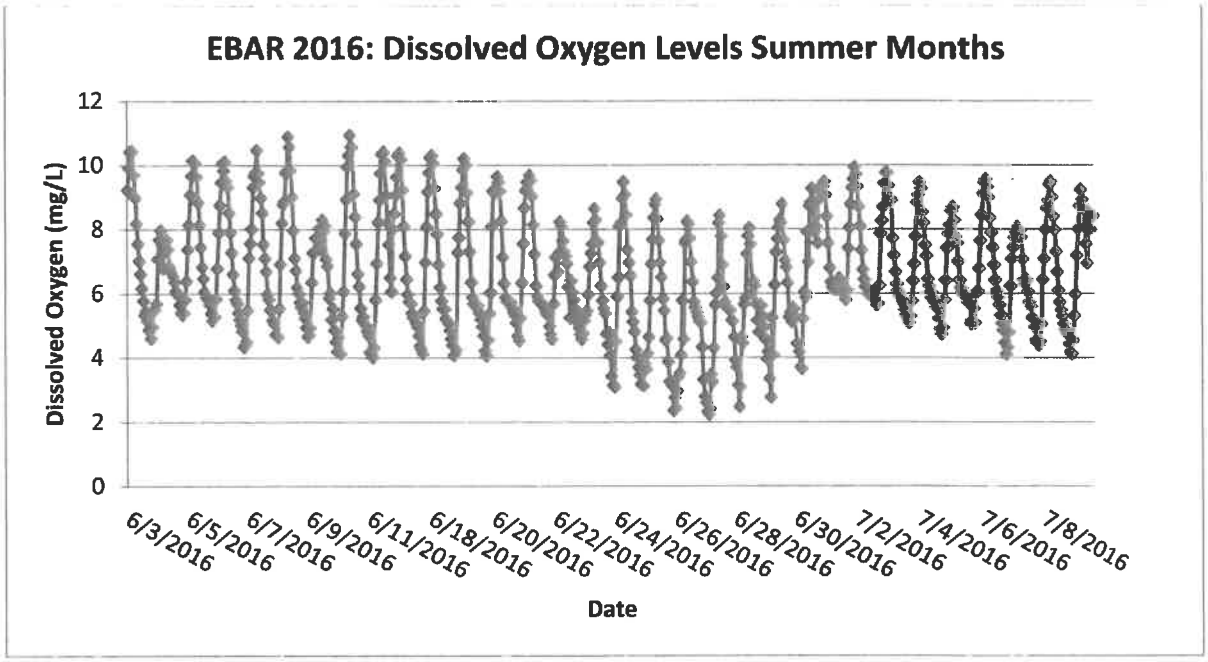
Table 5. Continuous DO monitoring locations in the DRSCW watersheds

Site ID	Stream Name	River Mile	Latitude	Longitude	Location
WBAD	W. Br. DuPage R.	29.9	41.9750	-88.1386	Arlington Drive
WBBR	W. Br. DuPage R.	11.7	41.825268	-88.179456	Butterfield Road
WBWD	W. Br. DuPage R.	11.1	41.82027	-88.17212	Downstream of Warrenville Grove Dam
EBAR	E. Br. DuPage R.	23.0	41.935171	-88.05843	Army Trail Road
EBCB	E. Br. DuPage R.	18.8	41.88510	-88.04110	Former Churchill Woods pool (Crescent Blvd)
EBHL	E. Br. DuPage R.	14.0	41.82570	-88.05316	Hidden Lake Preserve
EBHR	E. Br. DuPage R.	8.5	41.76800	-88.07160	Upstream Hobson Rd
EBWL	E. Br. DuPage R.	4.0	41.71230	-88.09160	Downstream of 2nd mine discharge
SCOM			41.941279	-87.983363	Oak Meadows Golf Course upstream of former Dam
SCBR	Salt Creek	16.1	41.864686	-87.95073	Butterfield Road
SCFW	Salt Creek	11.1	41.825493	-87.93158	Fullersburg Woods upstream of Dam
SCYR	Salt Creek	10.6	41.820552	-87.92658	York Road

Results

Results of the continuous DO monitoring conducted in the summer of 2016 is included in Figures 20-24.

Figure 20. Dissolved Oxygen plots for East Branch DuPage River sites EBAR (top panel) and EBCB (lower panel).



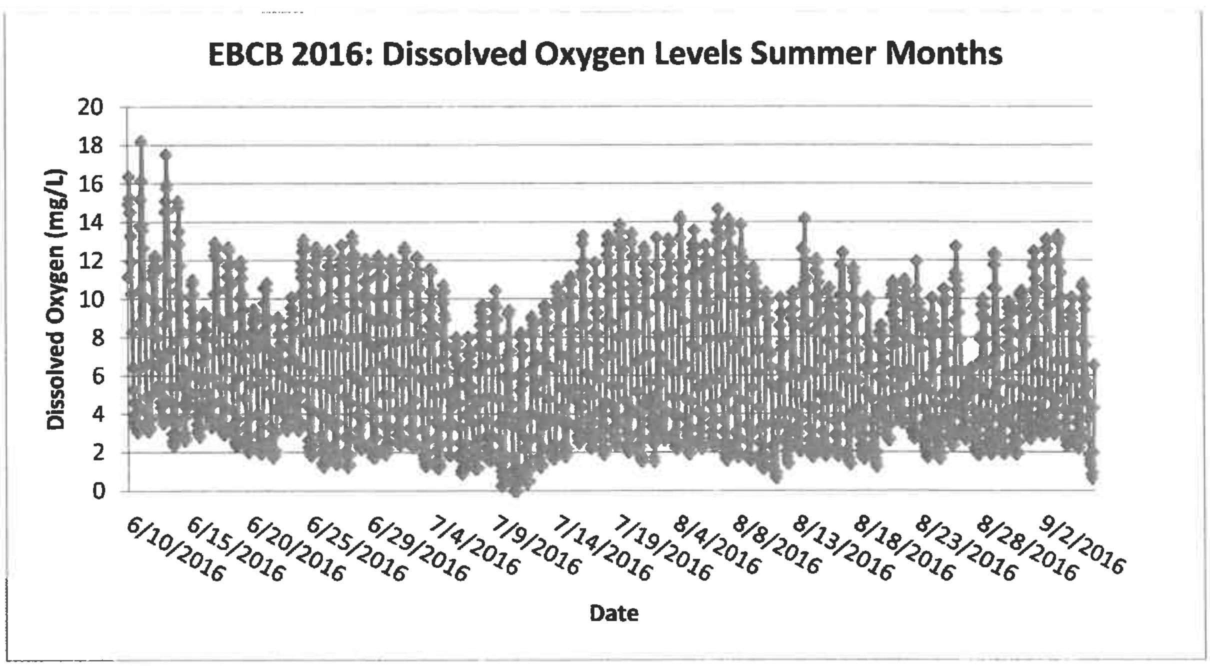
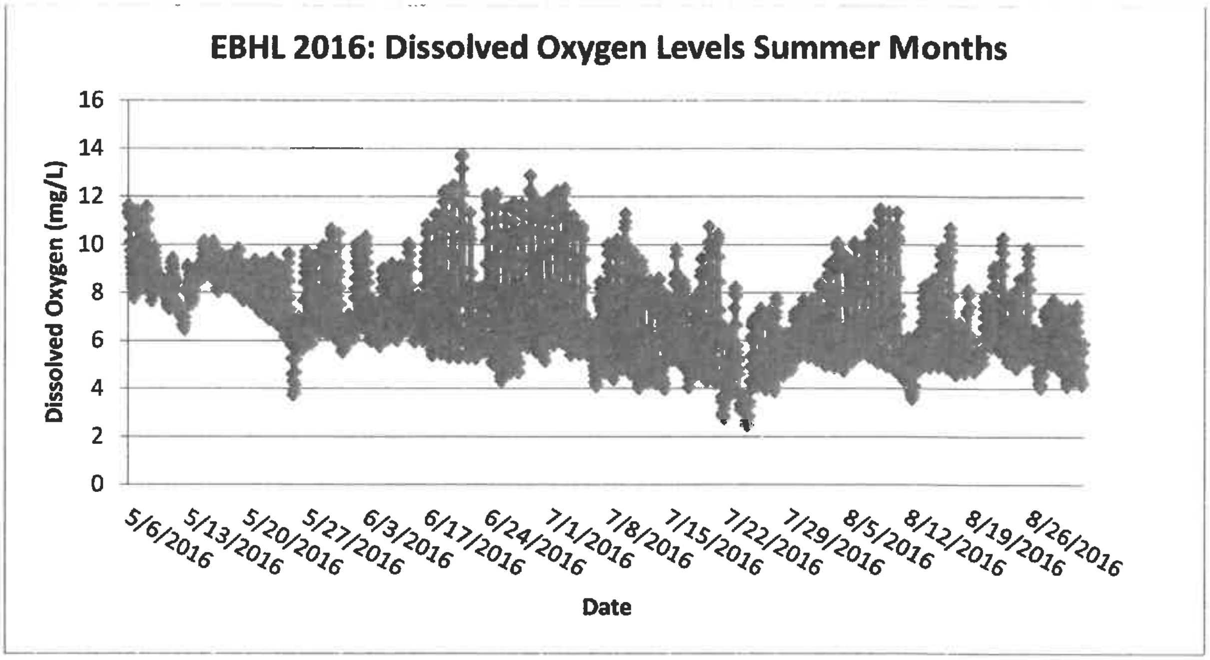


***Figure 21*.** Dissolved Oxygen plots for East Branch DuPage River sites EBHL (top panel) and EBHR (lower panel).



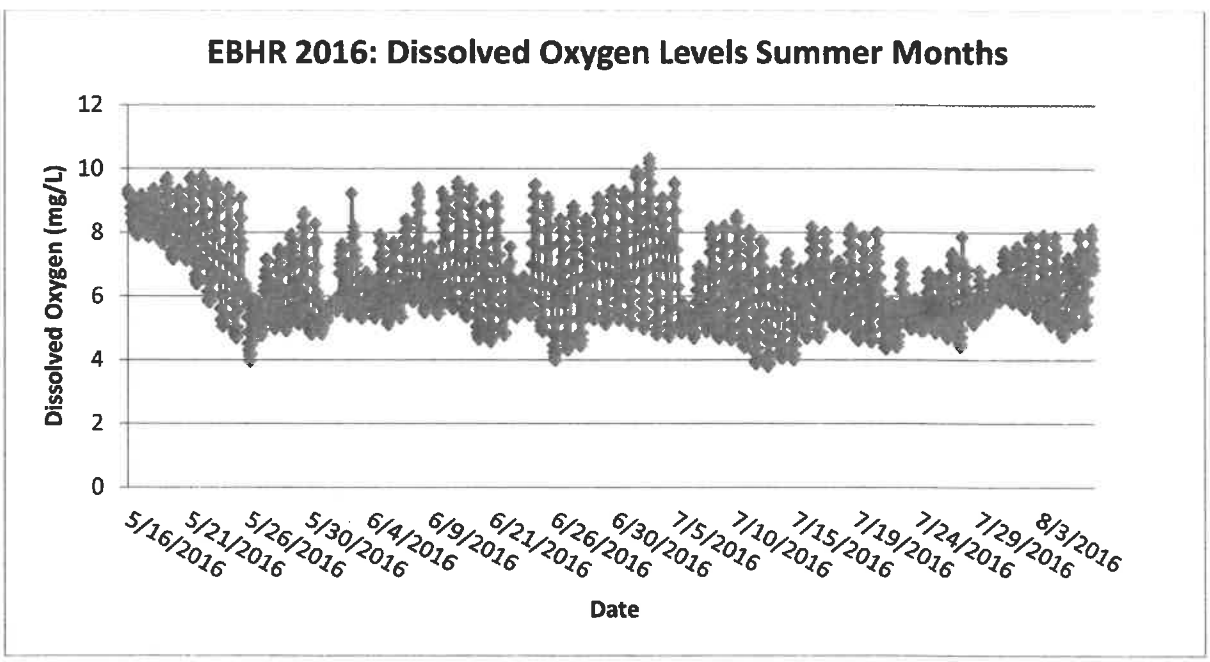
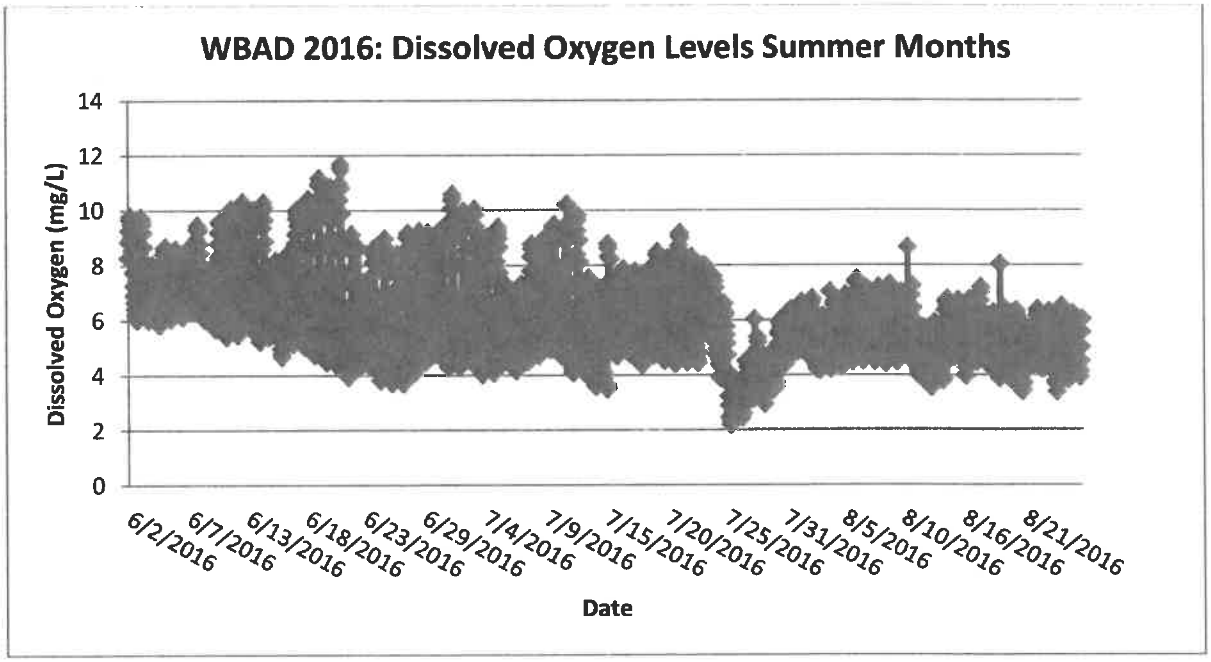


Figure 22. Dissolved Oxygen plots for West Branch DuPage River sites WBAD (top panel) and WBBR (lower panel).



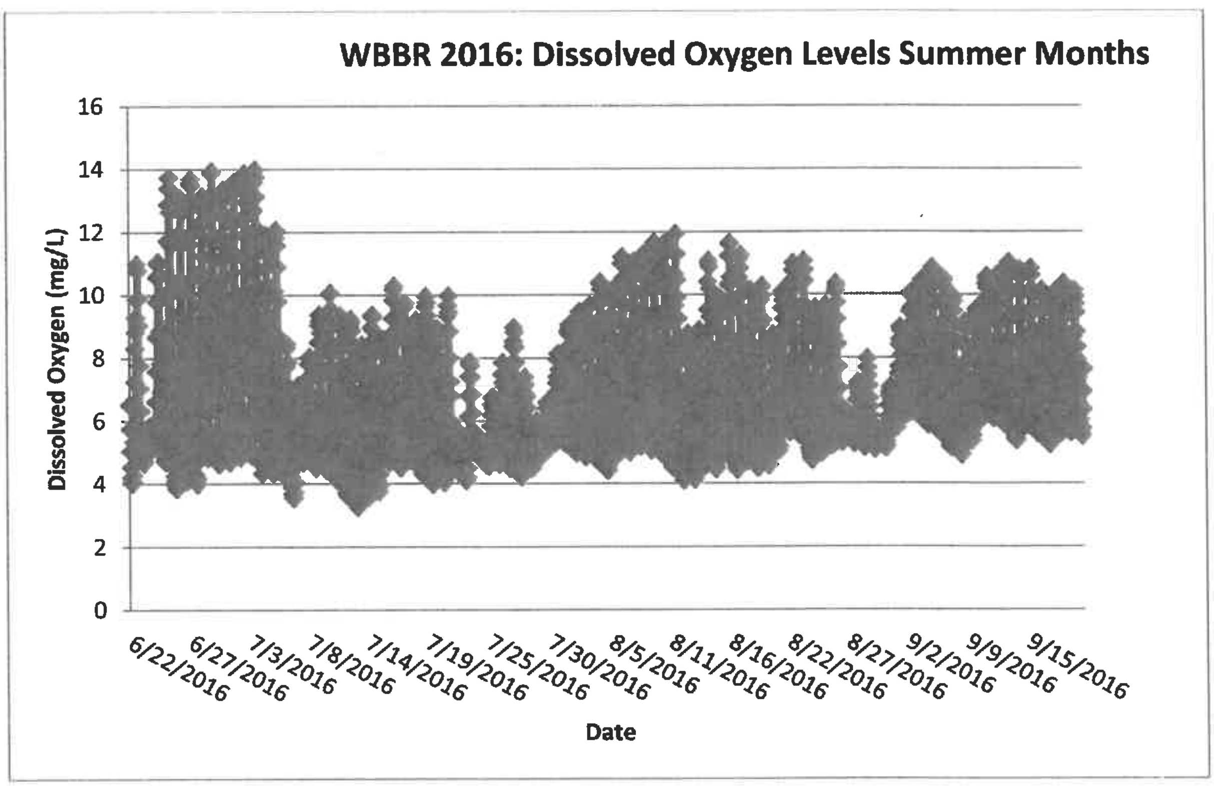
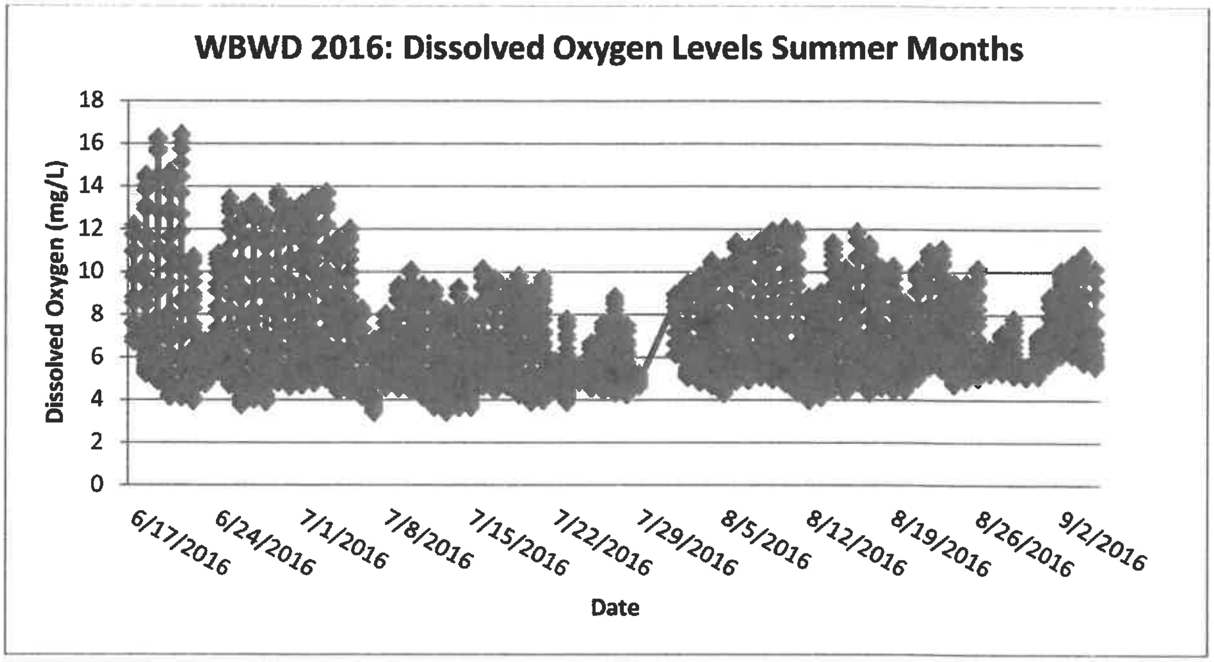


Figure 23. Dissolved Oxygen plots for West Branch DuPage River sites WBWD (top panel) and WBMG (lower panel).



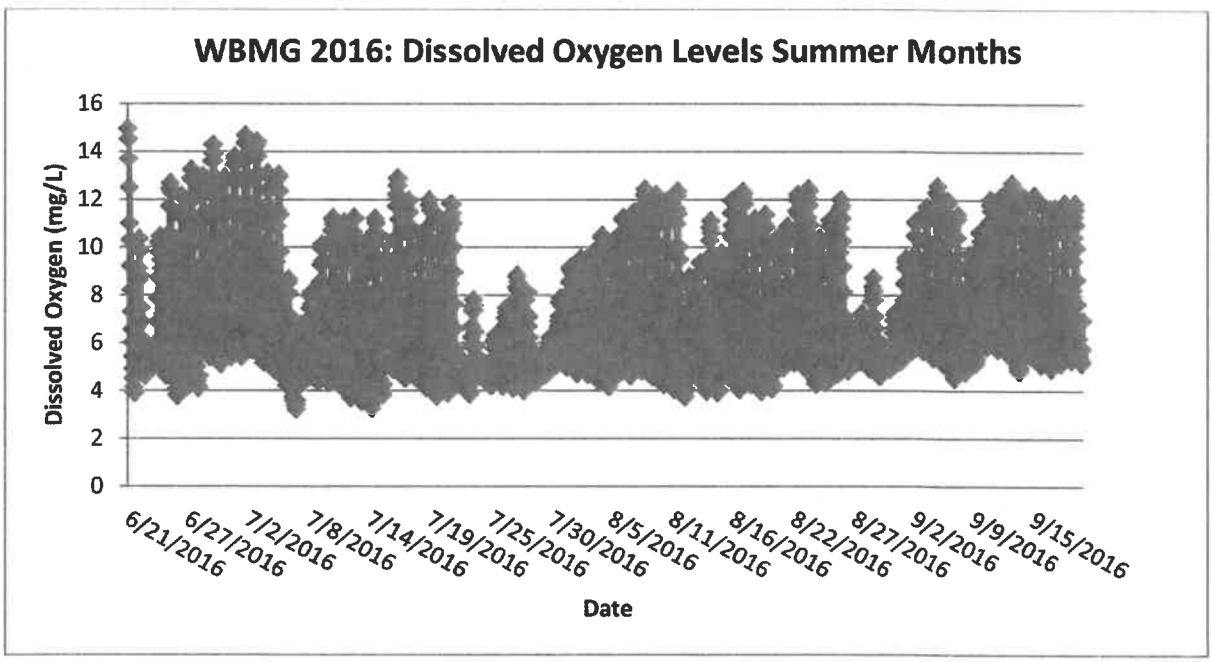
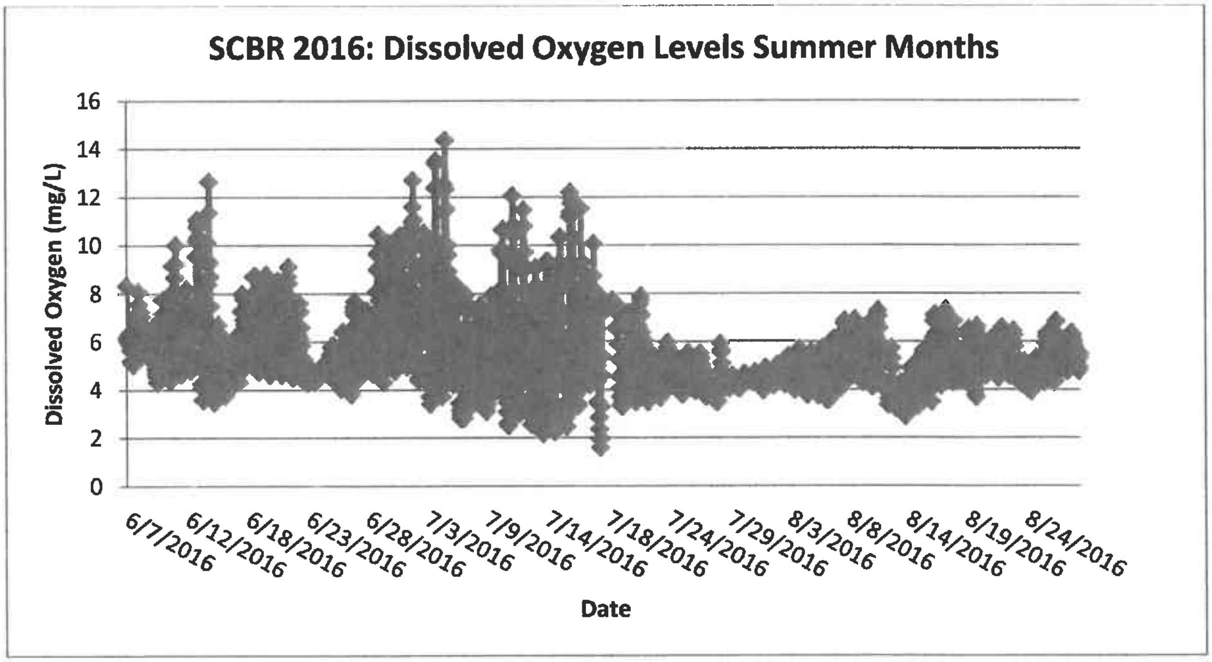
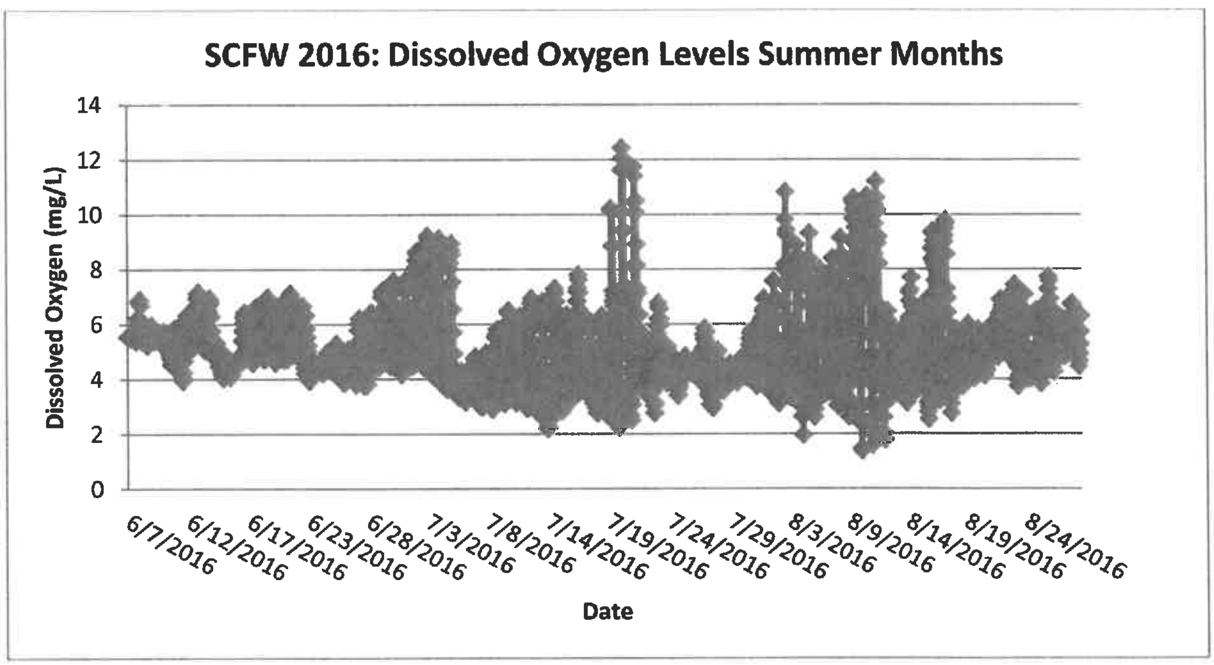


Figure 24. Dissolved Oxygen plots for Salt Creek sites SCBR (top panel) and SCFW (lower panel).





B. Recordkeeping

All monitoring data including by not limited to laboratory results, chain of custodies (COCs), and quality assurance protection plans (QAPP) will be maintained by the DRSCW for a minimum of 5 years after the expiration of the ILR40 (effective on 03/01/2016). The records are maintained at the DRSCW office located at The Conservation Foundation, 10S404 Knock Knolls Road, Naperville, Illinois 60656 and are accessible to the IEPA for review.

C. Reporting

The DRSCW is not responsible for preparing and submitting an Annual Report to the IEPA by the first day of June for each year that the permit is in effect. It is the responsibility of the individual ILR40 permit holders to utilize the information provided in this report to fulfill the reporting requirements outlined in the permit.

ATTACHMENT 6

MARCH 2016 – MARCH 2017

ANNUAL FACILITY INSPECTION REPORT

VILLAGE OF BARTLETT/NPDES PERMIT ILR40-0286

Additional Annual Facility Inspection Report Details

MARCH 2016 – MARCH 2017

ANNUAL FACILITY INSPECTION REPORT

VILLAGE OF BARTLETT/NPDES PERMIT ILR40-0286

SECTION A: Changes to BMP

No changes were made during this reporting year to the Best Management Practices (BMP's) as set forth in the Village's Notice of Intent (NOI) regarding General NPDES Permit ILR40.

MARCH 2016 – MARCH 2017

ANNUAL FACILITY INSPECTION REPORT

VILLAGE OF BARTLETT/NPDES PERMIT ILR40-0286

SECTION B: Status of Compliance

A. Public Education and Outreach

✓ A.1 Distributed Paper Material
A.2 Speaking Engagement
✓ A.3 Public Service Announcement
A.4 Community Event
A.5 Classroom Education Material
✓ A.6 Other Public Education

- The Village continues to distribute The Bartletter six times per year, or every other month starting with even months. It contains information regarding material and resource recycling, seasonal safety information, prescription drug drop-off information, storm and flood safety information, swale/pond maintenance information, illegal dumping information, parkway tree program information and Village or Park District event information.

- The Village continues to coordinate with Boy/Girl Scouts or other volunteer groups that request a stenciling activity for Storm Inlets – Do Not Dump, Drains to Stream/Pond.

- The Village website (http://www.village.bartlett.il.us/) offers information on Best Management Practices and other Stormwater Resources, as well as links to EPA and DuPage County sites. There are also links to DuPage, Cook and Kane County sites with information regarding Rain Barrels.

B. Public Participation/Involvement

✓ B.1 Public Panel
B.2 Educational Volunteer
✓ B.3 Stakeholder Meeting
B.4 Public Hearing
B.5 Volunteer Monitoring
✓ B.6 Program Coordination
B.7 Other Public Involvement

- The Village is a member of the DuPage River Salt Creek Workgroup (DRSCW) and regularly attends and supports the group with membership dues and meeting participation.

- The Village is also a member of the recently formed Chloride Group, or the Chloride Toxicity Assessment Consortium, which will operate in much the same manner as the DRSCW.

- The Village participated in an MWRD survey entitled *BMP's for Snow and Ice Removal* in January of 2017.

- The Village served on a volunteer committee with DuPage County and other municipal representatives to develop a regional/countywide NPDES framework for stormwater compliance in 2016.

- Village staff continues efforts to protect water quality through the DuPage County Stormwater Ordinance, with regard to all development. The Village maintains an Illicit Discharge and Detection Elimination (IDDE) IGA with DuPage County and enforces Floodplain and Soil/Erosion Control per the Stormwater Ordinance as a Partial Waiver community.

- County-wide items and activities can be found in the DuPage County Report.

MARCH 2016 – MARCH 2017

ANNUAL FACILITY INSPECTION REPORT

VILLAGE OF BARTLETT/NPDES PERMIT ILR40-0286

C. Illicit Discharge Detection and Elimination

✓ C.1 Storm Sewer Map Preparation
✓ C.2 Regulatory Control Program
✓ C.3 Detection/Elimination Prioritization Plan
✓ C.4 Illicit Discharge Tracing Procedure
✓ C.5 Illicit Source Removal Procedures
✓ C.6 Program Evaluation and Assessment
✓ C.7 Visual Dry Weather Screening
C.8 Pollutant Field Testing
C.9 Public Notification
C.10 Other Illicit Discharge Controls

- The Village continues to update the Storm Sewer Atlas and provides updates as required for IDDE, as well as to the DRSCW and the Chloride Group.

- The Village continues to work with MWRD, in the Cook County portion of Bartlett, as MWRD develops and refines their Watershed Ordinance.

- As part of an MWRD I/I program, the Village is surveying storm and sanitary structures in a high priority area in Bartlett. Data compilation began in 2017 and will continue in 2017.

- The Village has maintained an IDDE IGA with DuPage County since 2010 as a full participant. The ordinance includes discharge regulations, compliance monitoring and violations/enforcement/penalty articles.

- The Village continues to be diligent as to investigations into complaints regarding stormwater, most notably in commercial areas. Devices such as the SNOUT are regularly required to promote clean site discharge to basins or creeks. Village staff monitors all detention basins, outfalls and BMP's regularly for any indication of discharge irregularity. No illicit discharges were found during the reporting period.

- County-wide items and activities can be found in the DuPage County Report.

MARCH 2016 – MARCH 2017

ANNUAL FACILITY INSPECTION REPORT

VILLAGE OF BARTLETT/NPDES PERMIT ILR40-0286

D. Construction Site Runoff Control

✓ D.1 Regulatory Control Program
✓ D.2 Erosion and Sediment Control BMP's
D.3 Other Waste Control Program
✓ D.4 Site Plan Review Procedures
✓ D.5 Public Information Handling Procedures
✓ D.6 Site Inspection/Enforcement Procedures
D.7 Other Construction Site Runoff Controls

- The Village enforces the DuPage County Stormwater Ordinance with regard to soil and erosion control in all developments, public and private.

- The Village performed more than 300 S/E Control Site Inspections during the 2016 reporting period. These inspections are routinely carried out by the Village Engineer, engineering technicians and Building Department inspectors.

- The Village is currently in the planning stages for a PW BMP project that will be required after the completion of a large potable water pump station project and several site improvements. The BMP project will likely be completed in 2019.

- As a partial waiver community, all site plan review is currently done by Village staff and supplemented by private wetland/stormwater consultants. All development projects are reviewed by the Village, including those sites under 1 (one) acre in size.

- All complaints/issues regarding development and construction activities go to the Building Department, the PW Director or the Village Engineer. The complaints are investigated and resolved in a timely fashion.

- County-wide items and activities can be found in the DuPage County Report.

MARCH 2016 – MARCH 2017

ANNUAL FACILITY INSPECTION REPORT

VILLAGE OF BARTLETT/NPDES PERMIT ILR40-0286

E. Post-Construction Runoff Control

  E.1 Community Control Strategy
- ✓ E.2 Regulatory Control Program
- ✓ E.3 Long Term O&M Procedures
- ✓ E.4 Pre-Construction Review of BMP Designs
- ✓ E.5 Site Inspections During Construction
- ✓ E.6 Post-Construction Inspections

  E.7 Other Post-Construction Runoff Controls

- The Village enforces the DuPage County Stormwater Ordinance with regard to BMP development and maintenance. The recent ordinance requires Post-Construction BMP's for all developments that include more than 2,500 square feet of new or net impervious area. This is enforced on all private and public projects.

- The Village regularly inspects detention and wetland basins and other storm water facilities. All public or private complaints regarding stormwater detention are handled by Public Works staff or the Village Engineer.

- Site inspections of private or public BMP's are handled by the Village Engineer or a designated consultant. The DuPage County Water Quality Best Management Practices-Technical Guidance manual is referenced and utilized for BMP design.

- BMP's are placed within a Stormwater or Drainage easement and maintained as required by DuPage County. Both public and private developments are regulated in this manner. In private development, stormwater BMP's are treated as public improvements and inspected during and after construction

- County-wide items and activities can be found in the DuPage County Report.

MARCH 2016 – MARCH 2017
ANNUAL FACILITY INSPECTION REPORT
VILLAGE OF BARTLETT/NPDES PERMIT ILR40-0286

F. Pollution Prevention/Good Housekeeping

✓ F.1 Employee Training Program
✓ F.2 Inspection and Maintenance Program
✓ F.3 Municipal Operations Storm Water Control
✓ F.4 Municipal Operations Waste Disposal
F.5 Flood Management/Assess Guidelines
F.6 Other Municipal Operations Control

- The Village participates in numerous training opportunities with DuPage County Highway, DuPage County Stormwater, APWA and IRMA. The Village also runs in-house sessions for new employees and periodic or seasonal sessions (salt-use and chemical use) for regular employees.

- Added outdoor equipment wash area with inlet filter to catch debris and sediment in 2016.

- The Village did send a representative to the DuPage County training – Pollution Prevention for MS4 Communities – on April 5, 2017. A Maintenance Yard Checklist was presented at this training and will be added to the Village's training documents.

- Village facilities, including Public Works/Water/Wastewater are monitored on a regular basis by the PW Director, Village Engineer and PW staff. BMP's and PCBMP's are required for all public projects. Upon completion of an upcoming potable water project, a water BMP will be constructed at the PW facility to deal with an increase in impervious area.

- County-wide items and activities can be found in the DuPage County Report.

- <u>140 street miles</u>

2016	Snow Events	9	Salt Used	955 tons
	Ice Events	2	Average/Event	87 tons/Event
2016	Sweeping	4,235 miles – total, two sweepers		
	Storm Sewer	33	Inlets repaired/Cleaned plus 20 misc. cleanings	
	Roots Cut/Clear	2,000	LF	

MARCH 2016 – MARCH 2017

ANNUAL FACILITY INSPECTION REPORT

VILLAGE OF BARTLETT/NPDES PERMIT ILR40-0286

SECTION C: Information Collected/Analyzed/Monitoring

- For all data collection and monitoring during this reporting period, please see the DuPage County Annual Report.

SECTION D: Planned Storm Water Activities

- As part of a new Bartlett Police Facility, we have included several parking areas with a permeable pavement (pavers) system. This will serve as the PCBMP for the new facility, despite actually lowering the impervious area numbers.
- For all other activity planning information, please see the DuPage County Annual Report.

SECTION E: Government Entity

- The Village of Bartlett does rely on DuPage County, and the stormwater program, in order to fulfill permit obligations as set forth in Items A-F in Section B above.

SECTION F: Village Construction Projects

- The Village had no projects in this category during the reporting period.