Village of Clarendon Hills

Stormwater Management Program Plan

Prepared for:

Village of Clarendon Hills

Department of Community Development

1 North Prospect Avenue

Clarendon Hills, IL 60514

EXECUTIVE SUMMARY

The Village of Clarendon Hills (Village) is an operator of a Municipal Separate Storm Sewer System (MS4) as defined by the Illinois Environmental Protection Agency's (IEPA) National Pollution Discharge Elimination System (NPDES) Phase II program. The Village has applied for and obtained coverage under the IEPA's General NPDES Permit for Discharges from Small Municipal Separate Storm Sewer Systems. The Village of Clarendon Hills is a Qualifying Local Program of DuPage County (County) and works in conjunction with the County to achieve components of the six minimum control measures. Their permit number is ILR400175 and a copy of the general permit is provided in Appendix 8.

A central requirement of the NPDES Phase II Permit is the development and implementation of a program to reduce or prevent the discharge of pollutants in stormwater to meet the conditions and provisions of the ILR40 permit. To meet these requirements, the Village has developed this Stormwater Management Program Plan (SMPP) to detail the policies, plans and procedures in place to meet the conditions and requirements of the permit and serve as a resource for the implementation, interpretation and documentation of the Village's entire MS4 program. The SMPP encompasses all aspects of the Village's NPDES Phase II program and specifically addresses the following six minimum control measures:

1. Public Education

Responsibilities of the Village:

The Village will make brochures available, created by the County, covering topics related to stormwater quality. These topics include steps the public can take to reduce pollutants to stormwater runoff or the impacts of stormwater runoff on local water bodies. Specifically, the Village distributes education materials relating to water quality or stormwater management at the Village Hall in addition to being available on the Village website. The Village website will provide a link to the County website, which provides additional brochures and information relating to stormwater quality. The goal of this program is to provide residents and businesses education information on the impacts of storm water discharges on local water bodies, the steps that the public can take to reduce pollutants in storm water discharge, and the hazards associated with illegal discharges and improper waste disposal. The Village has additional information on its website relating to recycling of waste, waste disposal, stormwater and/or water quality and provides contact information for residents to report any potential stormwater or water quality related issues. In addition to these measures, the Village also relies on DuPage County as a QLP for Public Education as outlined below.

Responsibilities of the COUNTY:

DuPage County Stormwater Management will conduct public education and outreach activities throughout the region on a multitude of topics, such as watershed planning efforts, water quality, and best management practices (BMPs). On staff is a full time Stormwater Communications Supervisor who is responsible for managing stormwater education and outreach. The County also contracts annually, with several organizations that assist in providing additional education and

outreach services pertaining to both technical and general education on stormwater impact topics.

a. Distribution of Publications. Stormwater Management has created several handouts and brochures pertaining to sources of pollutants in waterways and water quality BMPs. These, as well as handouts from other entities, are distributed at public events, at the DuPage County complex, and through municipal partners. They are also available online. Informational topics include rain barrels, rain gardens, native plants, other green infrastructure techniques, citizen monitoring of waterways and seasonal BMPs for the spring, summer, fall and winter. Staff continues updating and developing educational materials to incorporate new and updated information, including the effects of climate change on stormwater impacts.

b. **Speaking Engagements & Community Events.** Stormwater Management coordinates, hosts, and presents at many workshops and community events countywide throughout the year. Staff also invites outside speakers who are experts on particular topics to present.

These events are held for residents, community groups, professional organizations, businesses, and governmental agencies. Among the topics discussed are water quality efforts for the watersheds, methods for pollutant reduction, during and after construction BMPs, native vegetation, and green infrastructure. In accordance with the updated NPDES requirements, presentations will include information on the potential impacts and effects of stormwater discharge due to climate change. Some of these presentations will be recorded and posted online for use by the County and municipalities for new staff or as a refresher course.

c. **Public Service Announcements & Media.** Stormwater Management has taken advantage of technology to enhance outreach efforts. The department runs Facebook, Twitter, Instagram, and YouTube pages that detail water quality trends and highlight practices that can reduce the transport of pollutants into waterways. In recent years, Stormwater Management has created or modified six pollution prevention video public service announcements, as well as another eight videos detailing flood control facilities and water quality projects. The County promotes all of these informational outlets using a Stormwater Management monthly e-newsletter, distributed to more than 2,000 recipients. In addition, Stormwater Management engages in direct media relations using press releases and advisories to promote seasonal BMPs, events, and other stormwater-related news.

d. **Classroom Education.** In partnership with schools and local educational organizations, DuPage County students are educated on stormwater management and water quality. Using several watershed models owned or borrowed by the County, students learn how watersheds work, including the transport of pollutants from watershed-wide land uses to waterways via stormwater. The students also learn about green infrastructure, such as rain gardens, permeable pavers, green roofs, native plants, and bioswales. DuPage County also promotes water quality and environmental efforts through the Water Quality Flag program. Schools and other institutions within the area can earn a Water Quality Flag by participating in certain educational trainings, using green infrastructure as a learning opportunity, and participating in a hands-on activity.

2. Public Participation and Involvement

Responsibilities of the Village:

The Village supports the County programs which coordinate with local groups to perform cleanup activities which directly reduce the amount of pollutants entering the Village's storm sewer system. The County holds public panels, stakeholder meetings, public meetings and hearings which are to be promoted events with regards to Village jurisdiction. The Village posts links to these activities on its website and will have a yearly stormwater meeting. The Village is also a member of the DuPage River Salt Creek Workgroup, which actively engages the public in "on the ground" activities and also coordinates watershed projects such as chloride reductions and stream restoration toward meeting the TMDL plan for the Salt Creek Watershed. In addition to these measures, the Village also relies on DuPage County as a QLP for Public Participation and Involvement as outlined below. The Village is responsible for advertising and promoting meetings, hearings, and events online and within their jurisdictions and ensuring attendance by their own staff, as necessary.

Responsibilities of the COUNTY:

DuPage County Stormwater aims to inform the public on watershed initiatives and engage a broad range of individuals regarding policies and projects related to the control and reduction of pollutants in stormwater runoff. This is accomplished through technical trainings, stakeholder groups, volunteer opportunities, and public meetings. The County has identified environmental justice areas within the watershed planning jurisdictions in order to ensure prioritization of efforts in regards to public involvement and participation initiatives.

a. **Public Panels.** Stormwater Management annually supports several training initiatives throughout the County, including The Conservation Foundation's Environmental Summit and biannual Beyond the Basics seminars and the DuPage River Salt Creek Workgroup's chloride reduction trainings. The purpose of the events is to engage local residents, organizations, and government agencies in pollution reduction practices and volunteer opportunities.
b. **Stakeholder Meetings.** Stormwater Management hosts at least two regular water quality stakeholder meetings per year in each of the County's three main watersheds. These meetings address matters pertaining to pollutant reduction on a watershed level. In addition, input on water quality impairments is requested from stakeholders for incorporation into watershed planning efforts, which may cause the formation of separate stakeholder groups any given year.
c. **Public Meetings & Hearings.** Stormwater Management will provide opportunity for public comment at several locations throughout the watershed in order to reach all interested residents on the adequacy of its MS4 program, watershed plans, and projects. At least one public meeting or hearing also accompanies public comment periods

associated with plans or projects. The County will publicize public comment periods in accordance with its education and outreach initiatives and include opportunities to comment online, in person, or by mail.

d. **Program Coordination.** Stormwater Management coordinates educational and public involvement strategies. To gauge their effectiveness, the County develops and distributes surveys via an email list, webpage, and on social media. These surveys measure citizen views, behaviors, and concerns pertaining to a variety of topics, including water quality, property management, flood perceptions, and residential pollutant control. County staff and/or educational partners analyze results of these surveys in order to improve and enhance the current program.

e. **Volunteer Opportunities.** A variety of volunteer opportunities are sponsored by Stormwater Management, including:
    - The Adopt-a-Stream program, which engages the public by providing an opportunity to pick up trash and/or monitor a stretch of waterway;
    - The DuPage River Sweep, which is an annual event that allows residents, groups, schools, and businesses to volunteer for a day to pick trash out of a section of a local waterway; and
    - The Storm Drain Stenciling program, where students can stencil information on a storm drain, which notifies the public where the drains lead and why nothing should be dumped into them.

3. Illicit Discharge Detection and Elimination

Responsibility of the Village:

The Village has an Intergovernmental Agreement (IGA) with the County in regards to screening for and tracing of illicit discharges into Waters of the State from MS4 outfalls. The Village has also developed its own IDDE program to complement the County's program and assists in activities related to the Illicit Discharge Detection and Elimination minimum control as a vital part of their MS4 program. As part of this program, the Village has a very detailed ordinance on illicit discharges. The Village prepared a storm sewer map that shows the location of all outfalls to receiving streams. The Village annually updates the map to reflect new development or changes to the system. The Village has procedures for requiring the removal of illicit discharges identified through the illicit discharge tracing program. The Village is developing a program to conduct dry weather screening and prioritizing outfalls to receiving waters. The primary goal of this measure is to visually identify any illicit discharges, but is also beneficial in helping the Village identify maintenance issues such as erosion or blockages. The Village's program includes photos and documentation for all outfall locations compiled in an IDDE report.

Responsibilities of the COUNTY:

DuPage County will perform field inspections of all known MS4 outfall locations for illicit discharges. The County has created a hotline for the public to report illicit discharges. During the permit cycle, the DuPage County Stormwater Management will conduct inspections of outfalls within the watershed that are owned and maintained by partnering permittees.

a. The County has developed a comprehensive storm sewer atlas from information obtained from partnering permittees, as well as other local and state entities. This atlas identifies the location of storm sewers and the outfalls point where a discharge into a Water of the State occurs. This atlas will be regularly updated to incorporate new projects as well as when updated information is received from other agencies. The atlas is also updated as outfall locations are verified and inspected for potential illicit discharges in the field.
b. DuPage County will conduct the ten step prioritization program identified in the DuPage County IDDE Program Technical Guidance. The outfalls in each watershed will be inspected in the order of prioritization. Dry weather sampling will be conducted throughout the watershed in order to detect any non-stormwater discharges being conveyed through the storm sewer system.
c. When a possible illicit discharge is located during dry weather conditions, field testing of pollutants is conducted. Testing parameters include temperature, surfactants, ammonia, fluoride, specific conductance, and pH.
d. If a discharge from an outfall is suspected to be from an illicit source, then tracing procedures are conducted using the storm sewer atlas, as well as visual inspections of sewers in the field. When the source is located, the appropriate enforcement agency, as well as the owner of the property, are notified.
e. DuPage County offers educational resources regarding illicit discharges to residents and businesses. Information regarding the County maintained IDDE Hotline is posted on DuPage County's website so that members of the public, residing throughout the watershed, can report suspected discharges from the storm sewer into a Water of the State. The end goal is to stop the discharge and educate the polluter on the implications of such actions. The site of the discharge is evaluated to determine any necessary remediation actions.
f. DuPage County conducts presentations to train appropriate staff members for all partnering permittees on the hazards associated with illicit discharges and the improper disposal of waste, as well as the requirement and mechanism for reporting such discharges.

4. Construction Site Runoff Control

Responsibilities of the Village:

The Village performs activities and services related to the Construction Site Runoff Control measure as part of their MS4 program. Specifically, the Village utilizes their regulatory control program and enforcement of the DuPage County Stormwater Ordinance as a full waiver community to regulate runoff from construction sites. The Village requires soil erosion and sediment control measures to reduce pollutants in storm water runoff from construction activities, an erosion and sediment control plan is required, site plan review that considers water quality, site inspection and enforcement of control measures, and sanctions to ensure compliance. The Village has procedures in place for site plan review and site inspection and enforcement of control measures that consider water quality as a part of the permitting process.

The Village has a consultant (Christopher B. Burke Engineering, Ltd.) to complete larger development reviews. The review and inspection procedures are documented by the Village Engineering department.

Responsibilities of the COUNTY:

DuPage County has developed and enacted the DuPage County Countywide Stormwater and Floodplain Ordinance (DCCSFPO) and will continue to administer the Ordinance and update as necessary. The Ordinance was first adopted in 1991 and has been revised several times. Sediment and erosion control provisions can be found in Section 15-40.E, 15-50, and Article VII of the DCCSFPO, last revised in April 2013. The DCCSFPO provides regulatory authority for developments in participating communities and unincorporated DuPage County. These communities may choose to review and process all aspects of the stormwater permit (complete waiver communities), while others may choose to delegate review authority for development in wetlands and floodplain, construction of post-construction BMPs, and sediment erosion control for developments over 1 acre to DuPage County (partial waiver communities), or the communities may allow DuPage County to review and process all aspects of the stormwater permit (non-waiver communities). The DCCSFPO establishes a minimum level of regulatory compliance that a municipality or unincorporated portion of the County must meet. As the DCCSFPO has been adopted into DuPage County's County Code, it serves as the regulatory mechanism for enforcement of these requirements. Development securities can be drawn upon in the event of non-compliance. Legal action through the State's Attorney's Office may also be applied. The DuPage County Stormwater Management Planning Committee oversees the administration and enforcement of the Ordinance on a countywide basis.

5. Post Construction Site Runoff Control

Responsibilities of the Village:

The Village ordinance requires the identification and responsible entity for long term maintenance of post construction BMPs required for development. The Village addresses volume and quality control for storm water runoff from finished development projects as part of its enforcement of the DuPage County Stormwater Ordinance as a full waiver community. It specifically requires controls to prevent or minimize water quality impacts, implementation of structural and non-structural BMPs, provisions for long-term operation and maintenance, pre-construction review by the Village of the site development plan, site inspections during construction, and post-construction inspections. The Village has a consultant (Christopher B. Burke Engineering, Ltd.) to complete larger development reviews.

Responsibilities of the COUNTY:

DuPage County has developed and enacted the DuPage County Countywide Stormwater and Floodplain Ordinance (DCCSFPO) and will continue to administer the Ordinance and update as necessary. The DCCSFPO was revised to include post-construction Best Management Practices in 2008. In 2013, the DCCSFPO was updated again to enhance the BMP section and add volume control requirements to all development sites increasing net new impervious area by 2,500 square

feet or greater. Infiltration of runoff is allowed and considered to provide both volume and pollution control when sized correctly. BMP provisions can be found in Section 15-40.F, 15-49, and Article VIII of the DCCSFPO, last revised in April 2013. The DCCSFPO provides regulatory authority for developments in participating communities and unincorporated DuPage County. These communities may choose to review and process all aspects of the stormwater permit (complete waiver communities), while others may choose to delegate review authority for development in wetlands and floodplain, construction of post-construction BMPs, and sediment erosion control for developments over 1 acre to DuPage County (partial waiver communities), or allow DuPage County to review and process all aspects of the stormwater permit (non-waiver communities). The DCCSFPO establishes a minimum level of regulatory compliance that a municipality or unincorporated portion of the County must meet. Inspections are conducted before, during, and after construction to ensure site stabilization. As the DCCSFPO has been adopted into the County Code, it serves as the regulatory mechanism for enforcement of these requirements. Development securities can be drawn upon in the event of non-compliance. Legal action through the State's Attorney's Office may also be applied. The DuPage County Stormwater Management Committee oversees the administration and enforcement of the Ordinance on a countywide basis.

a. The DCCSFPO requires a management and monitoring period including performance standards for BMPs utilizing native vegetation to ensure successful establishment of the planted native species. The management and monitoring period is typically 1- 3 years or until performance standards are achieved, depending on the planting plan being implemented. Post-construction inspections are conducted at all development sites utilizing native vegetation as a BMP, as well as for wetland, buffer, or riparian restoration and enhancement. These inspections are conducted by staff at least once per year for the duration of the maintenance and monitoring period. Long term operations and maintenance will be established in the permit for development sites utilizing native vegetation as a BMP. Development sites proposing to implement mechanical BMPs must also include long term maintenance plans to ensure that they remain functional.

b. The DCCSFPO requires that proposed BMP designs are submitted with a development permit application. BMPs are reviewed for compliance with the pollution control requirements, as well as volume control provisions.

c. The DCCSFPO requires that reviews of as-built details of infiltration and mechanical BMPs are conducted during construction to ensure they are installed correctly. Rock size is provided for infiltration trenches, and catch basins are inspected for mechanical BMP placement. As-built inspections are conducted on all BMP development sites immediately following site development and stabilization to ensure that BMPs have been implemented according to plan.

d. BMP training is conducted as new regulations are added to the Ordinance. This training is offered to the public and is also specifically targeted to municipalities, developers, consultants, and others often involved in the stormwater permitting process.

6. Pollution Prevention and Good Housekeeping

Responsibilities of the Village:

This minimum control measure involves the development and implementation of an operation and maintenance program to reduce the discharge of pollutants from municipal operations. This program must include a training program for municipal employees. The Village performs activities related to pollution prevention and good housekeeping as a part of their overall NPDES program. Specifically, the Village conducts regular employee training for municipal operations and safety and plans to complete yearly training to educate staff on prevention and reduction of storm water pollution from municipal activities. The goal of the program is to address activities such as park and open space maintenance, operation of storage yards, snow disposal, new construction and land disturbances, storm water system maintenance procedures for proper disposal of street cleaning debris and catch basin materials, and ways that flood management projects impact water quality, nonpoint source pollution control, and aquatic habitat. This program addresses the hazards associated with illegal discharges and improper disposal of waste. The Village will update and modify the training as needed to meet the requirements of the NPDES program. Applicable Village staff also attend County and DuPage River Salt Creek Workgroup meetings and training seminars.

The Village also has many operational policies designed to prevent storm water pollution associated with municipal operations. Road salt is stored on a paved surface and covered to protect it from precipitation. All Village salting is automated with calibrated equipment. The Village stores diesel fuel and gasoline for its vehicles in tanks with vault containment below. Flammable and hazardous chemicals are stored inside in metal cabinets. Used vehicle oil is stored in a holding tank and periodically hauled away by a licensed waste disposal service. Maintenance and washing of the Village's public work vehicles is performed in the public works garage with the assistance of a private company. Spill kits are located next to the fueling stations and catchbasin inserts are located at the inlets within the PW yard. The village also privately contracts storm sewer and catchbasin cleaning. The existing policies described above will be continued. Policies regarding storage of municipal construction wastes, and spill prevention and clean-up procedures are also included in the program. These programs will be evaluated on a regular basis to determine its effectiveness and modified as necessary to meet the requirements of the NPDES program.

Responsibilities of the County:

The County will organize training in procedures and practices that will minimize the discharge of pollutants from municipal operations into the storm sewer system for County and municipal staff. Examples of training topics include automobile maintenance, hazardous material storage, landscaping and lawn care, parking lot and street cleaning, pest control, pet waste collection, road salt application and storage, roadway and bridge maintenance, spill response and prevention, and storm drain system cleaning.

The County will create checklists and/or guidance materials to assist County and municipal staff in following the good housekeeping measures outlined in the ILR40 permit.

DuPage County Stormwater Management has the ability to provide shared services to local communities, in regards to maintenance of BMPs and associated infrastructure. This may include vegetation management, storm sewer cleanout, street sweeping, and other maintenance activities. The shared services will be determined by the equipment and staff available from participating agencies. Each municipality interested in shared services will have a specific contract identifying the scope, duties & responsibilities which would be incorporated into an IGA.

Monitoring and Assessment

Responsibilities of the Village:

The Village will be responsible for coordinating with the County on their monitoring and assessment program. Each year during the Annual Report period, the Village shall assess their program based on the monitoring results (if available) and other data.

Responsibilities of the County:

The County will be responsible for developing and implementing a monitoring and assessment program. This will include an evaluation of BMPs based on estimated effectiveness from published research accompanied by an inventory of the number and location of BMPs implemented as part of DuPage County and the Municipalities NPDES program and an estimate of pollutant reduction resulting from the BMPs. The County will also support and contribute to the DuPage River Salt Creek Workgroup ambient monitoring of waterways which will be performed within 48 hours of a precipitation event greater than or equal to one quarter inch in a 24-hour period. At a minimum, analysis of storm water discharges or ambient water quality will include monitoring for total suspended solids, total nitrogen, total phosphorus, fecal coliform, chlorides, and oil and grease. In addition, monitoring will be performed for any other pollutants associated with storm water runoff for which the receiving water is considered impaired pursuant to the most recently approved list under Section 303(d) of the Clean Water Act.

This SMPP details all of the Best Management Practices (BMPs), activities, policies, and procedures the Village of Clarendon Hills employs to protect water quality by reducing or preventing the introduction of contaminates into the municipal separate storm sewer system and to meet the requirements of their MS4 permit. The Village has also reviewed the TMDLs for Salt Creek and continues to tailor their program towards meeting the goals outlined in those reports.

The SMPP is a living document that will be updated regularly based on changes within the Village and the NPDES regulations. If fully utilized, the SMPP provides the Village with a vital tool to meet the following goals of this program:

- Improve water quality,
- Provide cleaner and more aesthetically pleasing local waterbodies and streams,
- Enhance recreation opportunities
- Healthier environment for residents and wildlife.

The SMPP will be reviewed annually during the Village's Annual Facility Inspection as required by the NPDES Phase II Permit and will be kept onsite in the Department of Community Development at Village Hall at 1 North Prospect Avenue, Clarendon Hills, DuPage County, IL 60514.

LIST OF APPENDICES

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2. Village of Clarendon Hills Street Map
3. Salt Creek Watershed Exhibit
4. Discovery Map for Des Plaines Watershed in DuPage County
5. Major Watershed of Illinois Map
6. Illinois River Watershed Map
7. Village of Clarendon Hills 2016 Notice of Intent
8. Village of Clarendon Hills Annual Facility Inspection Reports: Years 9-14
9. IEPA General NPDES Permit No. ILR40
10. Salt Creek Watershed – Restoring Balance
11. Salt Creek Watershed: A Resource Worth Preserving
12. Lower Des Plaines River Basin: An Inventory of the Region's Resources
13. Sample Inspection Forms: ILR40 and ILR10
14. Sample Contractor Certification Forms
15. IEPA Forms – NOI, ION, and NOT
16. Outfall Screening Checklist, Forms, Instructions, and Reports
17. Sample Inspection Checklists
18. Typical Soil Erosion and Sediment Control Details
19. Example Public Education and Outreach Materials
20. Construction Site Inspection Forms
21. Outfall Inspection Data Forms and Reports
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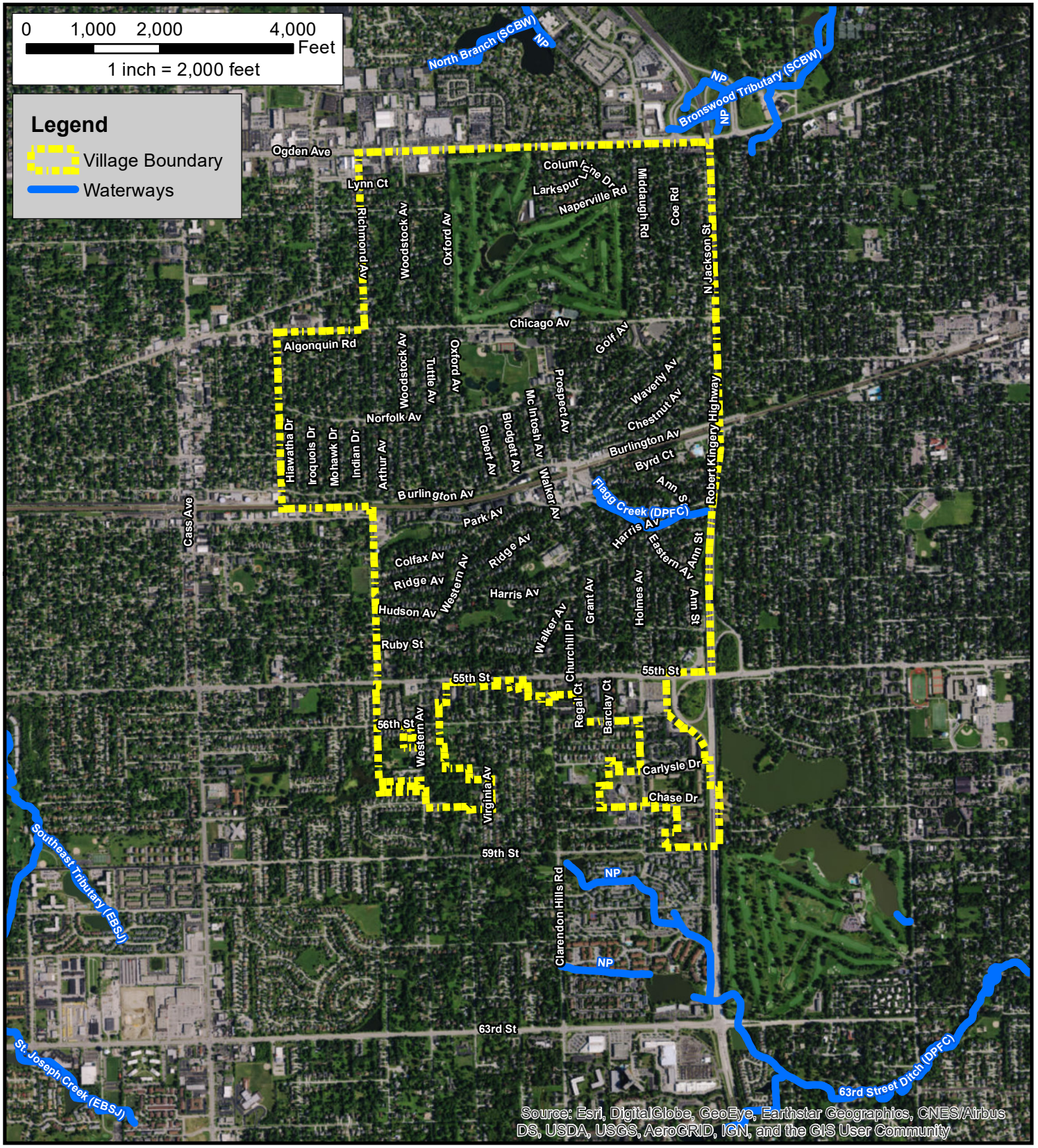
23. Pre-Construction Meeting Forms
24. Employee Training Agendas or Course Information
25. Compliance Documentation – Public Education and Outreach
26. Compliance Documentation – Public Participation/Involvement
27. Compliance Documentation – Illicit Discharge Detection and Elimination
28. Compliance Documentation – Construction Site Runoff Control
29. Compliance Documentation – Post-Construction Runoff Control
30. Compliance Documentation – Pollution Prevention/Good Housekeeping
31. Total Maximum Daily Loads Report – Salt Creek
32. DuPage River/Salt Creek Watershed – TMDL Stage 1 Report

APPENDIX 1

Village of Clarendon Hills Corporate Limits Exhibit



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DSGN.	BMK	CHKD.	

Christopher B. Burke Engineering, Ltd.
9575 West Higgins Road, Suite 600
Rosemont, IL 60018
(847) 823-0500 / FAX (847) 823-0520

CLIENT: Village of Clarendon Hills — The Volunteer Community

JOB# 170088

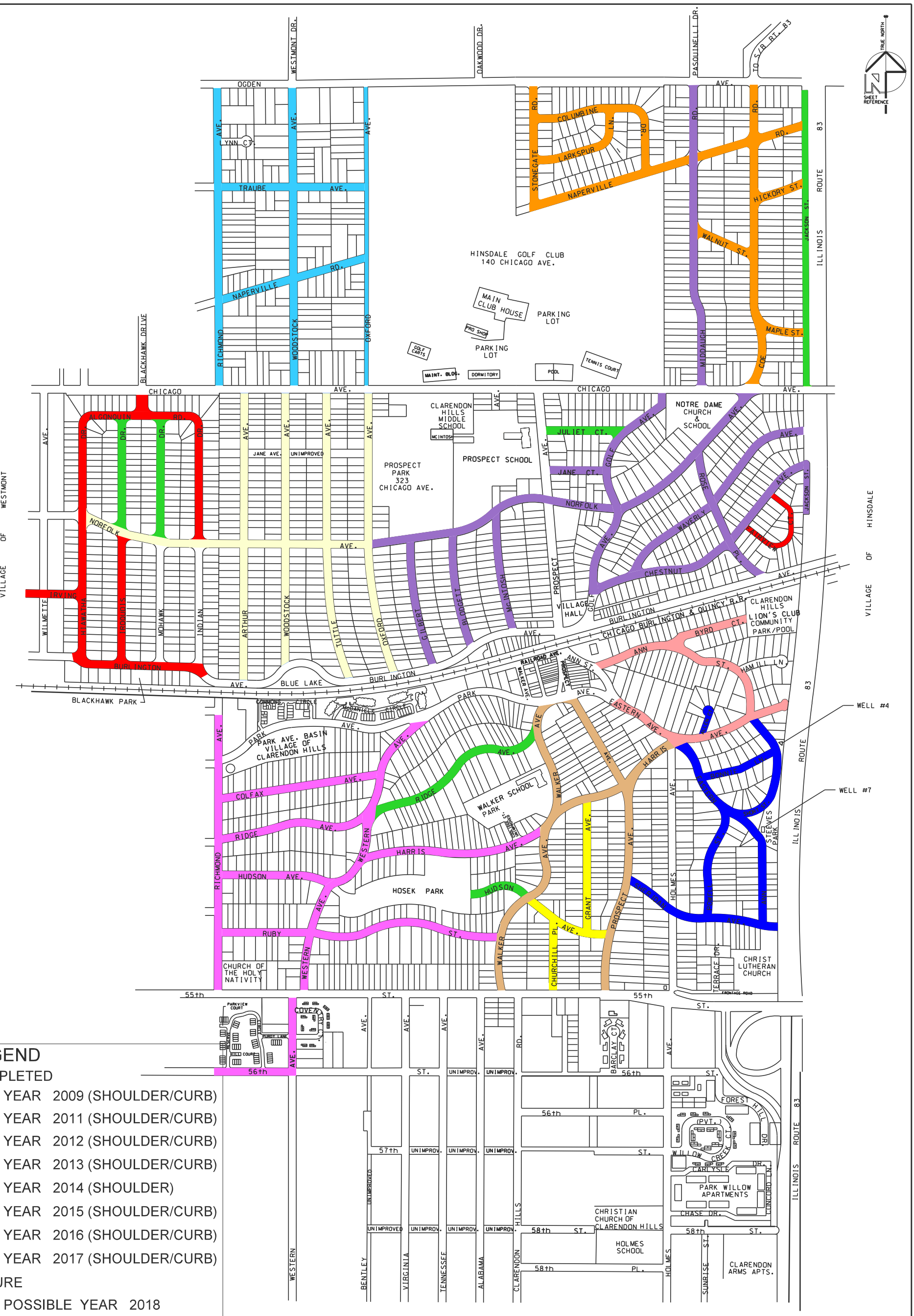
TITLE: CORPORATE LIMITS

DATE 06/09/17

EXHIBIT 1

APPENDIX 2

Village of Clarendon Hills Street Map



LEGEND

COMPLETED

- YEAR 2009 (SHOULDER/CURB)
- YEAR 2011 (SHOULDER/CURB)
- YEAR 2012 (SHOULDER/CURB)
- YEAR 2013 (SHOULDER/CURB)
- YEAR 2014 (SHOULDER)
- YEAR 2015 (SHOULDER/CURB)
- YEAR 2016 (SHOULDER/CURB)
- YEAR 2017 (SHOULDER/CURB)

FUTURE

- POSSIBLE YEAR 2018
- POSSIBLE YEAR 2019
- POSSIBLE YEAR 2020

CHRISTOPHER B. BURKE ENGINEERING LTD.
9575 West Higgins Road, Suite 600
Rosemont, Illinois 60018 (847) 823-0500

CLIENT: VILLAGE OF CLARENDON HILLS

VILLAGE SSA PROGRAM
STREET MAP

PROJECT NO. 16-0594

EXHIBIT 1

$DATE$

$FILE$

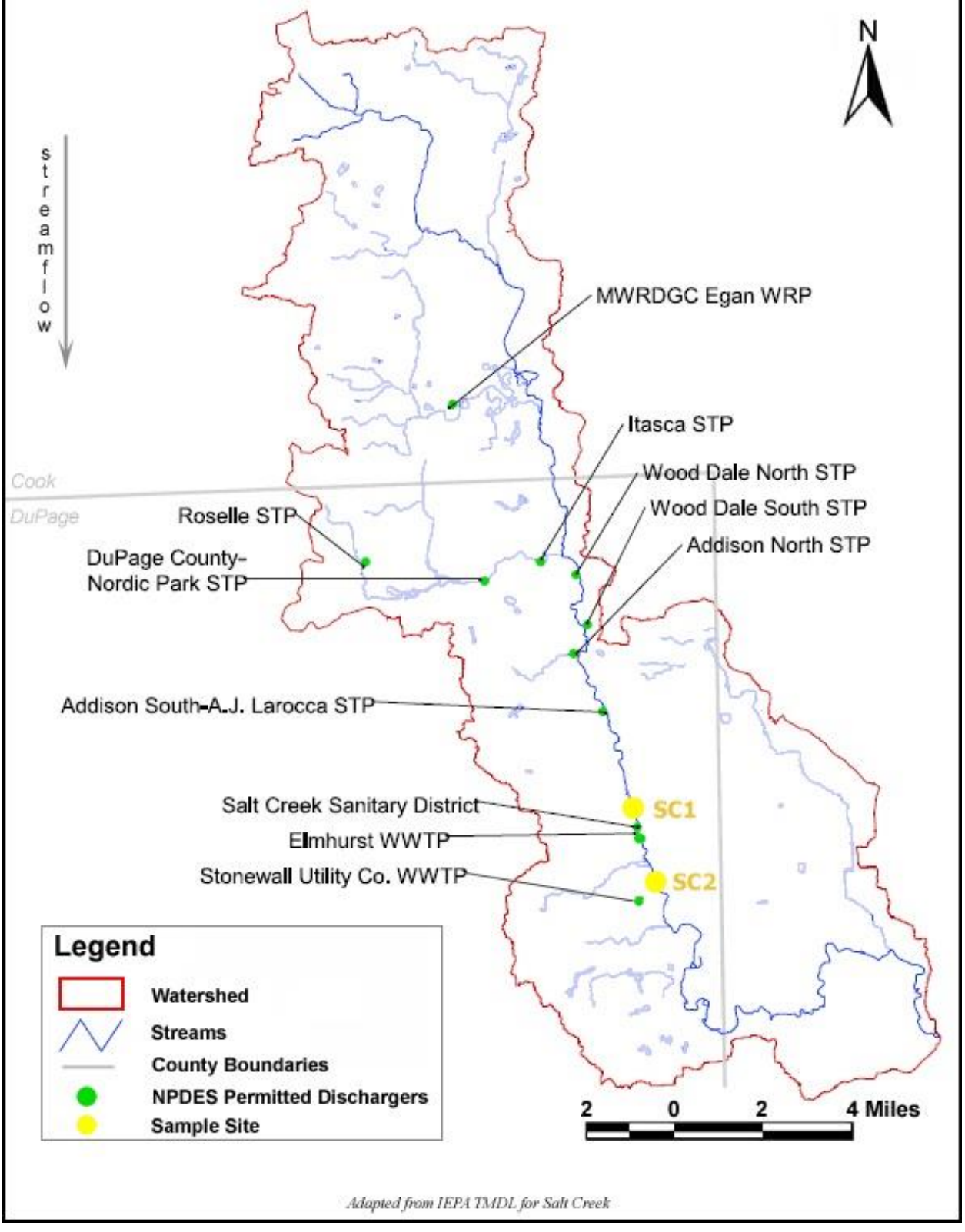
APPENDIX 3

Salt Creek Watershed Exhibit

Sierra Club - River Prairie Group

Upstream Dischargers of Significance

Salt Creek

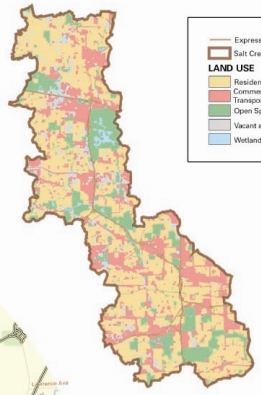


Adapted from IEPA TMDL for Salt Creek

Salt Creek Watershed

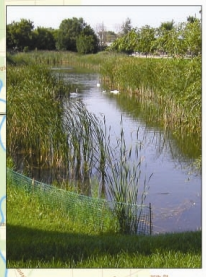
Covering roughly 150 square miles, the Salt Creek watershed incorporates more than 30 municipalities that are home to nearly 500,000 people.

Did you know? The Salt Creek watershed is mostly developed. In 1996, land cover in the watershed consisted of 77% urban land, 15% woodland, 4% wetland, and 4% other.



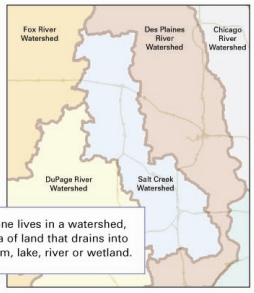
Did you know? DuPage County has proposed 30 miles of hiking and biking paths along Salt Creek in its Greenway Master Plan. A group of local agencies are working on a Water Trails Plan to create more paddling opportunities along Salt Creek including building more boat launches, removing dangerous obstacles, and installing helpful signage. So enjoy the watershed: play, peddle and paddle!

Did you know? One hundred years ago, maps called Salt Creek "The Little Des Plaines River". That changed, according to legend, when pioneers heading for Galena accidentally dumped a load of salt from their wagon into the water. From that day forward, it has been known as Salt Creek.



Legend

- Expressways
- Major Roads
- Streams
- Lakes and Ponds
- County Boundaries
- Open Space
- Salt Creek Watershed
- Golf Courses



Everyone lives in a watershed, an area of land that drains into a stream, lake, river or wetland.

Did you know? You do not have to live next to the creek to have an impact on it. Here native landscaping captures polluted runoff and allows stormwater a chance to soak into the ground rather than flowing to the creek via storm drains.

0 1 2 3 4 Miles

APPENDIX 4

Discovery Map for Des Plaines Watershed in DuPage County

Discovery Map #1

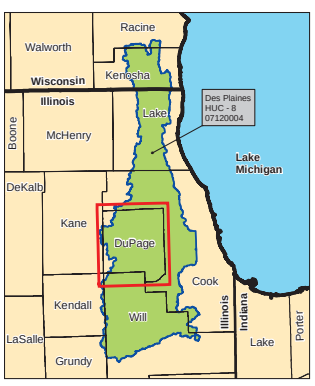
Des Plaines
HUC-8 07120004
DuPage County

3/26/2013

ILLINOIS STATE WATER SURVEY
PRAIRIE RESEARCH INSTITUTE

ILLINOIS

FEMA



Areas of Mitigation Interest
- Dams
- FEMA Public Assistance Data
- Stream Flow Constrictions

Roads
- Interstate
- U.S. Hwy
- State Hwy

0 0.5 1 2
Miles

N W E S

CNMS Streams Validation Status
- Unverified, Being Studied
- Unverified, To be Studied
- Assessed, Being Studied
- Assessed, To be Studied
- Unknown, To be Assessed
- Valid, NVUE Compliant

Special Flood Hazard Areas
- Approximate (Zone A)
- Detailed (Zone AE)
- Ponding (Zone AH)
- Shallow Flooding (Zone AO)

Average Annualized Loss (Census Blocks) Losses
- Very High
- High
- Medium
- Low
- Very Low

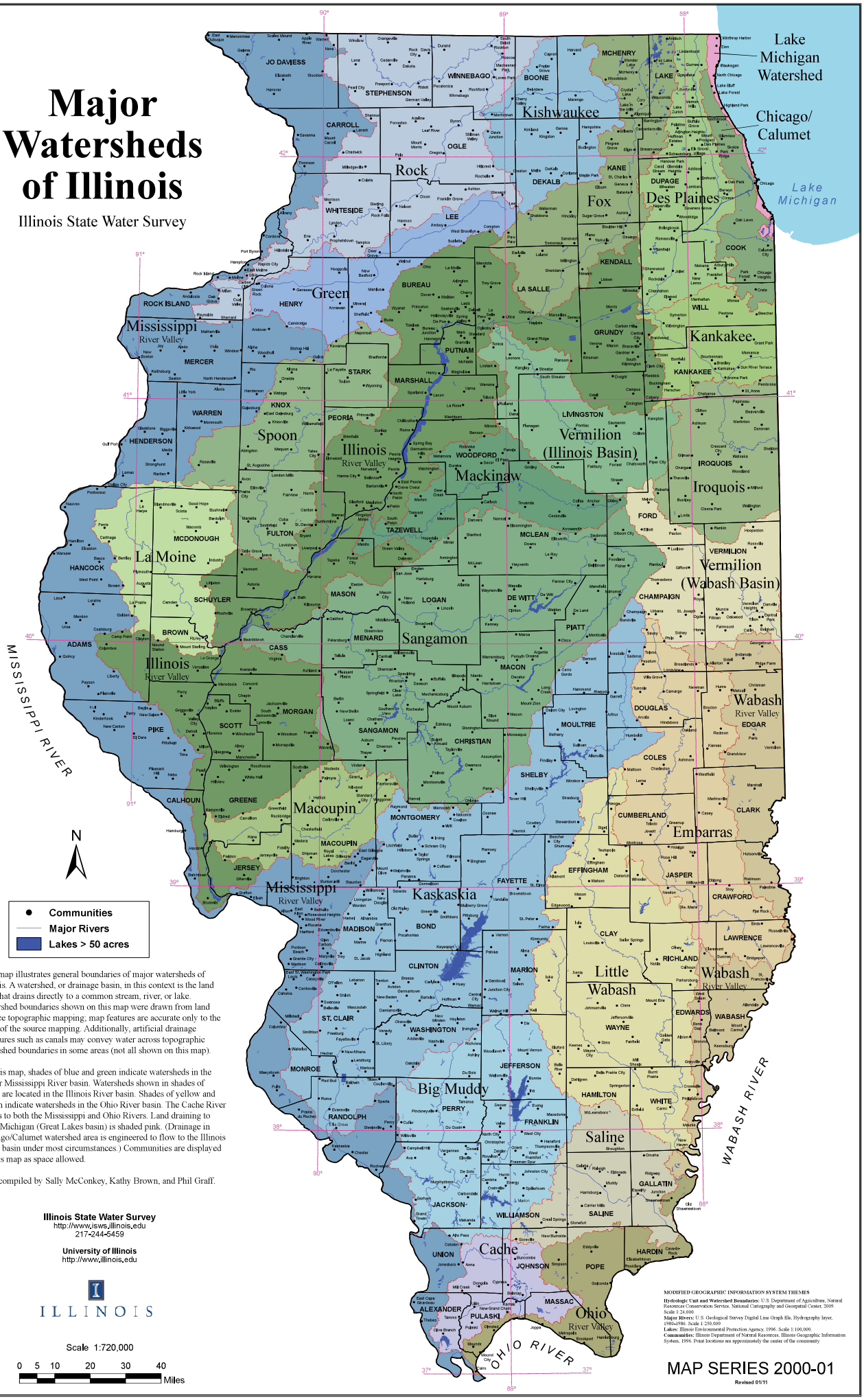
- Stream Gage
- Letter of Map Change (LOMC)
- LOMC Clusters
- Levee
- Community Boundary
- County Boundary
- Federal Lands
- Watershed Boundary
- Wetlands

APPENDIX 5

Major Watershed of Illinois Map

Major Watersheds of Illinois

Illinois State Water Survey



This map illustrates general boundaries of major watersheds of Illinois. A watershed, or drainage basin, in this context is the land area that drains directly to a common stream, river, or lake. Watershed boundaries shown on this map were drawn from land surface topographic mapping; map features are accurate only to the scale of the source mapping. Additionally, artificial drainage structures such as canals may convey water across topographic watershed boundaries in some areas (not all shown on this map).

On this map, shades of blue and green indicate watersheds in the Upper Mississippi River basin. Watersheds shown in shades of green are located in the Illinois River basin. Shades of yellow and brown indicate watersheds in the Ohio River basin. The Cache River drains to both the Mississippi and Ohio Rivers. Land draining to Lake Michigan (Great Lakes basin) is shaded pink. (Drainage in Chicago/Calumet watershed area is engineered to flow to the Illinois River basin under most circumstances.) Communities are displayed on this map as space allowed.

Map compiled by Sally McConkey, Kathy Brown, and Phil Graff.

Illinois State Water Survey
http://www.isws.illinois.edu
217-244-5459

University of Illinois
http://www.illinois.edu

ILLINOIS

MODIFIED GEOGRAPHIC INFORMATION SYSTEM THEMES

Hydrologic Unit and Watershed Boundaries: U.S. Department of Agriculture, Natural Resources Conservation Service, National Cartography and Geospatial Center, 2009. Scale 1:24,000.
Major Rivers: U.S. Geological Survey Digital Line Graph file, Hydrography layer, 1980–1986. Scale 1:250,000
Lakes: Illinois Environmental Protection Agency, 1996. Scale 1:100,000.
Communities: Illinois Department of Natural Resources, Illinois Geographic Information System, 1996. Point locations are approximately the center of the community.

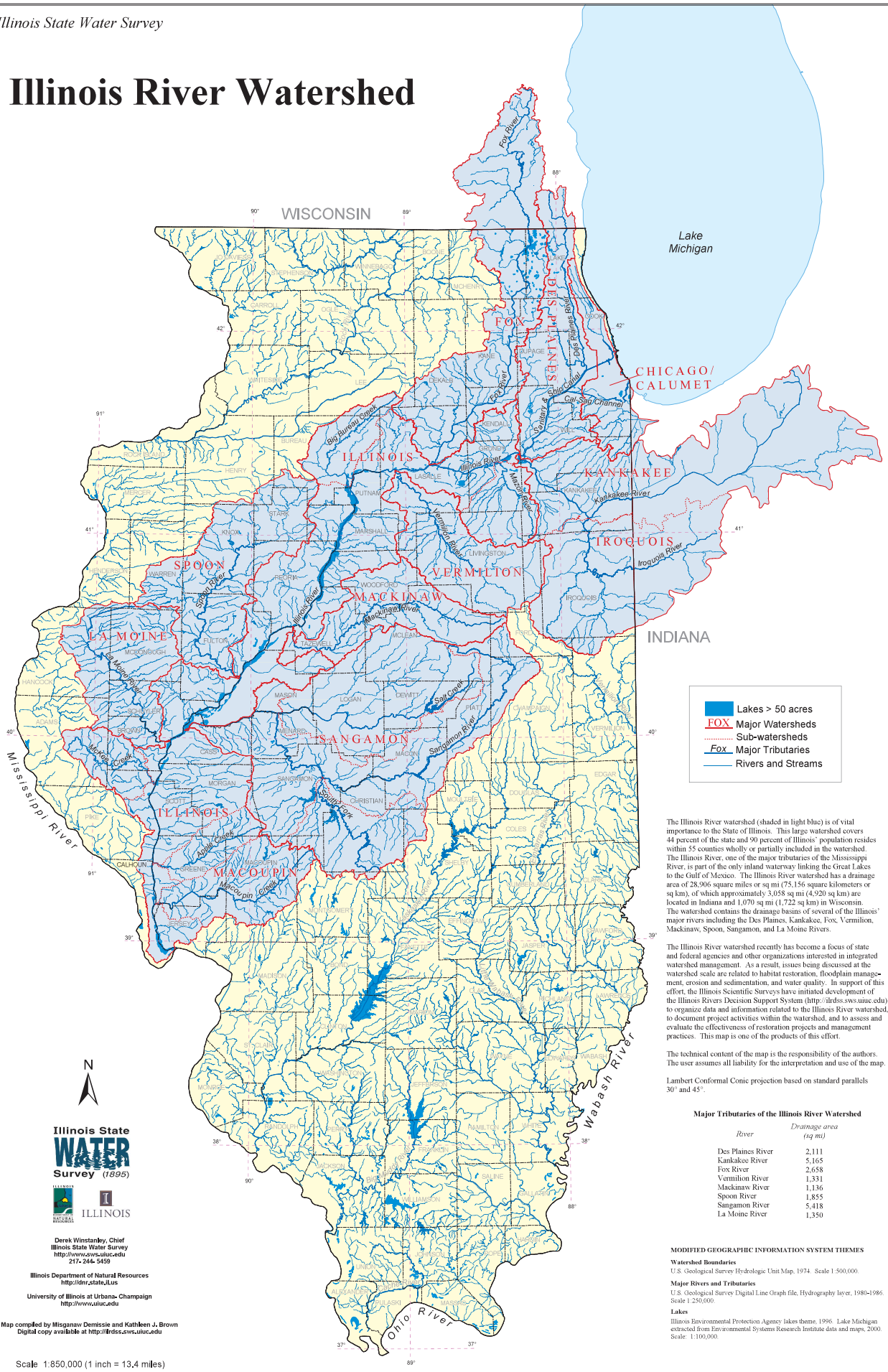
MAP SERIES 2000-01
Revised 01/11

APPENDIX 6

Illinois River Watershed Map

Illinois State Water Survey

Illinois River Watershed



The Illinois River watershed (shaded in light blue) is of vital importance to the State of Illinois. This large watershed covers 44 percent of the state and 90 percent of Illinois' population resides within 55 counties wholly or partially included in the watershed. The Illinois River, one of the major tributaries of the Mississippi River, is part of the only inland waterway linking the Great Lakes to the Gulf of Mexico. The Illinois River watershed has a drainage area of 28,906 square miles or sq mi (75,156 square kilometers or sq km), of which approximately 3,058 sq mi (4,920 sq km) are located in Indiana and 1,070 sq mi (1,722 sq km) in Wisconsin. The watershed contains the drainage basins of several of the Illinois' major rivers including the Des Plaines, Kankakee, Fox, Vermilion, Mackinaw, Spoon, Sangamon, and La Moine Rivers.

The Illinois River watershed recently has become a focus of state and federal agencies and other organizations interested in integrated watershed management. As a result, issues being discussed at the watershed scale are related to habitat restoration, floodplain management, erosion and sedimentation, and water quality. In support of this effort, the Illinois Scientific Surveys have initiated development of the Illinois Rivers Decision Support System (http://ilrdss.sws.uiuc.edu) to organize data and information related to the Illinois River watershed, to document project activities within the watershed, and to assess and evaluate the effectiveness of restoration projects and management practices. This map is one of the products of this effort.

The technical content of the map is the responsibility of the authors. The user assumes all liability for the interpretation and use of the map.

Lambert Conformal Conic projection based on standard parallels 30° and 45°.

Major Tributaries of the Illinois River Watershed

River	*Drainage area (sq mi)*
Des Plaines River	2,111
Kankakee River	5,165
Fox River	2,658
Vermilion River	1,331
Mackinaw River	1,136
Spoon River	1,855
Sangamon River	5,418
La Moine River	1,350

MODIFIED GEOGRAPHIC INFORMATION SYSTEM THEMES

Watershed Boundaries
U.S. Geological Survey Hydrologic Unit Map, 1974. Scale 1:500,000.

Major Rivers and Tributaries
U.S. Geological Survey Digital Line Graph file, Hydrography layer, 1980-1986. Scale 1:250,000.

Lakes
Illinois Environmental Protection Agency lakes theme, 1996. Lake Michigan extracted from Environmental Systems Research Institute data and maps, 2000. Scale: 1:100,000.

Illinois State Water Survey (1895)

ILLINOIS

Derek Winstanley, Chief
Illinois State Water Survey
http://www.sws.uiuc.edu
217- 244- 5459

Illinois Department of Natural Resources
http://dnr.state.il.us

University of Illinois at Urbana- Champaign
http://www.uiuc.edu

Map compiled by Misganaw Demissie and Kathleen J. Brown
Digital copy available at http://ilrdss.sws.uiuc.edu

MAP SERIES 2003-01
Printed by the authority of the State of Illinois (02-03-2449-4M)

APPENDIX 7

Village of Clarendon Hills 2013 Notice of Intent

Illinois Environmental Protection Agency

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

Notice of Intent for New or Renewal of General Permit for Discharges from Small Municipal Separate Storm Sewer Systems - MS4's

Part I. General Information

1. MS 4 Operator Name: CLARENDON HILL
2. MS4 Mailing Address: 1 NORTH PROSPECT AVENUE
   City: CLARENDON HILLS State: IL
3. Operator Type: Village Other:
4. Operator Status: Local Other:
5. Name(s) of governmental entity(ies) in which MS4 is located:

   CLARENDON HILLS
6. Area of land that drains to your MS4 in square miles: 1.7
7. Latitude and Longitude at approximate geographical center of MS4 for which you are requesting authorization to discharge:

   Latitude: 41 Degrees 47 Minutes: 50 Seconds:

   Longitude: 87 Degrees: 57 Minutes: 30 Seconds:
8. Name(s) of known receiving waters

   FLAGG CREEK

9. Persons responsible for implementation or coordination of Stormwater Management Program:

Name: MICHAEL MILLETTE Title: DIRECTOR OF PUBLIC WORKS Phone: 630-286-5400

Area of Responsibility: BMP'S A, B, C, D, E, F

Name: Title: Phone:

Area of Responsibility:

Part II. Best Management Practices (include shared responsibilities) which have been implemented or are proposed to be implemented in the MS4 area:

A. Public Education and Outreach

Qualifying Local Programs:

CO-PERMITTING WITH COUNTY OF DUPAGE

Measurable Goals (include shared responsibilities)

☒ A.1 Distributed Paper Material

Brief Description of BMP:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Measurable Goals, including frequencies:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Milestones:

Go to Additional Pages

Year 1:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 2:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 3:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 4:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 5:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

☒ A.2 Speaking Engagement

Brief Description of BMP:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Measurable Goals, including frequencies:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Milestones:

Year 1:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 2:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 3:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 4:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 5:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Go to Additional Pages

☒ A.3 Public Service Announcement

Brief Description of BMP:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Measurable Goals, including frequencies:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Milestones:

Year 1:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 2:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 3:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 4:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 5:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Go to Additional Pages

☒ A.4 Community Event

Brief Description of BMP:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Measurable Goals, including frequencies:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Milestones:

Year 1:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 2:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 3:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 4:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 5:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Go to Additional Pages

☒ A.5 Classroom Education Material (You may need to go to the next page to fill in this information)

Brief Description of BMP:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Measurable Goals, including frequencies:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Milestones:

Year 1:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 2:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 3:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 4:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 5:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Go to Additional Pages

☐ A.6 Other Public Education

B.Public Participation/Involvement

Measurable Goals (include shared responsibilities)

Qualifying Local Programs:

CO-PERMITTING WITH COUNTY OF DUPAGE

☐ B.2 Educational Volunteer

☒ B.3 Stakeholder Meeting (You may need to go to the next page to fill in this information)

Brief Description of BMP:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Measurable Goals, including frequencies:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Milestones:

Year 1:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 2:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 3:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 4:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 5:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Go to Additional Pages

☒ B.4 Public Hearing (You may need to go to the next page to fill in this information)

Brief Description of BMP:

REVISIONS TO STORMWATER ORDINANCES ARE PRESENTED FOR PUBLIC COMMENT AND REVIEW AT DUPAGE COUNTY STORMWATER COMMITTEE AND AT DUPAGE COUNTY BOARD

Measurable Goals, including frequencies:

MAJOR REVISIONS TO STORMWATER MANAGEMENT AND FLOODPLAIN ORDINANCE ADOPTED BY DUPAGE COUNTY ON 4/23/2013 AND SUBSEQUENTLY BY LOCAL MUNICIPALITY.

Milestones:

Year 1:

ORDINANCE REVISIONS AND ISSUANCE OF GENERAL CERTIFICATIONS AS NECESSARY.

Year 2:

ORDINANCE REVISIONS AND ISSUANCE OF GENERAL CERTIFICATIONS AS NECESSARY.

Year 3:

ORDINANCE REVISIONS AND ISSUANCE OF GENERAL CERTIFICATIONS AS NECESSARY.

Year 4:

ORDINANCE REVISIONS AND ISSUANCE OF GENERAL CERTIFICATIONS AS NECESSARY.

Year 5:

ORDINANCE REVISIONS AND ISSUANCE OF GENERAL CERTIFICATIONS AS NECESSARY.

Go to Additional Pages

☐ B.5 Volunteer Monitoring

☒ B.6. Program Involvement (You may need to go to the next page to fill in this information)

Brief Description of BMP:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Measurable Goals, including frequencies:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Milestones:

Year 1:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 2:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 3:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 4:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 5:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Go to Additional Pages

☒ B.7 Other Public Involvement (You may need to go to the next page to fill in this information)

Brief Description of BMP:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Measurable Goals, including frequencies:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Milestones:

Year 1:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 2:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 3:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 4:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 5:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Go to Additional Pages

C. Illicit Discharge Detection and Elimination

Qualifying Local Programs:

CO-PERMITTING WITH THE COUNTY OF DUPAGE.

Measurable Goals (include shared responsibilities)

☒ C.1 Sewer Map Preparation (You may need to go to the next page to fill in this information)

Brief Description of BMP:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES. VILLAGE HAS COMPLETED THE PREPARATION OF ITS STORM SEWER ATLAS AND SUBMITTED SAME TO DUPAGE COUNTY.

Measurable Goals, including frequencies:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES. VILLAGE TO UPDATE ITS ATLAS AS NECESSARY.

Milestones:

Year 1:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES. VILLAGE ATLAS UPDATE AS NECESSARY.

Year 2:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES. VILLAGE ATLAS UPDATE AS NECESSARY.

Year 3:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES. VILLAGE ATLAS UPDATE AS NECESSARY.

Year 4:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES. VILLAGE ATLAS UPDATE AS NECESSARY.

Year 5:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES. VILLAGE ATLAS UPDATE AS NECESSARY.

Go to Additional Pages

☒ C.2 Regulatory Control Program (You may need to go to the next page to fill in this information)

Brief Description of BMP:

VILLAGE HAS ADOPTED IDDE ORDINANCE AND HAS IGA WITH DUPAGE COUNTY TO MONITOR AND INVESTIGATE ILLICIT DISCHARGES AS THEY OCCUR.

Measurable Goals, including frequencies:

INVESTIGATION OF SUSPECTED ILLICIT DISCHARGES.

Milestones:

Year 1:

INVESTIGATE ALL ILLICIT DISCHARGES AS REPORTED AND ENFORCE COMPLIANCE.

Year 2:

NVESTIGATE ALL ILLICIT DISCHARGES AS REPORTED AND ENFORCE COMPLIANCE.

Year 3:

NVESTIGATE ALL ILLICIT DISCHARGES AS REPORTED AND ENFORCE COMPLIANCE.

Year 4:

NVESTIGATE ALL ILLICIT DISCHARGES AS REPORTED AND ENFORCE COMPLIANCE.

Year 5:

NVESTIGATE ALL ILLICIT DISCHARGES AS REPORTED AND ENFORCE COMPLIANCE.

Go to Additional Pages

☒ C.3 Detection/Elimination Prioritization Plan (You may need to go to the next page to fill in this information)

Brief Description of BMP:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Measurable Goals, including frequencies:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Milestones:

Year 1:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 2:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 3:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 4:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 5:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Go to Additional Pages

☒ C.4 Illicit Discharge Tracing Procedures (You may need to go to the next page to fill in this information)

Brief Description of BMP:

VILLAGE HAS ADOPTED IDDE ORDINANCE AND HAS IGA WITH DUPAGE COUNTY TO MONITOR AND INVESTIGATE ILLICIT DISCHARGES AS THEY OCCUR.

Measurable Goals, including frequencies:

INVESTIGATION OF SUSPECTED ILLICIT DISCHARGES.

Milestones:

Year 1:

INVESTIGATE ALL ILLICIT DISCHARGES AS REPORTED AND ENFORCE COMPLIANCE.

Year 2:

INVESTIGATE ALL ILLICIT DISCHARGES AS REPORTED AND ENFORCE COMPLIANCE.

Year 3:

INVESTIGATE ALL ILLICIT DISCHARGES AS REPORTED AND ENFORCE COMPLIANCE.

Year 4:

INVESTIGATE ALL ILLICIT DISCHARGES AS REPORTED AND ENFORCE COMPLIANCE.

Year 5:

INVESTIGATE ALL ILLICIT DISCHARGES AS REPORTED AND ENFORCE COMPLIANCE.

Go to Additional Pages

☒ C.5 Illicit Source Removal Procedures (You may need to go to the next page to fill in this information)

Brief Description of BMP:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Measurable Goals, including frequencies:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Milestones:

Year 1:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 2:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 3:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 4:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 5:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Go to Additional Pages

☐ C.6 Program Evaluation and Assessment

☒ C.7 Visual Dry Weather Screening (You may need to go to the next page to fill in this information)

Brief Description of BMP:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Measurable Goals, including frequencies:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Milestones:

Year 1:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 2:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 3:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 4:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 5:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Go to Additional Pages

☒ C.8 Pollutant Field Testing (You may need to go to the next page to fill in this information)

Brief Description of BMP:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Measurable Goals, including frequencies:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Milestones:

Year 1:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 2:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 3:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 4:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 5:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Go to Additional Pages

☐ C.9 Public Notification

☐ C.10 Other Illicit Discharge Controls

D. Construction Site Runoff Control

Measurable Goals (include shared responsibilities)

Qualifying Local Programs:

VILLAGE HAS ADOPTED THE DUPAGE COUNTY FLOODPLAIN AND STORMWATER MANAGEMENT ORDINANCE AND IS A PARTIAL WAIVER COMMUNITY.

☒ D.1 Regulatory Control Program (You may need to go to the next page to fill in this information)

Brief Description of BMP:

VILLAGE HAS ADOPTED THE DUPAGE COUNTY FLOODPLAIN AND STORMWATER MANAGEMENT ORDINANCE (DCFSMO) AND IS A PARTIAL WAIVER COMMUNITY.

Measurable Goals, including frequencies:

REVIEW PROPOSED DEVELOPMENT PLANS FOR COMPLIANCE WITH DCFSMO RESTRICTIONS ON STORMWATER DISCHARGE QUALITY AND QUANTITY.

Milestones:

Year 1:

REVIEW PROPOSED DEVELOPMENT PLANS AS SUBMITTED.

Year 2:

REVIEW PROPOSED DEVELOPMENT PLANS AS SUBMITTED.

Year 3:

REVIEW PROPOSED DEVELOPMENT PLANS AS SUBMITTED.

Year 4:

REVIEW PROPOSED DEVELOPMENT PLANS AS SUBMITTED.

Year 5:

REVIEW PROPOSED DEVELOPMENT PLANS AS SUBMITTED.

Go to Additional Pages

☒ D.2 Erosion and Sediment Control BMPs (You may need to go to the next page to fill in this information)

Brief Description of BMP:

VILLAGE HAS ADOPTED THE DUPAGE COUNTY FLOODPLAIN AND STORMWATER MANAGEMENT ORDINANCE (DCFSCMO) AND IS A PARTIAL WAIVER COMMUNITY. DFSCMO CONTAINS REQUIREMENTS FOR EROSION AND SEDIMENT CONTROL BMP'S.

Measurable Goals, including frequencies:

REVIEW PROPOSED DEVELOPMENT PLANS FOR COMPLIANCE WITH DCFSMO RESTRICTIONS ON STORMWATER DISCHARGE QUALITY AND QUANTITY.

Milestones:

Year 1:

REVIEW PROPOSED DEVELOPMENT PLANS AS SUBMITTED.

Year 2:

REVIEW PROPOSED DEVELOPMENT PLANS AS SUBMITTED.

Year 3:

REVIEW PROPOSED DEVELOPMENT PLANS AS SUBMITTED.

Year 4:

REVIEW PROPOSED DEVELOPMENT PLANS AS SUBMITTED.

Year 5:

REVIEW PROPOSED DEVELOPMENT PLANS AS SUBMITTED.

Go to Additional Pages

☐ D.3 Other Waste Control Program

☒ D.4 Site Plan Review Procedures (You may need to go to the next page to fill in this information)

Brief Description of BMP:

CO-PERMITTING WITH COUNTY OF DUPAGE. VILLAGE IS A PARTIAL WAIVER COMMUNITY AND REVIEWS DEVELOPMENT PLANS FOR STORMWATER MANAGEMENT OUTSIDE OF SPECIAL FLOOD HAZARD AREAS AND WETLANDS.

Measurable Goals, including frequencies:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES. REVIEW OF DEVELOPMENT PLANS FOR

Milestones:

Year 1:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 2:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 3:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 4:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 5:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Go to Additional Pages

☐ D.5 Public Information Handling Procedures

☒ D.6 Site Inspection/Enforcement Procedures (You may need to go to the next page to fill in this information)

Brief Description of BMP:

PRIVATE DEVELOPMENT REQUIRING AN ILR10 NPDES PERMIT IS REQUIRED TO PERFORM AND SELF-REPORT SITE INSPECTIONS AND PROVIDE COPIES TO THE VILLAGE. VILLAGE INSPECTION ON AN AS NEEDED BASIS.

Measurable Goals, including frequencies:

RECEIPT OF TIMELY INSPECTION REPORTS AND FOLLOW UP AS REQUIRED BY VILLAGE STAFF AND CONSULTANTS.

Milestones:

Year 1:

MONITOR CONSTRUCTION AS IT OCCURS.

Year 2:

MONITOR CONSTRUCTION AS IT OCCURS.

Year 3:

MONITOR CONSTRUCTION AS IT OCCURS.

Year 4:

MONITOR CONSTRUCTION AS IT OCCURS.

Year 5:

MONITOR CONSTRUCTION AS IT OCCURS.

Go to Additional Pages

☐ D.7 Other Construction Site Runoff Controls

E. Post-Construction Runoff Control

Qualifying Local Programs:

CO-PERMITTING WITH DUPAGE COUNTY

Measurable Goals (include shared responsibilities)

☐ E.1 Community Control Strategy

☒ E.2 Regulatory Control Program

Brief Description of BMP:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Measurable Goals, including frequencies:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Milestones:

Year 1:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 2:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 3:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 4:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 5:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Go to Additional Pages

☐ E.3 Long Term O & M Procedures

☒ E.4 Pre-Construction Review of BMP Designs (You may need to go to the next page to fill in this information)

Brief Description of BMP:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES IN UNINCORPORATED AREAS AND WITHIN WETLAND AND SPECIAL FLOOD HAZARD AREAS. VILLAGE REVIEWS PROPOSED DEVELOPMENT PLANS FOR COMPLIANCE WITH DCFSMO RESTRICTIONS ON STORMWATER DISCHARGE QUALITY AND QUANTITY.

Measurable Goals, including frequencies:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Milestones:

Year 1:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES. VILLAGE REVIEWS PROPOSED DEVELOPMENT PLANS AS SUBMITTED.

Year 2:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES. VILLAGE REVIEWS PROPOSED DEVELOPMENT PLANS AS SUBMITTED.

Year 3:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES. VILLAGE REVIEWS PROPOSED DEVELOPMENT PLANS AS SUBMITTED.

Year 4:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES. VILLAGE REVIEWS PROPOSED DEVELOPMENT PLANS AS SUBMITTED.

Year 5:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES. VILLAGE REVIEWS PROPOSED DEVELOPMENT PLANS AS SUBMITTED.

Go to Additional Pages

☐ E.5 Site Inspections During Construction

☒ E.6 Post-Construction Inspections

Brief Description of BMP:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Measurable Goals, including frequencies:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Milestones:

Year 1:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 2:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 3:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 4:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 5:

SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Go to Additional Pages

☐ E.7 Other Post-Construction Runoff Controls

F. Pollution Prevention/Good Housekeeping

Measurable Goals (include shared responsibilities)

Qualifying Local Programs:

CO-PERMITTING WITH COUNTY OF DUPAGE

☐ F.1 Employee Training Program

☒ F.2 Inspection and Maintenance Program (You may need to go to the next page to fill in this information)

Brief Description of BMP:
SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Measurable Goals, including frequencies:
SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Milestones:

Year 1:
SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 2:
SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 3:
SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 4:
SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 5:
SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Go to Additional Pages

☐ F.3 Municipal Operations Storm Water Control

☐ F.4 Municipal Operations Waste Disposal

☒ F.5 Flood Management/Assess Guidelines (You may need to go to the next page to fill in this information)

Brief Description of BMP:
SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Measurable Goals, including frequencies:
SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Milestones:

Year 1:
SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 2:
SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 3:
SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 4:
SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Year 5:
SEE ATTACHED LISTING OF DUPAGE COUNTY ACTIVITIES

Go to Additional Pages

☐ F.6 Other Municipal Operations Controls

Part III. Certification

I certify under penalty of law that this document an all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fines and imprisonment.

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)).

MICHAEL MILLETTE	DIRECTOR OF PUBLIC WORKS	9/27/13
Authorized Representative Name	Title	Date

Authorized Representative Signature

You may complete this form online and save a copy locally before printing and signing the form. It should then be sent to:

Illinois Environmental Protection Agency
Bureau of Water
Division of Water Pollution Control
Attn: Permit Section
P.O. Box 19276
1021 North Grand Avenue East
Springfield, IL 62794-9276

Information required by this form must be provided to comply with 415 ILCS 5/39 (2000). Failure to do so may prevent this form from being processed and could result in your application being denied.

Additional Info - Page 1

A. Public Education and Outreach

BMP Number _____

Add Another BMP Delete Last Entry

Additional Info - Page 2

B. Public Participation/Involvement

BMP Number _____

Add Another BMP Delete Last Entry

Additional Info - Page 3

C. Illicit Discharge Detection and

BMP Number _____

Add Another BMP

Delete Last Entry

Additional Info - Page 4

D. Construction Site Runoff Control

BMP Number _____

Add Another BMP Delete Last Entry

Additional Info - Page 5

E. Post-Construction Runoff Control

BMP Number _____

Add Another BMP Delete Last Entry

Additional Info - Page 6

F. Pollution Prevention/Good

BMP Number _____

Add Another BMP Delete Last Entry

A. Public Education and Outreach

Qualifying Local Programs:

DuPage County employs a Stormwater Outreach Coordinator and is engaged in contracts with the not-for-profit organizations SCARCE and The Conservation Foundation to provide education and outreach pertaining to the reduction of pollutants in stormwater runoff. These efforts take place throughout the entirety of DuPage County.

Measurable Goals (including shared responsibilities)

A.1 Distributed Paper Material

Brief Description of BMP:

Develop and distribute both paper and electronic material regarding the control of pollutants from seasonal sources and activities.

Measurable Goals, including frequencies:

The number of seasonal brochure packets developed per year.

Milestones:

- Year 1: 1 brochure packet
- Year 2: 2 brochure packets
- Year 3: 2 brochure packets
- Year 4: 3 brochure packets
- Year 5: 4 brochure packets

A.2 Speaking Engagement

Brief Description of BMP:

Engage interested parties through presentations detailing water quality trends for DuPage County waterways and highlighting practices that can reduce the transport of pollutants along with stormwater into those same waterways.

Measurable Goals, including frequencies:

The number of presentations made per year.

Milestones:

- Year 1: 5 presentations
- Year 2: 5 presentations
- Year 3: 6 presentations
- Year 4: 7 presentations
- Year 5: 7 presentations

A.3 Public Service Announcement

Brief Description of BMP:

Disburse press releases, public service announcements, and messages through social media to residents of the entirety of DuPage County. These messages detail water quality trends for DuPage County waterways and highlight practices that can reduce the transport of pollutants along with stormwater into those same waterways.

Measurable Goals, including frequencies:

The number of messages broadcast per year.

Milestones:

- Year 1: 8 messages
- Year 2: 9 messages
- Year 3: 10 messages
- Year 4: 11 messages
- Year 5: 12 messages

A.4 Community Event

Brief Description of BMP:

Present, through booths, workshops, or presentations, water quality issues to members of the community. Presentations detail water quality trends for DuPage County waterways and highlighting practices that can reduce the transport of pollutants along with stormwater into those same waterways.

Measurable Goals, including frequencies:

The number of events attended or hosted per year.

Milestones:

- Year 1: 2 events staffed
- Year 2: 3 events staffed

- Year 3: 4 events staffed
- Year 4: 5 events staffed
- Year 5: 6 events staffed

A.5 Classroom Education Material

Brief Description of BMP:

Educate school aged children regarding the basic principles of watersheds and practices to reduce the transfer of pollutants to waterways, including rain gardens, rain barrels, permeable pavers, green roofs, native plants, bioswales, and various source control measures.

Measurable Goals, including frequencies:

The number of students in attendance of outreach programs per year.

Milestones:

- Year 1: 300 students
- Year 2: 330 students
- Year 3: 363 students
- Year 4: 399 students
- Year 5: 439 students

B. Public Participation / Involvement

Qualifying Local Programs:

DuPage County seeks to engage a broad range of individuals and interests to provide input regarding policies and projects related to the control and reduction of pollutants in stormwater runoff. Such input is provided through hosting and participating in stakeholder meetings, as well as facilitating the involvement of the public in various activities.

Measurable Goals (including shared responsibilities)

B.3 Stakeholder Meeting

Brief Description of BMP:

Organize or serve as a principal participant in a stakeholder meeting that addresses matters pertaining to pollutant reduction on a watershed level.

Measurable Goals, including frequencies:

The number of meetings held per year.

Milestones:

- Year 1: 10 meetings
- Year 2: 11 meetings
- Year 3: 12 meetings
- Year 4: 13 meetings
- Year 5: 15 meetings

B.6 Program Involvement

Brief Description of BMP:

Facilitate attitude surveys to gauge citizen views, behaviors, and concerns pertaining to a variety of topics, including water quality, property management, and residential pollutant control.

Measurable Goals, including frequencies:

The number of surveys developed and disbursed per year.

Milestones:

- Year 1: 1 survey
- Year 2: 1 survey
- Year 3: 1 survey
- Year 4: 1 survey
- Year 5: 1 survey

B.7 Other Public Involvement

Brief Description of BMP:

Host events, such as Adopt-a-Stream, River Sweep, and Storm Drain Stenciling, were residents are engaged in reducing the transport of pollutants to, or directly removing pollutants from, waterways within DuPage County.

Measurable Goals, including frequencies:

The number of individuals involved in public events per year.

Milestones:

- Year 1: 400 participants
- Year 2: 420 participants
- Year 3: 441 participants
- Year 4: 463 participants
- Year 5: 486 participants

C. Illicit Discharge Detection and Elimination

Qualifying Local Programs:

DuPage County is engaged in intergovernmental agreements with the majority of municipalities regarding the screening for and tracing of illicit discharges into Waters of the State from MS4 outfalls. County staff hosts an illicit discharge hotline, performs field inspections of known outfall locations, and, where applicable, traces a suspected illicit discharge to the source.

Measurable Goals (including shared responsibilities)

C.1 Sewer Map Preparation

Brief Description of BMP:

Collect and compile, from a variety of sources, storm sewer maps. These maps identify the locations of storm sewer outfalls discharging to Waters of the State. The desired end product it one comprehensive, Countywide storm sewer atlas.

Measurable Goals, including frequencies:

The percentage of DuPage County for which a storm sewer atlas has been compiled.

Milestones:

- Year 1: 50 percent
- Year 2: 60 percent
- Year 3: 70 percent
- Year 4: 80 percent
- Year 5: 90 percent

C.3 Detection / Elimination Prioritization Plan

Brief Description of BMP:

Compile information pertaining to the ten step prioritization plan identified in the *DuPage County IDDE Program Technical Guidance*.

Measurable Goals, including frequencies:

The number of steps in the prioritization process completed per year.

Milestones:

- Year 1: 2 steps (1 & 2)
- Year 2: 2 steps (3 & 4)
- Year 3: 2 steps (5 & 6)
- Year 4: 2 steps (7 & 8)
- Year 5: 2 steps (9 & 10)

C.5 Illicit Source Removal Procedures

Brief Description of BMP:

Distribute educational materials pertaining to illicit discharges to DuPage County residents and businesses. DuPage County maintains an Illicit Discharge Detection and Elimination Hotline, where interested parties are able to report suspect discharges from the storm sewer system into waterways located within DuPage County. Often, these reported discharges originate from an individual or business that is unaware of the implications of their activities.

Measurable Goals, including frequencies:

The number of flyers, posters, or other public education tools distributed per year.

Milestones:

- Year 1: 10 pieces of educational material
- Year 2: 11 pieces of educational material
- Year 3: 12 pieces of educational material
- Year 4: 13 pieces of educational material
- Year 5: 14 pieces of educational material

C.7 Visual Dry Weather Screening

Brief Description of BMP:

Perform the visual screening of MS4 outfalls discharging to Waters of the State during dry-weather conditions.

Measurable Goals, including frequencies:

The number of outfalls inspected per year.

Milestones:

- Year 1: 10 percent of known outfalls
- Year 2: 15 percent of known outfalls
- Year 3: 20 percent of known outfalls
- Year 4: 25 percent of known outfalls
- Year 5: 30 percent of known outfalls

C.8 Pollutant Field Testing

Brief Description of BMP:

Conduct monitoring for the following chemical parameters when visual characterization of the discharge indicates an illicit nature: surfactants, ammonia, potassium, fluoride, conductivity, and pH.

Measurable Goals, including frequencies:

The percentage of outfalls releasing a suspected illicit discharge chemically monitored per year.

Milestones:

- Year 1: 20 percent
- Year 2: 30 percent
- Year 3: 40 percent
- Year 4: 50 percent
- Year 5: 60 percent

D. Construction Site Runoff Control

Qualifying Local Programs:

In addition to review of construction permit submittals for projects taking place within unincorporated of DuPage County, County staff also reviews construction permit submittals for a number of municipalities when special management areas are involved in the project.

Measurable Goals (including shared responsibilities)

D.4 Site Plan Review Procedures

Brief Description of BMP:

Review construction permit submittals to identify opportunities for avoidance of impacts to channels, wetlands, and adjoining property.

Measurable Goals, including frequencies:

The number of construction permit submittals reviewed per year.

Milestones:

- Year 1: 100 reviews
- Year 2: 105 reviews
- Year 3: 110 reviews
- Year 4: 116 reviews
- Year 5: 122 reviews

E. Post-Construction Runoff Control

Qualifying Local Programs:

The DuPage County Countywide Stormwater and Flood Plain Ordinance (DCCSFPO) establishes a minimum level of regulatory compliance that a municipality within DuPage County must meet. Several communities have waived their legal authority to enforce the DCCSFPO, either partially or wholly, within their jurisdiction. DuPage County staff offers numerous services for those communities, including permit submittal review and post-construction inspections at sites containing wetland buffer, riparian enhancement, and wetland mitigation.

Measurable Goals (including shared responsibilities)

E.2 Regulatory Control Program

Brief Description of BMP:

Review of the regulatory framework established by the DCCSFPO. Following review, the need for changes in Ordinance text, performance of community audits, general certification adoption, or development of technical guidance may be recognized.

Measurable Goals, including frequencies:

The number of regulatory activities performed per year.

Milestones:

- Year 1: 1 activity
- Year 2: 1 activity
- Year 3: 2 activities
- Year 4: 2 activities
- Year 5: 3 activities

E.4 Pre-Construction Review of BMP Designs

Brief Description of BMP:

Certify, for permit approval, permit submittals. Approval is granted to submittals that are in compliance with the DuPage County Countywide Stormwater and Flood Plain Ordinance, which requires post-construction best management practices (PCBMPs) for all developments with a 2,500 square foot net increase of impervious surfaces. While County staff is not able to control for the quality of permit submittals, efforts are made to educate the development community on how submittals can be enhanced.

Measurable Goals, including frequencies:

The percentage of permit submittals certified, versus the total number of submittals, per year.

Milestones:

- Year 1: 30 percent
- Year 2: 35 percent
- Year 3: 40 percent
- Year 4: 45 percent
- Year 5: 50 percent

E.6 Post-Construction Inspections

Brief Description of BMP:

Conduct post-construction inspections at sites containing wetland buffer, riparian enhancement, or wetland mitigation.

Measurable Goals, including frequencies:

The number of post-construction inspections performed per year.

Milestones:

- Year 1: 100 inspections
- Year 2: 110 inspections
- Year 3: 121 inspections
- Year 4: 133 inspections
- Year 5: 146 inspections

F. Pollution Prevention / Good Housekeeping

Qualifying Local Programs:

DuPage County, through passage of the DuPage County Stormwater Management Plan (DCSMP, 1989), assumed responsibility for regional watershed planning. Where applicable, watershed plans are to include updated and revised floodplain maps, basin-specific ordinances, recommended improvement projects and programs to alleviate present and anticipated flooding problems, and identification of wetlands and critical habitats. Additionally, DuPage County offers stream maintenance services to remove large timber debris accumulations from waterways when contacted by requesting municipalities. The DCSMP states that primary responsibility for maintenance lies within the municipality in which the stormwater facility, including drainage ways (rivers, streams, and ditches), is located; however, such a service for potential regional stormwater problems is offered to reduce overall cost and increase expediency in blockage removal.

Measurable Goals (including shared responsibilities)

F.2 Inspection and Maintenance Program

Brief Description of BMP:

Follow established procedures to remove accumulated timber debris from stormwater facilities that have potential to cause a regional stormwater problem.

Measurable Goals, including frequencies:

The number of cubic yards removed from drainage ways per year.

Milestones:

- Year 1: 200 cubic yards
- Year 2: 220 cubic yards
- Year 3: 242 cubic yards
- Year 4: 266 cubic yards
- Year 5: 293 cubic yards

F.5 Flood Management / Assess Guidelines

Brief Description of BMP:

Ensure that new flood management projects assess the impacts on water quality and examine existing projects for incorporation of additional water quality protection devices or practices.

Measurable Goals, including frequencies:

The number of completed watershed plans, or components thereof, approved by the Stormwater Management Planning Committee and County Board per year.

Milestones:

- Year 1: 1 watershed plan
- Year 2: 1 watershed plan
- Year 3: 1 watershed plan
- Year 4: 1 watershed plan
- Year 5: 1 watershed plan

APPENDIX 8

Village of Clarendon Hills Annual Facility Inspection Reports: Years 9-14

Village of Clarendon Hills

1 NORTH PROSPECT AVENUE CLARENDON HILLS, ILLINOIS 60514-1292
TEL (630) 286-5400 FAX (630) 286-5409 www.clarendonhills.us
EMAIL: admin@clarendonhills.us

April 19, 2012

Illinois Environmental Protection Agency, DWPC
Compliance Assurance Section
1021 North Grand Avenue East, POB 19276
Springfield, Illinois 62794-9276

Subject: Annual Report for NPDES Phase II MS4 General Stormwater Permit Year 9

Gentlemen:

Attached please find the following documents for the Village of Clarendon Hills:

1. IEPA Annual Facility Inspection Report (IL 532-2585).

2. Attachment F listing the Village-sponsored capital projects that took place during Year 9 of the current NPDES permit.

Please consider this letter as the Village's notice that it is relying upon the actions of the County of DuPage to satisfy the permit obligations of the Village (Attachment E).

If you have questions about the information contained within the attached Annual Report or its attachments, please contact myself or Mr. Daniel L. Lynch, the Village's Municipal Engineer (847-823-0500).

Sincerely,

John W. Hays
Director of Public Works

Village of Clarendon Hills

1 NORTH PROSPECT AVENUE CLARENDON HILLS, ILLINOIS 60514-1292
TEL (630) 286-5400 FAX (630) 286-5409 www.clarendonhills.us
EMAIL: admin@clarendonhills.us

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

Location	**Start Date** **Estimated/Actual Completion Date** **Description**
N/A - No publicly sponsored capital improvements related to Stormwater were undertaken by the Village during the reporting period.	N/A

Illinois Environmental Protection Agency

Bureau of Water • 1021 North Grand Avenue East • 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, 2011 To March, 2012

Permit No. ILR40 0502

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

Name: Village of Clarendon Hills

Mailing Address: 1 North Prospect Avenue County: DuPage

City: Clarendon Hills State: IL Zip: 60514 Telephone: 630-286-5400

Contact Person: John Hays Email Address: jhays@clarendonhills.us
(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 Clarendon Hills

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))

John W. Hays
Owner Signature:

4/20/2012
Date:

John Hays
Printed Name:

Director of Public Works
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

This Agency is authorized to require this information under Section 4 and Title X of the Environmental Protection Act (415 ILCS 5/4, 5/39). Failure to disclose this information may result in: a civil penalty of not to exceed $50,000 for the violation and an additional civil penalty of not to exceed $10,000 for each day during which the violation continues (415 ILCS 5/42) and may also prevent this form from being processed and could result in your application being denied. This form has been approved by the Forms Management Center.

Village of Clarendon Hills

1 NORTH PROSPECT AVENUE CLARENDON HILLS, ILLINOIS 60514-1292
TEL (630) 286-5400 FAX (630) 286-5409 www.clarendonhills.us
EMAIL: admin@clarendonhills.us

May 20, 2013

Illinois Environmental Protection Agency, DWPC
Compliance Assurance Section
1021 North Grand Avenue East, POB 19276
Springfield, Illinois 62794-9276

Subject: Annual Report for NPDES Phase II MS4 General Stormwater Permit Year 10

Gentlemen:

Attached please find the following documents for the Village of Clarendon Hills:

1. IEPA Annual Facility Inspection Report (IL 532-2585).

2. Attachment F listing the Village-sponsored capital projects that took place during Year 10 of the current NPDES permit.

Please consider this letter as the Village's notice that it is relying upon the actions of the County of DuPage to satisfy the permit obligations of the Village (Attachment E).

If you have questions about the information contained within the attached Annual Report or its attachments, please contact myself or Mr. Daniel L. Lynch, the Village's Municipal Engineer (847-823-0500).

Sincerely,

Michael D. Millette, P.E.
Director of Public Works

\\Server2008\users\mmillette\My Documents\storm water\L1 051513-CH.doc

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

Location	**Start Date** **Estimated/Actual Completion Date** **Description**
N/A - No publicly sponsored capital improvements related to Stormwater were undertaken by the Village during the reporting period.	N/A

Illinois Environmental Protection Agency

Bureau of Water • 1021 North Grand Avenue East • 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, 2012 To March, 2013

Permit No. ILR40 0502

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

Name: Village of Clarendon Hills

Mailing Address: 1 North Prospect Avenue County: DuPage

City: Clarendon Hills State: IL Zip: 60514 Telephone: 630-286-5400

Contact Person: Mike Millette Email Address: mmil
(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 Clarendon Hills

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))

Michael D. Millette
Owner Signature:

5/20/13
Date:

Michael D. Millette, PE
Printed Name:

Director of Public Works
Title:

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

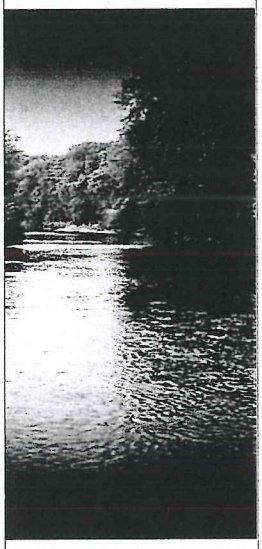
or Mail to: ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
WATER POLLUTION CONTROL
COMPLIANCE ASSURANCE SECTION #19
1021 NORTH GRAND AVENUE EAST
POST OFFICE BOX 19276
SPRINGFIELD, ILLINOIS 62794-9276

This Agency is authorized to require this information under Section 4 and Title X of the Environmental Protection Act (415 ILCS 5/4, 5/39). Failure to disclose this information may result in: a civil penalty of not to exceed $50,000 for the violation and an additional civil penalty of not to exceed $10,000 for each day during which the violation continues (415 ILCS 5/42) and may also prevent this form from being processed and could result in your application being denied. This form has been approved by the Forms Management Center.

View Our Reports | Bioassessment | Dissolved Oxygen | Winter De-icing | Non-point Source Project Identification and Prioritization

MENU

- Who is the DRSCW
- Meeting Calendar
- Agendas and Minutes
- Financials
- DRSCW in the News
- Newsletters
- Membership



DRSCW Officers and Executive Board

President - David Gorman, Village of Lombard

Vice President - Sue Baert, Wheaton Sanitary District

Secretary/Treasurer - Antonio Quintanilla, Metropolitan Water Reclamation District of Greater Chicago

Ex-Officio - Kevin Buoy, DuPage County

Monitoring Committee Chairperson - Jennifer Hammer, The Conservation Foundation

Salt Creek Committee Chairperson - Dennis Streicher, Sierra Club - River Prairie Group

East Branch DuPage River Committee Chairperson - Larry Cox, Downers Grove Sanitary District

West Branch DuPage River Committee Chairperson - John "Ole" Oldenburg, Forest Preserve District of DuPage County

Member At Large - Mitchell Patterson, Village of Addison

Member At Large - Tom Richardson, Sierra Club - Prairie River Group

Member At Large - Robert Swanson, DuPage County

Member At Large - Steven Zehner, Robinson Engineering, Ltd.

DRSCW Members

- Village of Addison
- Village of Arlington Heights
- Baxter & Woodman, Inc.
- Village of Bartlett
- Village of Bensenville
- Village of Bloomingdale
- Village of Bolingbrook
- CDM Smith
- Village of Carol Stream
- Village of Clarendon Hills
- Village of Downers Grove
- Downers Grove Sanitary District
- DuPage County
- DuPage County Health Department
- City of Elmhurst
- Engineering Resource Associates, Inc.
- Forest Preserve District of DuPage County
- Geosyntec Consultants
- Glenbard Wastewater Authority
- Village of Glen Ellyn
- Village of Glendale Heights
- HDR, Inc.
- Village of Hanover Park
- Ross A. Hill
- Village of Hinsdale
- Village of Hoffman Estates
- Huff & Huff, Inc.
- Illinois Department of Transportation
- Illinois State Toll Highway Authority
- Inter-Fluve, Inc.
- Village of Itasca
- Steven Kaar
- Village of Lisle
- Village of Lombard
- Metropolitan Water Reclamation District of Greater Chicago
- City of Naperville
- Naperville Park District
- City of Oakbrook Terrace
- Prairie Rivers Network
- RJN Group, Inc.
- Robinson Engineering, Ltd.
- Village of Roselle
- Salt Creek Sanitary District
- Salt Creek Watershed Network
- Village of Schaumburg
- Sierra Club, River Prairie Group
- Strand Associates, Inc.
- Suburban Laboratories, Inc.
- The Conservation Foundation
- The Morton Arboretum
- V3 Companies
- Village of Villa Park
- City of West Chicago
- Walter E. Deuchler Associates, Inc.
- Village of Westmont
- City of Wheaton
- Wheaton Sanitary District
- City of Wood Dale
- Village of Woodridge
- York Township Highway Department

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DRSCW NPDES Activities
March 2012 – March 2013

1. Public education and outreach on stormwater impacts

DRSCW outreach activities for the year ending 2013 included:

- The DRSCW website was maintained during the reporting period and periodically updated with presentations and material (www.drscw.org).
- Public information available on the website includes:
  - Chloride Fact Sheets aimed at mayors and managers, public works staff, commercial operators, and homeowners.
  - A fact sheet summarizing alternative deicing products.
  - 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).
  - An voluntary MOU for communities to sign declaring that they are discontinuing the use of coal tar based sealants.

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 is mainly stormwater and wastewater professionals but the general public is also welcome to attend. The list below includes presentations that were made during the period March 1, 2012 to February 28, 2013. Presentations are made available on the DRSCW website after the meetings.

April 25, 2012
Presentation: De-icing Liquids - A Success Story
Presenter: Scott Weber, Streets/Forestry Supervisor Village of Hanover Park

Presentation: Preliminary Results for Churchill Woods Dam Removal
Presenter: Stephen McCracken, DRSCW/ The Conservation Foundation

June 27, 2012
Presentation: Nutrient Removal Upgrade Costs at POTWs
Presenter: Pavel Hajda, Symbiont

August 29, 2012
Presentation: West Branch DuPage River Smallmouth Bass Release Project
Presenter: Steve Pescitelli IDNR Region II Stream Specialist

Presentation: Layman's Guide to the analysis behind the IPS methodology
Presenter: James Bland

October 31, 2012
Presentation: Ammonia Mass –Balance Update, Lower East Branch DuPage River
Presenter: Lindsay Birt, Huff & Huff

Presentation: Springbrook1 Creek and Wetland Restoration Project
Presenters: John Oldenburg, Forest Preserve District of DuPage County and Paul Botts, The Wetlands Initiative

December 5, 2012
Presentation: Role of Coal Tar-Based Sealants in the Source Apportionment of PAHs in Urban Stormwater pond Sediments
Presenter: Judy L. Crane, Ph.D., Minnesota Pollution Control Agency, St. Paul, MN.

Presentation: E3: Economy, Energy & Environment Initiative –
Presenter: Shefali Trivedi, Environmental Projects Specialist, DuPage County - Economic Development & Planning

February 27, 2013
Presentation: IPS Tool Outputs and White Paper Recommendations
Presenter: Stephen McCracken, The Conservation Foundation/ DRSCW

Presentation: Chloride Usage Education and Reduction Program Summary
Presenter: Dan Bounds, CDM Smith

Presentation: Database - present capabilities and future web portal
Presenter: Mark Willobee, Geosyntec

Presenter: IPS Tool and DO TMDL Implementation at Oak Meadows Forest Preserve
Presenter: Andy Selle, Inter-Fluve

Other Public Education Presentations

- 3/9/2012 for the Municipal Engineers Advisory Group for DuPage Mayors and Managers Conference "Optimal Buffer Width for improving mIBI Scores"
- 3/22/2012 for the Village of Lisle "What's Going on in Our Waterways?"
- 11/8/2012 for the Village of Arlington Heights Public Works Snow Fighting Training "Chlorides in Streams"
- 11/15/12 for USEPA Region 5's TMDL Practitioners Workshop "TMDLs and Adaptive Management"

- 1/10/13 for Twig 'N Bloom Garden Club "What's Going On In Our Rivers"
- 3/19/13 at WaterCon "DRSCW White Paper"

2. Public involvement and participation

Monitoring Activities

- Chloride – The DRSCW conducted monitoring of ambient chloride levels using hourly conductivity values at five locations (three data loggers maintained by DRSCW and two by MWRDGC). Hourly conductivity data was collected 24 hours a day from December 2012 to March 2013. A 2008 DRSCW study had established a strong correlation between ambient winter conductivity and chloride levels. Summer chloride concentrations were gathered under the surface water monitoring program.

- Dissolved Oxygen (DO) – Ambient DO, ph, temperature and conductivity were measured at ten sites under the continuous DO monitoring program. All DO data was collected under a Quality Assurance Plan agreed upon with IEPA1. A map of monitoring locations is given in Map 1. Sites were maintained by county, municipal and private environmental organization staff. Data collected in this report is used to develop the DRSCW Bioassessment report for the watershed. The data is also shared with IEPA for development and review of the 303(d) List.

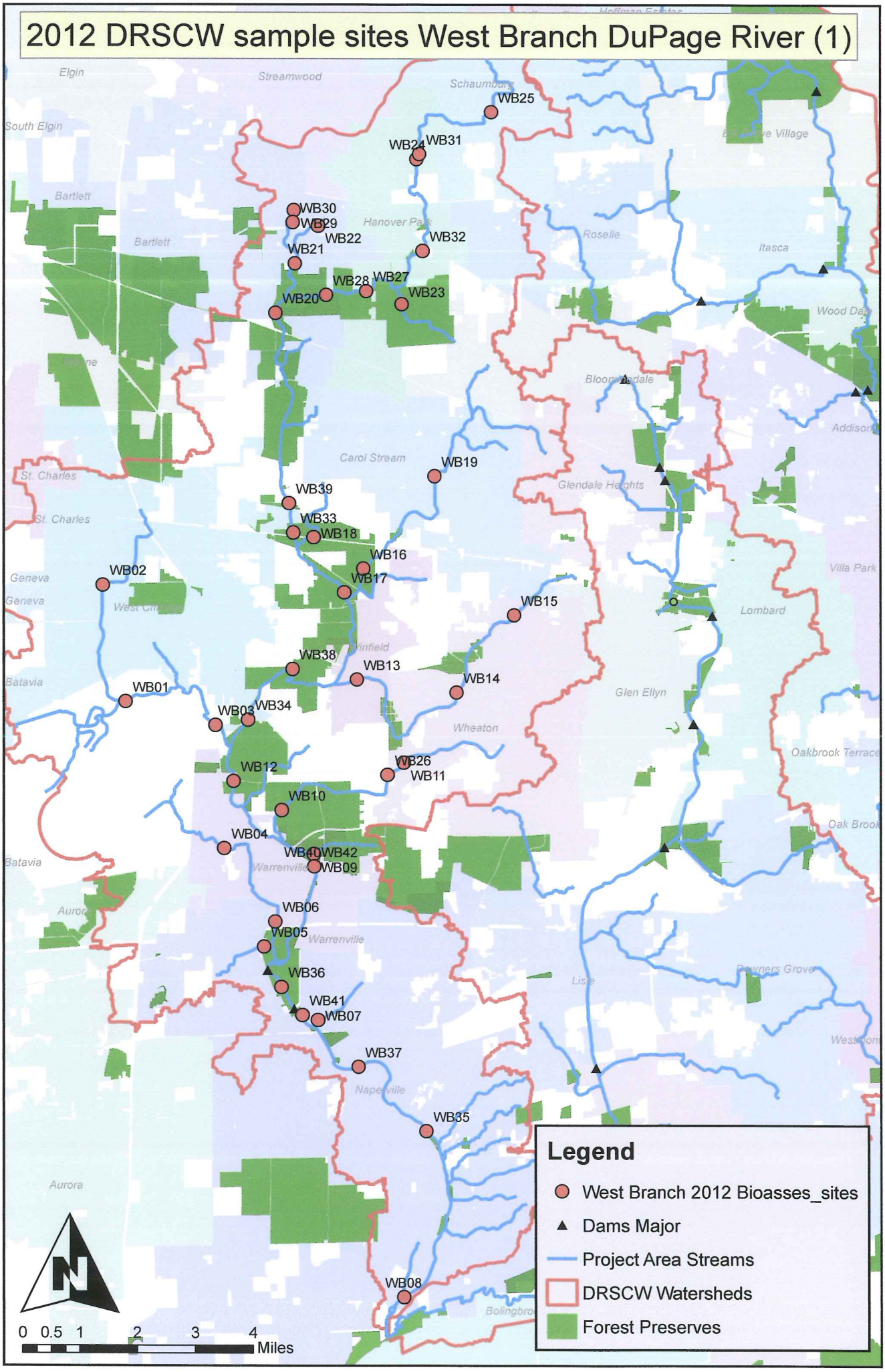
- Bioassessment – Bioassessment sampling was carried out in the East Branch DuPage River basin. A total of 38 sites were sampled for water column chemistry, sediment chemistry, Fish IBI (Index of Biological Integrity) and macro invertebrate IBI, and Qualitative Habitat Evaluation Index (QHEI) scores. The sediment and water column sampling parameters are listed in Table 1, sample site locations are indicated in Map 1.

Table 1. Water column and sediment parameters collected under the Bioassessment analysis

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	

Data from the plan is used to produce the Bioassessment analysis, to identify and prioritize stormwater, wastewater and restoration projects and is delivered to IEPA for use in the state's 303(d) list. The Bioassessment plan runs correlation analysis between IBI scores and various factors (water column chemistry, sediment chemistry and habitat). Reports for assessments for the period 2006-2010 are available on line at http://drscw.org/.

[1] DO Quality Assurance Plan DRSCW 2006


2012 DRSCW sample sites West Branch DuPage River (1)
Elgin
Streamwood
Schaumburg
South Elgin
Bartlett
Hanover Park
Roselle
Itasca
Wood Dale
Bloomingdale
Addison
Carol Stream
St. Charles
Glendale Heights
Geneva
Villa Park
Lombard
Batavia
Glen Ellyn
Wheaton
Oakbrook Terrace
Oak Brook
Warrenville
Aurora
Lisle
Downers Grove
Naperville
Bolingbrook
WB25
WB24
WB31
WB30
WB29
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WB34
WB12
WB26
WB11
WB10
WB04
WB40
WB42
WB09
WB06
WB05
WB36
WB41
WB07
WB37
WB35
WB08
Legend
West Branch 2012 Bioasses_sites
Dams Major
Project Area Streams
DRSCW Watersheds
Forest Preserves
N
0 0.5 1 2 3 4
Miles

Other Public Involvement

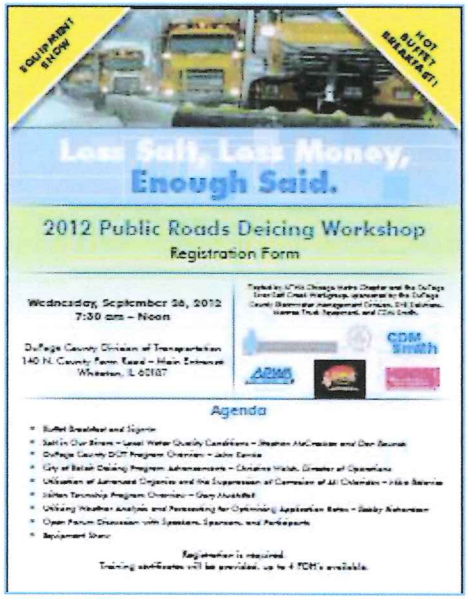
3. Illicit discharge detection and elimination – no activities

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

A 2012 Public Roadway Deicing Questionnaire was distributed to all eligible agency members and DuPage County townships. DRSCW received 34 Responses. Please note: Agencies should report their participation in this survey and make note of any changes to your responses from previous years.



Two chloride reduction workshops were held during the reporting period.

The Public Roads deicing workshop was held on 9.26.12. The agenda was as follows:

- Salt in Our Rivers – Local Water Quality Conditions (Stephen McCracken, DRSCW; Dan Bounds, CDM Smith)
- DuPage County DOT Program Overview (John Kawka, DuPage County DOT)
- City of Beloit Deicing Program Advancements (Bradley Trewyn, City of Beloit)
- Utilization of Advanced Organics and the Suppression of Corrosion of All Chlorides (Mike Belovics, SNI Solutions)
- Utilizing Weather Analysis and Forecasting for Optimizing Application Rates (Bobby Richardson, Formerly City of Chicago)
- Group discussion, items from audience
- Equipment Show (DuPage DOT)
- 111 people attended including presenters. All attendees received a certificate of attendance.

The Parking Lot and Sidewalk deicing workshop was held on the 10.04.12. The agenda was as follows:

- Local Chloride Reduction Program (Stephen McCracken, DRSCW)
- Chloride concentrations in water and its effects, materials, storage, winter facilities management planning, case studies of use
- Pavement temperature sensing, application rates, building equipment for liquids and pre-wetting
- Test on presented material
- This workshop had 35 participants including presenters. 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.

Village of Clarendon Hills

1 NORTH PROSPECT AVENUE CLARENDON HILLS, ILLINOIS 60514-1292
TEL (630) 286-5400 FAX (630) 286-5409 www.clarendonhills.us
EMAIL: admin@clarendonhills.us

May 27, 2014

Illinois Environmental Protection Agency, DWPC
Compliance Assurance Section
1021 North Grand Avenue East, POB 19276
Springfield, Illinois 62794-9276

Subject: Annual Report for NPDES Phase II MS4 General Stormwater Permit Year 11

Gentlemen:

Attached please find the following documents for the Village of Clarendon Hills:

1. IEPA Annual Facility Inspection Report (IL 532-2585).

2. Attachment F listing the Village-sponsored capital projects that took place during Year 11 of the current NPDES permit.

Please consider this letter as the Village's notice that it is relying upon the actions of the County of DuPage to satisfy the permit obligations of the Village (Attachment E).

If you have questions about the information contained within the attached Annual Report or its attachments, please contact myself or Mr. Daniel L. Lynch, the Village's Municipal Engineer (847-823-0500).

Sincerely,

Michael D. Millette, P.E.
Director of Public Works

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

Location	**Start Date** **Estimated/Actual Completion Date** **Description**
N/A - No publicly sponsored capital improvements related to Stormwater were undertaken by the Village during the reporting period.	N/A

Illinois Environmental Protection Agency

Bureau of Water • 1021 North Grand Avenue East • 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, 2013 To March, 2014

Permit No. ILR40 0502

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

Name: Village of Clarendon Hills

Mailing Address: 1 North Prospect Avenue County: DuPage

City: Clarendon Hills State: IL Zip: 60514 Telephone: 630-286-5400

Contact Person: John Hays Email Address:
(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 Clarendon Hills

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))

Michael D. Millette
Owner Signature:

5/27/14
Date:

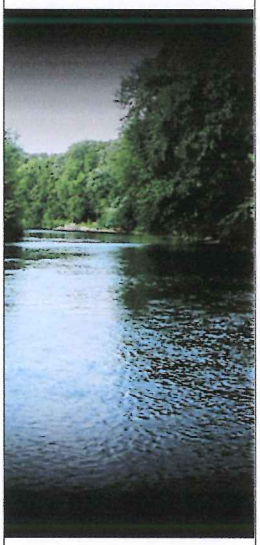
Michael D. Millette, PE
Printed Name:

Director of Public Works
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

This Agency is authorized to require this information under Section 4 and Title X of the Environmental Protection Act (415 ILCS 5/4, 5/39). Failure to disclose this information may result in: a civil penalty of not to exceed $50,000 for the violation and an additional civil penalty of not to exceed $10,000 for each day during which the violation continues (415 ILCS 5/42) and may also prevent this form from being processed and could result in your application being denied. This form has been approved by the Forms Management Center.



DRSCW Officers and Executive Board

President - David Gorman, Village of Lombard

Vice President - Sue Baert, Wheaton Sanitary District

Secretary/Treasurer - Antonio Quintanilla, Metropolitan Water Reclamation District of Greater Chicago

Ex-Officio - Kevin Buoy, DuPage County

Monitoring Committee Chairperson - Jennifer Hammer, The Conservation Foundation

Salt Creek Committee Chairperson - Dennis Streicher, Sierra Club - River Prairie Group

East Branch DuPage River Committee Chairperson - Larry Cox, Downers Grove Sanitary District

West Branch DuPage River Committee Chairperson - John "Ole" Oldenburg, Forest Preserve District of DuPage County

Member At Large - Mitchell Patterson, Village of Addison

Member At Large - Tom Richardson, Sierra Club - Prairie River Group

Member At Large - Robert Swanson, DuPage County

Member At Large - Steven Zehner, Robinson Engineering, Ltd.

DRSCW Members

- Village of Addison
- Arcadis US, Inc.
- Village of Arlington Heights
- Baxter & Woodman, Inc.
- Village of Bartlett
- Village of Bensenville
- Village of Bloomingdale
- Village of Bolingbrook
- CDM Smith
- Village of Carol Stream
- Christopher B. Burke Engineering, Ltd.
- Village of Clarendon Hills
- College of DuPage
- Village of Downers Grove
- Downers Grove Sanitary District
- DuPage County
- DuPage County Health Department
- City of Elmhurst
- Elmhurst-Chicago Stone, Co.
- Engineering Resource Associates, Inc.
- Forest Preserve District of DuPage County
- Geosyntec Consultants
- Glenbard Wastewater Authority
- Village of Glen Ellyn
- Village of Glendale Heights
- HDR, Inc.
- HR Green, Inc.
- Village of Hanover Park
- Ross A. Hill
- Village of Hinsdale
- Village of Hoffman Estates
- Huff & Huff, Inc.
- Illinois Department of Transportation
- Illinois State Toll Highway Authority
- Inter-Fluve, Inc.
- Village of Itasca
- K-Tech Specialty Coatings, Inc.
- Village of Lisle
- Village of Lombard
- Metropolitan Water Reclamation District of Greater Chicago
- City of Naperville
- Naperville Park District
- City of Oakbrook Terrace
- Prairie Rivers Network
- RHMG Engineers, Inc.
- RJN Group, Inc.
- Robinson Engineering, Ltd.
- Village of Roselle
- Salt Creek Sanitary District
- Salt Creek Watershed Network
- Village of Schaumburg
- Sierra Club, River Prairie Group
- Strand Associates, Inc.
- Suburban Laboratories, Inc.
- The Conservation Foundation
- The Morton Arboretum
- V3 Companies
- Village of Villa Park
- City of West Chicago
- Walter E. Deuchler Associates, Inc.
- City of Warrenville
- WellSpring Environmental Products
- Village of Westmont
- City of Wheaton
- Wheaton Sanitary District
- City of Wood Dale
- Village of Woodridge
- York Township Highway Department

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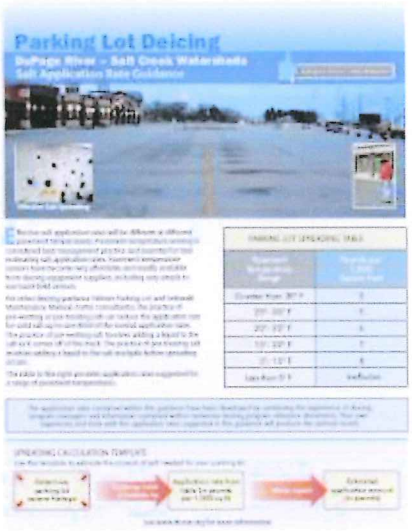
DRSCW NPDES Activities
March 2013 – March 2014

1. Public education and outreach on stormwater impacts

DRSCW outreach activities for the year ending 2014 included:

- The DRSCW website was maintained during the reporting period and periodically updated with presentations, reports and other relevant water quality material (www.drscw.org).
- An online stream resource database was developed for the website which allows users to query water chemistry, biological and physical stream data for area waterways.
- Other public information available on the website includes:
  - Chloride Fact Sheets aimed at mayors and managers, public works staff, commercial operators, and homeowners.
  - Application guidance worksheet for commercial parking lot winter deicing.
  - A fact sheet summarizing the characteristics of alternative deicing products.
  - Phase diagrams for the most common chloride compounds used in winter maintenance.
  - 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).
  - Coal Tar Based Sealant MOU, cost benefit anayis and summary.
  - The DRSCW released a winter newsletter covering roadway levels of service for winter maintenance and the Elgin O'Hare Western Access chloride offset project.



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 general public is also welcome to attend. The list below includes presentations that were made during the period March 1, 2013 to February 28, 2014. Selected presentations are made available on the DRSCW's website after the meetings.

April 24, 2013 Meeting

Presentation: The Village of Itasca, Illinois Wastewater Treatment Plant Relocation
Carl Fischer, P.E. BCEE, Manager, Wastewater Department, Baxter & Woodman, Inc. and Jeffrey Mohler, P.E. BCEE, Senior Engineer, Wastewater Department, Baxter & Woodman, Inc.

Presentation: Stormwater Management on the Elgin O'Hare – Western Access (EOWA) Project
Reed Panther Illinois Toll Highway Authority, Stephen McCracken, The Conservation Foundation/ DRSCW

June 26, 2013 Meeting

Presentation: Tollway MOU (Chloride Offset)
Stephen McCracken, The Conservation Foundation/ DRSCW

August 28, 2013 Meeting

Presentation: East Branch Basin Bioassessment 2011 Results
Presenter: Chris O. Yoder, Research Director, Midwest Biodiversity Institute

Presentation: Oak Meadows River Restoration Plan
Presenters: John Mayer, Project Manager, and Erin Pande, Director with Ecological Services, Engineering Resource Associates, Inc.

October 30, 2013 Meeting

Presentation: Efficient and Effective Winter Maintenance: Getting it Done with Less Impact
Presenter: Wilfrid Nixon, Ph.D., P.E., Professor of Civil and Environmental Engineering, University of Iowa

Presentation: DRSCW Database Portal
Presenter: Mark R. Willobee, Senior Engineer, Geosyntec Consultants

December 11, 2013 Meeting

Presentation: Chlorides Management at DuPage County
Presenter: John Kawka, Manager of Highway Operations at DuPage County

Presentation: Elgin O' Hare Western Access Chloride Offset Targets and Allocations
Presenter: Stephen McCracken, The Conservation Foundation/ DRSCW

February 26, 2014 Annual Meeting

Presentation: DRSCW Special Conditions, Tool Outputs and White Paper Recommendations
Presenters: Stephen McCracken, TCF/DRSCW; Nick Menninga, Downers Grove Sanitary District

Presentation: Chloride Usage Education and Reduction Program Summary
Presenter: Jim Knudsen, Village of Carol Stream

Presentation: West Branch Fish Passage Enhancement
Presenters: Sarah Hunn, DuPage County Stormwater Management; Phil Mahoney, V3 Companies

Presentation: Oak Meadows Forest Preserve Dam Removal and River Restoration
Presenter: Andy Selle, Inter-Fluve

Other Workshops/ Special Meetings

July 16, 2013 Special Meeting: Chloride Offset Project

March 3, 2014 Continuous Dissolved Oxygen Monitoring Workshop

January 23, 2014 - 8:30-11:30: Facility Planning for Nutrient Removal in the DRSCW's Program Area

Presentation: Review DRSCW's Draft Special Conditions
Presenter: Nick Menninga, Downers Grove Sanitary District and Stephen McCracken, TCF/ DRSCW

Presentation: Understanding Nutrient Removal: What should I do to get started?
Presenter: Ed Kobylinski, Black & Veatch Corporation

Presentation: Phosphorus Removal Study at Downers Grove Sanitary District
Presenter: Derek Wold, Baxter & Woodman and Nick Menninga

Presentation: Chemical and Biological Phosphorus Removal Testing at the Metropolitan Water Reclamation District of Greater Chicago (MWRD)
Presenter: Kathy Lai, Dongqi (Cindy) Qin, Tony Quintanilla, MWRD

DRSCW Calendar, Presentations and Press Coverage

4.25.2013 - 2013 Clean Rivers, Clean Lake Conference in Wisconsin hosted by the Sweet Water (Southeastern Wisconsin Watersheds Trust, Inc.). A look at 6 Dams in DuPage County.

Summer 2013 edition of *Illinois RiverWatcher*. The National Great Rivers Research and Education Center (NGRREC) published an article on the DRSCW.

7.26.2013 – MWRDGC's Monitoring and Research Departments Seminar Series. "Adaptive Watershed Management to Achieve the Designated Use for Aquatic Life: Salt Creek and the Upper DuPage River"

10.08.2013 – WEF TECH. Presentation and moderation of a session on stream restoration to reach ecological integrity. With John Oldenburg, Forest Preserve District DuPage County, and Beth Wentzel, Inter-Fluve.

11.21.2013 –Lake County Stormwater Management Commission. Dam removal as a tool for managing improved water quality and biological outcomes.

3.6.2014 – National webinar for stormwater BMPs on transportation infrastructure hosted by the USEPA. The Illinois Toll Highway Authority invited the DRSCW to co-present regarding the chloride offset program MOU.

3/10/14 – Prairie River Group of the Sierra Club. PAHs and Coal Tar sealants.

3/18/14 – WATERCON 2014 hosted by the Illinois Section American Water Works Association & Illinois Water Environment Association. White Paper proposal and Chloride Offset model.

2. Public involvement and participation

Monitoring Activities

- Seven (7) POTWs conducted additional conductivity and chloride monitoring activities on Salt Creek upstream of their plants and in effluent during August and/or September.

- Dissolved Oxygen (DO) – Ambient DO, pH, temperature and conductivity were measured at a number of sites under the continuous DO monitoring program. All DO data was collected under a Quality Assurance Plan agreed upon with IEPA[1]. A map of monitoring locations is given in Map 1. Sites were maintained by DuPage County, municipal and private environmental organization staff. Sondes are supplied to the program by DuPage County Division of Stormwater Management and MWRDGC. Data collected in this report is used to develop the DRSCW Bioassessment report for the watershed. The data is also shared with IEPA for development and review of the 303(d) List.

- Bioassessment – Bioassessment sampling was carried out in the Salt Creek basin. A total of 50 sites (excluding DO sites) were sampled for water column chemistry, sediment chemistry, Fish and macroinvertebrate IBI (Index of Biological Integrity), and Qualitative Habitat Evaluation Index (QHEI) scores. The sediment and water column sampling parameters are listed in Table 1, sample site locations are indicated in Map 1.

Table 1. Water column and sediment parameters collected under the Bioassessment analysis

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	

Data from the plan is used to produce the Bioassessment analysis, to identify and prioritize stormwater, wastewater and restoration projects and is submitted to IEPA for use in the state's 303(d) list. The Bioassessment plan runs correlation analysis between IBI scores and various factors (water column chemistry, sediment chemistry and habitat). Reports for assessments for the period 2006-2011 are available on line at http://drscw.org/.

Other Public Involvement

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

[1] DO Quality Assurance Plan DRSCW 2006

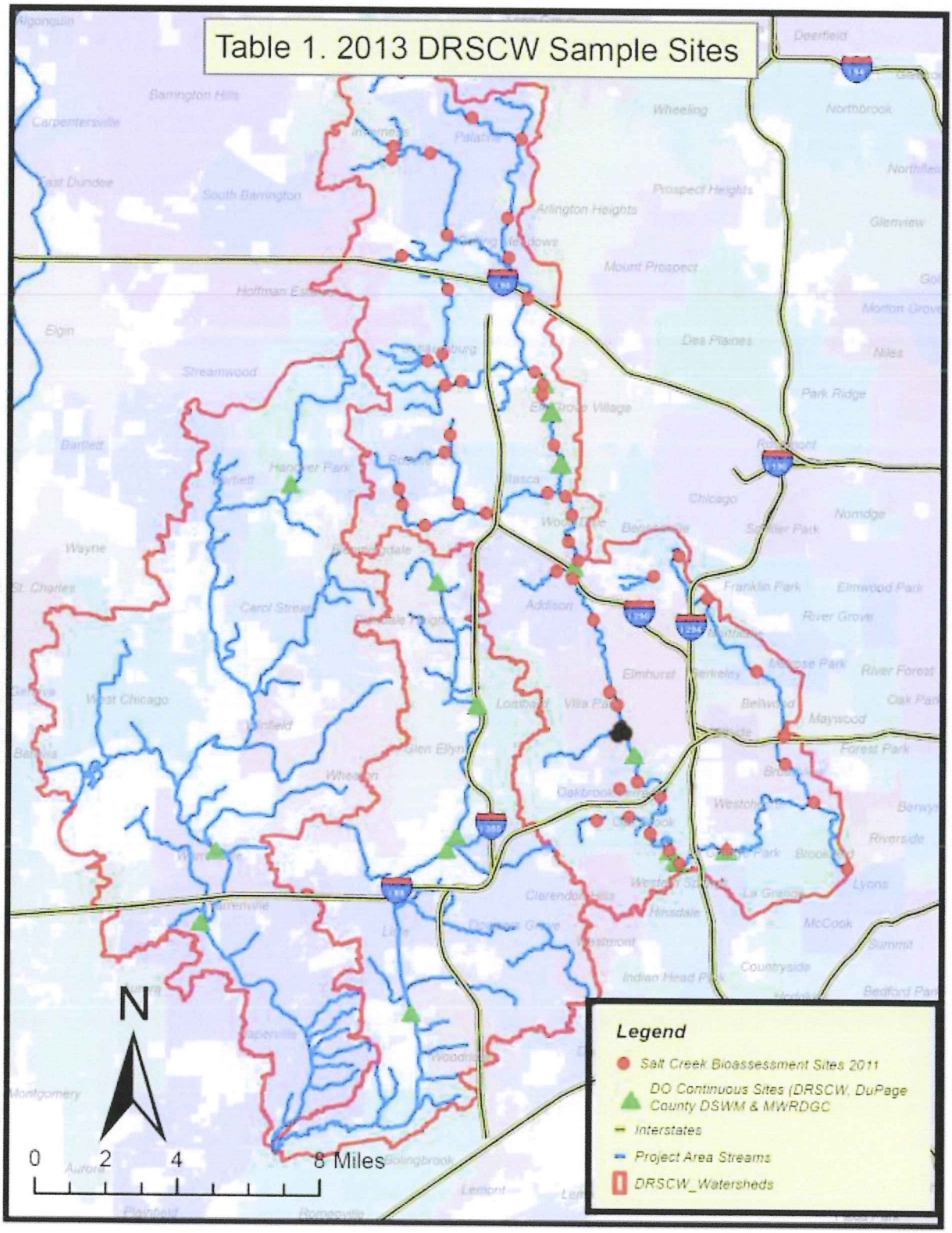


Table 1. 2013 DRSCW Sample Sites
N
0
2
4
8 Miles
Legend
Salt Creek Bioassessment Sites 2011
DO Continuous Sites (DRSCW, DuPage County DSWM & MWRDGC
Interstates
Project Area Streams
DRSCW_Watersheds

6. Pollution prevention/good housekeeping for municipal operations

Two chloride reduction workshops were held during the reporting period.

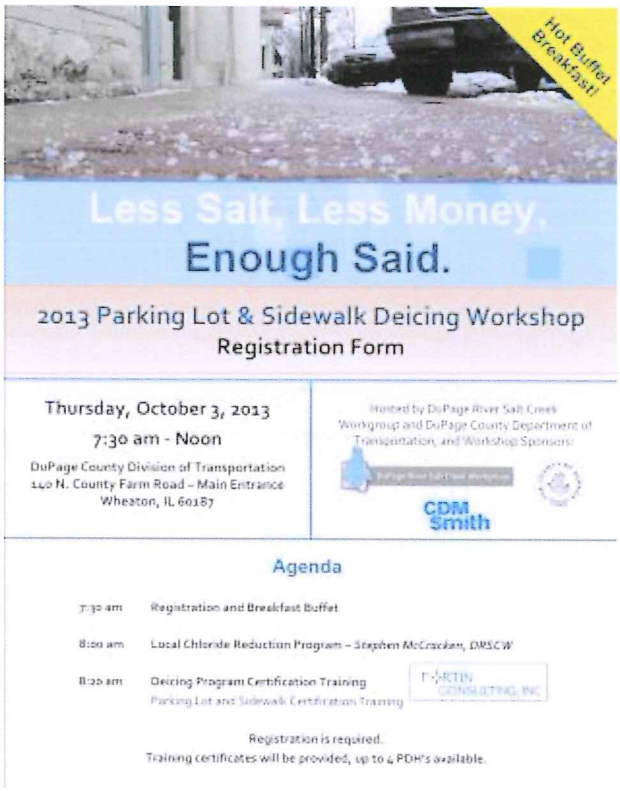
The Public Roads deicing workshop was held on 9.26.13. The agenda:

- Water Quality Conditions/ Regulatory Update
  Stephen McCracken, The Conservation Foundation/DRSCW and Dan Bounds, CDM Smith
- Efficient and Effective Winter Maintenance: Getting it Done with Less Impact
  Professor Wilfrid Nixon, Ph.D., P.E. U of Iowa
- Weather Forecasts
  David James, WeatherCommand
- Offsetting Chloride Loading from the Elgin O'Hare Western Access Project
  Stephen McCracken and
  Reed Panther, Illinois Toll Highway Authority
- Local Deicing Program Updates, Facilitated by Mark DeVries, McHenry County Department of Transportation:
  Scott Weber, Village of Hanover Park
  John Kawka, DuPage County Division of Transportation
  Tim Peters, Illinois Department of Transportation
- Panel of Speakers - Open Forum Discussion

- 105 people attended excluding presenters. All attendees received a certificate of attendance.

The Parking Lot and Sidewalk deicing workshop was held on 10.03.13. The agenda:

- Local Chloride Reduction Program
  Stephen McCracken, The Conservation Foundation/DRSCW
- Impact of salt from winter snow fighting operations impacts our rivers and streams. Information on developing efficient and cost-effective snow fighting operations, appropriate product selection, application rates, equipment calibration.
  Connie Fortin, Fortin Consulting,
  Chis Walsh, City of Beloit, WI
- Test on presented material
- This workshop had 55 participants excluding presenters. 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.



May 26, 2015

Illinois Environmental Protection Agency, DWPC
Compliance Assurance Section
1021 North Grand Avenue East, POB 19276
Springfield, Illinois 62794-9276

Subject: Annual Report for NPDES Phase II MS4 General Stormwater Permit Year 12

Gentlemen:

Attached please find the following documents for the Village of Clarendon Hills:

1. IEPA Annual Facility Inspection Report (IL 532-2585).

2. Attachment F listing the Village-sponsored capital projects that took place during Year 12 of the current NPDES permit.

3. DuPage River Salt Creek Work Group NPDES Activities Report for March 2014 thru March 2015

Please consider this letter as the Village's notice that it is relying upon the actions of the County of DuPage and the DuPage River Salt Creek Work Group to satisfy the permit obligations of the Village (Attachment E).

If you have questions about the information contained within the attached Annual Report or its attachments, please contact myself or Mr. Daniel L. Lynch, the Village's Municipal Engineer (847-823-0500).

Sincerely,

Dan Ungerleider, AICP
Community Development Director

L1.052615-CH

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

Location	**Start Date** **Estimated/Actual Completion Date** **Description**
N/A - No publicly sponsored capital improvements related to Stormwater were undertaken by the Village during the reporting period.	N/A

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, 2014 To March, 2015

Permit No. ILR40 0502

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

Name: Village of Clarendon Hills Mailing Address 1: 1 North Prospect Avenue

Mailing Address 2: County: DuPage

City: Clarendon Hills State: IL Zip: 60514 Telephone: 630-286-5400

Contact Person: Dan Ungerleider, Comm Dev Director Email Address: dungerleider@clarendonhills.us
(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 Clarendon Hills

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))

Dan Ungerleider 6-1-15

Owner Signature: Date:

Dan Ungerleider Community Development Director

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

This Agency is authorized to require this information under Section 4 and Title X of the Environmental Protection Act (415 ILCS 5/4, 5/39). Failure to disclose this information may result in: a civil penalty of not to exceed $50,000 for the violation and an additional civil penalty of not to exceed $10,000 for each day during which the violation continues (415 ILCS 5/42) and may also prevent this form from being processed and could result in your application being denied. This form has been approved by the Forms Management Center.

DuPage River Salt Creek Workgroup

DRSCW NPDES Activities
March 2014 – March 2015

1. Public education and outreach on stormwater impacts

DRSCW outreach activities for the year ending 2015 included:

- The DRSCW website was maintained during the reporting period and periodically updated with presentations and material (www.drscw.org).
- The online stream resource searchable database with information on local aquatic biodiversity, habitat, sediment and water column chemistry was updated.
- The online data viewer and searchable database, indicating monitoring locations throughout the three basins, was updated to include data from the Lower DuPage River Watershed Coalition.
- The DRSCW created a "Water Resource Manager's Guide to Aquatic Bioassessment," to be finalized in 2015.
- The 2014 Public Roads Deicing Questionnaire was distributed and responses were summarized and will be used to help plan other outreach strategies and future deicing workshop agendas.
- A draft Ambient Monitoring Data Analysis – 2013-2014 Winter Season was received and is under review.
- The DRSCW published on the website and distributed a fall 2014 newsletter, which included the IGIG award announcement (which was later frozen); articles on Michigan DOT's Bounce and Scatter Study, Low Cost Ways to Reduce Salt Use; Rethinking Winter Roads Policy in Carol Stream; Evaluation of Leaf Collection Programs as a Means to Reduce Phosphorus Loads from Urban Basins.

DuPage River Salt Creek Workgroup

Fall 2014

Letter from the President

- Public information available on the website includes:
  - Chloride Fact Sheets aimed at mayors and managers, public works staff, commercial operators, and homeowners.
  - Application guidance worksheet for commercial parking lot winter deicing.
  - A fact sheet summarizing the characteristics of alternative deicing products.
  - Phase diagrams for the most common chloride compounds used in winter maintenance.
  - 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).
  - Coal Tar Based Sealant MOU, cost benefit analysis and summary.
  - 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 general public is also welcome to attend. Presentations made during the period March 1, 2014 to February 28, 2015 are listed below. Selected presentations are made available on the DRSCW website and upon request.

April 30, 2014
DRSCW White Paper Proposal: Special Conditions & Implementation Plan
Presenters: Stephen McCracken, The Conservation Foundation/ DRSCW; Nick Menninga, Downers Grove Sanitary District

June 25, 2014
Adaptive Management Plan to improve aquatic life and implement TMDLs on the main stem lower Salt Creek
Presenter: Stephen McCracken, The Conservation Foundation/ DRSCW

Development of Ammonia Mass – Balance techniques: Web based load duration curve system and lower East Branch analysis
Presenter: Lindsay Birt, Huff & Huff

August 27, 2014
Reducing Urban Phosphorus Load: Identifying Sources and Controls
Presenter: Bill Selbig, Research Hydrologist, USGS - Wisconsin Water Science Center

2012 Bioassessment Study of the Lower DuPage River Watershed
Presenter: Jennifer Hammer, The Conservation Foundation/ LDRWC

October 29, 2014
Chloride Monitoring Results and TMDL Implementation Update
Presenters: Stephen McCracken, The Conservation Foundation/ DRSCW; Dan Bounds, CDM Smith

Fawell Dam- Preliminary Assessment
Presenters: Derrick Martin, V3 Companies; Andy Selle, Inter-Fluve; Jennifer Hintze and Jessica Spurlock, DuPage County Stormwater Management

December 10, 2014
Winnetka Refined Coal Tar Ban
Presenter: Steven M. Saunders, Director of Public Works/Village Engineer, Village of Winnetka

TMDL Development for the DuPage River/Salt Creek - The Illinois Environmental Protection Agency-Watershed Management Section/Planning (TMDL) Unit
Presenter: Abel Haile, Manager, Planning (TMDL) Unit, Watershed Management Section, Bureau of Water

Other Water Quality Presentations or Workshops by the DRSCW

March 4, 2014 Continuous Dissolved Oxygen Monitoring Workshop for Participating Agencies

March 6, 2014 – National webinar for stormwater BMPs on transportation infrastructure hosted by US EPA. The Illinois Toll Highway Authority invited the DRSCW to co-present regarding the chloride offset program MOU.

March 10, 2014 – Prairie River Group of the Sierra Club. PAHs and Coal Tar sealants.

March 18, 2014 – WATERCON 2014 hosted by the Illinois Section American Water Works Association & Illinois Water Environment Association. White Paper Proposal and Chloride Offset Model.

April 2, 2014 – Illinois 2014 Rivers and Streams Meeting, Milan, IL. Causal analysis and Prioritizing Projects.

April 3, 2014 – Iowa APWA Conference – Chlorides and Watershed Management.
August 2, 2014 – Forest Preserve District of DuPage County Urban Stream Research Center Open House. Ambient and wastewater chemistry.

September 25, 2014 – Public Roads Deicing Workshop at DuPage County Division of Transportation, Wheaton, IL

October 7, 2014 – Managing Snow and Ice Control Operations, University of Wisconsin-Madison; Winter Maintenance and Environmental Impacts – Winter Maintenance and Environmental Impacts.

October 9, 2014 – Parking Lots & Sidewalks Deicing Workshop at DuPage County Division of Transportation, Wheaton, IL

October 16, 2014 – Lower DuPage River Watershed Coalition's Deicing Workshops - Regulations related to salt management, New Lenox, IL

November 6, 2014 – US EPA/ FHWA National Webinar on Chloride Management – Co-Present with DuPage County Division of Transportation, Wheaton, IL.

November 18, 2014 – Salt Spreader Calibration Workshop at DuPage County Division of Transportation, Wheaton, IL.

November 20, 2014 – Lower DuPage River Watershed Coalition – DRSCW Project Funding Proposal & Other DRSCW Activities, Plainfield, IL.

February 19, 2015 – DuPage County Environmental Summit – Current River Conditions and the Challenges we Face, Naperville, IL

February 19, 2015 - Illinois Lakes Management's Annual Conference, DRSCW Formation and Organization, DeKalb, IL

February 24, 2015 - Illinois Water Environment Association's Annual Conference, DRSCW Formation and Organization, Champaign, IL.

2. Public involvement and participation

Monitoring Activities

- Dissolved Oxygen (DO) – Ambient DO, ph, temperature and conductivity were measured at 11 sites under the continuous DO monitoring program. All DO data was collected under a Quality Assurance Plan agreed upon with IEPA1. A map of monitoring locations is given in Map 1. Sites were maintained by DuPage County, municipal and private environmental organization staff. Sondes are supplied to the program by DuPage County Stormwater Management and MWRDGC. DuPage County Public Works provides the program with sonde calibration and maintenance, in addition to coordinating summer and winter deployment. Data collected in this report is used to develop the DRSCW Bioassessment report for the watershed. The data is shared with IEPA for development and review of the 303(d) List.

- Bioassessment – Bioassessment sampling was carried out in the East Branch DuPage River basin. A total of 35 sites (excluding DO sonde locations) were sampled for water column chemistry, sediment chemistry (at select sites), Fish IBI (Index of Biological Integrity) and macro invertebrate IBI, and Qualitative Habitat Evaluation Index (QHEI). The sediment and water column sampling parameters are listed in Table 1, sample site locations are shown in Map 1.

Table 1. Water column and sediment parameters collected under the Bioassessment analysis

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
Lead	Compounds
Magnesium	
Zinc	
Organics – Water	
PCBS	
Pesticides	
Semivolatile Organics	
Volatile Organics	

- Winter Chlorides – Winter chloride levels in the watersheds are monitored using continuous conductivity (a 2008 DRSCW study established a strong correlation between ambient winter conductivity and chloride levels in the Upper DuPage and Salt Creek Watersheds). Winter chloride levels were monitored at 5 locations during the winter of 2014 -15 (hourly from December 2014 to March 2015). These locations are shown on map 1. Summer chloride concentrations were gathered under the surface water monitoring program outlined under bullet two.

Data from the plan is used to produce the Bioassessment analysis, to identify and prioritize stormwater, wastewater and restoration projects. Data is shared with IEPA as requested for use in the state's 303(d) list. Reports for assessments for the period 2006-2012 are available on line at http://drscw.org/.

[1] DO Quality Assurance Plan DRSCW 2006

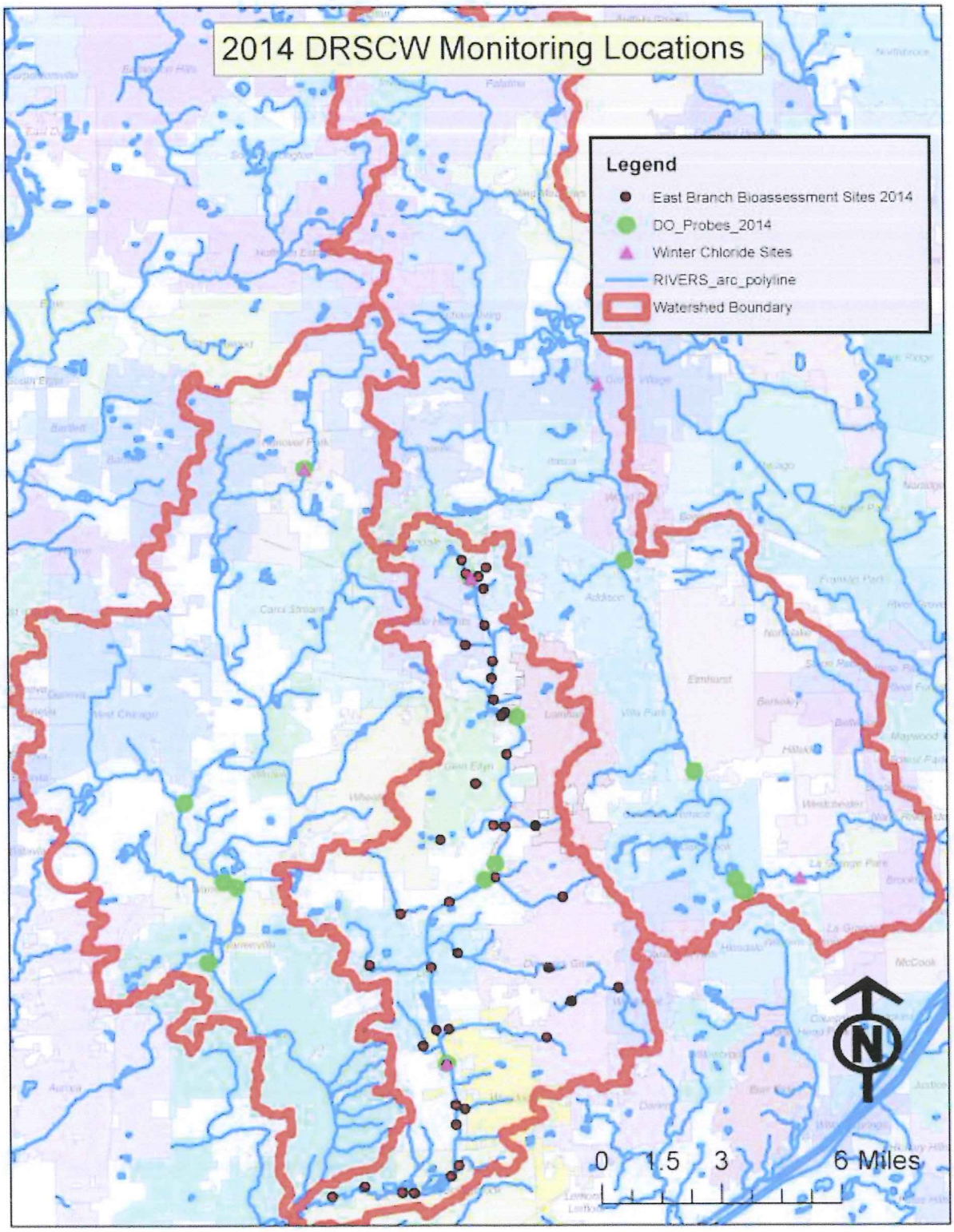
Other Public Involvement

3. Illicit discharge detection and elimination – no activities

4. Construction site stormwater runoff control - no activities

5. Post-construction stormwater management in new development and redevelopment - no activities

Map 1


2014 DRSCW Monitoring Locations
Legend
East Branch Bioassessment Sites 2014
DO_Probes_2014
Winter Chloride Sites
RIVERS_arc_polyline
Watershed Boundary
N
0 1.5 3 6 Miles

6. Pollution prevention/good housekeeping for municipal operations

Three chloride reduction workshops were held during the reporting period. The Public Roads deicing workshop was held on September 25, 2014 with the following agenda:

7:00 — 7:30 Registration and Breakfast

7:30 –7:35 Welcome - John Kawka, DuPage County DOT, Manager of Highway Operations

7:36 – 7:52 DuPage River Salt Creek Workgroup (DRSCW) Update - Stephen McCracken, TCF/ DRSCW, Director of Watershed Protection

7:53 – 8:09 Chloride Regulatory Update - Dan Bounds, CDM Smith, Principal Water Resources Engineer

8:10 – 8:45 Michigan DOT: Bounce and Scatter Study - Rich Hassenzahl, MDOT, Southwest Region Maintenance Superintendent

8:46 – 9:01 Exhibitor Briefs: New Products/ Equipment /Services

9:02 – 9:12 Break

9:13 – 9:33 Winter 2013-2014 & New Initiatives for 2014-2015 - Tim Peters, Illinois DOT, Winter Operations Engineer

9:34 – 9:59 Winter 2013-2014 Battle of the Extremes - Matt Wittum, Village of Spring Grove, Public Works Supervisor and Randy Morin, McHenry County DOT, Maintenance Supervisor

10:00 – 10:25 Winter 2013-2014 & Alternative Deicing - Stan Balicki, Village of Downers Grove, Assistant Director of Public Works

10:26 – 10:36 Break

10:37 – 11:07 Navigating the Winter with the Illinois Tollway - Scott Kapton, Illinois Tollway, Roadway Maintenance Manager

11:08 – 11:28 Baby Its Cold Out There! Products that Perform at Low Temperatures - Harvey Williams, Concept to Project Management, Owner

11:29 – 11:44 Open Forum Discussion

11:45 – 12:00 Close and Equipment Show

Attendance – 121 registered, 20 others, 5 vendors = 146 total. All participants received a certificate of attendance. We received 78 feedback forms which will be used to plan future outreach strategies and workshop agendas.

The Parking Lot and Sidewalk deicing workshop was held on October 9, 2014 with the following agenda:

- Local Chloride Reduction Program

  Stephen McCracken, The Conservation Foundation/DRSCW

- Impact of salt from winter snow fighting operations impacts our rivers and streams. Information on developing efficient and cost-effective snow fighting operations, appropriate product selection, application rates, equipment calibration.

  Connie Fortin, Fortin Consulting;

  Chis Walsh, City of Beloit, WI

- Test on presented material

- This workshop had 56 registrations, 8 others, 3 vendors = 67 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.

A separate hands-on spreader calibration workshop was held on November 18, 2014 from 9:00 AM – 12:00PM. This workshop was open to any operators including county, city, township, schools, park districts, libraries, etc. Hosted by DRSCW, DUDOT and Monroe Truck Equipment, this was our first time executing this kind of workshop, so it was a learning process. This workshop was offered free-of-charge and included a hot buffet breakfast, thanks to Monroe Truck Equipment. Participation included were 35 registrations, 15 staff/sponsors = 50 total.

Initially, we planned to have operators bring their own equipment, but this was not possible. Instead, we asked participants to submit information before the workshop, including: list of equipment to be calibrated; brand of the equipment; type of system (style of spreader, whether application rate is fixed or varies with vehicle speed, etc.); whether the system compensates for speed changes, etc.

The general agenda for the morning included information on calibration and why it is important then hands on demonstrations for an open loop (no compensation for changes in vehicle speed), closed loop (compensation for vehicle speed) and electronic system. Participants rotated through the "stations" in two groups.

Calibration Workshop Attendees, November 18th, Wheaton, IL

VILLAGE OF
CLARENDON HILLS
COMMUNITY DEVELOPMENT

1 N. Prospect Avenue
Clarendon Hills, Illinois 60514
630.286.5412

May 26, 2016

Illinois Environmental Protection Agency, DWPC
Compliance Assurance Section
1021 North Grand Avenue East, POB 19276
Springfield, Illinois 62794-9276

RE: **Annual Report for NPDES Phase II MS4 General Stormwater Permit Year 13**

Gentlemen,
Attached please find the following documents for the Village of Clarendon Hills:

1. IEPA Annual Facility Inspection Report (IL 532-2585).
2. Attachment F listing the Village-sponsored capital projects that took place during Year 13 of the current NPDES permit.
3. DuPage River Salt Creek Work Group NPDES Activities Report for March 2014 thru March 2015

Please consider this letter as the Village's notice that it is relying upon the actions of the County of DuPage and the DuPage River Salt Creek Work Group to satisfy the permit obligations of the Village (Attachment E).

If you have questions about the information contained within the attached Annual Report or its attachments, please contact myself or Mr. Daniel L. Lynch, the Village's Municipal Engineer (847-823-0500).

Sincerely,

VILLAGE OF CLARENDON HILLS

Dan Ungerleider, AICP
Community Development Director

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, 2015 To March, 2016

Permit No. ILR40 0175

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

Name: Village of Clarendon Hills Mailing Address 1: 1 North Prospect Avenue

Mailing Address 2: County: DuPage

City: Clarendon Hills State: IL Zip: 60514 Telephone: 630-286-5400

Contact Person: Dan Ungerleider Email Address: dungerleider@clarendonhills.us
(Person responsible for Annual Report)

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

City of Darien

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))

Dan Ungerleider
Owner Signature:

5-26-2016
Date:

Dan Ungerleider
Printed Name:

Community Development Director
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

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

Location	**Start Date** **Estimated/Actual Completion Date Description**
N/A - No publicly sponsored capital improvements related to Stormwater were undertaken by the Village during the reporting period.	N/A

DRSCW NPDES Activities
March 2015 – February 2016

1. Public education and outreach on stormwater impacts

DRSCW outreach activities for the year ending 2016 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, habitat, sediment and water column chemistry was added.
- The DRSCW created a "Water Resource Manager's Guide to Aquatic Bioassessment," to be finalized in 2016.
- Public information available on the website includes:
  - Chloride Fact Sheets aimed at mayors and managers, public works staff, commercial operators, and homeowners.
  - Example Salt Storage and Handling Ordinances and Policies.
  - Model Facilities Plan for Snow and Ice Control.
  - A fact sheet summarizing alternative deicing products.
  - 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 general public is also welcome to attend. Presentations made during the period March 1, 2015 to February 29, 2016 are listed below. Selected presentations are made available on the DRSCW website and upon request.

March 11, 2015 – DRSCW NPDES Special Conditions. Presenters: Stephen McCracken, The Conservation Foundation/DRSCW and Nick Menninga, Downers Grove Sanitary District.

April 29, 2015 – 2012 West Branch Basin Assessment Results. Presenter: Chris Yoder, Midwest Biodiversity Institute.

June 24, 2015 – DuPage County Wetland Map Update. Presenter: Mary Beth Falsey, DuPage County Stormwater Management.

June 24, 2015 – Oak Meadows Golf Course Rebuild and Ecological Restoration. Presenters: Erin Pande, Engineering Resource Associates and Beth Wentzel, Inter-Fluve.

August 25, 2015 – Proposed MS4 Permit. Presenter: Jeff Hutton, Illinois EPA.

August 25, 2015 – Navigating Winter with the Illinois Tollway. Presenter: Scott Kapton, Illinois Tollway.

October 28, 2015 – Oak Meadows Dam Removal and Stream Restoration (Special Conditions Project). Presenters: Beth Wentzel, Inter-Fluve and Ed Stevenson, Forest Preserve District of DuPage County.

December 9, 2015 – Beads of Destruction: A Survey of Great Lakes Plastic Pollution. Presenter: "Sam" Sherri A. Mason, The State University of New York at Fredonia.

February 24, 2016 – Permit Special Condition Review and Schedule. Presenters: Stephen McCracken, The Conservation Foundation/ DRSCW and Nick Menninga, Downers Grove Sanitary District.

February 24, 2016 – Chloride Reduction and Management. Presenter: Dan Bounds, CDM Smith.

February 24, 2016 – Oak Meadows Construction Update. Presenter: Beth Wentzel, Inter-Fluve.

February 24, 2016 – Fawell Dam Modification Update. Presenter: Stephen McCracken, The Conservation Foundation/ DRSCW.

Other Water Quality Presentations or Workshops by the DRSCW

April 21, 2015 – Continuous Dissolved Oxygen program update and refresher workshop for participating agencies (DRSCW and LDRWC). Optional calibration workshop for lab personnel in the afternoon. Presenters: Jennifer Hammer and Stephen McCracken, The Conservation Foundation; Mary Dressel and Micaela McGrath, DuPage County Public Works; Kirk Fischer and Charlie LaRocco, City of Elmhurst.

June 18, 2015 – Central States Water Environment Association – Illinois Section Collections Systems Seminar, Aurora. Oak Meadows Project Identification and Design. Presenters: Erin Pande, Engineering Resource Associates and Stephen McCracken, The Conservation Foundation/ DRSCW.

September 3, 2015 – IWEA NRR Annual Workshop, Addison. DRSCW's Watershed Approach. Presenter: Nick Menninga, Downers Grove Sanitary District.

October 14, 2015 – Chicago Wilderness Strategy Group on Water Management. DRSCW's Watershed Approach: Permit Special Conditions. Presenter: Jennifer Hammer, The Conservation Foundation.

October 15, 2015 – Lower DuPage River Watershed Coalition's Public Roads Deicing Workshop. Chloride: Environmental and Regulatory Impacts. Presenter: Stephen McCracken, The Conservation Foundation/ DRSCW.

October 15, 2015 – Representative Fine and Sierra Club Presentation. PAH Concentrations in the Upper DuPage and Salt Creek Watersheds. Presenter: Stephen McCracken, The Conservation Foundation/ DRSCW.

October 19, 2015 – MWRD-GC Board Study Meeting. Data Driven Solution to Aquatic Life Impairments (IPS Methodology and Outcomes). Presenter: Stephen McCracken, The Conservation Foundation/ DRSCW.

November 10, 2015 – Chicago Wilderness Strategy Group on Water Management. IPS Methodology and Outcomes. Presenter: Stephen McCracken, The Conservation Foundation/ DRSCW.

January 21, 2016 – Lower DuPage River Watershed Coalition. Update on the West Branch/DuPage River TMDL Development. Presenter: Stephen McCracken, The Conservation Foundation/ DRSCW.

January 28, 2016 – POTW Member Special Meeting. Presenters: Rick Federighi, Village of Addison; Nick Menninga, Downers Grove Sanitary District; Jill Kostel, The Wetlands Initiative.

2. Public involvement and participation

Monitoring Activities

- Dissolved Oxygen (DO) – Ambient DO, ph, temperature and conductivity were measured at 11 sites under the continuous DO monitoring program. All DO data was collected under a Quality Assurance Plan agreed upon with IEPA1. A map of monitoring locations is given in Map 1. Sites were maintained by county, municipal and private environmental organization staff. Data collected in this report is used to develop the DRSCW Bioassessment report for the watershed. Sample site locations are shown in Map 1.

- Bioassessment – Bioassessment sampling was carried out in the West Branch DuPage River basin. A total of 41 sites were sampled for water column chemistry, sediment chemistry (at select sites), Fish IBI (Index of Biological Integrity) and macro invertebrate IBI, and Qualitative Habitat Evaluation Index (QHEI). The sediment and water column sampling parameters are listed in Table 1, sample site locations are shown in Map 1.

- Winter Chlorides – Winter chloride levels in the watersheds are monitored using continuous conductivity (a 2008 DRSCW study established a strong correlation between ambient winter conductivity and chloride levels in the Upper DuPage and Salt Creek Watersheds). Winter chloride levels were monitored at 6 locations during the winter of 2015 -16 (hourly from December 2015 to March 2016). These locations are shown on Map 1. Summer chloride concentrations were gathered under the surface water monitoring program outlined under bullet two.

Table 1. Water column and sediment parameters collected under the Bioassessment analysis

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**
	Organochlorine
Metals	Pesticides
Cadmium	PCBS
Calcium	Percent Moisture
Copper	Semivolatile Organics
Iron	Volatile Organic
Lead	Compounds
Magnesium	
Zinc	
Organics – Water	
PCBS	
Pesticides	
Semivolatile Organics	
Volatile Organics	

Data from the plan is used to produce the Bioassessment analysis, to identify and prioritize stormwater, wastewater and restoration projects. Data is shared with IEPA as requested for use in the State's 303(d) List. Reports for assessments for the period 2006-2012 are available on line at http://drscw.org/.

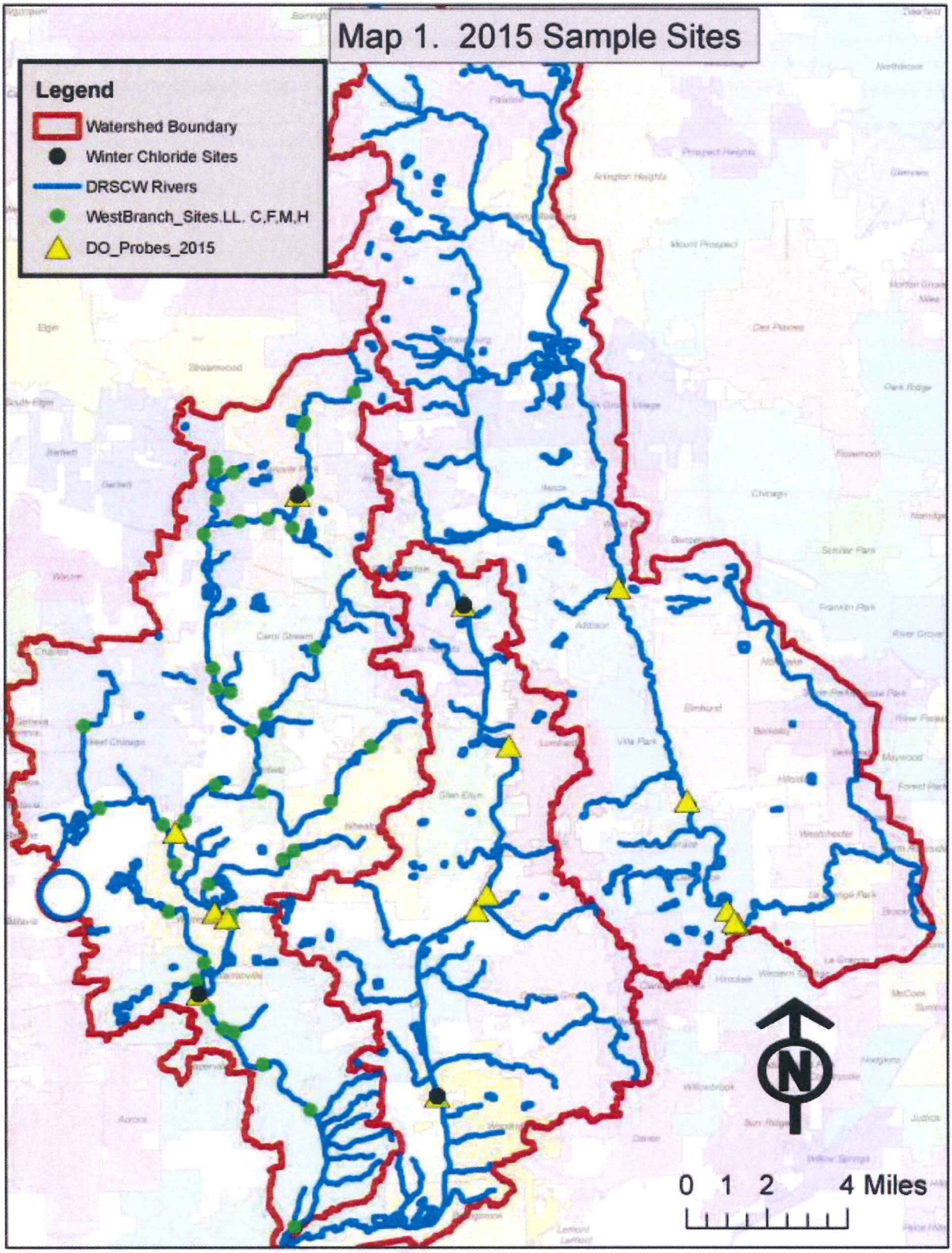
[1] DO Quality Assurance Plan DRSCW 2006

Other Public Involvement

3. Illicit discharge detection and elimination – no activities

4. Construction site stormwater runoff control - no activities

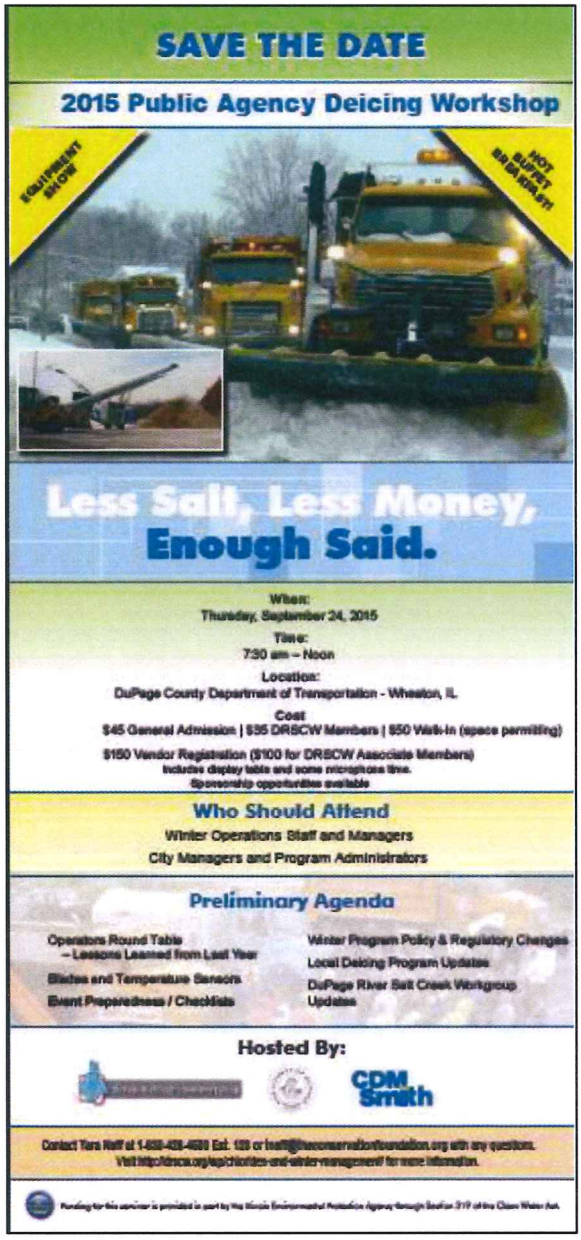
5. Post-construction stormwater management in new development and Redevelopment - no activities


Map 1. 2015 Sample Sites
Legend
Watershed Boundary
Winter Chloride Sites
DRSCW Rivers
WestBranch_Sites.LL. C,F,M,H
DO_Probes_2015
N
0 1 2 4 Miles

6. Pollution prevention/good housekeeping for municipal operations

Two chloride reduction workshops were held during the reporting period.

The Public Roads deicing workshop was held on September 24, 2015 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 – 7:40 DuPage River Salt Creek Workgroup (DRSCW) Update - Stephen McCracken, TCF/ DRSCW, Director of Watershed Protection

7:40 – 7:50 Chloride Regulatory Update - Dan Bounds, CDM Smith, Principal Water Resources Engineer

7:50 – 8:30 Performance Evaluation of Snow and Ice Plows and Synthesis of Best Practices in Snow and Ice Removal – Professor Souhail Elhouar, Bradley University

8:30 – 8:50 Exhibitor Briefs: New Products/ Equipment /Services

8:50 – 9:05 Break

9:05 – 9:25 A Look at Fish Species in Northeastern Illinois – Steve Pescitelli, Illinois DNR

9:25 – 9:55 Illinois Storm Chasers: Weather Forecasting – Danny Neal, Illinois Storm Chasers

9:55 – 10:15 How Chlorides Work in Deicing Compounds – Mark Cornwell, Sustainable Salting Solutions

10:15 – 10:35 How Carbohydrates Work in Deicing Compounds – Mike Bellovics, SNI Solutions, Inc.

10:35 – 10:45 Break

10:45 – 11:45 Operators Round Table

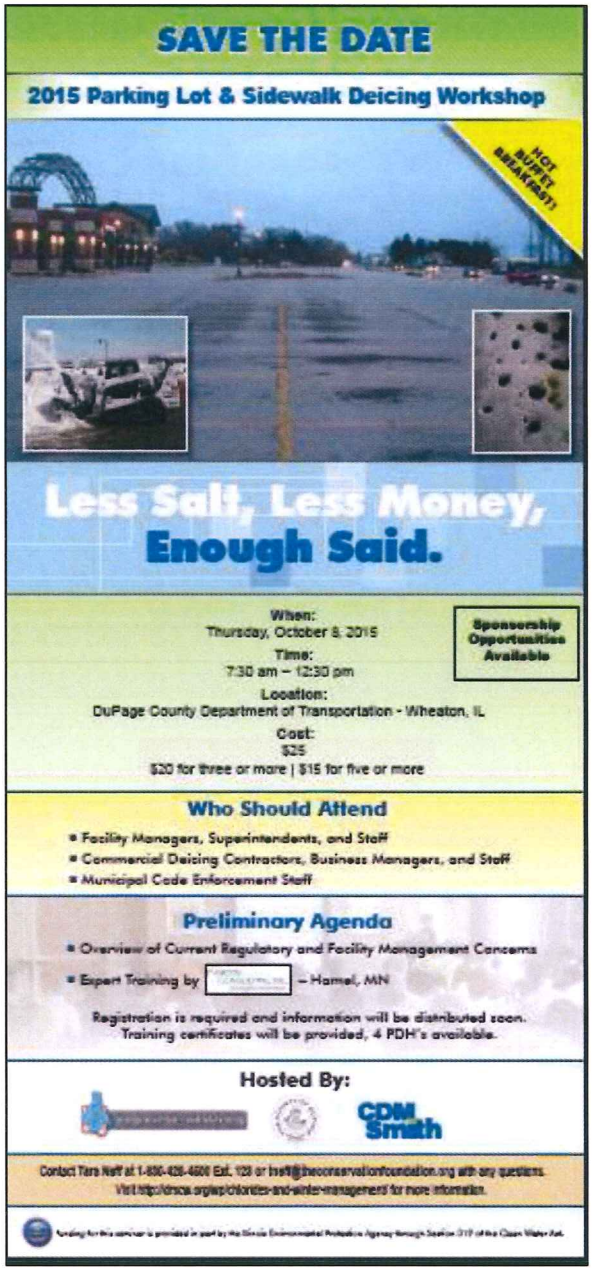
- Rich Schaffer, Village of Carol Stream
- Jason Walsh, DuPage County DOT
- Mike Figuray, DuPage County DOT
- Marc Collins, Village of Hanover Park
- Joe Dragovich, Illinois Tollway

11:45 – 12:00 Wrap Up, Bass Pro Shop Jacket Drawing, Equipment Show

Attendance – 141 registered, 13 presenters, 13 others, 6 sponsors/ vendors = 173 total. All participants received a certificate of attendance. We received 109 feedback forms from participants.

The Parking Lot and Sidewalk deicing workshop was held on October 8, 2015 with the following agenda:

- Local Chloride Reduction Program
  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.
  Connie Fortin, Fortin Consulting
  Chis Walsh, City of Beloit, WI
- Test on presented material.
- This workshop had 86 registrations, 3 presenters, 6 others, 3 sponsors/ vendors = 98 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 79 program evaluations from participants.



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 0175

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

Name: Village of Clarendon Hills Mailing Address 1: 1 North Prospect Avenue

Mailing Address 2: County: DuPage

City: Clarendon Hills State: IL Zip: 60514 Telephone: 630-286-5400

Contact Person: Dan Ungerleider Email Address: dungerleider@clarendonhills.us
(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 Clarendon Hills

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))

Dan Ungerleider
Owner Signature:

May 30, 2017
Date:

Dan Ungerleider
Printed Name:

Community Development Director
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

This Agency is authorized to require this information under Section 4 and Title X of the Environmental Protection Act (415 ILCS 5/4, 5/39). Failure to disclose this information may result in: a civil penalty of not to exceed $50,000 for the violation and an additional civil penalty of not to exceed $10,000 for each day during which the violation continues (415 ILCS 5/42) and may also prevent this form from being processed and could result in your application being denied. This form has been approved by the Forms Management Center.

MS4 Annual Facility Inspection Report

Illinois Environmental Protection Agency
National Pollutant Discharge Elimination System Phase II

Permit Year 14: March 2016 to March 2017

Village of Clarendon Hills

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Part A. Changes to Best Management Practices

Note: X indicates BMPs performed that were proposed in your NPDES permit
✓ indicates changes to BMPs proposed in your NPDES permit

Year 11	Year 12	Year 13	Year 14	Year 15	MS4
A. Public Education and Outreach					
X	X	X	X	X	A.1 Distributed Paper Material
					A.2 Speaking Engagement
					A.3 Public Service Announcement
					A.4 Community Event
					A.5 Classroom Education Material
X	X	X	X	X	A.6 Other Public Education
B. Public Participation/Involvement					
					B.1 Public Panel
X	X	X	X	X	B.2 Educational Volunteer
X	X	X	X	X	B.3 Stakeholder Meeting
X	X	X	X	X	B.4 Public Hearing
X	X	X	X	X	B.5 Volunteer Monitoring
X	X	X	X	X	B.6 Program Coordination
X	X	X	X	X	B.7 Other Public Involvement
C. Illicit Discharge Detection and Elimination					
X	X	X	X	X	C.1 Storm Sewer Map Preparation
X	X	X	X	X	C.2 Regulatory Control Program
					C.3 Detection/Elimination Prioritization Plan
X	X	X	X	X	C.4 Illicit Discharge Tracing Procedures
X	X	X	X	X	C.5 Illicit Source Removal Procedures
X	X	X	X	X	C.6 Program Evaluation and Assessment
X	X	X	X	X	C.7 Visual Dry Weather Screening
					C.8 Pollutant Field Testing
					C.9 Public Notification
X	X	X	X	X	C.10 Other Illicit Discharge Controls

Year 11	Year 12	Year 13	Year 14	Year 15	MS4
D. Construction Site Runoff Control					
X	X	X	X	X	D.1 Regulatory Control Program
X	X	X	X	X	D.2 Erosion and Sediment Control BMPs
X	X	X	X	X	D.3 Other Waste Control Program
X	X	X	X	X	D.4 Site Plan Review Procedures
X	X	X	X	X	D.5 Public Information Handling Procedures
X	X	X	X	X	D.6 Site Inspection/Enforcement Procedures
					D.7 Other Construction Site Runoff Controls
E. Post-Construction Runoff Control					
					E.1 Community Control Strategy
X	X	X	X	X	E.2 Regulatory Control Program
X	X	X	X	X	E.3 Long Term O&M Procedures
X	X	X	X	X	E.4 Pre-Const Review of BMP Designs
X	X	X	X	X	E.5 Site Inspections During Construction
X	X	X	X	X	E.6 Post-Construction Inspections
					E.7 Other Post-Const Runoff Controls
F. Pollution Prevention/Good Housekeeping					
X	X	X	X	X	F.1 Employee Training Program
X	X	X	X	X	F.2 Inspection and Maintenance Program
X	X	X	X	X	F.3 Municipal Operations Storm Water Control
X	X	X	X	X	F.4 Municipal Operations Waste Disposal
X	X	X	X	X	F.5 Flood Management/Assess Guidelines
X	X	X	X	X	F.6 Other Municipal Operations Controls

There are no changes to the BMPs proposed in the most recent NOI. The Village has and will continue to perform these activities throughout the permit period.

1. Public Education and Outreach

   No changes to selected BMPs.

2. Public Participation/Involvement

   No changes to selected BMPs.

3. Illicit Discharge Detection and Elimination

   No changes to selected BMPs.

4. Construction Site Runoff Control

   No changes to selected BMPs.

5. Post-Construction Runoff Control

   No changes to selected BMPs.

6. Pollution Prevention/Good Housekeeping

   No changes to selected BMPs.

Part B. Status of Compliance with Permit Conditions

The status of BMPs and measurable goals performed in Year 14 is described below.

1. Public Education and Outreach

The Village is committing to conduct Public Education and Outreach as part of its permit. Public Education and Outreach requires implementation of a program to distribute educational material to the community or conduct equivalent outreach activities about the impacts of storm water discharges on water bodies and the steps that the public can take to reduce pollutants to stormwater runoff. The Village commits to implementation of BMPs related to A.1 and A.6 as described below.

A.1 Distributed Paper Material

The Village and County partner to prepare and distribute materials related to stormwater pollution prevention.

Measurable Goals: *The Village and County will continue to produce and distribute the informational materials.*

A.6 Other Public Education

The Village has created website links on the Public Works website to information on protecting water quality from urban runoff.

Measurable Goals: *The Village will continue to monitor website links and update as new information becomes available.*

2. Public Participation/Involvement

The Village committed to performing activities and services related to the Public Participation/Involvement minimum control measure BMP under numbers B.2, B.3, B.4, B.6 and B.7. The status or progress for each of the measurable goals related to these BMPs is presented below.

B.2 Educational Volunteer, B.6 Program Coordination

The Village and County have coordinated with and supported volunteer activities throughout the Village. These activities have included stream monitoring, clean-up of ditches, trash pickup and supplying of material and services to local charities and civic group. These activities directly reduce the amount of pollutants reaching receiving waters and provide valuable data for enhancement programs.

Measurable Goals: *The Village will coordinate with the groups on future enhancement projects and activities.*

B.3 Stakeholder Meeting

The Village is a member of the DuPage River Salt Creek Workgroup (DRSCW) which hosts participates and coordinates with watershed planning activities and meetings

Measurable Goals: *The Village will remain a member and active supporter of the DRSCW and continue to participate in stakeholder meetings.*

B.4 Public Hearing

The Village holds public meetings to discuss topics including steps the public can take to reduce pollutants to stormwater runoff or the impacts of stormwater runoff on local water bodies.

Measurable Goals: *The Village will hold an annual public meeting for interested community members to learn and/or speak about the Village's NPDES program or other stormwater related topics.*

B.6 Program Involvement
The Village and County coordinate with local groups to perform clean-up activities. These activities directly reduce the amount of pollutants entering the Village's storm sewer system.

Measurable Goals: *This activity has the goal of encouraging active public participation in ambient water quality programs and increasing the visibility of water quality issues.*

B.7 Other Public Involvement
The Public Works Department provides contact information on the Village website to allow residents to report stormwater or water quality related issues.

Measurable Goals: *The goal of this program is to provide active citizen participation in detection of illicit discharges to the storm sewer system and problems with drainage features. This program will also aid the Public Works Department in the detection of illicit discharges and inspection of drainage features.*

3. Illicit Discharge Detection and Elimination

The Village committed to performing some activities related to the Illicit Discharge Detection and Elimination minimum control. BMPs will be implemented under BMP numbers C.1, C.2, C.3, C.4, C.5, C.6, C.7 and C.10 as described below.

C.1 Storm Sewer Map Preparation
The Village has a complete storm sewer map and regularly updated its map based on development or other changes as needed.

Measurable Goals: *The Village will complete a biennial review of the storm sewer map and update as needed.*

C.2 Regulatory Control Program
The Village has adopted the DuPage Countywide Stormwater and Floodplain Ordinance (DCSFO) which is utilized as the regulatory control program for illicit discharges.

Measurable Goals: *The goal of this program is to eliminate any non-storm water discharges to the storm sewer system.*

C.3 Detection/Elimination Plan
The Village has procedures for handling and prioritizing the report of a possible illicit discharge to storm sewer systems.

Measurable Goals: *The goal of this program is to develop a procedure for receiving, tracking, investigating and eliminating illicit discharges to the storm sewer system.*

C.4 Illicit Discharge Tracing Procedures and C.5 Illicit Source Removal Procedures
The Village has developed illicit discharge tracing and elimination procedures. The Village also currently documents activities related to illicit discharges with service request forms, activity logs, etc.

Measurable Goals: *The Village will annually trace and remove all illicit discharges detected by resident reporting, dry weather screening, or regular storm sewer maintenance. The Village will continue to utilize the documentation procedures in place and modify as needed to meet the NPDES compliance standards.*

C.6 Program Evaluation and Assessment
The Village has performed yearly program compliance monitoring and evaluation to determine the effectiveness of the overall program and the BMPs selected.

Measurable Goals: *The goal of this activity to assess the Village's NPDES program for compliance and effectiveness as well as ensure compliance with applicable TMDLs and Watershed Management Plans.*

C.7 Visual Dry Weather Screening
The Village will perform inspections of all MS4 outfalls during dry weather conditions or as determined by the inspection prioritization plan.

Measurable Goals: *The goal of this activity is to identify outfalls with potential illicit discharges.*

C.10 Other Illicit Discharge Controls
The Village performs annual monitoring of the receiving waters upstream and downstream of all MS4 discharge points. The Village monitors the progress of watershed work groups and the establishment of any applicable TMDLs or other Watershed Management Plans. The Village current monitoring program plan is to evaluate the effectiveness of the program's BMPs for the removal of pollutants.

Measurable Goals: *The goal of this activity is to monitor receiving streams for potential changes due to the discharge of stormwater and ensure compliance with applicable TMDLs and Watershed Management Plans to reduce waste loads.*

4. Construction Site Runoff Control

DuPage County has adopted a Countywide Stormwater and Floodplain Ordinance (DCSFO) that establishes the minimum stormwater management requirements for developments in DuPage County. The Ordinance establishes standards for construction site runoff control. As a partial-waiver community, the Village will continue to enforce the DuPage County Ordinance throughout the Village.

D.1 Regulatory Control Program
The Village will enforce the DuPage County Stormwater and Floodplain Ordinance.

Measurable Goals: *The Village will continue to enforce the Ordinance.*

D.2 Erosion and Sediment Control BMPs
The Village requires erosion and sediment control BMPs.

Measurable Goals: *The Village will continue to require sediment and erosion control BMPs.*

D.4 Site Plan Review Procedures
The Village reviews site plans for conformance with the DuPage County Ordinance.

Measurable Goals: *The Village will continue to review site plans for conformance to the Ordinance.*

D.5 Other Waste Control Program
The Village has procedures in place for addressing reports from residents related to construction site runoff.

Measurable Goals: *The Village will continue to address the reporting of problems related to construction site runoff.*

D.6 Site Inspection/Enforcement Procedures
The Village has inspected construction sites and enforced the DuPage County Ordinance.

Measurable Goals: *The Village will continue to inspect construction sites and enforce the DuPage County Ordinance.*

5. Post-Construction Runoff Control

As described above, the DuPage Countywide Stormwater and Floodplain Ordinance (DCSFO) establishes the minimum stormwater management requirements for developments in DuPage County. The DCSFO establishes standards for post-construction site runoff control. The Village will continue to enforce the DCSFO.

E.2 Regulatory Control Program
The Village will enforce the DCSFO.

Measurable Goals: *The Village will continue to enforce the DCSFO.*

E.3 Long Term O&M Procedures
The Village has enforced the DCSFO which requires long term O&M procedures.

Measurable Goals: *The Village will continue to enforce the DCSFO.*

E.4 Pre-Construction Review of BMP Designs
The Village reviews BMP designs prior to construction.

Measurable Goals: *The Village will review BMP designs prior to construction.*

E.5 Site Inspections During Construction
The Village has inspected sites during construction.

Measurable Goals: *The Village will continue to inspect sites during construction.*

E.6 Post-Construction Inspections
The Village has inspected sites after construction.

Measurable Goals: *The Village will continue to inspect sites after construction.*

6. Pollution Prevention/Good Housekeeping

This minimum control measure involves the development and implementation of an operation and maintenance program to reduce the discharge of pollutants from municipal operations. This program must include a training program for municipal employees. The Village will perform BMPs under BMP numbers F.1, F.2, F.3, F.4, F.5, and F.6 as described below.

F.1 Employee Training Program
The Village will continue provide the training and other presentations that provide guidance and procedures for employees to reduce or eliminate the discharge of pollutants from Village owned facilities and activities to the storm sewer system.

Measurable Goals: *The Village will continue to educate Public Works employees of current practices that contribute to storm water pollution and/or to develop new procedures and make revisions to existing procedures that will curtail the discharge of pollutants to storm sewer systems by Public Works employees, annually.*

F.2 Inspection and Maintenance Program
The Village has procedures and inspection forms for the routine inspections of ponds, stream channels and storm sewer outfalls. The Village typically completes the inspection cycle once every three years or as funding allows.

Measurable Goals: *The Village will continue the inspection and maintenance program to identify and repair any stormwater issues with the municipal separate storm sewer system and provide information about individual BMP performance.*

F.3 Municipal Operations Stormwater Control, F.4 Municipal Operations Waste Control and F.6 Other Municipal Operations Control

The Village has a formalized program to prevent stormwater pollution from municipal operations at the Public Works facility. This program encompasses a wide array of activities such as fleet maintenance, salt storage, and recycling. The Village also has procedures and policies to require the appropriate of municipal generated wastes. Lastly the Village performs a variety of activities that reduce or prevent pollutants including pesticides, herbicides, fertilizers and trash from entering the storm sewer system and to minimize exposure. These activities are part of the Villages municipal operations controls and include proper storage and handling, certification, spill and leak prevention, and response procedures, street sweeping and waste recycling.

Measurable Goals: *The Village will implement the formal program and evaluate the effectiveness of the program annually and update the program as needed.*

F.5 Flood Management/Assessment Guidelines

The Village has adopted the DuPage County Stormwater and Floodplain Ordinance that specifically addresses the Federal Emergency Management Agency requirements regarding flood-prone areas.

Measurable Goals: *The Village will continue to enforce the ordinance regarding potential uses of the special flood hazard area to limit potential for the discharge of contaminants to the storm sewer system.*

Part C. Information and Data Collection Results

Please see the attached Annual Facility Inspection Report from the DuPage River Salt Creek Workgroup for information related to data collection. The report is found in Part F.

Part D. Summary of Year 15 Stormwater Activities

The following table summarizes the BMPs committed to for Year 15. Specific BMPs and measurable goals for Year 15 Stormwater Management Program development activities are presented in the sections following the table.

Note: X indicates BMPs committed to for Year 15.

Year 15 MS4	
A. Public Education and Outreach	
X	A.1 Distributed Paper Material
	A.2 Speaking Engagement
	A.3 Public Service Announcement
	A.4 Community Event
	A.5 Classroom Education Material
X	A.6 Other Public Education
B. Public Participation/Involvement	
	B.1 Public Panel
X	B.2 Educational Volunteer
	B.3 Stakeholder Meeting
	B.4 Public Hearing
X	B.5 Volunteer Monitoring
X	B.6 Program Coordination
X	B.7 Other Public Involvement
C. Illicit Discharge Detection and Elimination	
X	C.1 Storm Sewer Map Preparation
X	C.2 Regulatory Control Program
X	C.3 Detection/Elimination Prioritization Plan
X	C.4 Illicit Discharge Tracing Procedures
X	C.5 Illicit Source Removal Procedures
X	C.6 Program Evaluation and Assessment
X	C.7 Visual Dry Weather Screening
	C.8 Pollutant Field Testing
	C.9 Public Notification
X	C.10 Other Illicit Discharge Controls

Year 15 MS4	
D. Construction Site Runoff Control	
X	D.1 Regulatory Control Program
X	D.2 Erosion and Sediment Control BMPs
X	D.3 Other Waste Control Program
X	D.4 Site Plan Review Procedures
	D.5 Public Information Handling Procedures
X	D.6 Site Inspection/Enforcement Procedures
	D.7 Other Construction Site Runoff Controls
E. Post-Construction Runoff Control	
	E.1 Community Control Strategy
X	E.2 Regulatory Control Program
X	E.3 Long Term O&M Procedures
X	E.4 Pre-Const Review of BMP Designs
X	E.5 Site Inspections During Construction
X	E.6 Post-Construction Inspections
	E.7 Other Post-Const Runoff Controls
F. Pollution Prevention/Good Housekeeping	
X	F.1 Employee Training Program
X	F.2 Inspection and Maintenance Program
X	F.3 Municipal Operations Storm Water Control
X	F.4 Municipal Operations Waste Disposal
X	F.5 Flood Management/Assess Guidelines
X	F.6 Other Municipal Operations Controls

1. Public Education and Outreach

The Village is committing to conduct Public Education and Outreach as part of its permit. Public Education and Outreach requires implementation of a program to distribute educational material to the community or conduct equivalent outreach activities about the impacts of storm water discharges on water bodies and the steps that the public can take to reduce pollutants to stormwater runoff. The Village commits to implementation of BMPs related to A.1 and A.6 as described below.

A.1 Distributed Paper Material

The Village and County partner to prepare and distribute materials related to stormwater pollution prevention.

Measurable Goals: *The Village and County will continue to produce and distribute the informational materials.*

The Village and County will continue to publish and distribute stormwater pollution prevention materials.

A.6 Other Public Education

The Village has created website links on the Public Works website to information on protecting water quality from urban runoff.

Measurable Goals: *The Village will continue to monitor website links and update as new information becomes available.*

The website links provide residents and businesses with information for preventing pollution and using water resources appropriately.

2. Public Participation/Involvement

The Village will perform activities and services related to the Public Participation/Involvement minimum control measure. BMPs will be implemented under BMP number B.2, B.3, B.4, B.5, B.6, and B.7 as described below.

B.2 Educational Volunteer, B.6 Program Coordination

The Village and County have coordinated with and supported volunteer activities throughout the Village. These activities have included stream monitoring, clean-up of ditches, trash pickup and supplying of material and services to local charities and civic group. These activities directly reduce the amount of pollutants reaching receiving waters and provide valuable data for enhancement programs.

Measurable Goals: *The Village will coordinate with the groups on future enhancement projects and activities.*

The Village will continue with the clean-up activities and work to increase participation.

B.3 Stakeholder Meeting

The Village is a member of the DuPage River Salt Creek Workgroup (DRSCW) which hosts participates and coordinates with watershed planning activities and meetings

Measurable Goals: *The Village will remain a member and active supporter of the DRSCW and continue to participate in stakeholder meetings.*

The Village will continue to participate in the stakeholder meetings.

B.4 Public Hearing

The Village holds public meetings to discuss topics including steps the public can take to reduce pollutants to stormwater runoff or the impacts of stormwater runoff on local water bodies.

Measurable Goals: *The Village will hold an annual public meeting for interested community members to learn and/or speak about the Village's NPDES program or other stormwater related topics.*

The Village will continue to hold a public meeting at least once a year.

B.6 Program Involvement
The Village and County coordinate with local groups to perform clean-up activities. These activities directly reduce the amount of pollutants entering the Village's storm sewer system.

Measurable Goals: *This activity has the goal of encouraging active public participation in ambient water quality programs and increasing the visibility of water quality issues.*

The Village will continue with the clean up activities and work to increase participation.

B.7 Other Public Involvement
The Public Works Department provides contact information on the Village website to allow residents to report stormwater or water quality related issues.

Measurable Goals: *The goal of this program is to provide active citizen participation in detection of illicit discharges to the storm sewer system and problems with drainage features. This program will also aid the Public Works Department in the detection of illicit discharges and inspection of drainage features.*

The Village will continue to provide the appropriate contact information to report illicit discharges or other stormwater issues and work with groups to reduce pollution.

3. Illicit Discharge Detection and Elimination

The Village commits to performing some activities related to the Illicit Discharge Detection and Elimination minimum control. BMPs will be implemented under BMP numbers C.1, C.2, C.4, C.5, C.7 and C.10 as described below.

C.1 Storm Sewer Map Preparation
The Village regularly updated its storm sewer map.

Measurable Goals: *The Village will complete a biennial review of the storm sewer map and update as needed.*

The Village continues to review and update the storm sewer map as needed.

C.2 Regulatory Control Program
The Village has adopted the DuPage Countywide Stormwater and Floodplain Ordinance (DCSFO) which is utilized as the regulatory control program for illicit discharges.

Measurable Goals: *The Village will enforce the DuPage County Stormwater and Floodplain Ordinance.*

The Village continues to enforce the Ordinance.

C.4 Illicit Discharge Tracing Procedures and C.5 Illicit Source Removal Procedures
The Village has developed illicit discharge tracing and elimination procedures.

Measurable Goals: *The Village will annually trace and remove all illicit discharges detected by resident reporting, dry weather screening, or regular storm sewer maintenance.*

The Village continues to trace and remove illicit discharges.

C.7 Visual Dry Weather Screening
The Village has screened storm sewer structures as part of its regular storm sewer maintenance.

Measurable Goals: *The Village will annually screen all outfalls within the Village limits. The Village will annually screen 20% of storm sewer structures including manholes, catch basins and inlets.*

The Village continues annually screen the outfalls and storm sewer structures in the Village.

C.10 Other Illicit Discharge Controls
The Village performs annual monitoring of the receiving waters upstream and downstream of all MS4 discharge points. The Village monitors the progress of watershed work groups and the establishment of any applicable TMDLs or other Watershed Management Plans. The Village current monitoring program plan is to evaluate the effectiveness of the program's BMPs for the removal of pollutants.

Measurable Goals: *The goal of this activity is to monitor receiving streams for potential changes due to the discharge of stormwater and ensure compliance with applicable TMDLs and Watershed Management Plans to reduce waste loads.*

The Village will continue the program and will formally document the inspection and monitoring.

4. Construction Site Runoff Control

DuPage County has adopted a Countywide Stormwater and Floodplain Ordinance (DCSFO) that establishes the minimum stormwater management requirements for developments in DuPage County. The Ordinance establishes standards for construction site runoff control. As a partial-waiver community, the Village will continue to enforce the DuPage County Ordinance throughout the Village.

D.1 Regulatory Control Program
The Village will enforce the DuPage Countywide Stormwater and Floodplain Ordinance.

Measurable Goals: *The Village will continue to enforce the Ordinance.*

The Village continues to enforce the Ordinance.

D.2 Erosion and Sediment Control BMPs
The Village requires erosion and sediment control BMPs.

Measurable Goals: *The Village will continue to require sediment and erosion control BMPs.*

The Village continues to require the erosion and sediment control BMPs.

D.3 Other Waste Control Program
The Village Building Department enforces an ordinance that requires construction site operators to control wastes that may adversely impact water quality.

Measurable Goals: *The Village will continue to require construction site operators to control wastes.*

The Village continues to require construction site operators to control wastes.

D.4 Site Plan Review Procedures
The Village reviews site plans for conformance with the DuPage Countywide Ordinance.

Measurable Goals: *The Village will continue to review site plans for conformance to the Ordinance.*

The Village continues to review site plans for conformance with the DuPage County Ordinance.

D.6 Site Inspection/Enforcement Procedures
The Village has inspected construction sites and enforced the DuPage County Ordinance.

Measurable Goals: *The Village will continue to inspect construction sites and enforce the DuPage County Ordinance.*

The Village continues to inspect construction sites and enforce the DuPage County Ordinance.

5. Post-Construction Runoff Control

As described above, the DuPage Countywide Stormwater and Floodplain Ordinance (DCSFO) establishes the minimum stormwater management requirements for developments in DuPage County. The DCSFO establishes standards for post-construction site runoff control. The Village will continue to enforce the DCSFO.

E.2 Regulatory Control Program
The Village will enforce the DCSFO.

Measurable Goals: *The Village will continue to enforce the DCSFO.*

The Village continues to enforce the DCSFO.

E.2 Long Term O&M Procedures
The Village has enforced the DCSFO which requires long term O&M procedures.

Measurable Goals: *The Village will continue to enforce the DCSFO.*

The Village continues to enforce the DCSFO.

E.4 Pre-Construction Review of BMP Designs
The Village reviews BMP designs prior to construction.

Measurable Goals: *The Village will review BMP designs prior to construction.*

The Village continues to review BMP designs prior to construction.

E.5 Site Inspections During Construction
The Village has inspected sites during construction.

Measurable Goals: *The Village will continue to inspect sites during construction.*

The Village continues to inspect sites during construction.

E.6 Post-Construction Inspections
The Village has inspected sites after construction.

Measurable Goals: *The Village will continue to inspect sites after construction.*

The Village continues to inspect sites after construction.

6. Pollution Prevention/Good Housekeeping

This minimum control measure involves the development and implementation of an operation and maintenance program to reduce the discharge of pollutants from municipal operations. This program must include a training program for municipal employees. The Village will perform BMPs under BMP numbers F.1, F.2, F.3, F.4, F.5, and F.6 as described below.

F.1 Employee Training Program

The Village will continue provide the training and other presentations that provide guidance and procedures for employees to reduce or eliminate the discharge of pollutants from Village owned facilities and activities to the storm sewer system.

Measurable Goals: *The Village will continue to educate Public Works employees of current practices that contribute to storm water pollution and/or to develop new procedures and make revisions to existing procedures that will curtail the discharge of pollutants to storm sewer systems by Public Works employees, annually.*

The Village will continue the pollution prevention and good housekeeping program to reduce or prevent the discharge of pollutants from municipal activities to the storm sewer system.

F.2 Inspection and Maintenance Program

The Village has procedures and inspection forms for the routine inspections of ponds, stream channels and storm sewer outfalls. The Village typically completes the inspection cycle once every three years or as funding allows.

Measurable Goals: *The Village will continue the inspection and maintenance program to identify and repair any stormwater issues with the municipal separate storm sewer system and provide information about individual BMP performance.*

The Village will continue with the inspection and maintenance program.

F.3 Municipal Operations Stormwater Control, F.4 Municipal Operations Waste Control and F.6 Other Municipal Operations Control

The Village has a formalized program to prevent stormwater pollution from municipal operations at the Public Works facility. This program encompasses a wide array of activities such as fleet maintenance, salt storage, and recycling. The Village also has procedures and policies to require the appropriate of municipal generated wastes. Lastly the Village performs a variety of activities that reduce or prevent pollutants including pesticides, herbicides, fertilizers and trash from entering the storm sewer system and to minimize exposure. These activities are part of the Villages municipal operations controls and include proper storage and handling, certification, spill and leak prevention, and response procedures, street sweeping and waste recycling.

Measurable Goals: *The Village will implement the formal program and evaluate the effectiveness of the program annually and update the program as needed.*

The Village will continue the municipal operations control program.

F.5 Flood Management/Assessment Guidelines

The Village has adopted the DuPage County Ordinance that specifically addresses the Federal Emergency Management Agency requirements regarding flood-prone areas.

Measurable Goals: *The Village will continue to enforce the ordinance regarding potential uses of the special flood hazard area to limit potential for the discharge of contaminants to the storm sewer system.*

The Village will continue the special flood hazard area development and use requirements.

Part E. Notice of Qualifying Local Program

DuPage County and the DuPage River Salt Creek Workgroup will serve as a Qualifying Local Programs (QLP) for the Village of Clarendon Hills. Part E of the Annual Report details the activities performed by the Qualifying Local Programs and is outlined in the attached Annual Report.

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

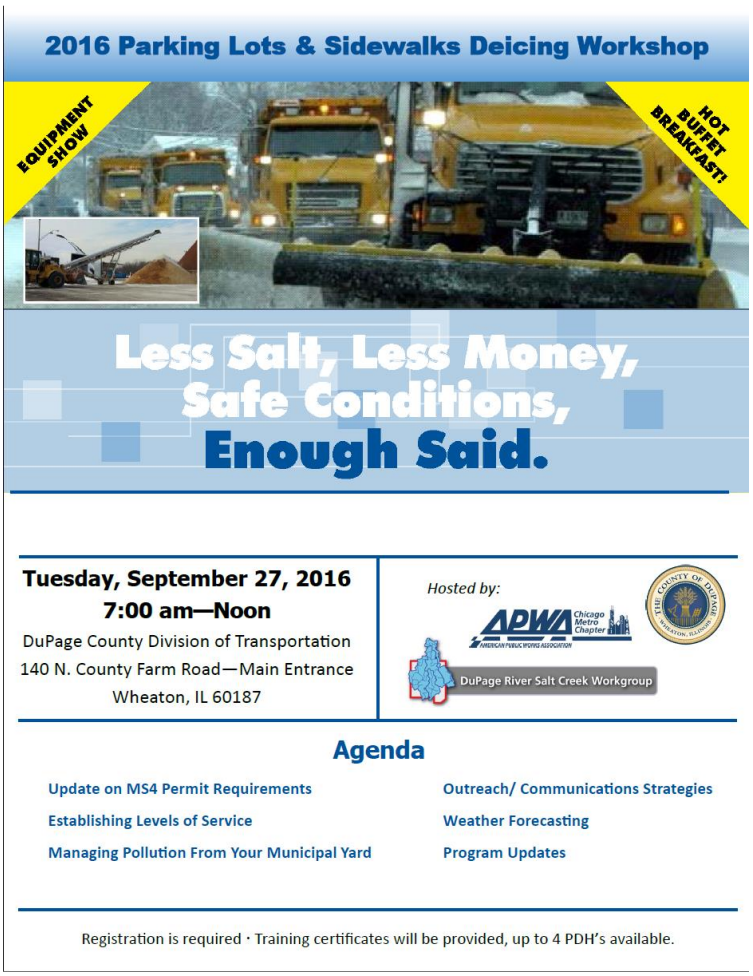
5. Post-Construction Storm Water Management in New Development and Redevelopment - no activities

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.

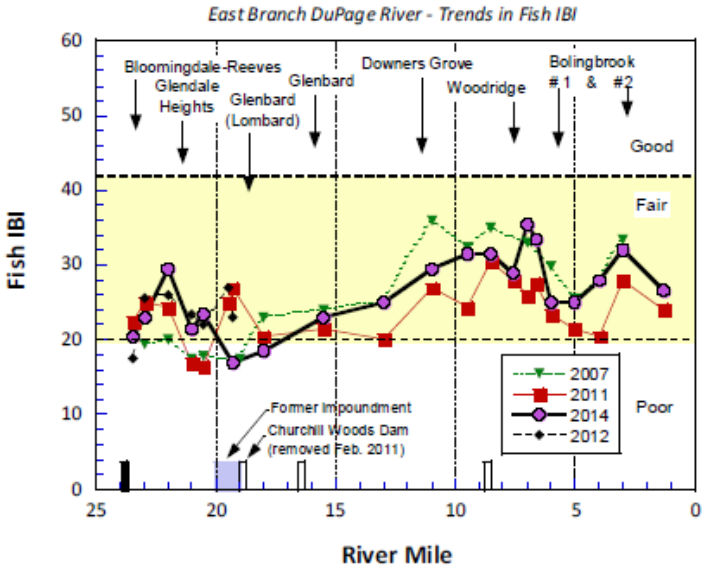
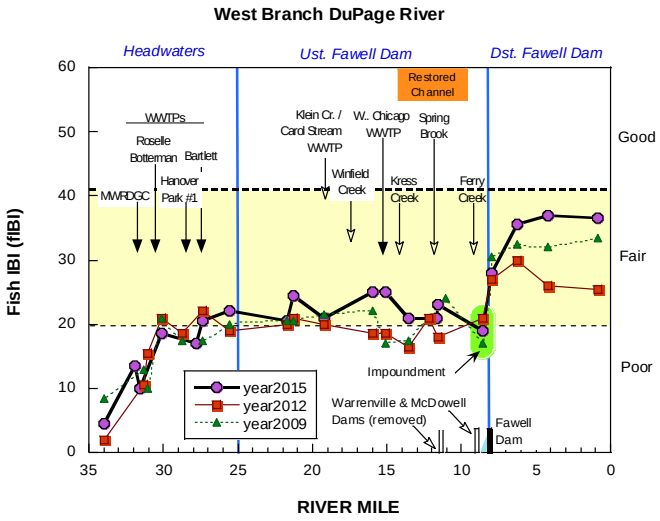


Figure 2. Fish IBI scores in the West Branch DuPage River, 2015, 2011-12 and 2007 in relation to municipal POTW dischargers. Bars along the x-axis depict mainstem dams or weirs (only black bars impede fish passage). The shaded area demarcates the "fair" narrative range.



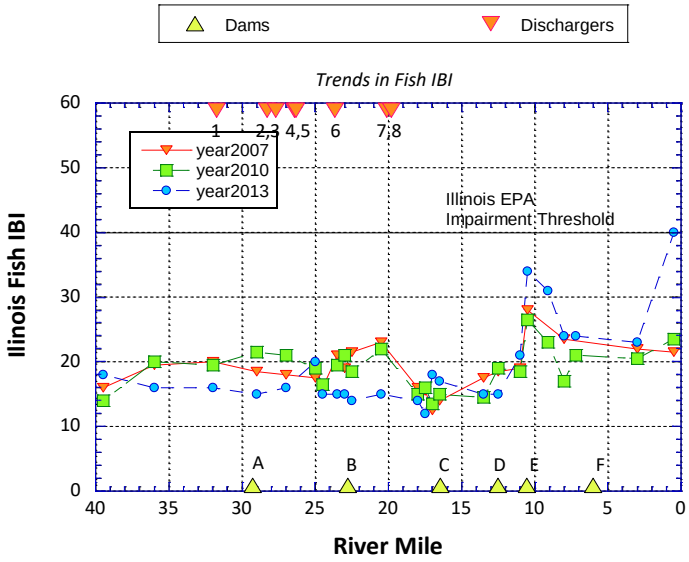
Salt Creek

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.

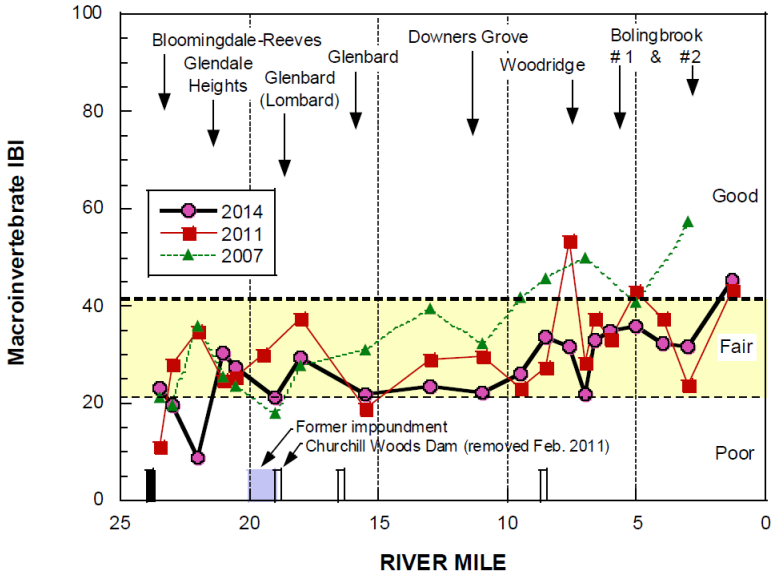
Results

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.



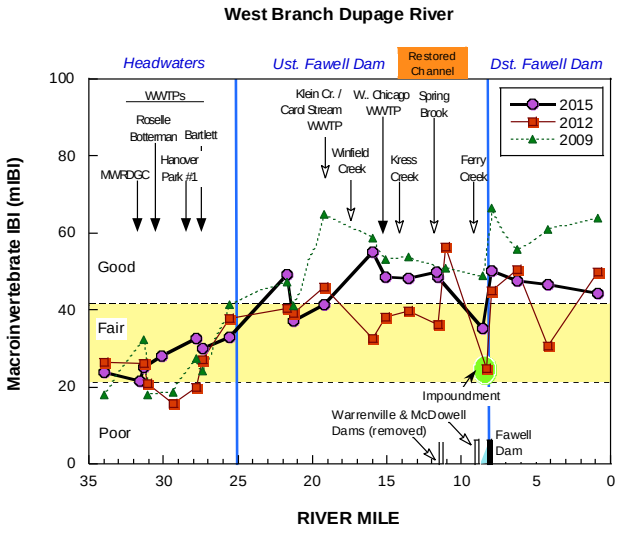
West Branch DuPage River

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.



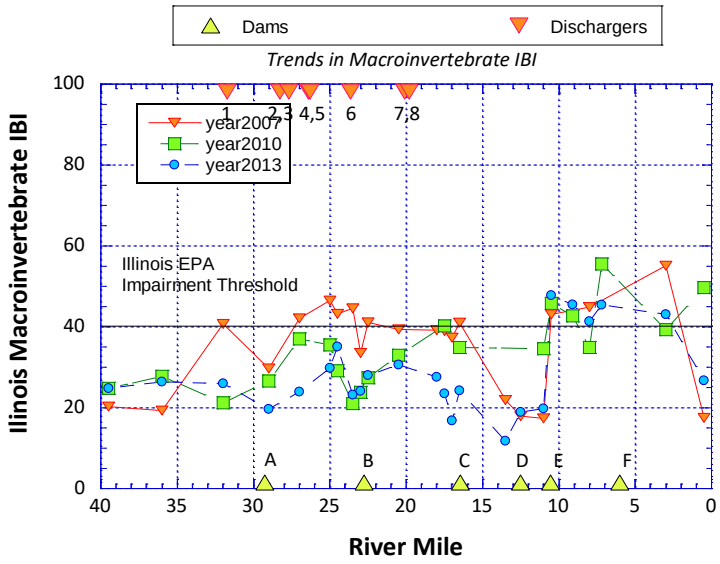
Salt Creek

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/.

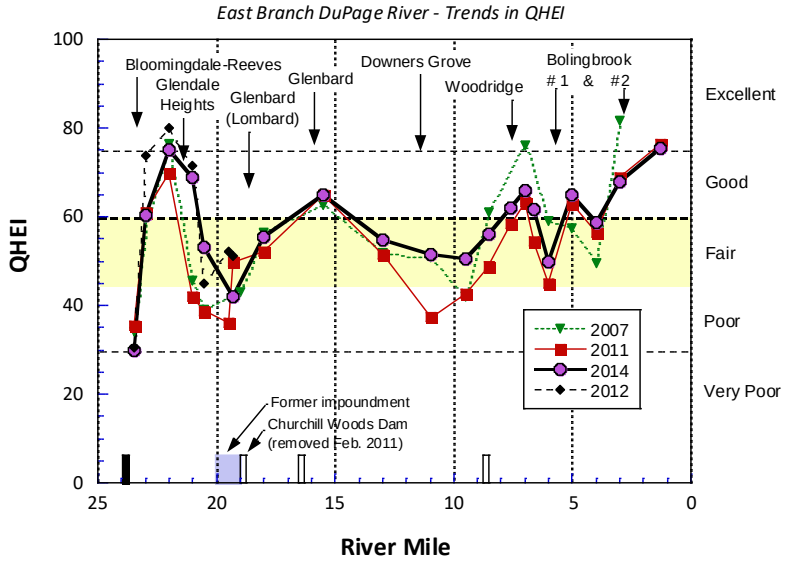
The physical habitat of a stream is a primary determinant of biological quality. Streams in the glaciated Midwest, left in their natural state, typically possess riffle-pool-run sequences, high sinuosity, and well-developed channels with deep pools, heterogeneous substrates and cover in the form of woody 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.

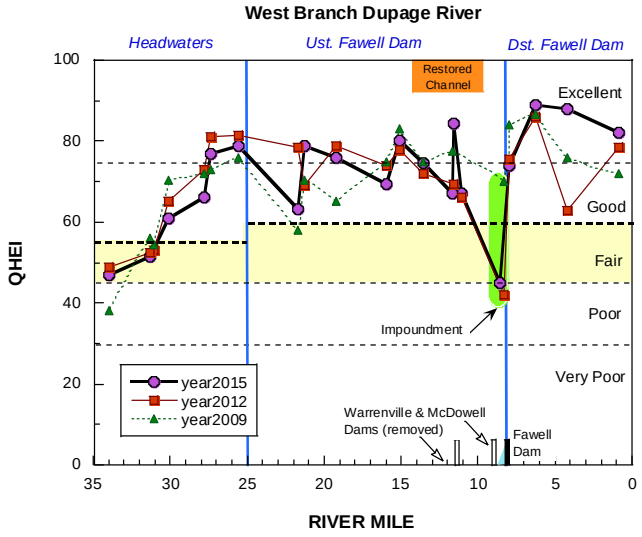
Figure 7. Qualitative Habitat Evaluation Index (QHEI) scores for the E. Branch DuPage River in 2007, 2011-12, and 2014 in relation to municipal WWTP discharges. Bars along the x-axis depict mainstem dams or weirs (black bars are dams that impede fish passage). The shaded region depicts the range of QHEI 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

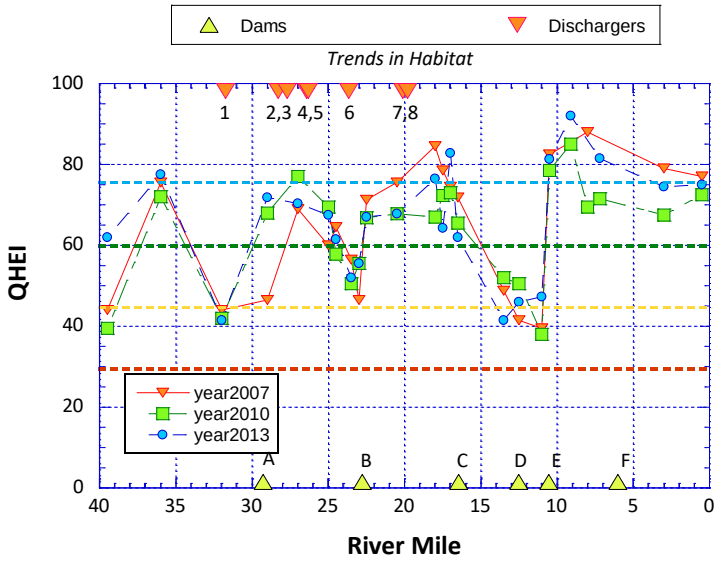


Salt Creek

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

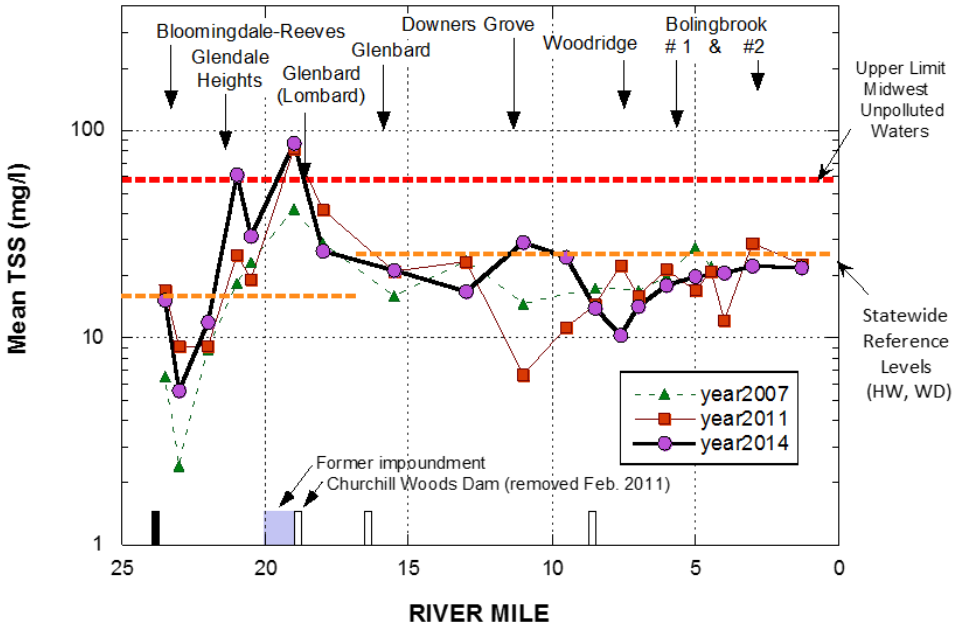
Stream flow in the West Branch DuPage River is effluent dominated during summer months. As such, its water quality is highly influenced by the concentrations and composition of chemical constituents in the effluent as well as runoff from the urban and developed land cover in the watershed. Water quality 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.



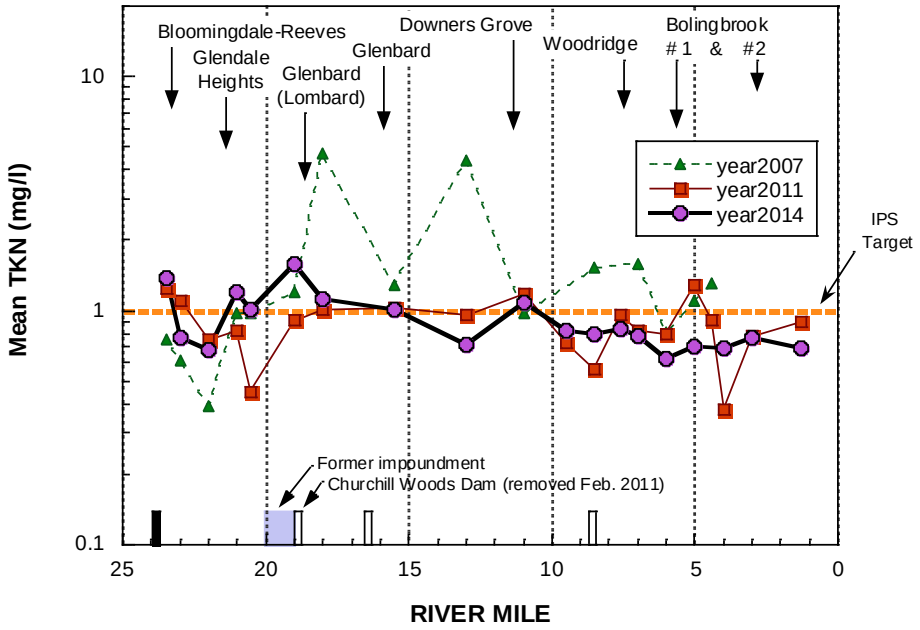


Figure 11. Concentrations of ammonia-N (top panel) and nitrate+nitrite-N (lower panel) from E. Branch DuPage River samples in 2007, 2011 and 2014 in relation to municipal WWTP discharges. Bars along the x-axis depict mainstem dams or weirs (only black bars for dams that impede fish passage). For ammonia-N, 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).

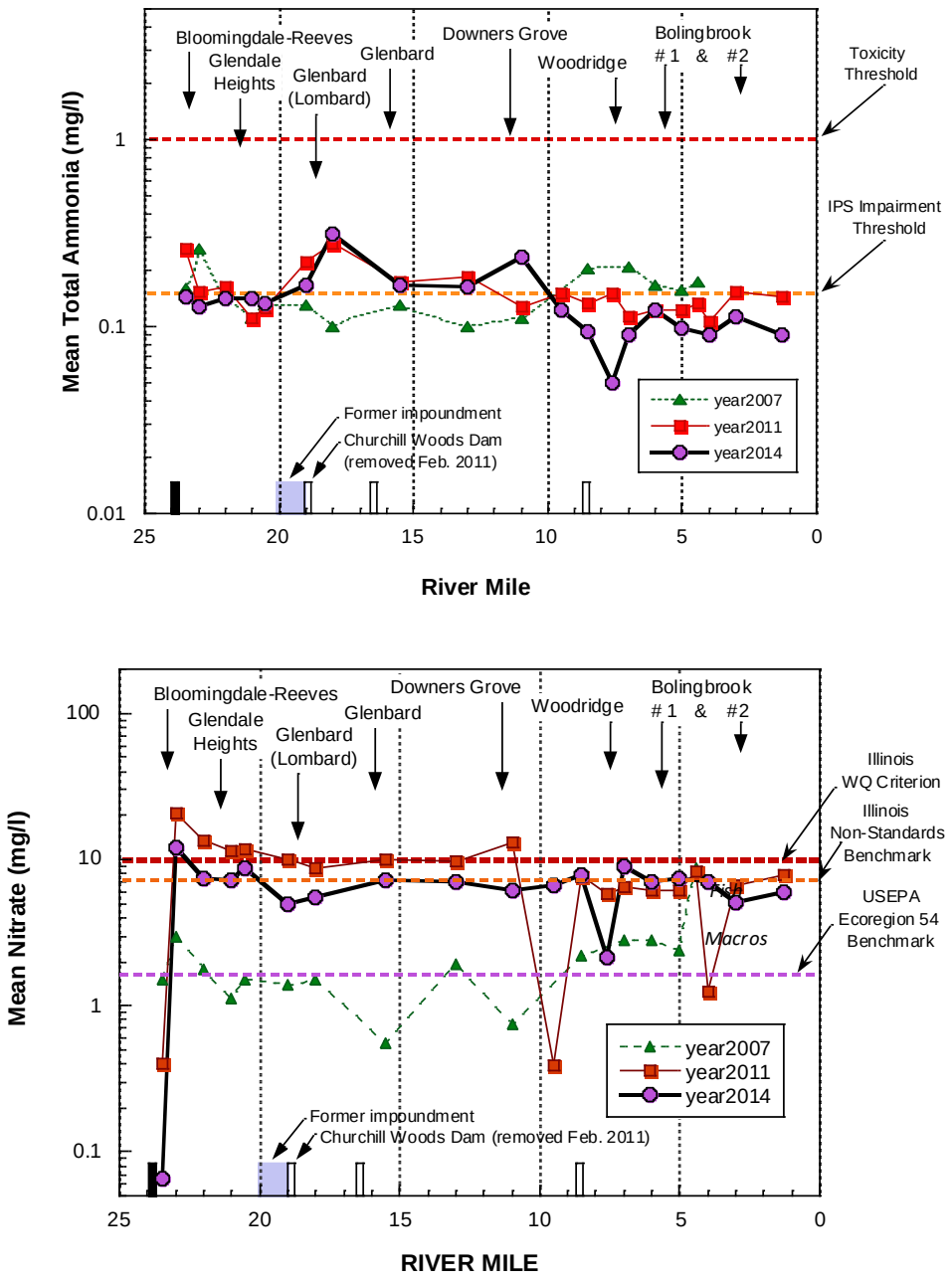


Figure 12. Concentrations total phosphorus from E. Branch DuPage River samples in 2007, 2011 and 2014 in relation to municipal WWTP discharges. Bars along the x-axis depict mainstem dams or weirs (black bars are dams that impede fish passage). For phosphorus, orange dashed lines represent target concentrations 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.

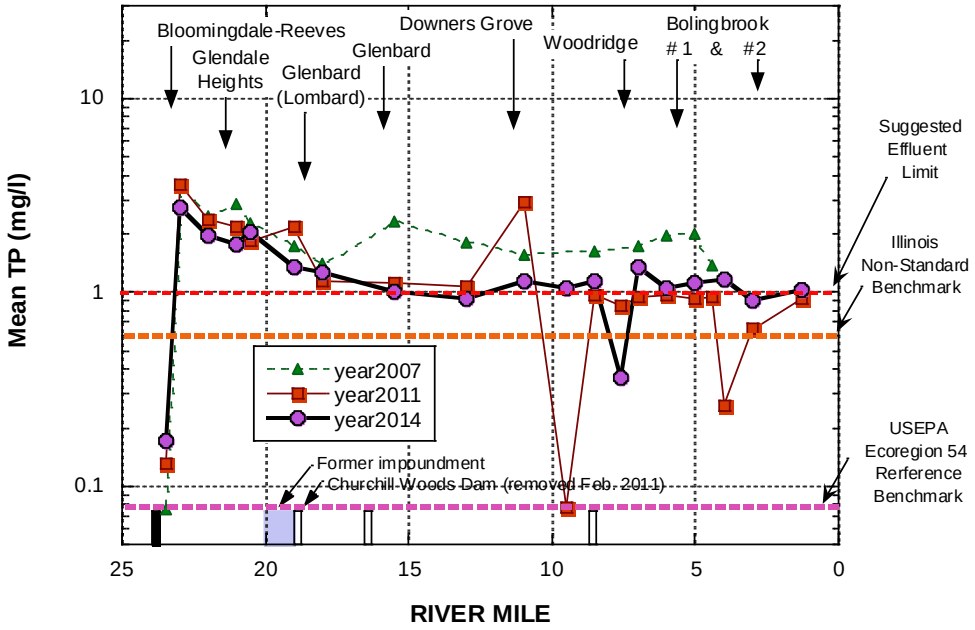


Figure 13. Chloride concentrations from the East Branch DuPage River in the summer of 2007, 2011 and 2014.

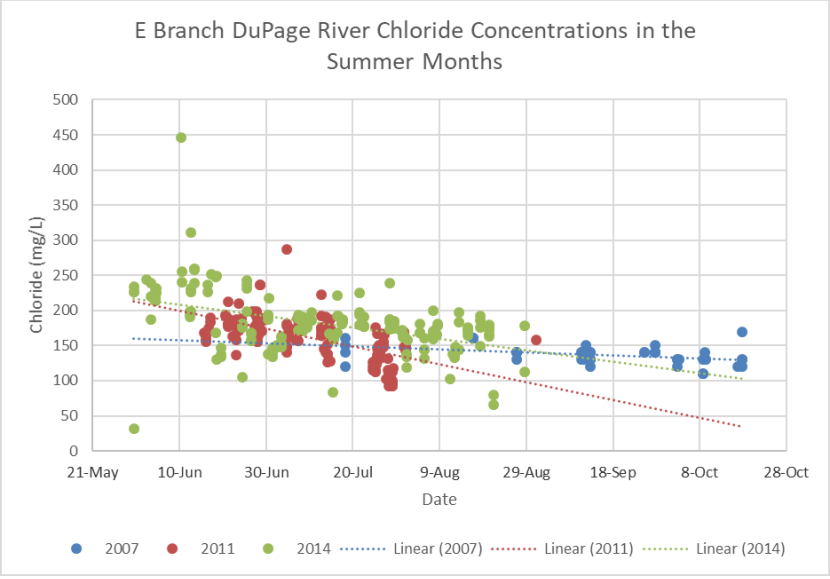
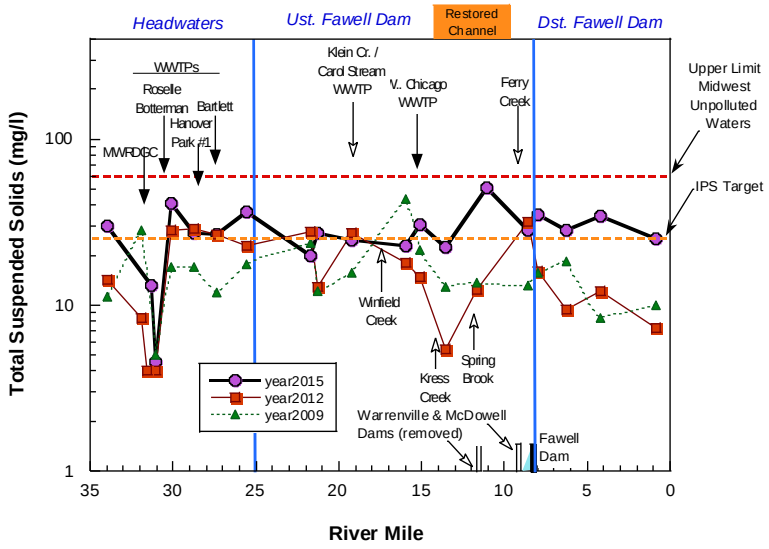


Figure 14. Concentrations of total suspended solids (top panel) and TKN (lower panel) from W. Branch DuPage River samples in 2008, 2012 and 2015 in relation to municipal WWTP discharges. Bars along the x-axis depict mainstem dams or weirs (black bars are dams that impede fish passage). Red dashed lines 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.



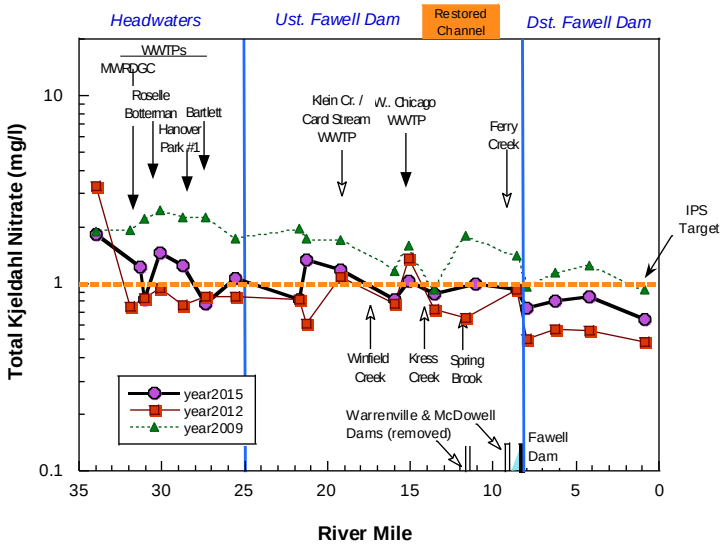


Figure 15. Concentrations of ammonia-N (top panel) and total nitrate (lower panel) from W. Branch DuPage River samples in 2008, 2012 and 2015 in relation to municipal WWTP discharges. Bars along the x-axis depict mainstem dams or weirs (only black bars for dams that impede fish passage). For ammonia-N, 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.

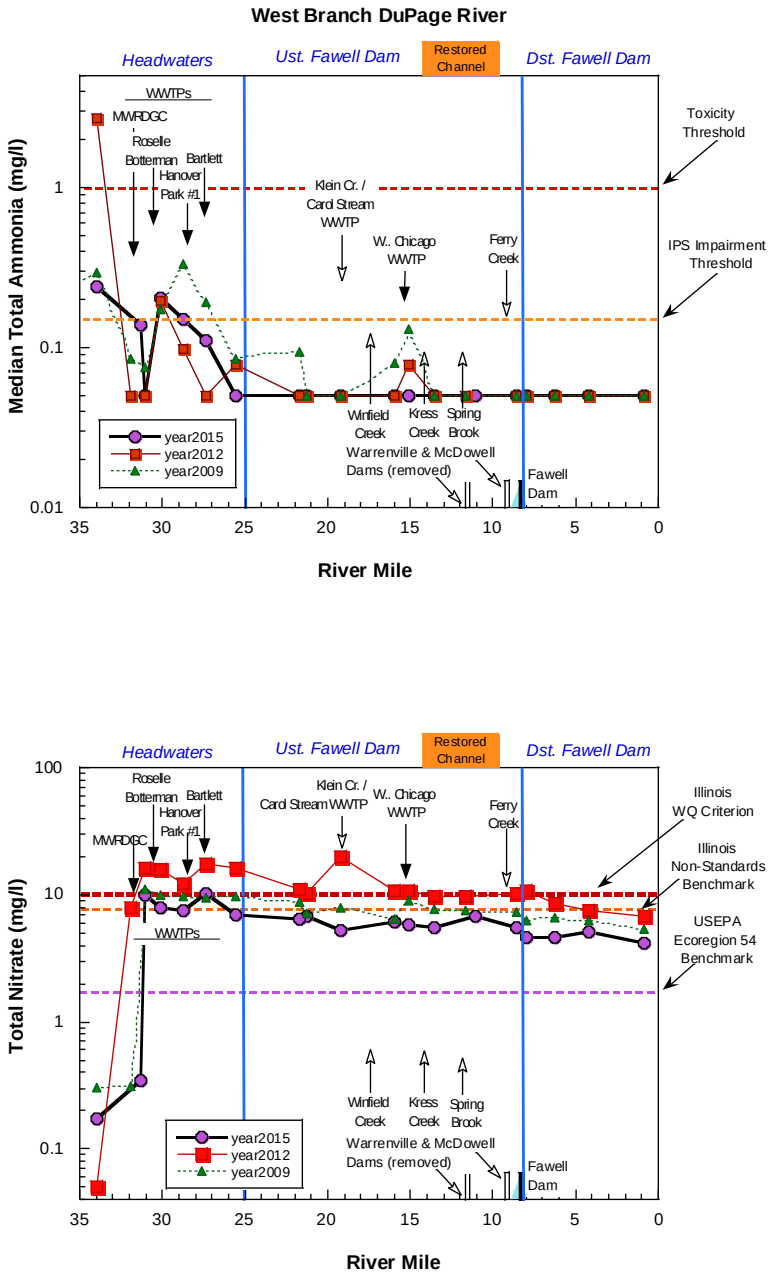
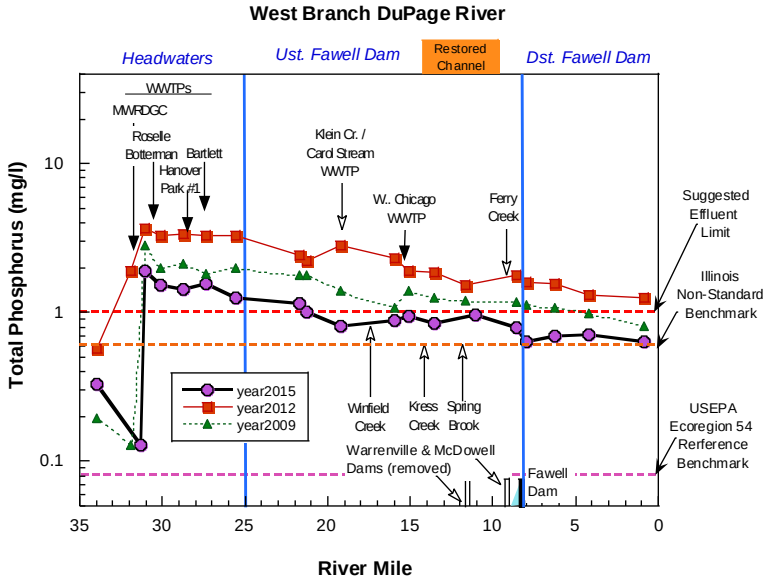


Figure 16. Concentrations total phosphorus (top panel) and chloride (lower panel) from W. Branch DuPage River samples in 2008, 2012 and 2015 in relation to municipal WWTP discharges. Bars along the x-axis depict mainstem dams or weirs (black bars are dams that impede fish passage). For phosphorus, orange 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.



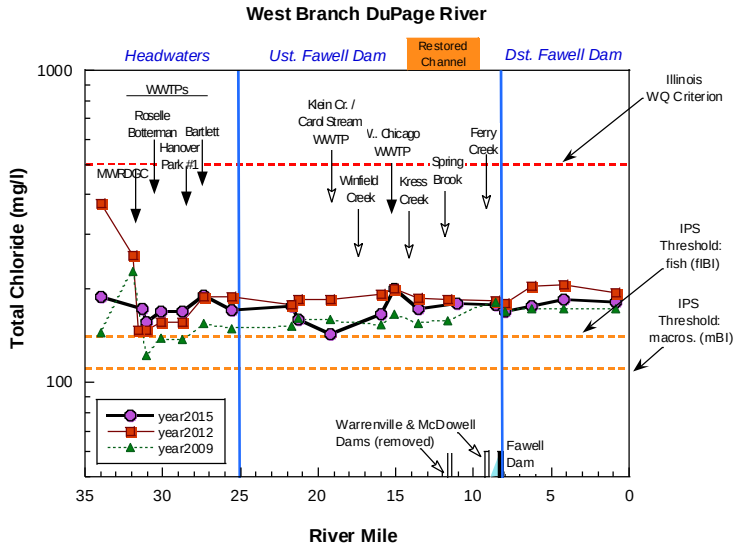
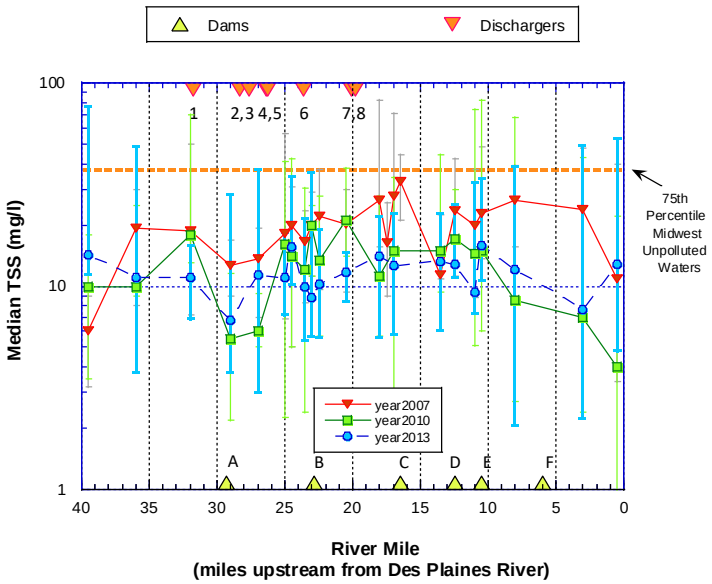


Figure 17. Concentrations of total suspended solids (top panel) and TKN (lower panel) from Salt Creek samples in 2007, 2010 and 2013 in relation to municipal WWTP discharges. Yellow triangles along the x-axis depict mainstem dams or weirs. Orange dashed lines shows the upper limits of concentrations 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.



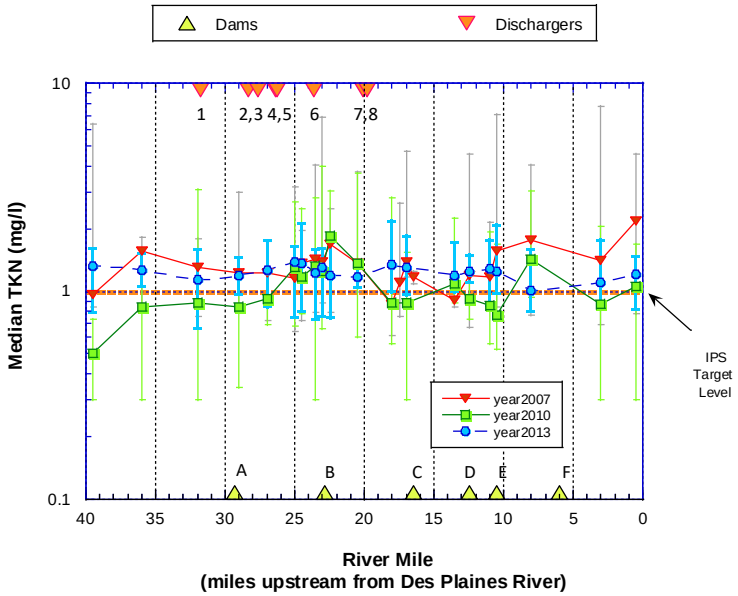
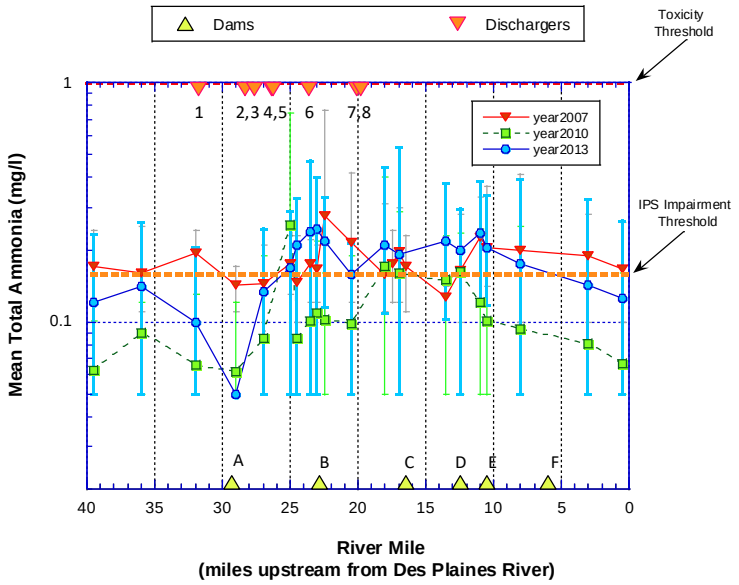


Figure 18. Concentrations of ammonia-N (top panel) and total nitrate (lower panel) from Salt Creek samples in 2007, 2010 and 2013 in relation to municipal WWTP discharges. Yellow triangles along the x-axis depict mainstem dams or weirs. For ammonia-N, the blue dashed line (1.0 mg/l) represents a threshold 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.



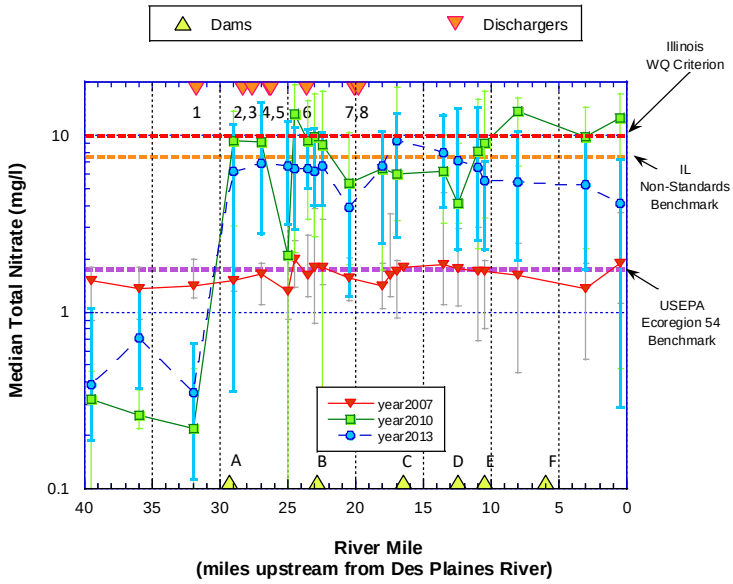
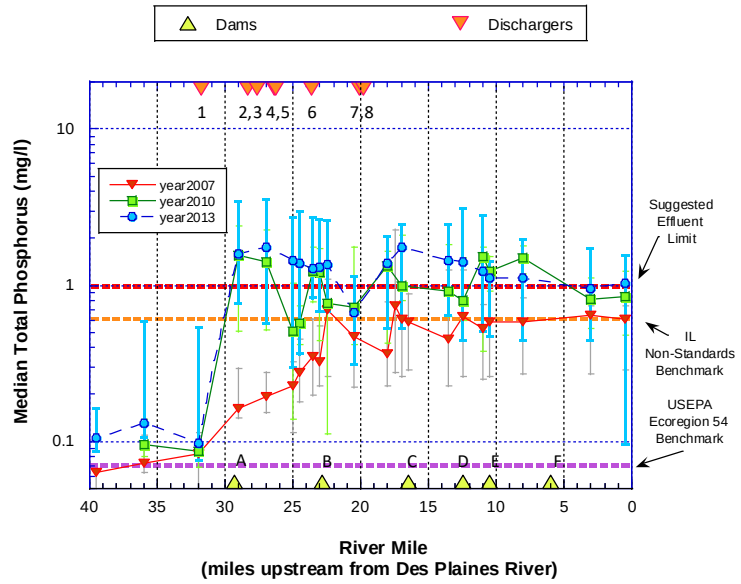
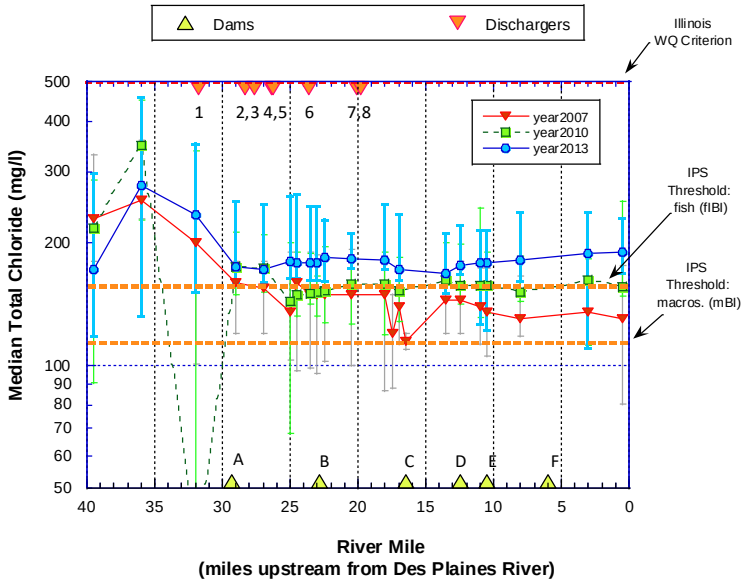


Figure 19. Concentrations total phosphorus (top panel) and chloride (lower panel) from Salt Creek samples in 2007, 2010, and 2013 in relation to municipal WWTP discharges. Yellow triangles along the x-axis depict mainstem dams or weirs. For phosphorus, purple dashed lines represent target concentrations 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.

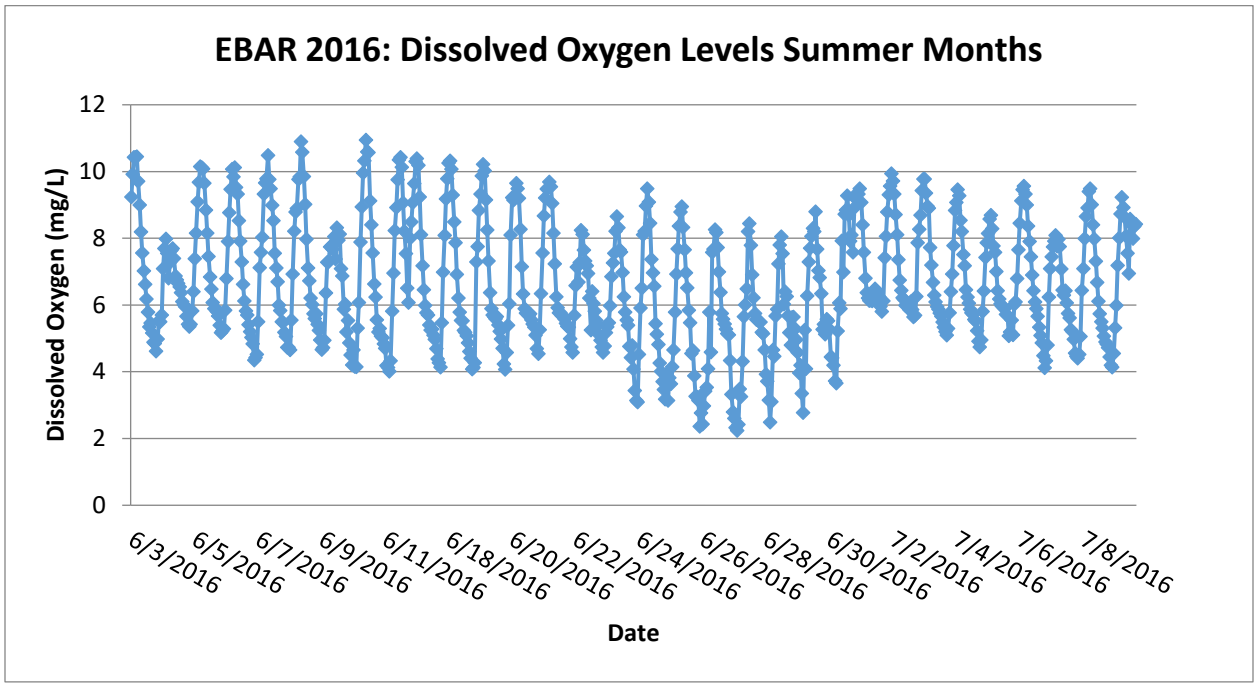
***Table 5*.** Continuous DO monitoring locations in the DRSCW watersheds

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).



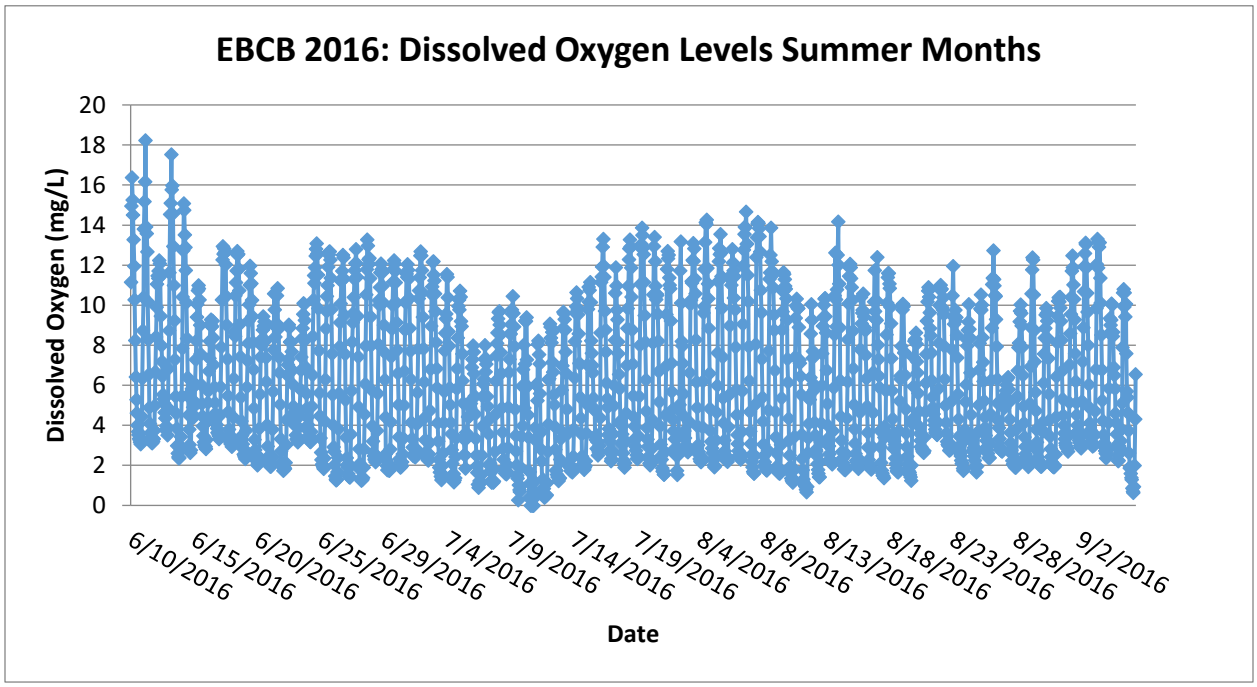
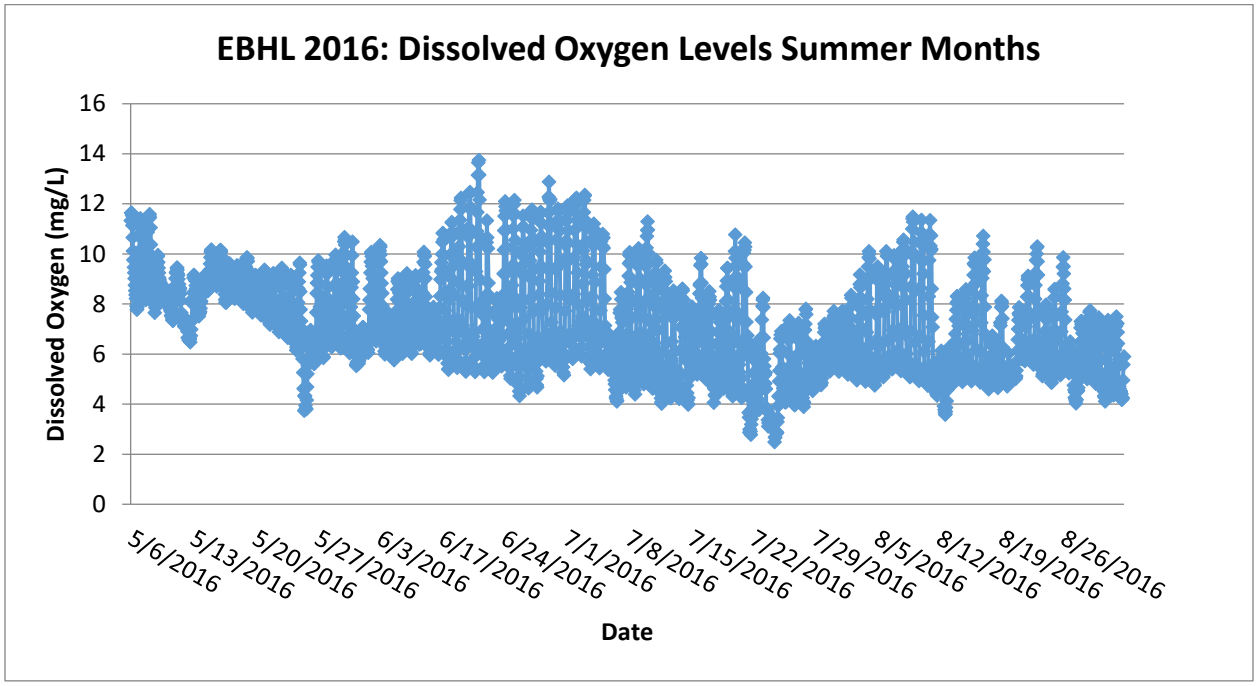


Figure 21. Dissolved Oxygen plots for East Branch DuPage River sites EBHL (top panel) and EBHR (lower panel).



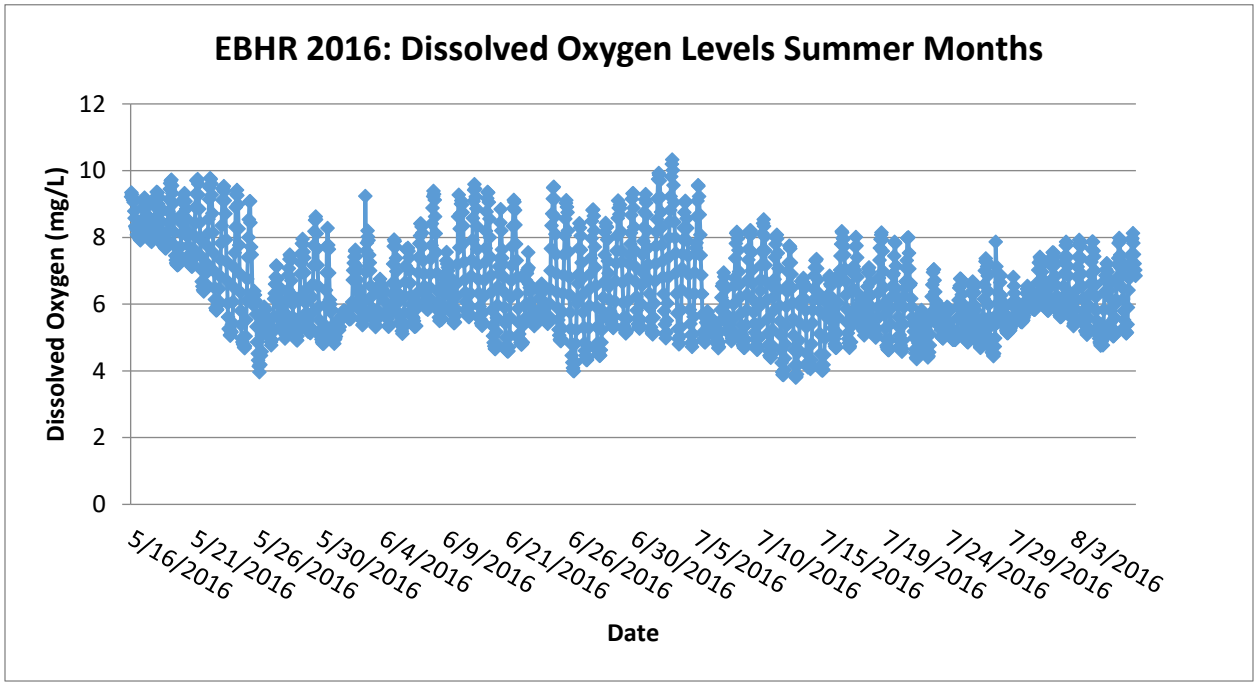
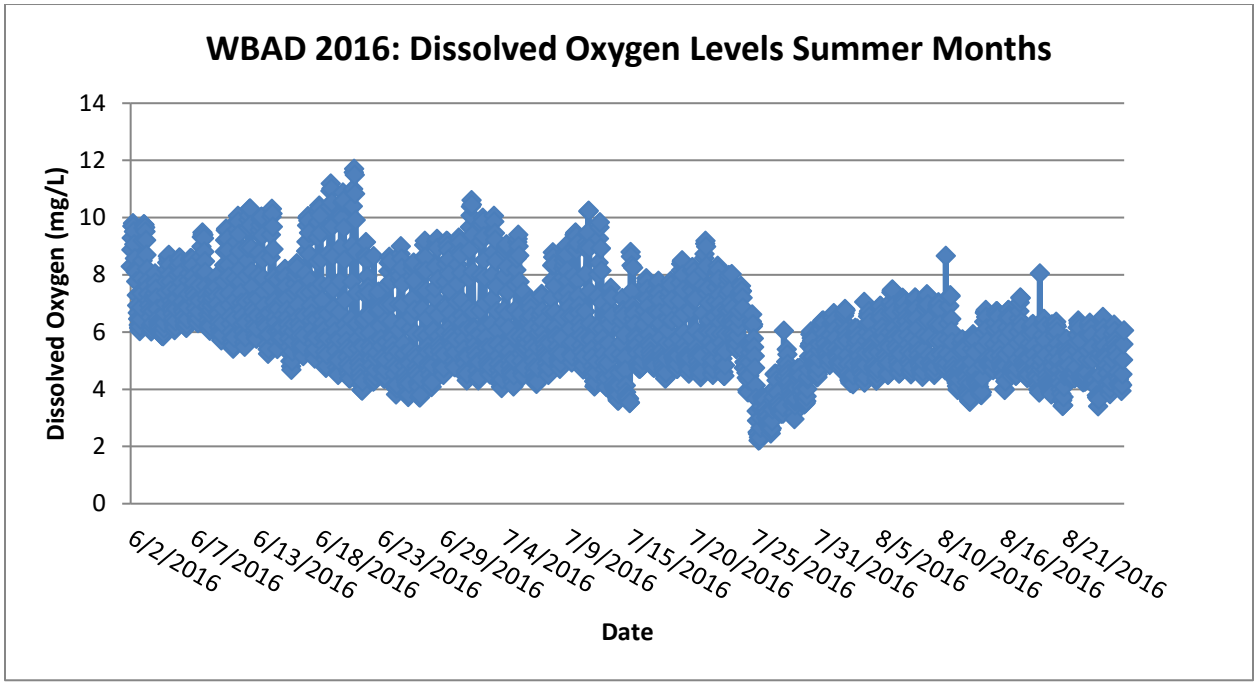


Figure 22. Dissolved Oxygen plots for West Branch DuPage River sites WBAD (top panel) and WBBR (lower panel).



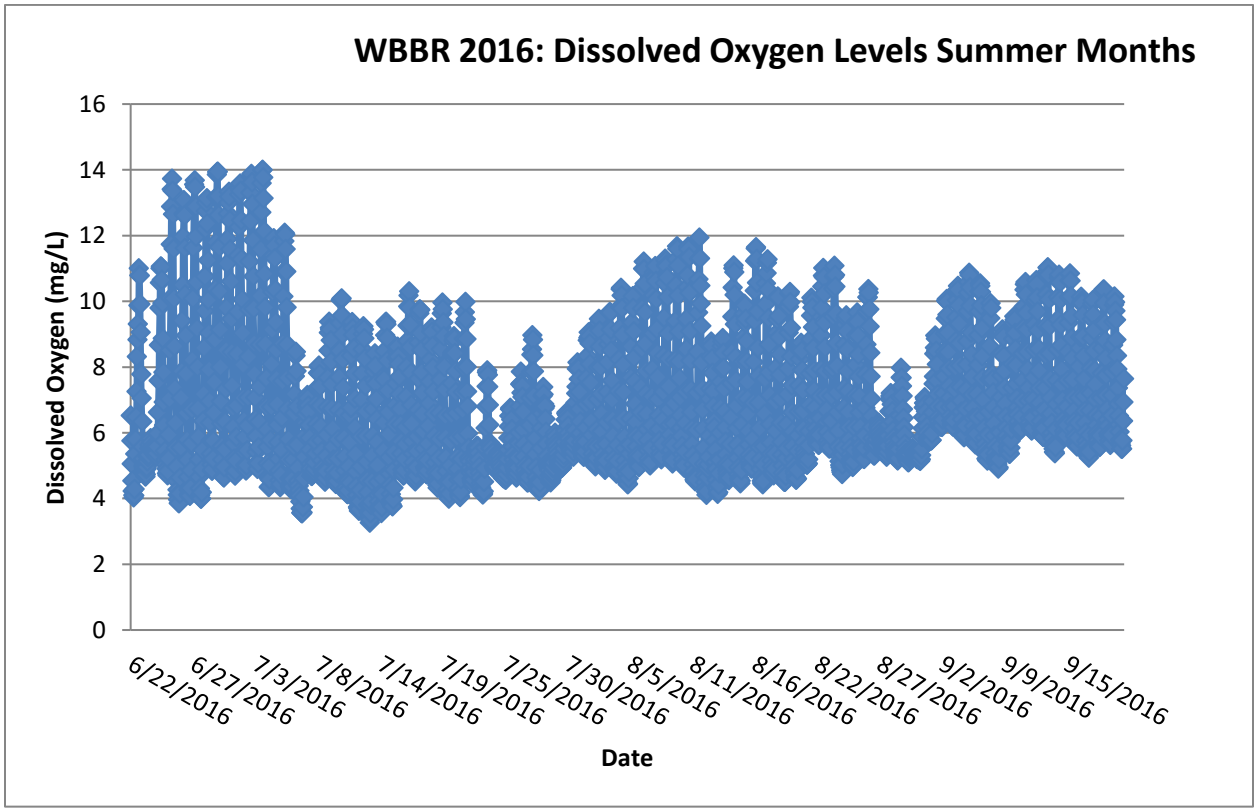
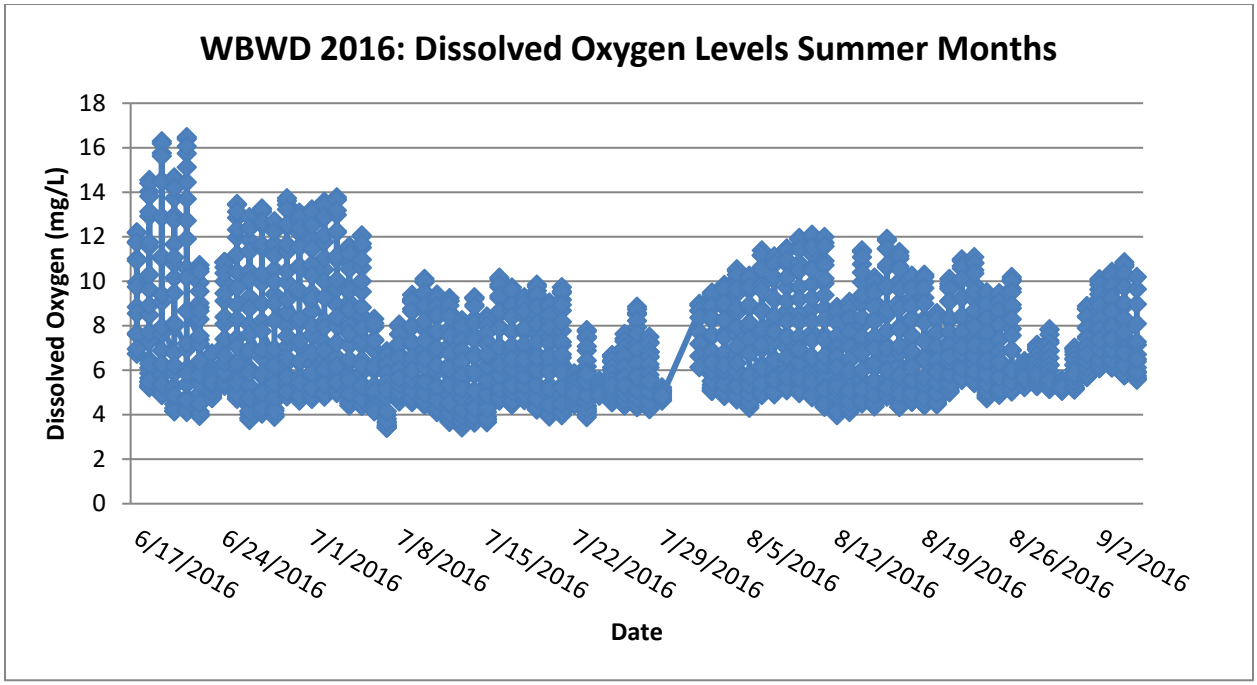


Figure 23. Dissolved Oxygen plots for West Branch DuPage River sites WBWD (top panel) and WBMG (lower panel).



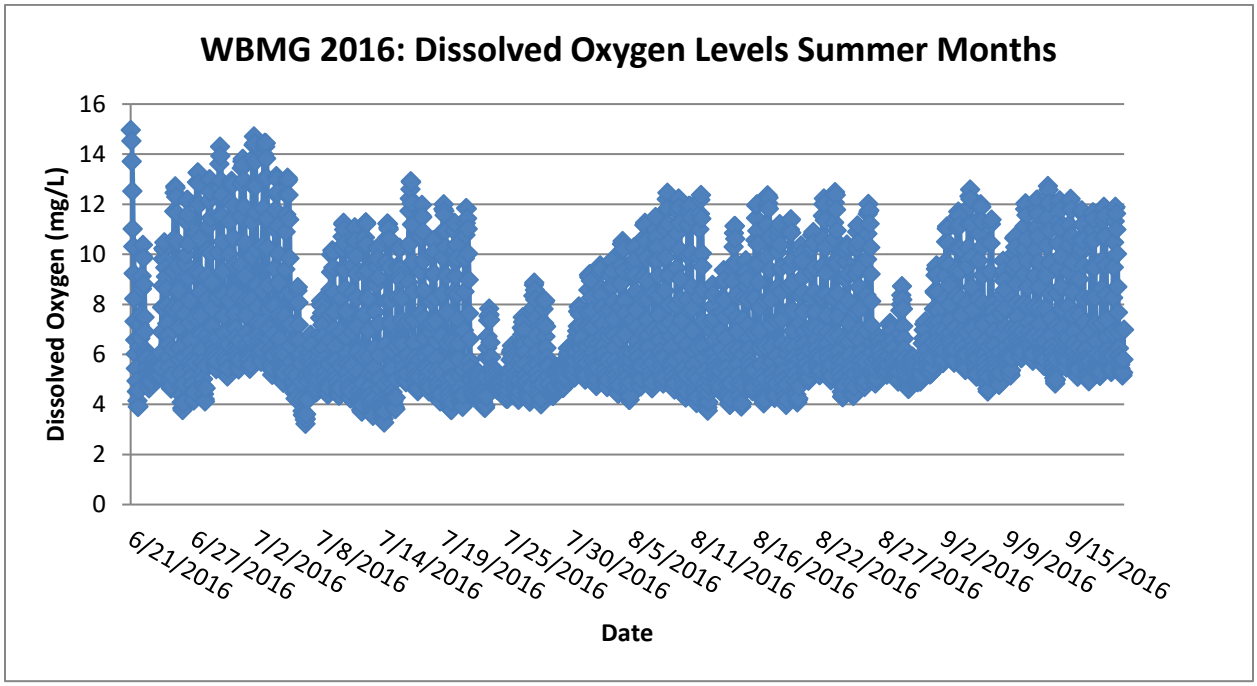
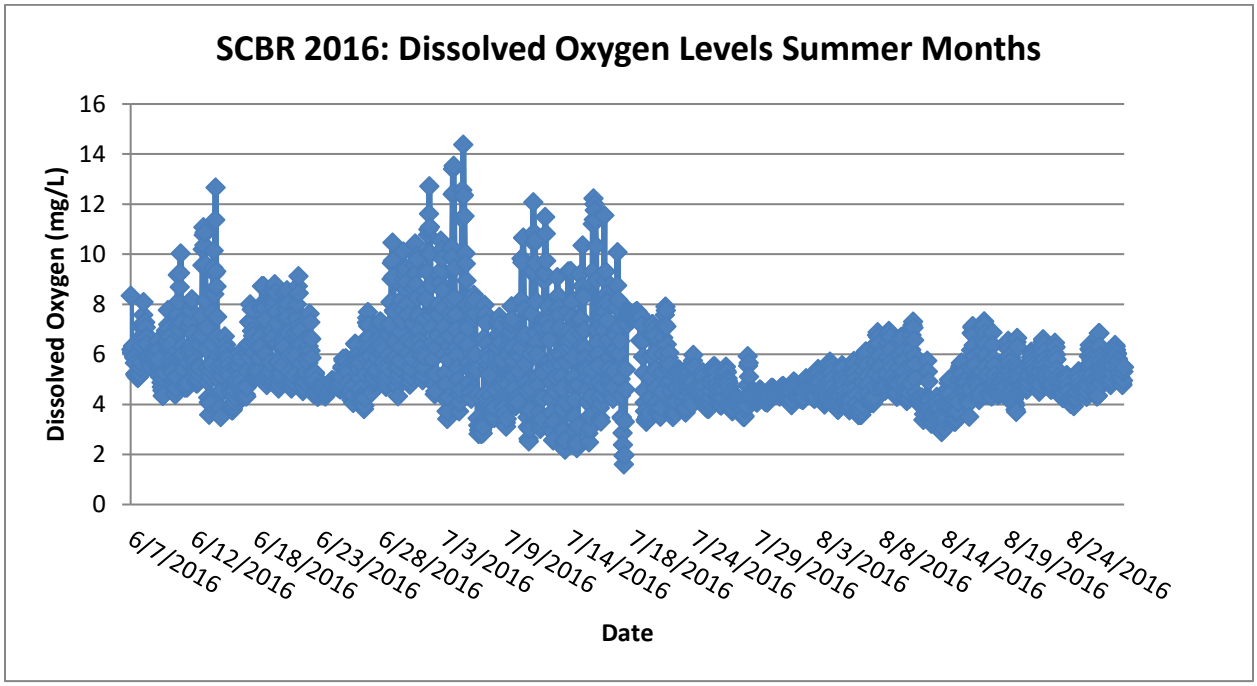
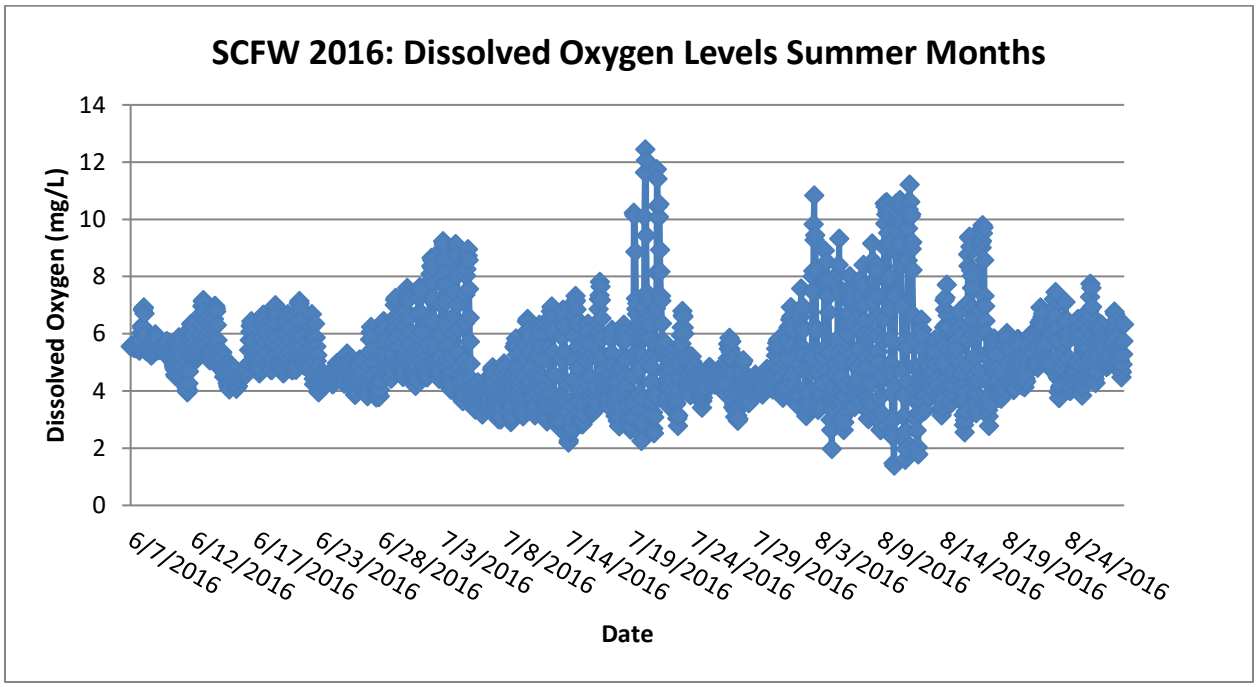


Figure 24. Dissolved Oxygen plots for Salt Creek sites SCBR (top panel) and SCFW (lower panel).





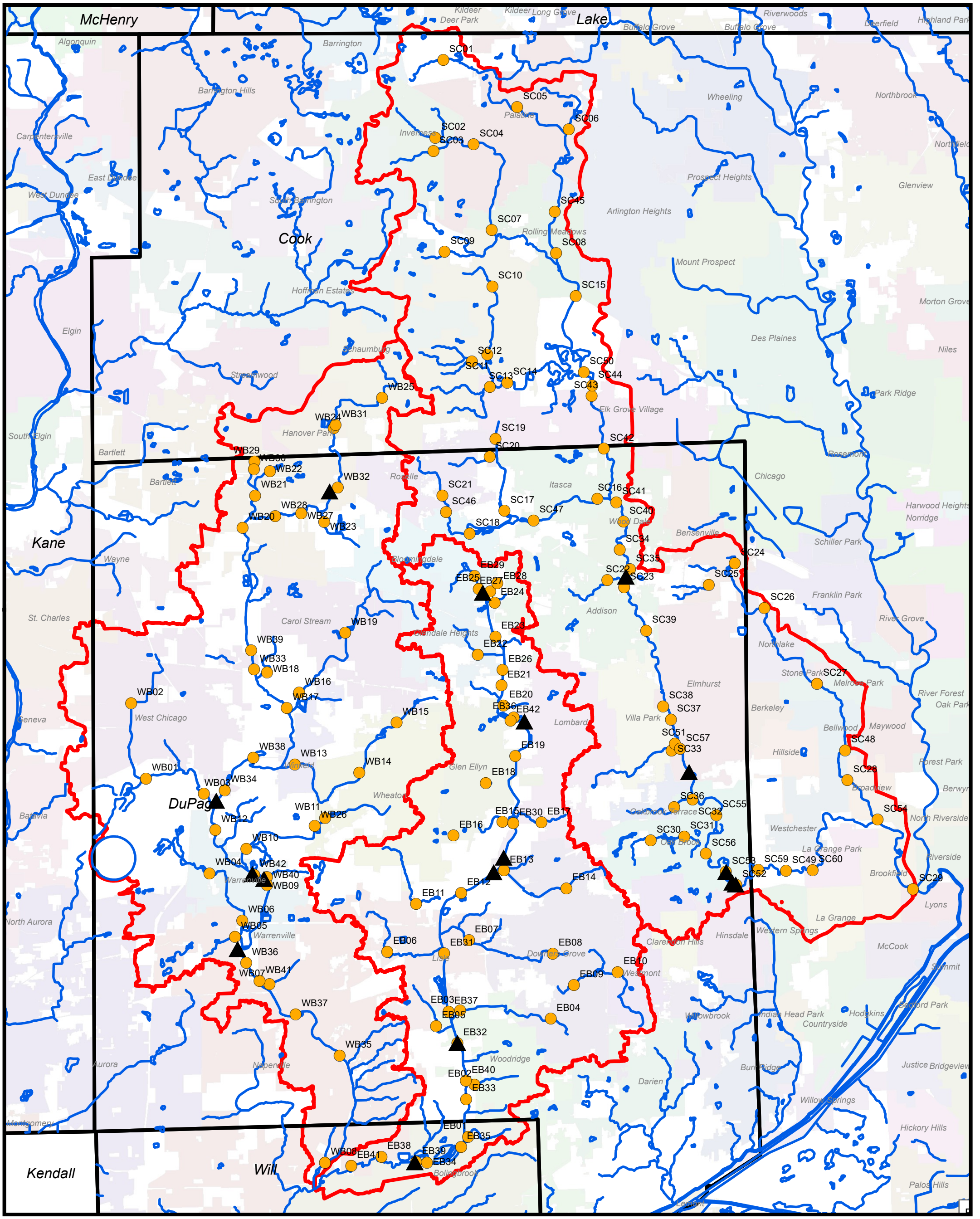
B. Recordkeeping

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.

Map 1. DRSCW Ambient Bioassessment and Continuous Dissolved Oxygen Monitoing Locations



Legend

- Continuous DO_Probes
- Bioassessment Sites
- RIVERS
- County Boundary
- DRSCW_Watersheds

N W E S

0 0.75 1.5 3 4.5 6 Miles

DuPage River Salt Creek Workgroup

McHenry

Lake

Cook

Kane

DuPage

Kendall

Will

Map 2. DRSCW Ambient Bioassessment Sediment and Organics sites.

DuPage River Salt Creek Workgroup

Legend

- Sediment Sites
- Organics Sites
- RIVERS
- County Boundary
- DRSCW_Watersheds

N

W E

S

0 0.75 1.5 3 4.5 6 Miles

Attachment A

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

CDM Smith

DuPage River Salt Creek Workgroup

Chloride Education and Reduction Program

2014 Deicing Program Survey

REPORT

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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.

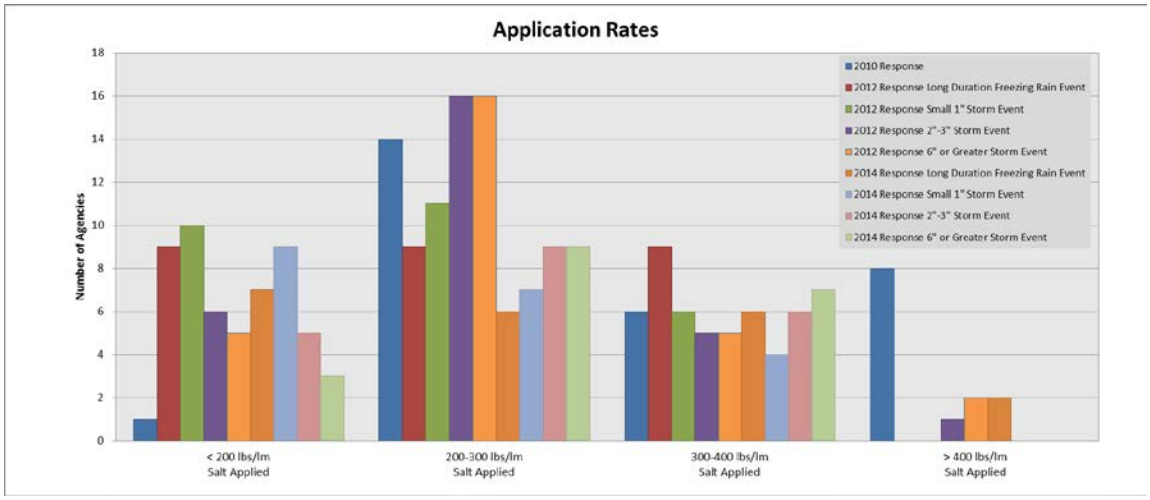

Figure 2-1 – Average Salt Application Rates

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)**.

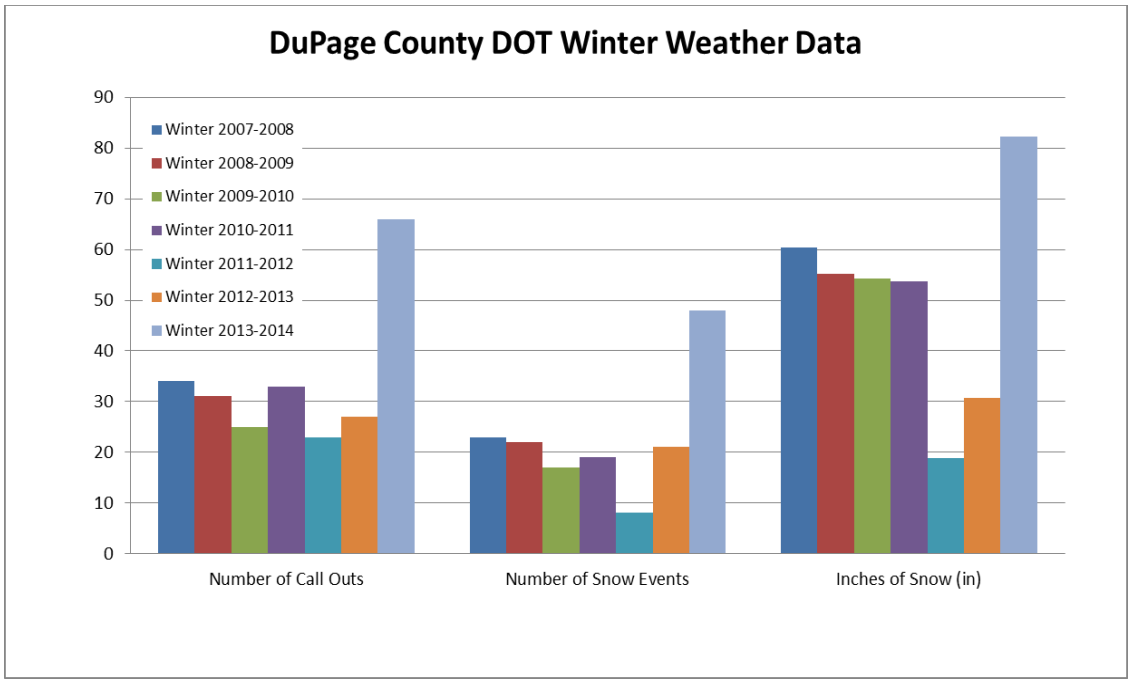

Figure 2-2 – DuPage County DOT Winter Weather Data

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.

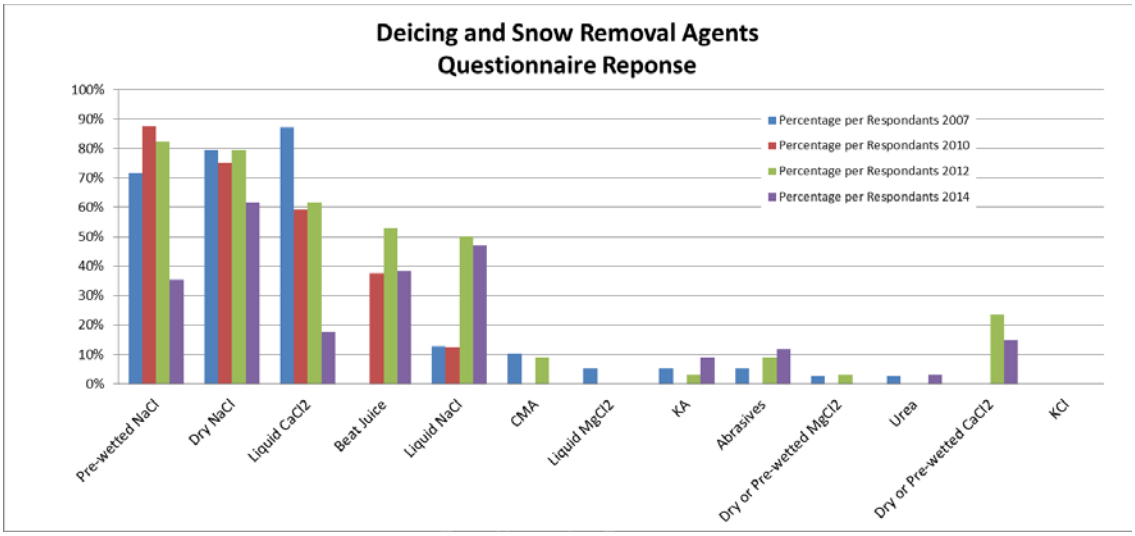

Figure 2-3 – Deicing and Snow Removal Agents

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.

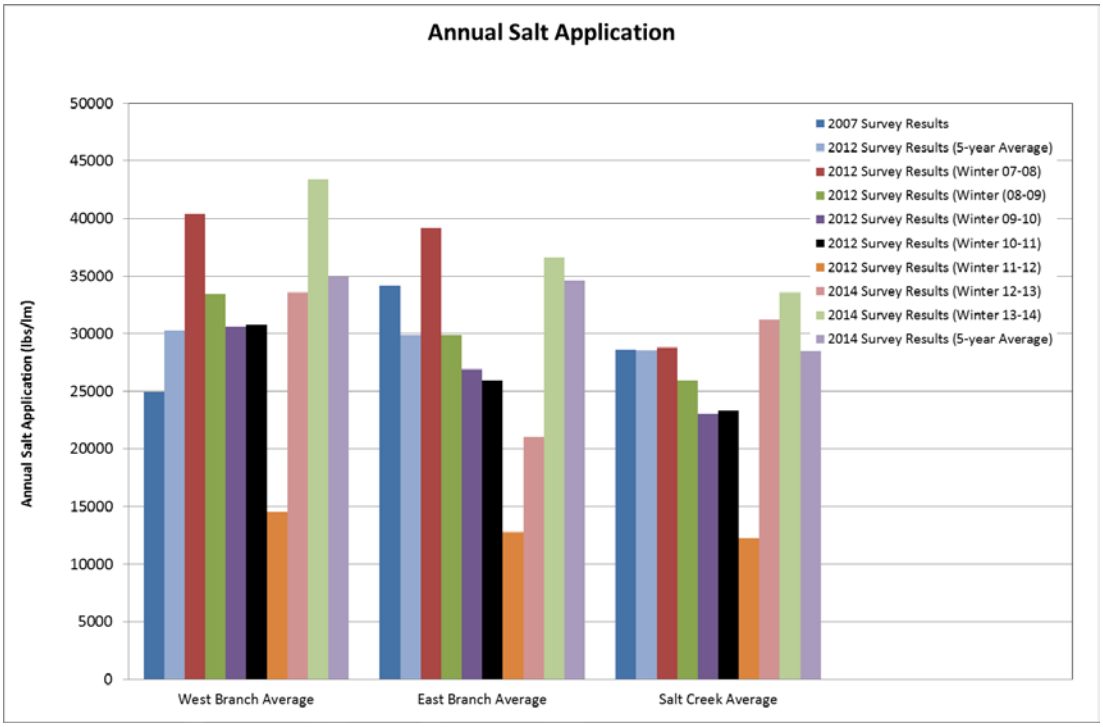

Figure 2-4 – Annual Salt Application Reported in 2007, 2012, and 2014

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.

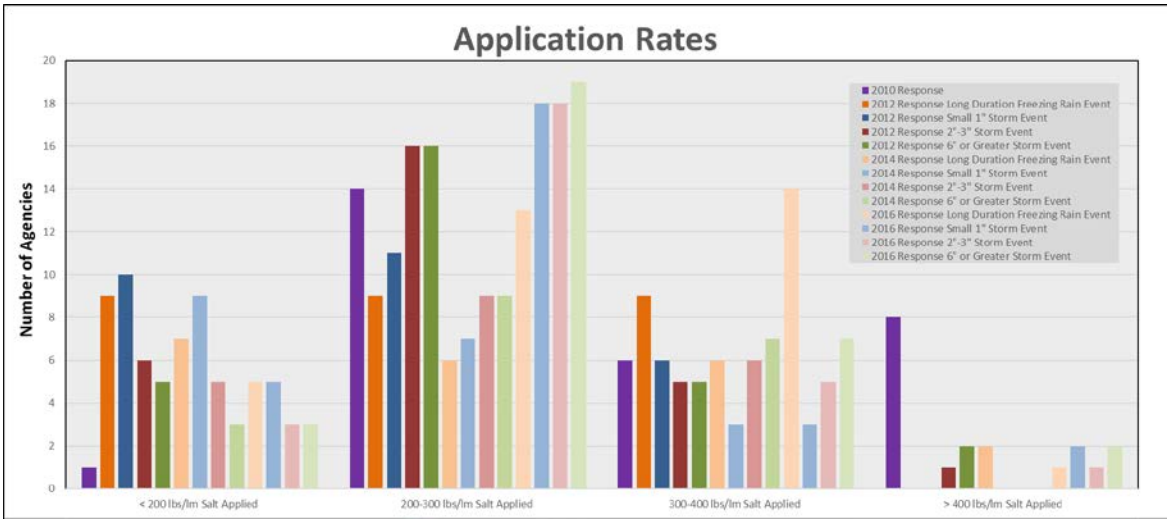

Figure 2-1 – Average Salt Application Rates

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.

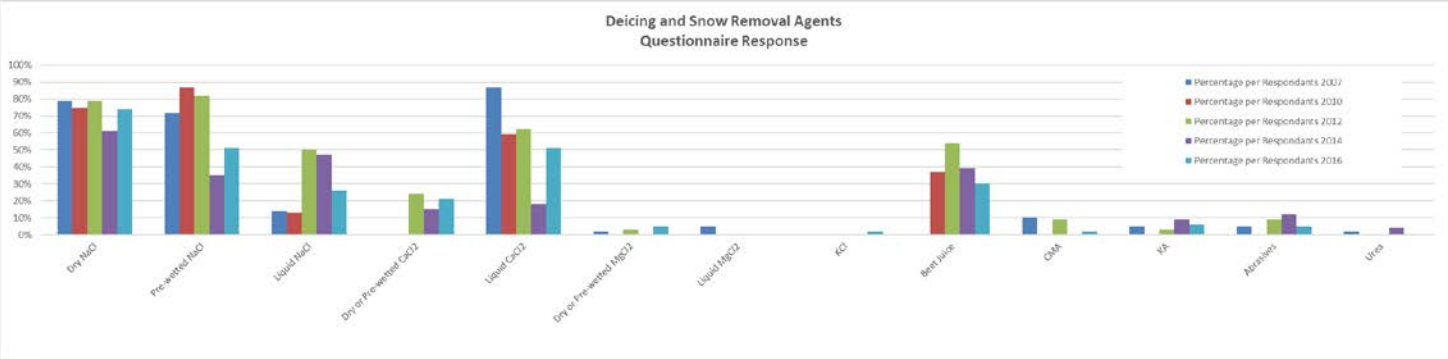

Figure 2-2 – Deicing and Snow Removal Agents

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.

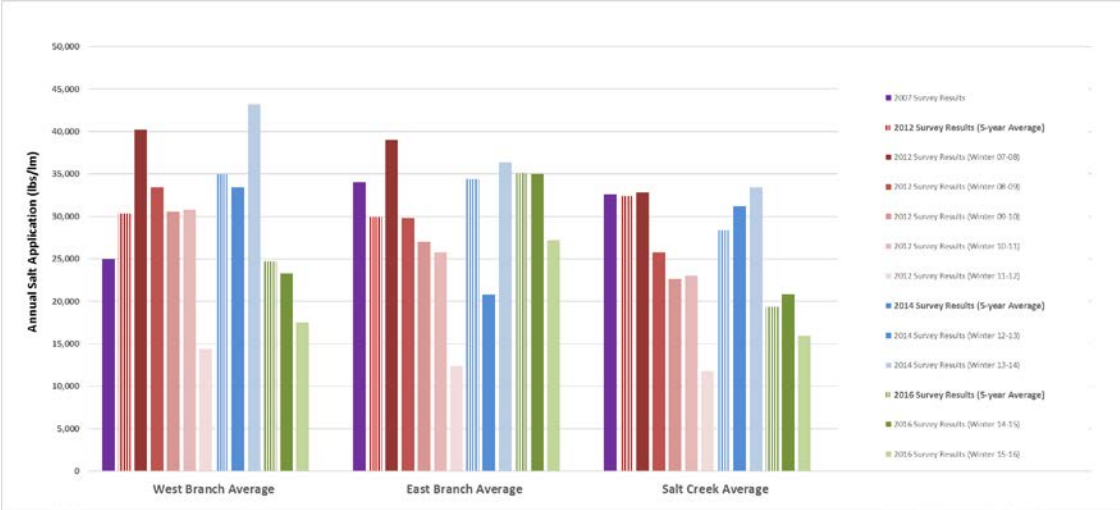

Figure 2-3 – Annual Salt Application Reported from 2007 - 2016

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.

Appendix A - Questionnaire and Responses

Part F. Construction Projects Conducted During Year 14

There were no construction project over 1 acre funded by the Village during Permit Year 14.

Project Name	Project Size (acres)	Construction Start Date	Construction End Date

APPENDIX 9

IEPA General NPDES Permit No. ILR40

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276 • (217) 782-3397
BRUCE RAUNER, GOVERNOR LISA BONNETT, DIRECTOR

217/782-0610

February 10, 2016

Re: General NPDES Permit ILR40 for Discharge from Small Municipal Separate Storm Sewer Systems (MS4)

Dear Permittee:

Enclosed with this letter is the reissued General NPDES Permit ILR40 for the discharge of storm water from small MS4s. Significant changes have been made in the final permit based on comments received by the Agency. Please review the final permit and make any necessary modifications to your storm water management program. The Agency has also provided a list of permit modifications and a summary of responses to comments received by the Agency.

Please note that the Agency will be reviewing the Notice of Intent (NOI) for all NOIs that have been received. If you have not submitted an NOI, you must submit a NOI within 90 days of the effective date of the permit. A separate permit coverage letter will be sent by the Agency to persons who have submitted a complete NOI after review of the NOI.

Should you have any questions or comments regarding this letter, please contact Melissa Parrott or Cathy Demeroukas of my staff at (217) 782-0610 or at the above address.

Sincerely,

Alan Keller

Alan Keller, P.E.
Manager, Permit Section
Division of Water Pollution Control

SAK:16020801bah/MS4 NOI Letter

4302 N. Main St., Rockford, IL 61103 (815) 987-7760
595 S. State, Elgin, IL 60123 (847) 608-3131
2125 S. First St., Champaign, IL 61820 (217) 278-5800
2009 Mall St., Collinsville, IL 62234 (618) 346-5120

9511 Harrison St., Des Plaines, IL 60016 (847) 294-4000
412 SW Washington St., Suite D, Peoria, IL 61602 (309) 671-3022
2309 W. Main St., Suite 116, Marion, IL 62959 (618) 993-7200
100 W. Randolph, Suite 10-300, Chicago, IL 60601

PLEASE PRINT ON RECYCLED PAPER

General NPDES Permit No. ILR40

Illinois Environmental Protection Agency
Division of Water Pollution Control
1021 North Grand East
P.O. Box 19276
Springfield, Illinois 62794-9276

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

General NPDES Permit
For
Discharges from Small Municipal Separate Storm Sewer Systems

Expiration Date: February 28, 2021

Issue Date: February 10, 2016

Effective Date: March 1, 2016

In compliance with the provisions of the Illinois Environmental Protection Act, the Illinois Pollution Control Board Rules and Regulations (35 Ill. Adm. Code, Subtitle C, Chapter 1) and the Clean Water Act, the following discharges may be authorized by this permit in accordance with the conditions herein:

Discharges of only storm water from small municipal separate storm sewer systems (MS4s), as defined and limited herein. Storm water means storm water runoff, snow melt runoff, and surface runoff and drainage.

Receiving waters: Discharges may be authorized to any surface water of the State.

To receive authorization to discharge under this general permit, a facility operator must submit a Notice of Intent (NOI) as described in Part II of this permit to the Illinois Environmental Protection Agency (Illinois EPA). Authorization, if granted, will be by letter and include a copy of this permit.

Alan Keller, P.E.
Manager, Permit Section
Division of Water Pollution Control

NPDES/Hutton/stormwater/MS4/MSFinal2-9-16.daa

CONTENTS OF GENERAL PERMIT ILR40

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PART I. COVERAGE UNDER GENERAL PERMIT ILR40

A. Permit Area

This permit covers all areas of the State of Illinois.

B. Eligibility

1. This permit authorizes discharges of storm water from MS4s as defined in 40 CFR 122.26 (b)(16) as designated for permit authorizations pursuant to 40 CFR 122.32.

2. This permit authorizes the following non-storm water discharges provided they have been determined not to be substantial contributors of pollutants to a particular small MS4 applying for coverage under this permit:

   - Water line and fire hydrant flushing,
   - Landscape irrigation water,
   - Rising ground waters,
   - Ground water infiltration,
   - Pumped ground water,
   - Discharges from potable water sources, (excluding wastewater discharges from water supply treatment plants)
   - Foundation drains,
   - Air conditioning condensate,
   - Irrigation water, (except for wastewater irrigation),
   - Springs,
   - Water from crawl space pumps,
   - Footing drains,
   - Storm sewer cleaning water,
   - Water from individual residential car washing,
   - Routine external building washdown which does not use detergents,
   - Flows from riparian habitats and wetlands,
   - Dechlorinated pH neutral swimming pool discharges,
   - Residual street wash water,
   - Discharges or flows from fire fighting activities
   - Dechlorinated water reservoir discharges, and
   - Pavement washwaters where spills or leaks of toxic or hazardous materials have not occurred (unless all spilled material has been removed).

3. Any municipality covered by this general permit is also granted automatic coverage under Permit No. ILR10 for the discharge of storm water associated with construction site activities for municipal construction projects disturbing one acre or more. The permittee is granted automatic coverage 30 days after Agency receipt of a Notice of Intent to Discharge Storm Water from Construction Site Activities from the permittee. The Agency will provide public notification of the construction site activity and assign a unique permit number for each project during this period. The permittee shall comply with all the requirements of Permit ILR10 for all such construction projects.

C. Limitations on Coverage

The following discharges are not authorized by this permit:

1. Storm water discharges that are mixed with non-storm water or storm water associated with industrial activity unless such discharges are:

   a. In compliance with a separate NPDES permit; or

   b. Identified by and in compliance with Part I.B.2 of this permit.

2. Storm water discharges that the Agency determines are not appropriately covered by this general permit. This determination may include discharges identified in Part 1.B.2 or that introduce new or increased pollutant loading that may be a significant contributor of pollutants to the receiving waters.

3. Storm water discharges to any receiving water specified under 35 Ill. Adm. Code 302.105(d) (6).

4. The following non-storm water discharges are prohibited by this permit: concrete and wastewater from washout of concrete (unless managed by an appropriate control), drywall compound, wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds and other construction materials, fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance, soaps, solvents, or detergents, toxic or hazardous substances from a spill or other release, or any other pollutant that could cause or tend to cause water pollution.

5. Discharges from dewatering activities (including discharges from dewatering of trenches and excavations) are allowable if managed by appropriate controls as specified in a project's storm water pollution prevention plan, erosion and sediment control plan, or storm water management plan.

D. Obtaining Authorization

In order for storm water discharges from small MS4s to be authorized to discharge under this general permit, a discharger must:

1. Submit a Notice of Intent (NOI) in accordance with the requirements of Part II using an NOI form provided by the Agency (or a photocopy thereof).

2. Submit a new NOI in accordance with Part II within 30 days of a change in the operator or the addition of a new operator.

3. Unless notified by the Agency to the contrary, an MS4 owner submitting a complete NOI in accordance with the requirements of this permit will be authorized to discharge storm water from their small MS4s under the terms and conditions of this permit 30 days after the date that the NOI is received. Authorization will be by letter and include a copy of this permit. The Agency may deny coverage under this permit and require submittal of an application for an individual NPDES permit based on a review of the NOI or other information.

PART II. NOTICE OF INTENT (NOI) REQUIREMENTS

A. Deadlines for Notification

1. If an MS4 was automatically designated under 40 CFR 122.32(a)(1) to obtain permit coverage, then you were required to submit an NOI or apply for an individual permit by March 10, 2003.

2. If an MS4 has coverage under the previous general permit for storm water discharges from small MS4s, you must renew your permit coverage under this part. Unless previously submitted for this general permit, you must submit a new NOI within 90 days of the effective date of this reissued general permit for storm water discharges from small MS4s to renew your NPDES permit coverage. The permittee shall comply with any new provisions of this general permit within 180 days of the effective date of this permit and include modifications pursuant to the NPDES permit in its Annual Report.

3. If an MS4 is designated in writing by Illinois EPA under 40 CFR 122.32(a)(2) during the term of this general permit, then you are required to submit an NOI within 180 days of such notice.

4. MS4s are not prohibited from submitting an NOI after established deadlines for NOI submittals. If a late NOI is submitted, your authorization is only for discharges that occur after permit coverage is granted. Illinois EPA reserves the right to take appropriate enforcement actions against MS4s that have not submitted a timely NOI.

B. Contents of Notice of Intent

Dischargers seeking coverage under this permit shall submit the Illinois MS4 NOI form. The NOI shall be signed in accordance with Standard Condition 11 of this permit and shall include all of the following information:

1. The street address, county, and the latitude and longitude of the municipal office for which the notification is submitted;

2. The name, address, and telephone number of the operator(s) filing the NOI for permit coverage and the name, address, telephone number, and email address of the person(s) responsible for implementation and compliance with the MS4 Permit; and

3. The name and segment identification of the receiving water(s), whether any segments(s) is or are listed as impaired on the most recently approved list pursuant to Section 303(d) of the Clean Water Act or any currently applicable Total Maximum Daily Load (TMDL) or alternate water quality study, and the pollutants for which the segment(s) is or are impaired. The most recent 303(d) list may be found at http://www.epa.state.il.us/water/water-quality/index.html. Information regarding TMDLs may be found at http://www.epa.state.il.us/water/tmdl/.

4. The following shall be provided as an attachment to the NOI:

   a. A description of the best management practices (BMPs) to be implemented and the measurable goals for each of the storm water minimum control measures in paragraph IV. B. of this permit designed to reduce the discharge of pollutants to the maximum extent practicable;

   b. The month and year in which you implemented any BMPs of the six minimum control measures, and the month and year in which you will start and fully implement any new minimum control measures or indicate the frequency of the action;

   c. For existing permittees, provide adequate information or justification on any BMPs from previous NOIs that could not be implemented; and

   d. Identification of a local qualifying program, or any partners of the program if any.

5. For existing permittees, certification that states the permittee has implemented necessary BMPs of the six minimum control measures.

C. All required information for the NOI shall be submitted electronically and in writing to the following addresses:

Illinois Environmental Protection Agency
Division of Water Pollution Control
Permit Section
Post Office Box 19276
Springfield, Illinois 62794-9276

epa.ms4noipermit@illinois.gov

D. Shared Responsibilities

Permittees may partner with other MS4s to develop and implement their storm water management program. Each MS4 must fill out the NOI form. MS4s may also jointly submit their individual NOI in coordination with one or more MS4s. The description of their storm water management program must clearly describe which permittees are responsible for implementing each of the control measures. Each permittee is responsible for implementation of best management practices for the Storm Water Management Program within its jurisdiction.

PART III. SPECIAL CONDITIONS

A. The Permittee's discharges, alone or in combination with other sources, shall not cause or contribute to a violation of any applicable water quality standard outlined in 35 Ill. Adm. Code 302.

B. If there is evidence indicating that the storm water discharges authorized by this permit cause, or have the reasonable potential to cause or contribute to a violation of water quality standards, you may be required to obtain an individual permit or an alternative general permit or the permit may be modified to include different limitations and/or requirements.

C. If a TMDL allocation or watershed management plan is approved for any water body into which you discharge, you must review your storm water management program to determine whether the TMDL or watershed management plan includes requirements for control of storm water discharges. If you are not meeting the TMDL allocations, you must modify your storm water management program to implement the TMDL or watershed management plan within eighteen months of notification by the Agency of the TMDL or watershed management plan approval. Where a TMDL or watershed management plan is approved, the permittee must:

1. Determine whether the approved TMDL is for a pollutant likely to be found in storm water discharges from your MS4.

2. Determine whether the TMDL includes a pollutant waste load allocation (WLA) or other performance requirements specifically for storm water discharge from your MS4.

3. Determine whether the TMDL addresses a flow regime likely to occur during periods of storm water discharge.

4. After the determinations above have been made and if it is found that your MS4 must implement specific WLA provisions of the TMDL, assess whether the WLAs are being met through implementation of existing storm water control measures or if additional control measures are necessary.

5. Document all control measures currently being implemented or planned to be implemented to comply with TMDL waste load allocation(s). Also include a schedule of implementation for all planned controls. Document the calculations or other evidence that shows that the WLA will be met.

6. Describe and implement a monitoring program to determine whether the storm water controls are adequate to meet the WLA.

7. If the evaluation shows that additional or modified controls are necessary, describe the type and schedule for the control additions/revisions.

8. Continue requirements 4 through 7 above until monitoring from two continuous NPDES permit cycles demonstrate that the WLAs or water quality standards are being met.

9. If an additional individual permit or alternative general permit includes implementation of work pursuant to an approved TMDL or alternate water quality management plan, the provisions of the individual or alternative general permit shall supersede the conditions of Part III.C. TMDL information may be found at http://www.epa.state.il.us/water/tmdl/.

D. If the permittee performs any deicing activities that can cause or contribute to a violation of an applicable State chloride water quality standard, the permittee must participate in any watershed group(s) organized to implement control measures which will reduce the chloride concentration in any receiving stream in the watershed.

E. Authorization: Owners or operators must submit either an NOI in accordance with the requirements of this permit or an application for an individual NPDES Permit to be authorized to discharge under this General Permit. Authorization, if granted will be by letter and include a copy of this Permit. Upon review of an NOI, the Illinois EPA may deny coverage under this permit and require submittal of an application for an individual NPDES permit.

1. Automatic Continuation of Expired General Permit: Except as provided in III.E.2 below, when this General Permit expires the conditions of this permit shall be administratively continued until the earliest of the following:

   a. 150 days after the new General Permit is reissued;

   b. The Permittee submits a Notice of Termination (NOT) and that notice is approved by Illinois EPA;

   c. The Permittee is authorized for coverage under an individual permit or the renewed or reissued General Permit;

   d. The Permittee's application for an individual permit for a discharge or NOI for coverage under the renewed or reissued General Permit is denied by the Illinois EPA; or

   e. Illinois EPA issues a formal permit decision not to renew or reissue this General Permit. This General Permit shall be automatically administratively continued after such formal permit decision.

2. Duty to Reapply:

   a. If the permittee wishes to continue an activity regulated by this General Permit, the permittee must apply for permit coverage before the expiration of the administratively continued period specified in III.E.1 above.

   b. If the permittee reapplies in accordance with the provisions of III.E.2.a above, the conditions of this General Permit shall continue in full force and effect under the provisions of 5 ILCS 100/10-65 until the Illinois EPA makes a final determination on the application or NOI.

   c. Standard Condition 2 of Attachment H is not applicable to this General Permit.

F. The Agency may require any person authorized to discharge by this permit to apply for and obtain either an individual NPDES permit or an alternative NPDES general permit. Any interested person may petition the Agency to take action under this paragraph. The Agency may require any owner or operator authorized to discharge under this permit to apply for an individual or alternative general NPDES permit only if the owner or operator has been notified in writing that a permit application is required. This notice shall include a brief statement of the reasons for this decision, an application form, a statement setting a deadline for the owner or operator to file the application, and a statement that on the effective date of the individual NPDES permit or the alternative general permit as it applies to the individual permittee, coverage under this general permit shall automatically terminate. The Agency may grant additional time to submit the application upon request of the applicant. If an owner or operator fails to submit in a timely manner an individual or alternative general NPDES permit application required by the Agency under this paragraph, then the applicability of this permit to the individual or alternative general NPDES permittee is automatically terminated by the date specified for application submittal.

G. Any owner or operator authorized by this permit may request to be excluded from the coverage of this permit by applying for an individual permit. The owner or operator shall submit an individual application with reasons supporting the request, in accordance with the requirements of 40 CFR 122.28, to the Agency. The request will be granted by issuing an individual permit or an alternative general permit if the reasons cited by the owner are adequate to support the request.

H. When an individual NPDES permit is issued to an owner or operator otherwise subject to this permit, or the owner or operator is approved for coverage under an alternative NPDES general permit, the applicability of this permit to the individual NPDES permittee is automatically terminated on the issue date of the individual permit or the date of approval for coverage under the alternative general permit, whichever the case may be.

PART IV. STORM WATER MANAGEMENT PROGRAMS

A. Requirements

The permittee must develop, implement, and enforce a storm water management program designed to reduce the discharge of pollutants from their MS4 to the maximum extent practicable, to protect water quality, and to satisfy the appropriate water quality requirements of the Illinois Pollution Control Board Rules and Regulations (35 Ill. Adm. Code, Subtitle C, Chapter 1) and the Clean Water Act. The permittee's storm water management program must include the minimum control measures described in section B of this Part. For new permittees, the permittee must develop and implement specific program requirements by the date specified in the Agency's coverage letter. The U.S. Environmental Protection Agency's National Menu of Storm Water Best Management Practices (http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm) and the most recent version of the Illinois Urban Manual should be consulted regarding the selection of appropriate BMPs.

B. Minimum Control Measures

The 6 minimum control measures to be included in the permittee's storm water management program are:

1. Public Education and Outreach on Storm Water Impacts

New permittees shall develop and implement elements of their storm water management program addressing the provisions listed below. Existing permittees renewing coverage under this permit shall maintain their current programs addressing this Minimum Control Measure, updating and enhancing their storm water management programs as necessary to comply with the terms of this section.

a. Distribute educational materials to the community or conduct equivalent outreach activities about the impacts of storm water discharges on water bodies and the steps that the public can take to reduce pollutants in storm water runoff. The educational materials shall include information on the potential impacts and effects on storm water discharge due to climate change. Information on climate change can be found at http://epa.gov/climatechange/. The permittee shall incorporate the following into its education materials, at a minimum:

i. Information on effective pollution prevention measures to minimize the discharge of pollutants from private property and activities into the storm sewer system, on the following topics:

A. Storage and disposal of fuels, oils and similar materials used in the operation of or leaking from, vehicles and other equipment;
B. Use of soaps, solvents or detergents used in the outdoor washing of vehicles, furniture and other property,
C. Paint and related décor;
D. Lawn and garden care; and
E. Winter de-icing material storage and use.

ii. Information about green infrastructure strategies such as green roofs, rain gardens, rain barrels, bioswales, permeable piping, dry wells, and permeable pavement that mimic natural processes and direct storm water to areas where it can be infiltrated, evaporated or reused.

iii. Information on the benefits and costs of such strategies and provide guidance to the public on how to implement them.

b. Define appropriate BMPs for this minimum control measure and measurable goals for each BMP. These measurable goals must ensure the reduction of all of the pollutants of concern in the permittee's storm water discharges to the maximum extent practicable; and

c. Provide an annual evaluation of public education and outreach BMPs and measurable goals. Report on this evaluation in the Annual Report pursuant to Part V.C.1.

2. Public Involvement/Participation

New permittees shall develop and implement elements of their storm water management program addressing the provisions listed below. Existing permittees renewing coverage under this permit shall maintain their current programs addressing this Minimum Control Measure, updating and enhancing their storm water management programs as necessary to comply with the terms of this section.

a. At a minimum, comply with State and local public notice requirements when implementing a public involvement/ participation program;

b. Define appropriate BMPs for this minimum control measure and measurable goals for each BMP, which must ensure the reduction of all of the pollutants of concern in the permittee's storm water discharges to the maximum extent practicable;

c. Provide a minimum of one public meeting annually for the public to provide input as to the adequacy of the permittee's MS4 program. This requirement may be met in conjunction with or as part of a regular council or board meeting;

d. The permittee shall identify environmental justice areas within its jurisdiction and include appropriate public involvement/participation. Information on environmental justice concerns may be found at http://www.epa.gov/environmentaljustice/. This requirement may be met in conjunction with or as part of a regular council or board meeting; and

e. Provide an annual evaluation of public involvement/participation BMPs and measurable goals. Report on this evaluation in the Annual Report pursuant to Part V.C.1.

3. Illicit Discharge Detection and Elimination

New permittees shall develop and implement elements of their storm water management program addressing the provisions listed below. Existing permittees renewing coverage under this permit shall maintain their current programs addressing this Minimum Control Measure, updating and enhancing their storm water management programs as necessary to comply with the terms of this section.

a. Develop, implement, and enforce a program to detect and eliminate illicit connections or discharges into the permittee's small MS4;

b. Develop, if not already completed, a storm sewer system map, showing the location of all outfalls and the names and location of all waters that receive discharges from those outfalls. Existing permittees renewing coverage under this permit shall update their storm sewer system map to include any modifications to the sewer system;

c. To the extent allowable under state or local law, prohibit, through ordinance, or other regulatory mechanism, non-storm water discharges into the permittee's storm sewer system and implement appropriate enforcement procedures and actions, including enforceable requirements for the prompt reporting to the MS4 of all releases, spills and other unpermitted discharges to the separate storm sewer system, and a program to respond to such reports in a timely manner;

d. Develop and implement a plan to detect and address non-storm water discharges, including illegal dumping, to the system;

e. Inform public employees, businesses, and the general public of hazards associated with illegal discharges and improper disposal of waste and the requirements and mechanisms for reporting such discharges;

f. Address the categories of non-storm water discharges listed in Section I.B.2 only if you identify them as significant contributor of pollutants to your small MS4 (discharges or flows from firefighting activities are excluded from the effective prohibition against non-storm water and need only be addressed where they are identified as significant sources of pollutants to waters of the United States);

g. Define appropriate BMPs for this minimum control measure and measurable goals for each BMP. These measurable goals must ensure the reduction of all of the pollutants of concern in your storm water discharges to the maximum extent practicable;

h. Conduct periodic inspections of the storm sewer outfalls in dry weather conditions for detection of non-storm water discharges and illegal dumping. The permittee may establish a prioritization plan for inspection of outfalls, placing priority on outfalls with the greatest potential for non-storm water discharges. Major/high priority outfalls shall be inspected at least annually; and

i. Provide an annual evaluation of illicit discharge detection and elimination BMPs and measurable goals. Report on this evaluation in the Annual Report pursuant to Part V.C.1.

4. Construction Site Storm Water Runoff Control

New permittees shall develop and implement elements of their storm water management program addressing the provisions listed below. Existing permittees renewing coverage under this permit shall maintain their current programs addressing this Minimum Control Measure, updating and enhancing their storm water management programs as necessary to comply with the terms of this section.

a. Develop, implement, and enforce a program to reduce pollutants in any storm water runoff to the permittee's small MS4 from construction activities that result in a land disturbance of greater than or equal to one acre. Control of storm water discharges from construction activity disturbing less than one acre must be included in your program if that construction activity is part of a larger common plan of development or sale that would disturb one acre or more or has been designated by the permitting authority.

At a minimum, the permittee must develop and implement the following:

i. An ordinance or other regulatory mechanism to require erosion and sediment controls, as well as sanctions to ensure compliance, to the extent allowable under state or local law;

ii. Erosion and Sediment Controls - The permittee shall ensure that construction activities regulated by the storm water program require the construction site owner/operator to design, install, and maintain effective erosion controls and sediment controls to minimize the discharge of pollutants. At a minimum, such controls must be designed, installed, and maintained to:

A. Control storm water volume and velocity within the site to minimize soil erosion;
B. Control storm water discharges, including both peak flow rates and total storm water volume, to minimize erosion at outlets and to minimize downstream channel and stream bank erosion;
C. Minimize the amount of soil exposed during construction activity;
D. Minimize the disturbance of steep slopes;
E. Minimize sediment discharges from the site. The design, installation and maintenance of erosion and sediment controls must address factors such as the amount, frequency, intensity and duration of precipitation, the nature of resulting storm water runoff, and soil characteristics, including the range of soil particle sizes expected to be present on the site;
F. Provide and maintain natural buffers around surface waters, direct storm water to vegetated areas to increase sediment removal, and maximize storm water infiltration, unless infeasible; and
G. Minimize soil compaction and preserve topsoil, unless infeasible.

iii. Requirements for construction site operators to control or prohibit non-storm water discharges that would include concrete and wastewater from washout of concrete (unless managed by an appropriate control), drywall compound, wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds and other construction materials, fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance, soaps, solvents, or detergents, toxic or hazardous substances from a spill or other release, or any other pollutant that could cause or tend to cause water pollution;

iv. Require all regulated construction sites to have a storm water pollution prevention plan that meets the requirements of Part IV of NPDES permit No. ILR10, including management practices, controls, and other provisions at least as protective as the requirements contained in the Illinois Urban Manual, 2014, or as amended including green infrastructure techniques where appropriate and practicable;

v. Procedures for site plan reviews which incorporate consideration of potential water quality impacts and site plan review of individual pre-construction site plans by the permittee to ensure consistency with local sediment and erosion control requirements;

vi. Procedures for receipt and consideration of information submitted by the public; and

vii. Site inspections and enforcement of ordinance provisions.

b. Define appropriate BMPs for this minimum control measure and measurable goals for each BMP. These measurable goals must ensure the reduction of all of the pollutants of concern in your storm water discharges to the maximum extent practicable.

c. Provide an annual evaluation of construction site storm water control BMPs and measureable goals in the Annual Report pursuant to Part V.C.1.

5. Post-Construction Storm Water Management in New Development and Redevelopment

New permittees shall develop and implement elements of their storm water management program addressing the provisions listed below. Existing permittees renewing coverage under this permit shall maintain their current programs addressing this Minimum Control Measure, updating and enhancing their storm water management programs, as necessary, to comply with the terms of this section.

a. Develop, implement, and enforce a program to address and minimize the volume and pollutant load of storm water runoff from projects for new development and redevelopment that disturb greater than or equal to one acre, projects less than one acre that are part of a larger common plan of development or sale or that have been designated to protect water quality, that discharge into the permittee's small MS4 within the MS4's jurisdictional control. The permittee's program must ensure that appropriate controls are in place that would protect water quality and reduce the discharge of pollutants to the maximum extent practicable. In addition, each permittee shall adopt strategies that incorporate the infiltration, reuse, and evapotranspiration of storm water into the project to the maximum extent practicable. The permittee shall also develop and implement procedures for receipt and consideration of information submitted by the public.

b. Develop and implement strategies which include a combination of structural and/or non-structural BMPs appropriate for all projects within the permittee's jurisdiction for all new development and redevelopment that disturb greater than or equal to1 acre (at a minimum) that will reduce the discharge of pollutants and the volume and velocity of storm water flow to the maximum extent practicable. These strategies shall include effective water quality and watershed protection elements and shall be amenable to modification due to climate change. Information on climate change can be found at http://www.epa.gov/climatechange/. When selecting BMPs to comply with requirements contained in this Part, the permittee shall adopt one or more of the following general strategies, listed in order of preference below. The proposal of a strategy shall include a rationale for not selecting an approach from among those with a higher preference.

   i. Preservation of the natural features of development sites, including natural storage and infiltration characteristics;

   ii. Preservation of existing natural streams, channels, and drainage ways;

   iii. Minimization of new impervious surfaces;

   iv. Conveyance of storm water in open vegetated channels;

   v. Construction of structures that provide both quantity and quality control, with structures serving multiple sites being preferable to those serving individual sites; and

   vi. Construction of structures that provide only quantity control, with structures serving multiple sites being preferable to those serving individual sites.

c. If a permittee requires new or additional approval of any development, redevelopment, linear project construction, replacement or repair on existing developed sites, or other land disturbing activity covered under this Part, the permittee shall require the person responsible for that activity to develop a long term operation and maintenance plan including the adoption of one or more of the strategies identified in Part IV.B.5.b. of this permit.

d. Develop and implement a program to minimize the volume of storm water runoff and pollutants from public highways, streets, roads, parking lots, and sidewalks (public surfaces) through the use of BMPs that alone or in combination result in physical, chemical, or biological pollutant load reduction, increased infiltration, evapotranspiration, and reuse of storm water. The program shall include, but not be limited to the following elements:

   i. Annual Training for all MS4 employees who manage or are directly involved in (or who retain others who manage or are directly involved in) the routine maintenance, repair, or replacement of public surfaces in current green infrastructure or low impact design techniques applicable to such projects; and

   ii. Annual Training for all contractors retained to manage or carry out routine maintenance, repair, or replacement of public surfaces in current green infrastructure or low impact design techniques applicable to such projects. Contractors may provide training to their employees for projects which include green infrastructure or low impact design techniques.

e. Develop and implement a program to minimize the volume of storm water runoff and pollutants from existing privately owned developed property that contributes storm water to the MS4 within the MS4 jurisdictional control. Such program must be documented and may contain the following elements:

   i. Source Identification – Establish an inventory of storm water and pollutants discharged to the MS4;

   ii. Implementation of appropriate BMPs to accomplish the following:

      A. Education on green infrastructure BMPs;
      B. Evaluation of existing flood control techniques to determine the feasibility of pollution control retrofits;
      C. Evaluation of existing flood control techniques to determine potential impacts and effects due to climate change;
      D. Implementation of additional controls for special events expected to generate significant pollution (fairs, parades, performances);
      E. Implementation of appropriate maintenance programs, (including maintenance agreements, for structural pollution control devices or systems);
      F. Management of pesticides and fertilizers; and
      G. Street cleaning in targeted areas.

f. Infiltration practices should not be implemented in any of the following circumstances:

i. Areas/sites where vehicle fueling and/or maintenance occur;

ii. Areas/sites with shallow bedrock which allow movement of pollutants into the groundwater;

iii. Areas/sites near Karst features;

iv. Areas/sites where contaminants in soil or groundwater could be mobilized by infiltration of storm water;

v. Areas/sites within a delineated source water protection area for a public drinking water supply where the potential for an introduction of pollutants into the groundwater exists. Information on groundwater protection may be found at:

http://www.epa.state.il.us/water/groundwater/index.html

vi. Areas/sites within 400 feet of a community water supply well if there is not a wellhead protection delineation area or within 200 feet of a private water supply well. Information on wellhead protection may be found at :

http://www.epa.state.il.us/water/groundwater/index.html

g. Develop and implement an ordinance or other regulatory mechanism to address post-construction runoff from new development and redevelopment projects, public surfaces, and existing developed property as set forth above to the extent allowable under state or local law.

h. Require all regulated construction sites to have post-construction management plans that meet or exceed the requirements of Part IV.D.2.h of NPDES permit No. ILR10 including management practices, controls, and other provisions at least as protective as the requirements contained in the most recent version of the Illinois Urban Manual, 2014.

i. Ensure adequate long-term operation and maintenance of BMPs.

j. Define appropriate BMPs for this minimum control measure and measurable goals for each BMP. These measurable goals must ensure the reduction of all of the pollutants of concern in your storm water discharges to the maximum extent practicable.

k. Within 3 years of the effective date of the permit, the permittee must develop and implement a process to assess the water quality impacts in the design of all new and existing flood management projects that are associated with the permittee or that discharge to the MS4. This process must include consideration of controls that can be used to minimize the impacts to site water quality and hydrology while still meeting the project objectives. This will also include assessment of any potential impacts and effects on flood management projects due to climate change.

l. Provide an annual evaluation of post-construction storm water management BMPs and measureable goals in the Annual Report pursuant to Part V.C.1 .

6. Pollution Prevention/Good Housekeeping for Municipal Operations

New permittees shall develop and implement elements of their storm water management program addressing the provisions listed below. Existing permittees renewing coverage under this permit shall maintain their current programs addressing this Minimum Control Measure, updating and enhancing their storm water management programs as necessary to comply with the terms of this section.

a. Develop and implement an operation and maintenance program that includes an annual training component for municipal staff and contractors and is designed to prevent and reduce the discharge of pollutants to the maximum extent practicable.

b. Pollution Prevention- The permittee shall design, install, implement, and maintain effective pollution prevention measures to minimize the discharge of pollutants from municipal properties, infrastructure, and operations. At a minimum, such measures must be designed, installed, implemented and maintained to:

i. Minimize the discharge of pollutants from equipment and vehicle washing, wheel wash water, and other wash waters. Wash waters must be treated in a sediment basin or alternative control that provides equivalent or better treatment prior to discharge;

ii. Minimize the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, chemical storage tanks, deicing material storage facilities and temporary stockpiles, detergents, sanitary waste, and other materials present on the site to precipitation and to storm water;

iii. Minimize the discharge of pollutants from spills and leaks and implement chemical spill and leak prevention and response procedures; and

iv. Provide regular inspection of municipal storm water management BMPs. Based on inspection findings, the permittee shall determine if repair, replacement, or maintenance measures are necessary in order to ensure the structural integrity, proper function, and treatment effectiveness of structural storm water BMPs. Necessary maintenance shall be completed as soon as conditions allow to prevent or reduce the discharge of pollutants to storm water.

c. Deicing material must be stored in a permanent or temporary storage structure or seasonal tarping must be utilized. If no permanent structures are owned or operated by the Permittee, new permanent deicing material storage structures shall be constructed within two years of the effective date of this permit. Storage structures or stockpiles shall be located and managed to minimize storm water pollutant runoff from the stockpiles or loading/unloading areas of the stockpiles. Stockpiles and loading/unloading areas should be located as far as practicable from any area storm sewer drains. Fertilizer, pesticides, or other chemicals shall be stored indoors to prevent any discharge of such chemicals within the storm water runoff.

d. Using training materials that are available from USEPA, the State of Illinois, or other organizations, the permittee's program must include annual employee training to prevent and reduce storm water pollution from activities such as park and open space maintenance, fleet and building maintenance, operation of storage yards, snow disposal, deicing material storage handling and use on roadways, new construction and land disturbances, and storm water system maintenance procedures for proper disposal of street cleaning debris and catch basin material. In addition, training should include how flood management projects impact water quality, non-point source pollution control, green infrastructure controls, and aquatic habitat.

e. Define appropriate BMPs for this minimum control measure and measurable goals for each BMP. These measurable goals must ensure the reduction of all of the pollutants of concern in your storm water discharges to the maximum extent practicable.

f. Provide an annual evaluation of pollution prevention/good housekeeping for municipal operations and measureable goals in the Annual Report pursuant to Part V.C.1.

C. Qualifying State, County, or Local Program

If an existing qualifying local program requires a permittee to implement one or more of the minimum control measures of Part IV. B. above, the permittee may follow that qualifying program's requirements rather than the requirements of Part IV.B. above. A qualifying local program is a local, county, or state municipal storm water management program that imposes, at a minimum, the relevant requirements of Part IV. B. Any qualifying local programs that permittees intend to follow shall be specified in their storm water management program.

D. Sharing Responsibility

1. Implementation of one or more of the minimum control measures may be shared with another entity, or the entity may fully take over the control measure. A permittee may rely on another entity only if:

a. The other entity implements the control measure;

b. The particular control measure, or component of that measure is at least as stringent as the corresponding permit requirement;

c. The other entity agrees to implement any minimum control measure on the permittee's behalf. A written agreement of this obligation is recommended. This obligation must be maintained as part of the description of the permittee's Storm Water Management Program. If the other entity agrees to report on the minimum control measure, the permittee must supply the other entity with the reporting requirements contained in Part V.C of this permit. If the other entity fails to implement the minimum control measure on the permittee's behalf, then the permittee remains liable for any discharges due to that failure to implement the minimum control measure.

E. Reviewing and Updating Storm Water Management Programs

1. Storm Water Management Program Review- The permittee must perform an annual review of its Storm Water Management Program in conjunction with preparation of the annual report required under Part V.C. The permittee must include in its annual report a plan for complying with any changes or new provisions in this permit, or in any State or federal regulations. The permittee must also include in its annual report a plan for complying with all applicable TMDL Report(s) or watershed management plan(s). Information on TMDLs may be found at:

http://www.epa.state.il.us/water/tmdl/.

2. Storm Water Management Program Update - The permittee may modify its Storm Water Management Program during the life of the permit in accordance with the following procedures:

a. Modifications adding (but not subtracting or replacing) components, controls, or requirements to the Storm Water Management Program may be made at any time upon written notification to the Agency;

b. Modifications replacing an ineffective or infeasible BMP specifically identified in the Storm Water Management Program with an alternate BMP may be requested at any time. Unless denied by the Agency, modifications proposed in accordance with the criteria below shall be deemed approved and may be implemented 60 days from submittal of the request. If the request is denied, the Agency will send the permittee a written response giving a reason for the decision. The permittee's modification requests must include the following:

i. An analysis of why the BMP is ineffective or infeasible (including cost prohibitive);

ii. Expectations on the effectiveness of the replacement BMP; and

iii. An analysis of why the replacement BMP is expected to achieve the goals of the BMP to be replaced.

c. Modification of any ordinances relative to the storm water management program, provided the updated ordinance is at least as stringent as the provisions stipulated in this permit; and

d. Modification requests or notifications must be made in writing and signed in accordance with Standard Condition II of Attachment H.

3. Storm Water Management Program Updates Required by the Agency. Modifications requested by the Agency must be made in writing, set forth the time schedule for permittees to develop the modifications, and offer permittees the opportunity to propose alternative program modifications to meet the objective of the requested modification. All modifications required by the Permitting Authority will be made in accordance with 40 CFR 124.5, 40 CFR 122.62, or as appropriate 40 CFR 122.63. The Agency may require modifications to the Storm Water Management Program as needed to:

a. Address impacts on receiving water quality caused, or contributed to, by discharges from the MS4;

b. Include more stringent requirements necessary to comply with new federal or State statutory or regulatory requirements; or

c. Include such other conditions deemed necessary by the Agency to comply with the goals and requirements of the Clean Water Act.

PART V. MONITORING, RECORDKEEPING, AND REPORTING

A. Monitoring

The permittee 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 within 180 days of the effective date of this permit. The program should be tailored to the size and characteristics of the MS4 and the watershed. The permittee shall provide a justification of its monitoring and assessment program in the Annual Report. By not later than 180 days after the effective date of this permit, the permittee shall initiate an evaluation of its storm water program. The plan for monitoring/evaluation shall be described in the Annual Report. Evaluation and/or monitoring results shall be provided in the Annual Report. The monitoring and assessment program may include evaluation of BMPs and/or direct water quality monitoring as follows:

1. An evaluation of BMPs based on estimated effectiveness from published research accompanied by an inventory of the number and location of BMPs implemented as part of the permittee's program and an estimate of pollutant reduction resulting from the BMPs, or

2. Monitoring the effectiveness of storm water control measures and progress towards the MS4's goals using one or more of the following:

a. MS4 permittees serving a population of less than 25,000 may conduct visual observations of the storm water discharge documenting color, odor, clarity, floating solids, settled solids, suspended solids, foam, oil sheen, or other obvious indicators of storm water pollution; or

b. MS4 permittees may evaluate storm water quality and impacts using one or more of the following methods;

i. Instream monitoring in the highest level hydrological unit code segment in the MS4 area. Monitoring shall include, at a minimum, quarterly monitoring of receiving waters upstream and downstream of the MS4 discharges in the designated stream(s).

ii. Measuring pollutant concentrations over time.

iii. Sediment monitoring.

iv. Short-term extensive network monitoring. Short-term sampling at the outlets of numerous drainage areas to identify water quality issues and potential storm water impacts, and may help in ranking areas for implementation priority. Data collected simultaneously across the MS4 to help characterize the geographical distribution of pollutant sources.

v. Site-specific monitoring. High-value resources such as swimming beaches, shellfish beds, or high-priority habitats could warrant specific monitoring to assess the status of use support. Similarly, known high-priority pollutant sources or impaired water bodies with contaminated aquatic sediments, an eroding stream channel threatening property, or a stream reach with a degraded fish population could be monitored to assess impacts of storm water discharges and/or to identify improvements that result from the implementation of BMPs.

vi. Assessing physical/habitat characteristics such as stream bank erosion caused by storm water discharges.

vii. Outfall/Discharge monitoring.

viii. Sewershed-focused monitoring. Monitor for pollutants in storm water produced in different areas of the MS4. For example, identify which pollutants are present in storm water from industrial areas, commercial areas, and residential areas.

ix. BMP performance monitoring. Monitoring of individual BMP performance to provide a direct measure of the pollutant reduction efficiency of these key components of a MS4 program.

x. Collaborative watershed-scale monitoring. The permittee may choose to work collaboratively with other permittees and/or a watershed group to design and implement a watershed or sub-watershed-scale monitoring program that assesses the water quality of the water bodies and the sources of pollutants. Such programs must include elements which assess the impacts of the permittee's storm water discharges and/or the effectiveness of the BMPs being implemented.

c. If ambient water quality monitoring under 2b above is performed, the monitoring of storm water discharges and ambient monitoring intended to gauge storm water impacts shall be performed within 48 hours of a precipitation event greater than or equal to one quarter inch in a 24-hour period. At a minimum, analysis of storm water discharges or ambient water quality shall include the following parameters: total suspended solids, total nitrogen, total phosphorous, fecal coliform, chlorides, and oil and grease. In addition, monitoring shall be performed for any other pollutants associated with storm water runoff for which the receiving water is considered impaired pursuant to the most recently approved list under Section 303(d) of the Clean Water Act.

B. Recordkeeping

The permittee must keep records required by this permit for 5 years after the expiration of this permit. Records to be kept under this Part include the permittee's NOI, storm water management plan, annual reports, and monitoring data. All records shall be kept onsite or locally available and shall be made accessible to the Agency for review at the time of an on-site inspection. Except as otherwise provided in this permit, permittees must submit records to the Agency only when specifically requested to do so. Permittees must post their NOI, storm water management program plan, and annual reports on the permittee's website. The permittee must make its records available to the public at reasonable times during regular business hours. The permittee may require a member of the public to provide advance notice, in accordance with the applicable Freedom of Information Act requirements. Storm sewer maps may be withheld for security reasons.

C. Reporting

The permittee must submit Annual Reports to the Agency by the first day of June for each year that this permit is in effect. If the permittee maintains a website, a copy of the Annual Report shall be posted on the website by the first day of June of each year. Each Report shall cover the period from March of the previous year through March of the current year. Annual Reports shall be maintained on the permittees' website for a period of 5 years. The Report must include:

1. An assessment of the appropriateness and effectiveness of the permittee's identified BMPs and progress towards achieving the statutory goal of reducing the discharge of pollutants to the maximum extent practicable (MEP), and the permittee's identified measurable goals for each of the minimum control measures;

2. The status of compliance with permit conditions, including a description of each incidence of non-compliance with the permit, and the permittee's plan for achieving compliance with a timeline of actions taken or to be taken;

3. Results of information collected and analyzed, including monitoring data, if any, during the reporting period;

4. A summary of the storm water activities the permittee plans to undertake during the next reporting cycle, including an implementation schedule;

5. A change in any identified BMPs or measurable goals that apply to the program elements;

6. Notice that the permittee is relying on another government entity to satisfy some of the permit obligations (if applicable);

7. Provide an updated summary of any BMP or adaptive management strategy constructed or implemented pursuant to any approved TMDL or alternate water quality management study. Use the results of your monitoring program to assess whether the WLA or other performance requirements for storm water discharges from your MS4 are being met; and

8. If a qualifying local program or programs with shared responsibilities is implementing all minimum control measures on behalf of one or more entities, then the local qualifying program or programs with shared responsibilities may submit a report on behalf of itself and any entities for which it is implementing all of the minimum control measures.

The Annual Reports shall be submitted to the following office and email addresses:

Illinois Environmental Protection Agency
Division of Water Pollution Control
Compliance Assurance Section
Municipal Annual Inspection Report
1021 North Grand Avenue East
P.O. Box 19276
Springfield, Illinois 62794-9276

epa.ms4annualinsp@illinois.gov

PART VI. DEFINITIONS AND ACRONYMS

All definitions contained in Section 502 of the Clean Water Act, 40 CFR 122, and 35 Ill. Adm. Code 309 shall apply to this permit and are incorporated herein by reference. For convenience, simplified explanations of some regulatory/statutory definitions have been provided. In the event of a conflict, the definition found in the statute or regulation takes precedence.

Best Management Practices (BMPs) means structural or nonstructural controls, schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the state. BMPs also include treatment requirements, operating procedures, and practices to control runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

BMP is an acronym for "Best Management Practices."

CFR is an acronym for "Code of Federal Regulations."

Control Measure as used in this permit refers to any Best Management Practice or other method used to prevent or reduce storm water runoff or the discharge of pollutants to waters of the State.

CWA or The Act means the Clean Water Act (formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972) Pub. L. 92-500, as amended Pub. L. 95-217, Pub. L. 95-576, Pub. L. 96-483 and Pub. L. 97-117, 33 U.S.C. 1251 ET. seq.

Discharge when used without a qualifier, refers to discharge of a pollutant as defined at 40 CFR 122.2.

Environmental Justice (EJ) means the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies

Environmental Justice Area means a community with a low-income and/or minority population greater than twice the statewide average. In addition, a community may be considered a potential EJ community if the low-income and/or minority population is less than twice the state-wide average but greater than the statewide average and it has identified itself as an EJ community. If the low-income and/or minority population percentage is equal to or less than the statewide average, the community should not be considered a potential EJ community.

Flood management project means any project which is intended to control, reduce or minimize high stream flows and associated damage. This may also include projects designed to mimic or improve natural conditions in the waterway.

Green Infrastructure means wet weather management approaches and technologies that utilize, enhance or mimic the natural hydrologic cycle processes of infiltration, evapotranspiration and reuse. Green infrastructure approaches currently in use include green roofs, trees and tree boxes, rain gardens, vegetated swales, pocket wetlands, infiltration planters, porous and permeable pavements, porous piping systems, dry wells, vegetated median strips, reforestation/revegetation, rain barrels, cisterns, and protection and enhancement of riparian buffers and floodplains.

Illicit Connection means any man-made conveyance connecting an illicit discharge directly to a municipal separate storm sewer.

Illicit Discharge is defined at 40 CFR 122.26(b)(2) and refers to any discharge to a municipal separate storm sewer that is not composed entirely of storm water, except discharges authorized under an NPDES permit (other than the NPDES permit for discharges from the MS4) and discharges resulting from fire fighting activities.

MEP is an acronym for "Maximum Extent Practicable," the technology-based discharge standard for Municipal Separate Storm Sewer Systems to reduce pollutants in storm water discharges that was established by CWA Section 402(p). A discussion of MEP as it applies to small MS4s is found at 40 CFR 122.34.

MS4 is an acronym for "Municipal Separate Storm Sewer System" and is used to refer to a Large, Medium, or Small Municipal Separate Storm Sewer System (e.g. "the Dallas MS4"). The term is used to refer to either the system operated by a single entity or a group of systems within an area that are operated by multiple entities (e.g., the Houston MS4 includes MS4s operated by the city of Houston, the Texas Department of Transportation, the Harris County Flood Control District, Harris County, and others).

Municipal Separate Storm Sewer is defined at 40 CFR 122.26(b)(8) and means a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains): (i) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, storm water, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under Section 208 of the CWA that discharges to waters of the United States; (ii) Designed or used for collecting or conveying storm water; (iii) Which is not a combined sewer; and (iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2.

NOI is an acronym for "Notice of Intent" to be covered by this permit and is the mechanism used to "register" for coverage under a general permit.

NPDES is an acronym for "National Pollutant Discharge Elimination System."

Outfall is defined at 40 CFR 122.26(b) (9) and means a point source as defined by 40 CFR 122.2 at the point where a municipal separate storm sewer discharges to waters of the United States and does not include open conveyances connecting two municipal storm sewers, or pipes, tunnels or other conveyances which connect segments of the same stream or other waters of the United States and are used to convey waters of the United States.

Owner or Operator is defined at 40 CFR 122.2 and means the owner or operator of any "facility or activity" subject to regulation under the NPDES program.

Permitting Authority means the Illinois EPA.

Point Source is defined at 40 CFR 122.2 and means any discernable, confined and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural storm water runoff.

Pollutants of Concern means pollutants identified in a TMDL waste load allocation (WLA) or on the Section 303(d) list for the receiving water, and any of the pollutants for which water monitoring is required in Part V.A. of this permit.

Qualifying Local Program is defined at 40 CFR 122.34(c) and means a local, state, or Tribal municipal storm water management program that imposes, at a minimum, the relevant requirements of paragraph (b) of Section 122.34.

Small Municipal Separate Storm Sewer System is defined at 40 CFR 122.26(b)(16) and refers to all separate storm sewers that are owned or operated by the United States, a State [sic], city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State [sic] law) having jurisdiction over disposal of sewage, industrial wastes, storm water, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under Section 208 of the CWA that discharges to waters of the United States, but is not defined as "large" or "medium" municipal separate storm sewer system. This term includes systems similar to separate storm sewer systems in municipalities, such as systems at military bases, large hospital or prison complexes, and highways and other thoroughfares. The term does not include separate storm sewers in very discrete areas, such as individual buildings.

Storm Water is defined at 40 CFR 122.26(b) (13) and means storm water runoff, snowmelt runoff, and surface runoff and drainage.

Storm Water Management Program (SWMP) refers to a comprehensive program to manage the quality of storm water discharged from the municipal separate storm sewer system.

SWMP is an acronym for "Storm Water Management Program."

TMDL is an acronym for "Total Maximum Daily Load."

Waters (also referred to as waters of the state or receiving water) is defined at Section 301.440 of Title 35: Subtitle C: Chapter I of the Illinois Pollution Control Board Regulations and means all accumulations of water, surface and underground, natural, and artificial, public and private, or parts thereof, which are wholly or partially within, flow through, or border upon the State of Illinois, except that sewers and treatment works are not included except as specially mentioned; provided, that nothing herein contained shall authorize the use of natural or otherwise protected waters as sewers or treatment works except that in-stream aeration under Agency permit is allowable.

"You" and "Your" as used in this permit is intended to refer to the permittee, the operator, or the discharger as the context indicates and that party's responsibilities (e.g., the city, the country, the flood control district, the U.S. Air Force, etc.).

Attachment H

Standard Conditions

Definitions

Act means the Illinois Environmental Protection Act, 415 ILCS 5 as Amended.

Agency means the Illinois Environmental Protection Agency.

Board means the Illinois Pollution Control Board.

Clean Water Act (formerly referred to as the Federal Water Pollution Control Act) means Pub. L 92-500, as amended. 33 U.S.C. 1251 et seq.

NPDES (National Pollutant Discharge Elimination System) means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under Sections 307, 402, 318 and 405 of the Clean Water Act.

USEPA means the United States Environmental Protection Agency.

Daily Discharge means the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the "daily discharge" is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurements, the "daily discharge" is calculated as the average measurement of the pollutant over the day.

Maximum Daily Discharge Limitation (daily maximum) means the highest allowable daily discharge.

Average Monthly Discharge Limitation (30 day average) means the highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.

Average Weekly Discharge Limitation (7 day average) means the highest allowable average of daily discharges over a calendar week, calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week.

Best Management Practices (BMPs) means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the State. BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

Aliquot means a sample of specified volume used to make up a total composite sample.

Grab Sample means an individual sample of at least 100 milliliters collected at a randomly-selected time over a period not exceeding 15 minutes.

24-Hour Composite Sample means a combination of at least 8 sample aliquots of at least 100 milliliters, collected at periodic intervals during the operating hours of a facility over a 24-hour period.

8-Hour Composite Sample means a combination of at least 3 sample aliquots of at least 100 milliliters, collected at periodic intervals during the operating hours of a facility over an 8-hour period.

Flow Proportional Composite Sample means a combination of sample aliquots of at least 100 milliliters collected at periodic intervals such that either the time interval between each aliquot or the volume of each aliquot is proportional to either the stream flow at the time of sampling or the total stream flow since the collection of the previous aliquot.

(1) **Duty to comply.** The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Act and is grounds for enforcement action, permit termination, revocation and reissuance, modification, or for denial of a permit renewal application. The permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants within the time provided in the regulations that establish these standards or prohibitions, even if the permit has not yet been modified to incorporate the requirements.

(2) **Duty to reapply.** If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit. If the permittee submits a proper application as required by the Agency no later than 180 days prior to the expiration date, this permit shall continue in full force and effect until the final Agency decision on the application has been made.

(3) **Need to halt or reduce activity not a defense.** It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

(4) **Duty to mitigate.** The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

(5) **Proper operation and maintenance.** The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up, or auxiliary facilities, or similar systems only when necessary to achieve compliance with the conditions of the permit.

(6) **Permit actions.** This permit may be modified, revoked and reissued, or terminated for cause by the Agency pursuant to 40 CFR 122.62 and 40 CFR 122.63. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

(7) **Property rights.** This permit does not convey any property rights of any sort, or any exclusive privilege.

(8) **Duty to provide information.** The permittee shall furnish to the Agency within a reasonable time, any information which the Agency may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with the permit. The permittee shall also furnish to the Agency upon request, copies of records required to be kept by this permit.

(9) **Inspection and entry.** The permittee shall allow an authorized representative of the Agency or USEPA (including an authorized contractor acting as a representative of the Agency or USEPA), upon the presentation of credentials and other documents as may be required by law, to:

(a) Enter upon the permittee's premises where a regulated

facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

(b) Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

(c) Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and

(d) Sample or monitor at reasonable times, for the purpose of assuring permit compliance, or as otherwise authorized by the Act, any substances or parameters at any location.

(10) **Monitoring and records.**

(a) Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

(b) The permittee shall retain records of all monitoring information, including all calibration and maintenance records, and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of this permit, measurement, report or application. Records related to the permittee's sewage sludge use and disposal activities shall be retained for a period of at least five years (or longer as required by 40 CFR Part 503). This period may be extended by request of the Agency or USEPA at any time.

(c) Records of monitoring information shall include:

(1) The date, exact place, and time of sampling or measurements;

(2) The individual(s) who performed the sampling or measurements;

(3) The date(s) analyses were performed;

(4) The individual(s) who performed the analyses;

(5) The analytical techniques or methods used; and

(6) The results of such analyses.

(d) Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit. Where no test procedure under 40 CFR Part 136 has been approved, the permittee must submit to the Agency a test method for approval. The permittee shall calibrate and perform maintenance procedures on all monitoring and analytical instrumentation at intervals to ensure accuracy of measurements.

(11) **Signatory requirement.** All applications, reports or information submitted to the Agency shall be signed and certified.

(a) **Application.** All permit applications shall be signed as follows:

(1) For a corporation: by a principal executive officer of at least the level of vice president or a person or position having overall responsibility for environmental matters for the corporation:

(2) For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or

(3) For a municipality, State, Federal, or other public agency: by either a principal executive officer or ranking elected official.

(b) **Reports.** All reports required by permits, or other information requested by the Agency shall be signed by a person described in paragraph (a) or by a duly authorized representative of that person. A person is a duly authorized representative only if:

(1) The authorization is made in writing by a person described in paragraph (a); and

(2) The authorization specifies either an individual or a position responsible for the overall operation of the facility, from which the discharge originates, such as a plant manager, superintendent or person of equivalent responsibility; and

(3) The written authorization is submitted to the Agency.

(c) **Changes of Authorization.** If an authorization under (b) is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of (b) must be submitted to the Agency prior to or together with any reports, information, or applications to be signed by an authorized representative.

(d) **Certification.** Any person signing a document under paragraph (a) or (b) of this section shall make the following certification:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

(12) **Reporting requirements.**

(a) **Planned changes.** The permittee shall give notice to the Agency as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required when:

(1) The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source pursuant to 40 CFR 122.29 (b); or

(2) The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements pursuant to 40 CFR 122.42 (a)(1).

(3) The alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan.

(b) **Anticipated noncompliance.** The permittee shall give advance notice to the Agency of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

(c) **Transfers.** This permit is not transferable to any person except after notice to the Agency.

(d) **Compliance schedules.** Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date.

(e) **Monitoring reports.** Monitoring results shall be reported at the intervals specified elsewhere in this permit.

(1) Monitoring results must be reported on a Discharge Monitoring Report (DMR).

(2) If the permittee monitors any pollutant more frequently than required by the permit, using test procedures approved under 40 CFR 136 or as specified in the permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR.

(3) Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified by the Agency in the permit.

(f) **Twenty-four hour reporting.** The permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24-hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and time; and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. The following shall be included as information which must be reported within 24-hours:

(1) Any unanticipated bypass which exceeds any effluent limitation in the permit.

(2) Any upset which exceeds any effluent limitation in the permit.

(3) Violation of a maximum daily discharge limitation for any of the pollutants listed by the Agency in the permit or any pollutant which may endanger health or the environment.

The Agency may waive the written report on a case-by-case basis if the oral report has been received within 24-hours.

(g) **Other noncompliance.** The permittee shall report all instances of noncompliance not reported under paragraphs (12) (d), (e), or (f), at the time monitoring reports are submitted. The reports shall contain the information listed in paragraph (12) (f).

(h) **Other information.** Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application, or in any report to the Agency, it shall promptly submit such facts or information.

(13) **Bypass.**

(a) Definitions.

(1) Bypass means the intentional diversion of waste streams from any portion of a treatment facility.

(2) Severe property damage means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

(b) Bypass not exceeding limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs (13)(c) and (13)(d).

(c) Notice.

(1) Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten days before the date of the bypass.

(2) Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in paragraph (12)(f) (24-hour notice).

(d) Prohibition of bypass.

(1) Bypass is prohibited, and the Agency may take enforcement action against a permittee for bypass, unless:

(i) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

(ii) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and

(iii) The permittee submitted notices as required under paragraph (13)(c).

(2) The Agency may approve an anticipated bypass, after considering its adverse effects, if the Agency determines that it will meet the three conditions listed above in paragraph (13)(d)(1).

(14) **Upset.**

(a) Definition. Upset means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

(b) Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of paragraph (14)(c) are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

(c) Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

(1) An upset occurred and that the permittee can identify the cause(s) of the upset;

(2) The permitted facility was at the time being properly operated; and

(3) The permittee submitted notice of the upset as required in paragraph (12)(f)(2) (24-hour notice).

(4) The permittee complied with any remedial measures required under paragraph (4).

(d) Burden of proof. In any enforcement proceeding the permittee seeking to establish the occurrence of an upset has the burden of proof.

(15) **Transfer of permits.** Permits may be transferred by modification or automatic transfer as described below:

(a) Transfers by modification. Except as provided in paragraph (b), a permit may be transferred by the permittee to a new owner or operator only if the permit has been modified or revoked and reissued pursuant to 40 CFR 122.62 (b) (2), or a minor modification made pursuant to 40 CFR 122.63 (d), to identify the new permittee and incorporate such other requirements as may be necessary under the Clean Water Act.

(b) Automatic transfers. As an alternative to transfers under paragraph (a), any NPDES permit may be automatically transferred to a new permittee if:

(1) The current permittee notifies the Agency at least 30 days in advance of the proposed transfer date;
(2) The notice includes a written agreement between the existing and new permittees containing a specified date for transfer of permit responsibility, coverage and liability between the existing and new permittees; and
(3) The Agency does not notify the existing permittee and the proposed new permittee of its intent to modify or revoke and reissue the permit. If this notice is not received, the transfer is effective on the date specified in the agreement.

(16) All manufacturing, commercial, mining, and silvicultural dischargers must notify the Agency as soon as they know or have reason to believe:
(a) That any activity has occurred or will occur which would result in the discharge of any toxic pollutant identified under Section 307 of the Clean Water Act which is not limited in the permit, if that discharge will exceed the highest of the following notification levels:
(1) One hundred micrograms per liter (100 ug/l);
(2) Two hundred micrograms per liter (200 ug/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 ug/l) for 2,4-dinitrophenol and for 2-methyl-4,6 dinitrophenol; and one milligram per liter (1 mg/l) for antimony.
(3) Five (5) times the maximum concentration value reported for that pollutant in the NPDES permit application; or
(4) The level established by the Agency in this permit.
(b) That they have begun or expect to begin to use or manufacture as an intermediate or final product or byproduct any toxic pollutant which was not reported in the NPDES permit application.

(17) All Publicly Owned Treatment Works (POTWs) must provide adequate notice to the Agency of the following:
(a) Any new introduction of pollutants into that POTW from an indirect discharge which would be subject to Sections 301 or 306 of the Clean Water Act if it were directly discharging those pollutants; and
(b) Any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.
(c) For purposes of this paragraph, adequate notice shall include information on (i) the quality and quantity of effluent introduced into the POTW, and (ii) any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

(18) If the permit is issued to a publicly owned or publicly regulated treatment works, the permittee shall require any industrial user of such treatment works to comply with federal requirements concerning:
(a) User charges pursuant to Section 204 (b) of the Clean Water Act, and applicable regulations appearing in 40 CFR 35;
(b) Toxic pollutant effluent standards and pretreatment standards pursuant to Section 307 of the Clean Water Act; and
(c) Inspection, monitoring and entry pursuant to Section 308 of the Clean Water Act.

(19) If an applicable standard or limitation is promulgated under Section 301(b)(2)(C) and (D), 304(b)(2), or 307(a)(2) and that effluent standard or limitation is more stringent than any effluent limitation in the permit, or controls a pollutant not limited in the permit, the permit shall be promptly modified or revoked, and reissued to conform to that effluent standard or limitation.

(20) Any authorization to construct issued to the permittee pursuant to 35 Ill. Adm. Code 309.154 is hereby incorporated by reference as a condition of this permit.

(21) The permittee shall not make any false statement, representation or certification in any application, record, report, plan or other document submitted to the Agency or the USEPA, or required to be maintained under this permit.

(22) The Clean Water Act provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Clean Water Act is subject to a civil penalty not to exceed $25,000 per day of such violation. Any person who willfully or negligently violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318 or 405 of the Clean Water Act is subject to a fine of not less than $2,500 nor more than $25,000 per day of violation, or by imprisonment for not more than one year, or both.
Additional penalties for violating these sections of the Clean Water Act are identified in 40 CFR 122.41 (a)(2) and (3).

(23) The Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than 2 years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than $20,000 per day of violation, or by imprisonment of not more than 4 years, or both.

(24) The Clean Water Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

(25) Collected screening, slurries, sludges, and other solids shall be disposed of in such a manner as to prevent entry of those wastes (or runoff from the wastes) into waters of the State. The proper authorization for such disposal shall be obtained from the Agency and is incorporated as part hereof by reference.

(26) In case of conflict between these standard conditions and any other condition(s) included in this permit, the other condition(s) shall govern.

(27) The permittee shall comply with, in addition to the requirements of the permit, all applicable provisions of 35 Ill. Adm. Code, Subtitle C, Subtitle D, Subtitle E, and all applicable orders of the Board or any court with jurisdiction.

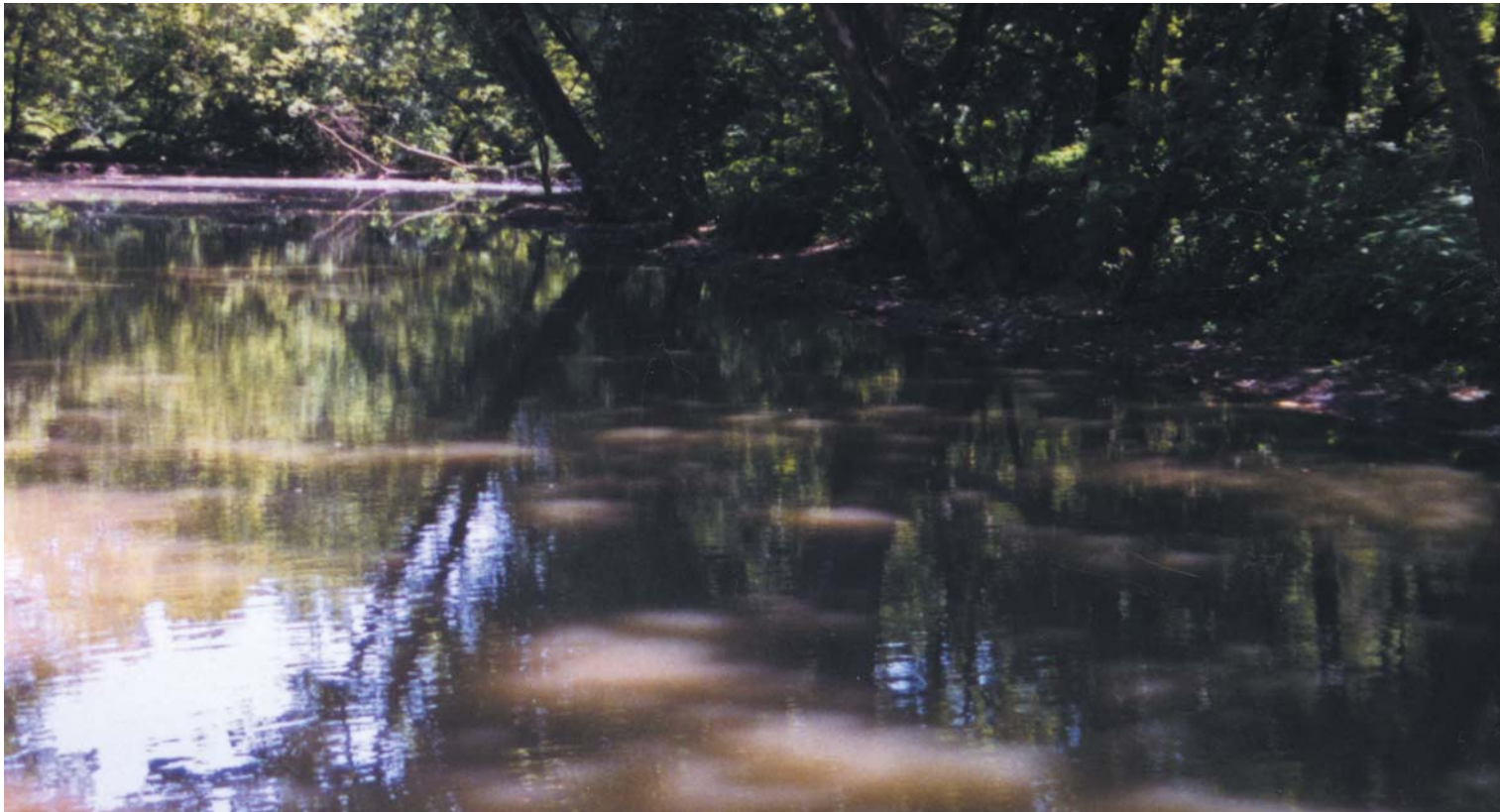
(28) The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit is held invalid, the remaining provisions of this permit shall continue in full force and effect.

(Rev. 7-9-2010 bah)

APPENDIX 10

Salt Creek Watershed – Restoring Balance

SALT·CREEK
WATERSHED·NETWORK



Prepared by the Salt Creek Watershed Network
January 2002

Salt Creek Watershed Restoring Balance

Citizens' Concerns about Natural Resource Issues in the Lower Salt Creek Watershed

The Salt Creek TODAY....

A HISTORY OF THE SALT CREEK WATERSHED

Fourteen thousand years ago, huge glaciers carved out the Great Lakes and excavated the entire landscape down to the bedrock—drastically altering the Midwest. The subsequent glacial debris rebuilt the landscape by forming hills, valleys and plains, while the melt water formed the region's lakes, wetlands and streams.

Over time, woodland, wetland and riparian ecosystems reestablished themselves comprised of plants and animals that further built the landscape in an interdependent relationship with their environment. The soils that developed in the Chicagoland area—while at first influenced by geologic and topographic factors—were mostly shaped by the variety of natural plant and animal communities that provided the lush biomass necessary for the formation of thick, organic-rich soils.

The topography in conjunction with local weather conditions determined the shape of watersheds and the size of streams, flood plains and wetlands. Rainfall and snow melt would first infiltrate the soil, thereby recharging the groundwater. Plants held the soil in place and returned water to the atmosphere via evapo-transpiration. Any excess water in the system was managed in wetlands and flood plains. All of these natural processes worked together to achieve a long-term equilibrium in the water cycle.

When Native Americans settled in the area they found a balanced ecosystem that they, too, managed to live with in harmony. Europeans found abundant natural resources and fertile soils suitable for extraction and agricultural purposes, which supported Chicago's great financial success and provided the catalyst for expanded settlement throughout the region. This development, like the glaciers before them, drastically altered the landscape and disturbed the delicate relationship between geology, topography, soil, climate, and native plant and animal communities.

Today, the Salt Creek watershed is highly urbanized and densely populated. Human activities of all kinds place tremendous strains on the natural environment, which are evidenced by air pollution, soil erosion, flooding, water pollution, habitat loss, and decreased species diversity. Citizens living throughout the Salt Creek watershed are becoming more aware of this imbalance and are looking for ways to improve conditions.

This document represents the efforts of a group of concerned citizens to identify problem areas and share a vision of Salt Creek's future. The group envisions people making better decisions about how they manage the land, how they manage the water that flows off the land, and what they can do to participate in the enhancement, protection and preservation of the creek. They understand that the Salt Creek watershed will not be what it was 10,000 or even 200 years ago. But it is a natural resource suitable for fishing, recreating, and deserving respect and proper management in order to improve the quality of life in an area that many people call home.

tributaries network cleanup
surface groundwater source
resource habitat recreation

...and tomorrow

LIFE THROUGHOUT THE SALT CREEK WATERSHED

As we all know, water flows downhill. A watershed is simply the total area of land that drains into a given stream, river or wetland. The entire Salt Creek watershed drains about 150 square miles. This includes the land that drains into Addison Creek and Spring Brook, two of the creek's major tributaries. The creek itself is about 50 miles long and has a vertical drop of about 225 feet along this distance. As of 1996, land cover in the watershed consisted of 77% urban and built-up land, 15% forest and woodland, 4% wetland, and 4% other. The map on the next page shows the municipalities of the watershed.

Everyone lives in a watershed, and everyone lives upstream. For instance, Salt Creek flows into the Des Plaines River. The Des Plaines River flows into the Illinois River, which then flows into the Mississippi River. Ultimately, we are all residents—and therefore stewards—of the Gulf of Mexico. But it is more reasonable to manage surface water resources if they are on the scale of a local watershed, which is why the focus of this document is on the lower Salt Creek watershed.

The Lower Salt Creek Watershed

Salt Creek is dammed in Elk Grove Village creating Busse Lake, which forms a boundary between the highly urbanized lower watershed and the still developing upper watershed. This document focuses primarily on the lower watershed, downstream from the Busse Lake reservoir, because the resource concerns and management issues are similar for this geographic area.

From Busse Lake, the creek flows south and east about 45 miles to its confluence with the Des Plaines River in Lyons. Including Spring Brook and Addison Creek, the lower watershed drains about 130 square miles of urbanized landscape composed of 26 municipalities in two counties. Land use in the lower watershed is primarily residential mixed with commercial, followed by light manufacturing and county forest preserves.

According to the U.S. Geological Survey (USGS), 19 sewage treatment plants supply the main water discharge for the Salt Creek watershed, seven of which are actually on the creek. The Illinois Environmental Protection Agency (IEPA) ranks Salt Creek water quality as "fair." The main problems stem from non-point source pollution (from rainwater and melt water runoff), channelization (straightening of the creek), and habitat changes (building in the floodplain, stormwater discharges).

Nearly all the problems facing Salt Creek, however, are related to rainwater in the watershed. Specifically, runoff from the urban landscape picks up a variety of chemicals and pollutants from lawns and roadways that directly discharge—untreated—into the creek. The manmade surfaces throughout the watershed convey a greater volume of rainwater than the creek evolved to hold. Furthermore, development in the floodplain has eliminated the creek's ability to handle this greater volume of water, which results in more frequent floods and increased property damage. Finally, in older communities, raw sewage enters the creek during heavy rains because of the manner in which the infrastructure was built. These are some of the major resource management issues facing the creek today.

THE MISSION OF SALT CREEK WATERSHED NETWORK

The Salt Creek Watershed Network (SCWN) was formed in March 1998 as a grass roots organization to bring people together, raise awareness of the issues facing the creek, and find ways to make the creek an enjoyable resource for people. SCWN recognized that various groups with common goals were operating throughout the watershed, but local efforts needed a regional perspective to ensure long-term and watershed-wide improvements.

As a result, SCWN's mission is to seek a common vision and provide coordination and promote communication among the various volunteer groups, citizens, businesses, agencies and others operating and living within the watershed. By facilitating, partnering and conducting public education throughout the watershed, SCWN promotes the improvement of water quality, recreation, and the use of best management practices and ecosystem enhancements.

During its first year, SCWN organized a watershed bus tour, coordinated several creek cleanups, elected a board of directors, and co-hosted an IEPA public meeting. SCWN then initiated the watershed planning process in an effort to bring together people throughout the watershed to discuss the issues facing Salt Creek.

History of the Watershed Planning Process

In early 1998, concerned citizens from the Salt Creek watershed came together to find common ground from which they could improve the quality of the watershed. Those stakeholders became participants of the Watershed Planning Team. In February 1999, IEPA awarded SCWN funds to develop this document. The Natural Resource Conservation Service facilitated the process, which included brainstorming sessions and a discussion of the issues over a 24-month period. While a variety of concerns were voiced, eight major resource categories were identified and prioritized:

- Water Quality
- Streambank Maintenance
- Habitat
- Flooding
- Land Use
- Public Policy
- Public Awareness/Education
- Recreation

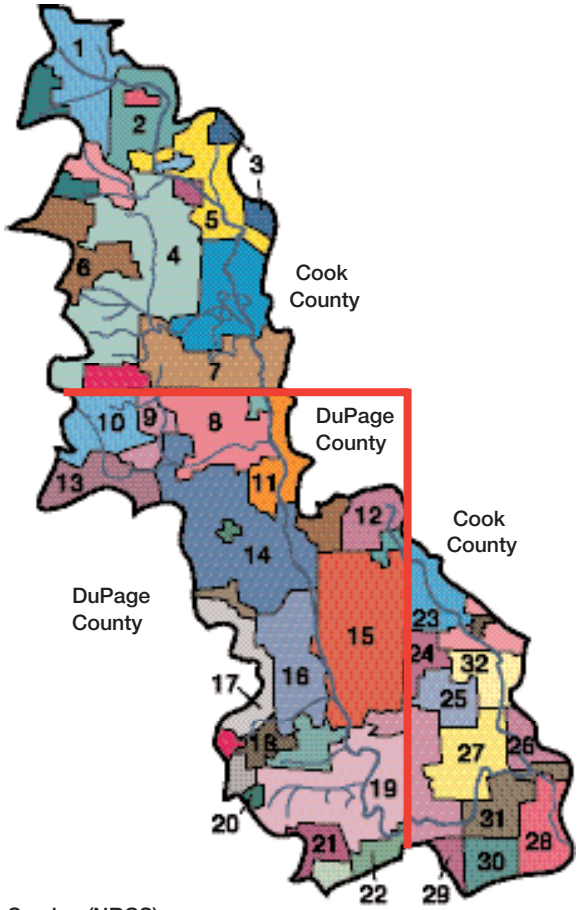
The Watershed Planning Team divided into three working subcommittees to develop specific concern statements and goals for the eight categories, which are presented in the next section.

In February 2000, a Technical Advisory Team (A-Team) met to discuss the points raised by the Watershed Planning Team. Technical comments received by A-Team members were incorporated into this document in August 2000. Between December 2000 and March 2001, this document was written, revised and formatted.

SALT CREEK WATERSHED MUNICIPALITIES

Northern Cook County Municipalities:
Inverness 1
Palatine 2
Arlington Heights 3
Schaumburg 4
Rolling Meadows 5
Hoffman Estates 6
Elk Grove Village 7

DuPage County Municipalities:
Itasca 8
Medinah 9
Roselle 10
Wood Dale 11
Bensenville 12
Bloomingdale 13
Addison 14
Elmhurst 15
Villa Park 16
Lombard 17
York Center 18
Oakbrook 19
Oakbrook Terrace 20
Westmont 21
Hinsdale 22



County Boundary

Watershed Boundary

Western Cook County Municipalities:
Northlake 23
Berkeley 24
Hillside 25
Broadview 26
Westchester 27
Brookfield 28
Western Springs 29
LaGrange 30
LaGrange Park 31
Bellwood 32

USDA–Natural Resources Conservation Service (NRCS)

ISSUES AND ACTIONS

The Watershed Planning Team identified the following eight issues in order to define a future vision for the watershed and create a list of actions needed to restore balance in the watershed. The concerns, vision and actions are identified for each issue.

ISSUE: Water Quality

Concern: Salt Creek was once a swimming and boating recreational asset. Now water quality has deteriorated because of non-point sources of pollution, destruction of habitat along the creek, development and flooding.

Vision: The water quality of Salt Creek is improved so that its ranking is changed from "fair" to "good," and all citizens and wildlife living within the watershed enjoy the benefits.

Actions

- Understand the sources of impairment, which will be articulated in a Total Maximum Daily Load (TMDL) study.
- Communicate findings of the TMDL study throughout watershed. Work with municipalities to implement solutions to water-quality issues.
- Educate people about their positive and negative impacts on water quality and how to reduce point and non-point sources of pollution.
- Work toward restoring natural aquatic habitats that support a diverse, native, aquatic community.
- Evaluate then remove or modify unnecessary dams to restore natural flow and improve fish passage and flood-water management.
- Work with watershed constituents to strengthen and enforce ordinances that prevent water-quality impairments.

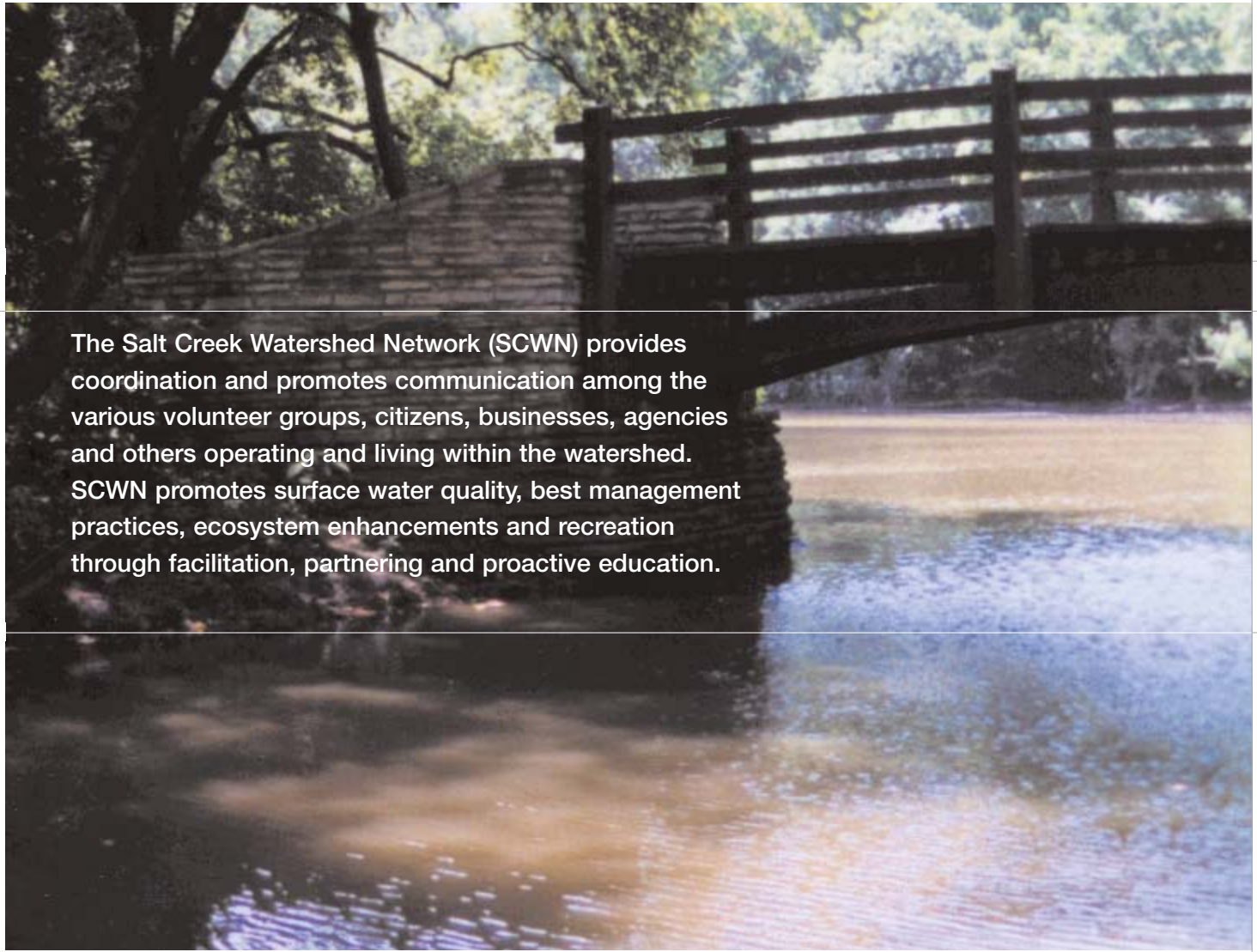
ISSUE: Streambank Maintenance

Concern: Salt Creek streambanks have eroded due to flooding and poor streamside management which has left them bare and less functional. Numerous jurisdictions along the creek have resulted in no consistent maintenance process.

Vision: Restored streambanks that are stable, support vegetation, and provide habitat for wildlife.

Actions

- Identify jurisdictions along the creek to determine responsibility for maintenance of such things as log jams.
- Identify existing projects that can serve as models for other communities.
- Develop educational information about streambank erosion and appropriate best management practices, then distribute this information to all streambank landowners.
- Develop a list of critical agencies/commissions within the watershed making decisions about dam and stream maintenance, then get on their mailing list.
- Develop a method to mobilize Salt Creek Watershed Network and citizens to publically support and actively participate in streambank stabilization, dam maintenance and other related issues.



The Salt Creek Watershed Network (SCWN) provides coordination and promotes communication among the various volunteer groups, citizens, businesses, agencies and others operating and living within the watershed. SCWN promotes surface water quality, best management practices, ecosystem enhancements and recreation through facilitation, partnering and proactive education.

ISSUE: Habitat

Concern: Salt Creek no longer supports a diversity of plants and animals due to urbanization and the effects of erratic stormwater discharges (unstable hydrologic conditions). Channelized areas have a uniform gradient, no riffle or pool development, no meanders (curves) and very steep banks. During low-flow periods in the summer, many channelized streams have low dissolved-oxygen levels. Under these conditions, they provide poor habitat for fish or other stream organisms, such as benthic macroinvertebrates.

Vision: The effects of urbanization are minimized and better managed. The riverine ecosystem is in balance with healthy aquatic and terrestrial habitats that support a diversity of plants and animals.

Actions

- Educate people about the value of a diverse ecosystem consisting of abundant native plants and wildlife.
- Work with biologists to complete the watershed-wide survey of existing terrestrial and aquatic habitats and species.
- Develop strategies that protect and enhance existing terrestrial and aquatic habitat and species variety.
- Work with stakeholders to remove or modify unnecessary, non-functional dams in an effort to restore the natural flow of water, thereby improving fish passage.

ISSUE: Flooding

Concern: Urbanization has changed the hydrology of the watershed by increasing impervious surfaces and modifying or developing the flood plain. This has increased direct flow to the creek and the frequency and severity of flood events, thus worsening the erosion problem. Building in the flood plains has been a very expensive proposition, due to losses during floods.

Vision: When feasible, the man-made infrastructure is removed from the flood plain to allow natural systems to renew themselves. Floodwaters are less destructive as there has been a watershed-wide effort to encourage better flood-plain management practices and reduce erratic flows into the creek.

Actions

- Educate the public on the causes of flooding in order to encourage public support for ordinances that improve flood-plain usage.
- Work with watershed jurisdictions to amend policies and ordinances that impact urbanized flood plains.
- Educate the public on actions individuals can take to reduce the amount of rainwater flow from their property into storm-drain systems.
- Partner with stormwater specialists to help restore natural stormwater processes and flood-plain processes to the maximum extent possible.

ISSUE: Land Use

Concern: The way we manage the land has changed and the impacts on the land are greater. Many land-use policies support continued development. Each community within the watershed has its own focus on land use without broader vision toward the entire watershed.

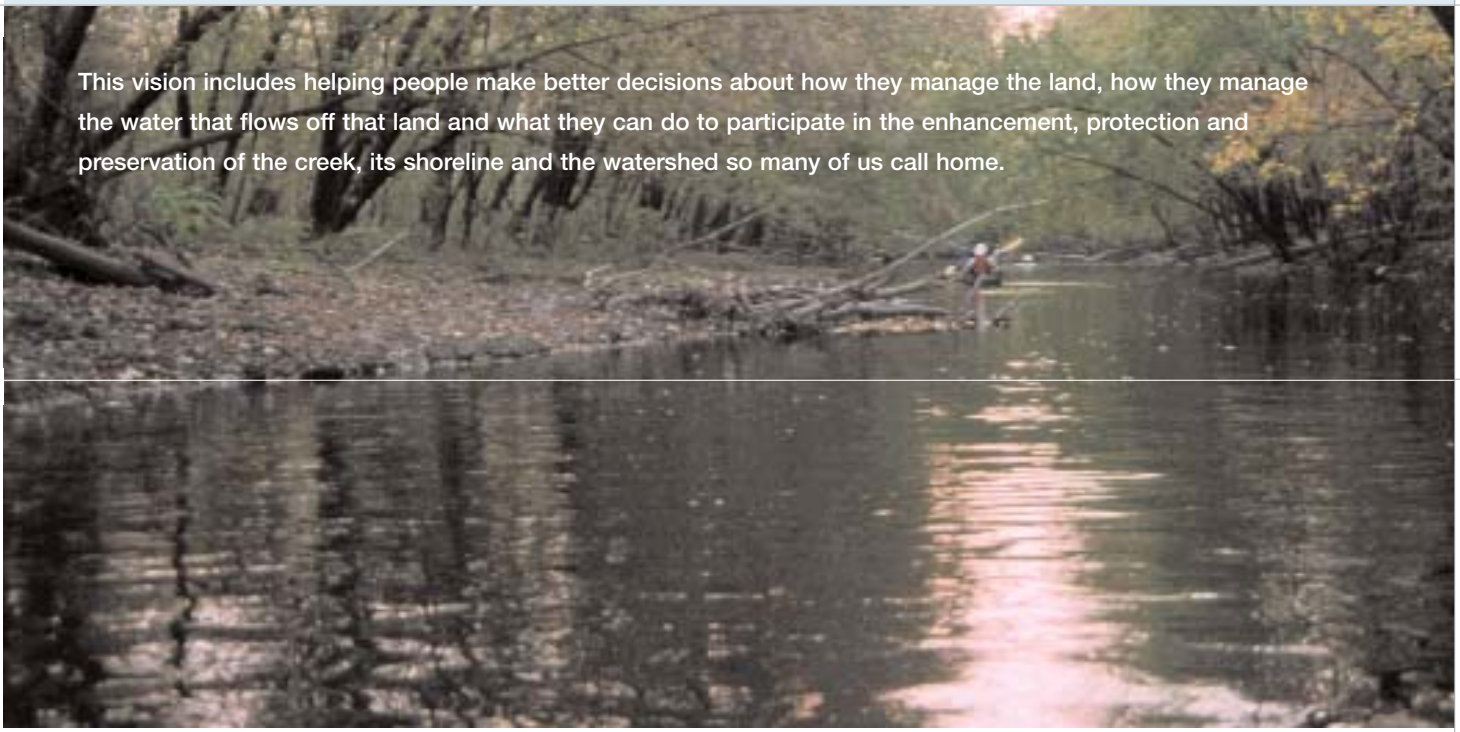
Vision: All local governments and agencies work together to create land-use policies that are consistent throughout the watershed and protect environmental quality.

Actions

- Implement stormwater and flood-plain ordinances that minimize or eliminate development in flood plains.
- Educate landowners about land-management issues and identify ways they can better care for and protect the watershed.
- Educate policy makers on how to minimize the negative impacts of land-use changes and land-management practices within their jurisdiction.
- Amend ordinances to protect and improve riparian environments.
- Improve communications among stakeholders to increase consistent best management practices across the watershed.

A VISION FOR THE SALT CREEK WATERSHED

- People recreating on and relaxing by the creek.
- Municipalities working together to better manage the Salt Creek as a natural resource.
- Citizens, businesses and municipalities understanding the sources and impacts of non-point pollution.
- A riverene ecosystem that supports a diversity of life.



This vision includes helping people make better decisions about how they manage the land, how they manage the water that flows off that land and what they can do to participate in the enhancement, protection and preservation of the creek, its shoreline and the watershed so many of us call home.

ISSUE: Public Policy

Concern: Salt Creek flows through numerous jurisdictional boundaries and is home to a large population of individuals, landowners and agencies, many with overlapping and possibly conflicting viewpoints.

Vision: The numerous jurisdictions, individuals, landowners, and agencies work in coordination to best manage and improve the water resources in the watershed.

Actions

- Create an advisory board with representatives from each watershed jurisdiction and stakeholder group to coordinate policies throughout the watershed, addressing water-quality and stormwater management.
- Establish a clearinghouse of exemplary ordinances and best management practices.
- Promote a forum for sharing successes and experiences that encourage jurisdictions to learn from one another.
- Advocate public involvement in policy changes and in implementing those changes.

ISSUE: Public Awareness/Education

Concern: Much of the land in the Salt Creek watershed was developed decades ago, and its current poor condition has become "acceptable" or considered "the way it is." A majority of the public is unaware of the issues facing the environmental quality in the watershed and lacks an understanding of the solutions.

Vision: The watershed is home to informed citizens, policy makers and other stakeholders who appreciate the environmental assets in the watershed, foresee its long-term value, understand how their actions affect it, and make individual decisions necessary to reduce negative impacts.

Actions

- Develop a strategic outreach communication plan that includes message points, action steps and evaluation strategies.
- Heighten awareness for, deepen appreciation of, and promote action on behalf of Salt Creek throughout the watershed.
- Identify priority target audiences and then determine the most effective education program for each group.
- Utilize existing networks to get the word out.

ISSUE: Recreation

Concern: Because few people have a connection to Salt Creek, or they perceive it as inaccessible and unhealthy, it is an underutilized recreational resource.

Vision: More and more people visit the public areas of the watershed to enjoy the benefits of healthy natural resources, including recreational activities on the creek.

Actions

- Evaluate current recreational opportunities and identify ways to create more.
- Promote the development of access points and portages for paddlers.
- Identify barriers that keep people from utilizing Salt Creek.
- Develop safe access along the shores that encourage responsible recreational use of the creek.
- Promote change in the legal status of Salt Creek to "navigable" waterway.
- Promote changing the "designated use" of the creek from "general" to "secondary contact."
- Work in conjunction with the Salt Creek portion of the NIPC-sponsored regional Water Trails Plan.
- Do what is necessary to restore the natural flow to the creek and provide safe passage for recreation.
- Establish a communication program that informs citizens of safety issues associated with the creek's recreational uses.

APPENDIX A: GLOSSARY

Action Teams or Subcommittees: these are the ongoing or temporary groups that are formed to carry out specific tasks of a more specialized nature, including planning special events or investigating specific issues such as wetlands preservation or best management practices.

Benthic Macroinvertebrates: bottom dwelling (benthic) invertebrates that can be seen by the unaided eye (macro). Most benthic macroinvertebrates in flowing water are aquatic insects or the aquatic stage of insects, such as stonefly nymphs, mayfly nymphs, caddisfly larvae, dragonfly nymphs and midge larvae. They also include such things as clams and worms. The presence of benthic macroinvertebrates that are intolerant of pollution is a good indicator of good water quality.

Best Management Practices (BMPs): practices or techniques that are used to prevent or ameliorate damage to natural resources; some BMPs used in urban areas may include urban stormwater wetlands, dust control, urban filter strip, porous pavement, silt fence and vegetative streambank stabilization.

Bioengineering (or Soil Bioengineering): techniques for stabilizing eroding or slumping river banks that rely on the use of plants and plant materials, such as live willow posts, brush layering, coconut logs and other "greener" or "softer" techniques in contrast to techniques that rely on creating "hard" edges with riprap, concrete and sheet piling (metal and plastic).

Channelized Stream: a stream that has been artificially straightened, deepened, or widened to accommodate increased stormwater, to increase the amount of adjacent land that can be developed or used for urban development, agriculture or navigation purposes.

Collaboration: a mutually beneficial and well-defined relationship entered into by two or more organizations to achieve results they are more likely to achieve together than alone.

Combined Sewer Overflow (CSO): in older communities, the storm sewers and sanitary sewers were combined. In newer communities the two sewers are separate. During heavy rains, the volume of water is so high that raw sewage is discharged directly to a surface water body.

Consensus: an inclusive form of decision making in which all of the parties discuss and debate the issues prior to reaching an agreement. All parties must either agree with the decision or at least agree that they can live with it. Any one party may block an agreement.

Geographic Information System (GIS): a computer system that inputs, assembles, stores, manipulates and displays (usually in the form of maps) geographically referenced information.

Impervious Surfaces: the land in a watershed—expressed in an area or percentage—covered by hard surfaces that prevent the infiltration of water into the soil. Impervious surfaces are the asphalt or concrete roads, parking lots, buildings or other "hard surfaces" that are relatively impenetrable to the movement of water.

Non-point Source Pollution: the diffuse, intermittent runoff of pollutants from various sources. Precipitation moving over and through the ground picks up pollutants from these various sources and carries them into rivers, lakes and groundwater.

Partner: the watershed stakeholders who take an active role in the watershed management planning process.

Planning Committee: the group of stakeholders responsible for creating the watershed-management plan.

Sewershed: an area of land where stormwater drains into a common storm sewer.

Stakeholder: a person who has a legal, economic, personal or professional interest in the watershed.

Technical Advisory Team (A-Team): the group of technically qualified ecologists, biologists, hydrologists, engineers, planners and others who advise the planning committee in performing the assessment and analysis phase and developing the best management practices and policies in the action plan.

Urban Runoff: water from rain or snow that runs over surfaces such as streets, lawns, parking lots and directly into storm sewers before entering the river—rather than infiltrating the land upon which it falls.

Watershed: an area of land that drains into a given stream, river, lake or wetland.

RESTORING BALANCE:

Citizens' Concerns about Natural Resource Issues in the Lower Salt Creek Watershed

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GETTING INVOLVED

With the completion of this planning document comes the excitement of sharing it with as many people in the watershed as possible. SCWN needs people to share this story, promote these causes and move this plan into action. To implement this plan, everyone must get involved—writers, educators, fisherman, paddlers, designers, residents, business leaders and municipalities—to achieve a balanced and healthy ecosystem for future generations.

To learn more about SCWN or to get directly involved contact us:

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APPENDIX 11

Salt Creek Watershed – A Resource Worth Preserving

Salt Creek:
A Resource Worth Preserving

Best Management Practices
for Reducing Non-Point Source Pollution

June, 2004

northeastern illinois planning commission

SALT CREEK

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

Salt Creek has a rich history and, with your help, a bright future as a healthy and valuable asset to our communities. Protecting and enhancing Salt Creek and its watershed can provide numerous benefits:

- Floodwater detention that reduces property damage.
- Business and tourism revenue from recreation.
- Increasing property values.
- Erosion control and water quality protection.
- Better fishing, canoeing, and enjoying the creek.
- Habitat for native plants and animals.

Municipalities, park districts, and other local governments can manage public property and guide development and land use to minimize impact to the creek. Stormwater, in particular, can be a problem because much of it eventually flows into the creek. Impervious (impenetrable) surfaces such as rooftops, parking lots, roads, and sidewalks do not allow stormwater to seep into the ground, which can lead to flooding. Rainwater flowing across these hard surfaces picks up pollutants such as oil and grease, dirt, fertilizers, pesticides, road salt, and bacteria. These pollutants from across the landscape are called non-point source pollution. These materials cause water contamination, toxicity, and algae growth making the creek unsuitable for fishing, swimming, and aquatic life, and reducing its value as a community amenity.

This manual provides local governments and other landowners with cost-effective techniques to improve the quality of Salt Creek. The Best Management Practices (BMPs) described here can effectively and naturally improve water quality and the natural environment, and reduce the volume of stormwater runoff.

These BMPs are important because a healthy Salt Creek is an asset to communities, a recreational amenity for residents, and an essential component of a healthy environment. BMPs can reduce development costs and long-term maintenance costs for stormwater management. They can also help communities meet the Salt Creek Total Maximum Daily Load (TMDL) standards that specify how much pollution the creek can carry, as well as National Pollution Discharge Elimination System (NPDES) Phase 2 permit requirements for eliminating significant sources of water pollution from municipal stormwater systems and construction activities.

This manual is a first step for increasing awareness of the need for better management of stormwater in the Salt Creek watershed, but it is not intended as an in-depth "how-to" technical resource. Many additional resources are provided in the back of this manual for those seeking technical information. The practices are arranged in order beginning with those easier and less costly to implement. If you have never tried any of these practices, consider one of the first few techniques and then move on to more complex projects, which may

A low-head dam on Salt Creek.

require additional time and resource investments and outside funding sources. However, the order of this manual is not an indicator of effectiveness. Simpler BMPs can be as effective as more complicated ones. The key is to use the right BMP for the job.

In many communities, outdated ordinances and other standards are barriers to the use of BMPs. For example, many community weed ordinances do not allow vegetation greater than a few inches in height, thereby outlawing the use of beneficial native plants that grow taller. Local regulations should be adopted or updated to encourage or at least allow the techniques covered in this manual.

BMPs covered in this manual:

- Public green space management.
- Natural landscaping, buffers, swales, and filter strips.
- Rain barrels, cisterns, and rain gardens.
- Reduced road salt impacts.
- Bioengineered streambank stabilization.
- Naturalized detention basins.
- Infiltration practices.
- Green roofs.

This manual is one part of a larger educational effort by the Salt Creek Watershed Network, the Illinois Environmental Protection Agency, and the Northeastern Illinois Planning Commission to work with local government entities, residents, businesses, and other landowners to improve water quality and environmental conditions in Salt Creek and its watershed.

Public Green Space Management – Be Kind to the Land

Why is this Important?

Turf grass covers a portion of the Salt Creek watershed's public green space, from parks and playing fields and golf courses to the lawns around municipal buildings and business campuses. When managed in a traditional fashion using fertilizers and pesticides, turf grass is a primary contributor to runoff pollution. Turf grass areas absorb much less runoff than might be expected; most rainfall runs off turf grass into storm sewers. Pesticides, fertilizers, and the bacteria found in pet waste flow easily off of turf during rainstorms and end up in lakes and streams. Proper land management and maintenance can minimize negative environmental impacts, particularly from stormwater runoff and non-point source pollution.

Ideas for Implementation

Though there are many ways to protect the creek from runoff and non-point source pollution, some of the easiest and most significant ways involve simply changing management practices on public land. Though costs are difficult to estimate, the majority of these practices present cost savings, some short term and others over the long term, over traditional management approaches.

Convert turf grass into native plants. Where possible, convert turf grass into native groundcover, shrubs, trees, or meadow plantings (also see section on natural landscaping). Replace grass under mature trees with shade-tolerant groundcover. Where turf grass is difficult to grow, native groundcover and shrubs can thrive. Use turf grass selectively for a particular function such as a children's play area or soccer field.

Check the soil. Test the soils to determine pH and fertility; lime or fertilizer may not be necessary. Also test for soil compaction. If the soil is compacted, aerate it.

Choose the right grass. If you must use turf, choose a grass that is adapted to northeastern Illinois' climate such as a fine fescue. Consider new species of slow-growing, low-input dwarf grass mixes that reduce the need for mowing and fertilizers. Check with your local nurseries for information on these new "no-mow" or "low-mow" mixes.

Allow grass to grow taller. Mowing height affects the depth of the root system; the longer the cut the deeper the roots and the stronger and healthier the turf. Set mowing height as high as possible, at least one setting higher than you normally do, and don't mow too often; this allows the grass to grow in thicker with deeper roots and will help crowd out weeds reducing the need for fertilizers and pesticides. Leave some of the grass clippings on the lawn (or better yet use a mulching mower) to provide nutrients and hold in moisture. Recycle or compost the rest of the grass clippings.

Use appropriate amounts of fertilizer. Heavy use of fertilizers, particularly those with high nitrogen and phosphorous content, is one of the leading causes of excessive algae growth in Salt Creek. Fertilizers not absorbed by plant roots often run directly into the water, where the nutrients intended to grow grass provide food for the algae. Not only are algae unsightly, when they die the decomposition process consumes oxygen in the water that is needed by other plants and animals. It also blocks light needed by aquatic plants growing in the bottom of the creek. To reduce the effects of fertilizers on the creek:

- Fertilize only if soil tests indicate that it is necessary; some soils are fertile enough.
- Apply low-nitrogen, encapsulated nitrogen, or zero phosphorous fertilizers or an organic product.
- Follow application instructions; more is not better.
- Maintain natural vegetative strips at least 25 feet wide along streamside property to filter out excess fertilizer (see section on buffers, swales, and filter strips.)
- Avoid placing lawn clippings directly along creek banks.
- Don't fertilize before a rain.
- Ensure grounds maintenance personnel follow these guidelines.

Accept some weeds. Healthy, full grass will crowd out most weeds. Get comfortable with the idea that some weeds are ok, as long as they don't dominate. Employ least toxic methods to reduce weeds such as herbicidal soap and rapidly biodegradable or biological pest controls.

Insects are a necessary part of the landscape.

Accept some pests. Bugs are a natural part of the environment, and they serve important functions in the food chain. Applying poisons designed to kill bugs will also kill birds, butterflies, fish, and other wildlife. If you

have an overabundance of insects, try removing or trapping them, introducing biological control agents such as bugs that prey on your pests, or by applying low toxic chemical controls like insecticidal soaps. You can also try to attract natural predators such as birds that eat those pesky bugs.

Be smart with water. The turf grass most of us associate with an attractive lawn is not adapted to our hot summers and heavy watering to keep it green is highly wasteful and can also be expensive. Use landscaping techniques that don't require a lot of water, or, if you must irrigate, try watering the lawn well in the early morning or late in the evening.

Manage golf courses naturally. Golf courses can be a significant source of water pollution, but they also present great opportunities for good land management. Courses that have incorporated natural features are receiving increasing attention and acclaim from golfers and environmentalists alike, and some are certified as Audubon Cooperative Sanctuary courses by Audubon International and the United States Golf Association. (See resources section for a listing of Illinois golf courses that are Audubon certified.)

Golf courses, such as this one in Olympia Fields, provide good opportunities for natural landscaping.

Incorporating natural characteristics into course design can reduce the course's impact on natural resources. For example, small woods, wetlands, and stream buffers can be designated as unplayable rough while providing good habitat for wildlife. Long, broad fairways are significant sources of runoff pollution. Keep cart paths away from the streams and minimize stream crossings. Fertilizers and pesticides are also a serious concern. Swales, streamside buffers, and infiltration trenches can help remove fertilizers and pesticides from fairway runoff before it enters the stream.

Landscape golf courses naturally. Intensive irrigation of golf course turf grass, which is not adapted to north-eastern Illinois' climate, can reduce the water level in streams and groundwater and cause serious problems for the stream. Native vegetation for course landscaping and drought and disease resistant turf for greens and fairways can reduce water consumption.

Manage animal waste. One deceptive contributor to water quality impairments, especially in heavily urbanized watersheds such as Salt Creek, is pet and animal waste. When allowed to enter the water via stormwater runoff, this waste causes high nutrient and bacterial levels, which can lead to excessive algae growth and damage to plants and animals. Leash and pick-up rules, appropriate signage, and the provision of pet waste bags at streamside parks have proven effective in mitigating pet waste's negative effects. Goose waste, found in abundance on turf areas around detention basins, is another significant source of pollution for streams.

Natural landscaping, covered in the next section, is helpful for reducing the number of geese, especially around detention basins, because tall plants make geese uncomfortable causing them to seek out other areas.

Success Stories

In 1998, the DuPage County Forest Preserve District purchased the erosion-plagued Oak Meadows Golf Course in Addison. In 2001, the county's Master Plan for Golf Course Reconfiguration called for shoreline and bank toe stabilization to curtail erosion along Salt Creek, as well as bridge modifications to make the creek more suitable for recreation. The project, begun in autumn of 2002, stabilized 6,619 linear feet of streambank. The Illinois Department of Natural Resources contributed approximately 75% of the project total cost of $2.2 million, with the DuPage County Forest Preserve District and Department of Environmental Services picking up the rest. Golf course administrators reduced the slope of the streambanks, replaced shallow-rooted vegetation with deep-rooted native grasses, shrubs, and trees, and removed the stonework stabilization measures previously installed in favor of more aesthetic, below-water A-Jacks to stabilize the streambank toe. The project, which cost approximately $124 per linear foot, is widely regarded as a success. (See section on bioengineered streambank stabilization for more on practices mentioned here.)

Native landscapes are beautiful and functional.

Natural Landscaping, Buffers, Swales, and Filter Strips – Filter, Infiltrate, and Stabilize

Why is this Important?

Using native plant materials in landscaped areas on a development site is a low-cost and environmentally beneficial alternative to traditional landscaping. Native plants are far superior to turf grass for stabilizing soil, reducing erosion, infiltrating stormwater, and filtering and absorbing pollutants. The root structures of native vegetation are 3 to 10 feet deep for prairie vegetation versus 4 to 6 inches for turf grass. Native plants require no mowing, fertilizers, or pesticides, thereby eliminating a source of pollution and saving money. Native plants also play a key role in the filtration capacities of many of the other best management practices discussed in this manual including swales, buffers, filter strips, and natural detention areas.

Ideas for Implementation

Natural landscaping is appropriate on nearly all sites, especially large common areas, stormwater facilities (e.g., detention basins), drainage ways, and buffers along sensitive natural areas. It is particularly well-suited to low density residential and multi-family residential developments, institutions, office and industrial campuses, government property, and public land. Existing natural features should be preserved whenever possible.

Natural landscaping costs significantly less than conventional landscaping to install and maintain. Though prairie and wetland planting costs are similar to turf grass seeding (approximately $2,000 to $4,000 per acre),

turf irrigation systems can double its cost, and sod ($10,000 or more per acre) and ornamental trees and shrubs are even more costly. Only annual mowing or controlled burning and occasional spot spraying to control invasive weeds is typically needed.

Controlled burning is a specific management tool that requires some additional attention. Professionally trained burn crews must be used, all state and local permits must be secured prior to using controlled burning as a management tool, and the group undertaking the burn must coordinate with local fire districts and should also coordinate with other local governments to help avoid misunderstandings and conflicts.

Maintenance costs range from one half to one-fifth of the amount for conventional landscaping. However, it can take slightly longer to fully establish a diverse native plant community (2 – 4 years.)

Buffers, swales, and filter strips are areas of land comprised of deep-rooted native plants that help protect water by filtering pollutants from runoff. Buffers are typically used along waterways, and filters strips are used adjacent to impervious areas. They are recommended for use between developed areas and sensitive aquatic environments, especially along roads, parking lots, and construction sites. Swales are somewhat different from buffers and filter strips. They are vegetated channels used to transport and temporarily store runoff. Swales can be alternatives to storm sewers in some areas.

The longer water takes to move across these treatments, the better cleansing and infiltration will occur. Filter strips, swales, and buffers are particularly effective at reducing pollutants through settling and filtration. Road

Native plant buffer in Wood Dale.

salt, however, is not well removed by filters, buffers, or swales and can harm native plants, which are not adapted to salty conditions. These practices also can reduce surface runoff volumes by up to 40 percent for small storm events, and may reduce the need for storm sewers in less densely developed areas.

Installation of buffers and filter strips begins by removing existing plants and turf grass and then immediately planting with native species to minimize opportunities for erosion. Planting live plants in combination with seeds is preferred because it results in rapid establishment of vegetative cover. Live plants, however, are more expensive than seed. Where seeding is done on bare soil it is important to protect the seed and soil from washing away by raking the seed into the ground and covering the soil with an erosion blanket or hydro mulch.

Along streams, native vegetation should begin at or below normal water level with aquatic or wetland species and continue up the bank with water-tolerant and finally upland species. Any amount of native vegetation can be beneficial, but to be most effective, a

buffer should be at least 25 feet wide on each side of the stream and should cover the entire bank to provide maximum soil stabilization.

Filter strips and buffers can cost approximately $2,000 to $3,000 per acre to seed, not including soil erosion prevention. Maintenance within the first two growing seasons, as with most natural landscaping, may require prescribed burns, removal of invasive species, and additional planting to control undesirable plants from invading and taking over newly planted areas. After

Managing natural landscapes with controlled burns.

establishment, mowing and/or prescribed burns every 2 – 3 years will provide most of the subsequent maintenance needs. Fertilizer and pesticides are typically not necessary. However, herbicide may be necessary if invasive species are allowed to colonize.

Swales, open, vegetated drainage channels, can be used as alternatives to enclosed storm sewers and concrete-lined channels where there is some undeveloped land between buildings or paved areas. However, in denser, more urbanized settings they usually must be used in conjunction with storm sewers. Like buffers and filter strips, swales function best on gentle slopes and when planted with abundant native vegetation. They should be shallow and wide, with gentle side slopes, and evenly graded to avoid ponding of water. Swales generally cost up to $13 per linear foot less to install than curb and gutter storm sewers, and can often be installed faster, though it may take some time for the natural vegetation to become fully established. Swales may require occasional mowing and debris and sediment removal, but cost much less to maintain than storm sewers which require periodic maintenance, repair, and replacement. One type of swale, a depressed median, can be used within paved areas such as parking lots to collect and infiltrate stormwater (see section on infiltration practices.)

Success Stories

Save the Prairie Society is using all plant materials to stabilize and restore approximately 1900 feet of streambank along Salt Creek. Invasive and non-native tree and plant species have been removed to allow sunlight to reach the streambanks where native grasses, forbs, and sedges create a dense, deeply rooted vegetative cover. Trees, while they do have deep root systems, do not protect the banks from erosion and can shade out ground cover leaving bare banks. The native vegetation will provide food and shelter for various types of wildlife including the Henslow's Sparrow, Kingfisher, and the Monarch Butterfly. Maintenance of the area includes prescribed burning and selective herbiciding and cutting of invasive species. The native planting along the stream also acts as a buffer to absorb pollutants before they reach the waterway.

Stabilized Salt Creek canoe launch in Elmhurst.

In 2002, the Elmhurst Park District completed the installation of a naturally vegetated streambank buffer near a canoe launch on Salt Creek. This buffer is helping to stabilize steep, eroding streambanks and provide a protective filter for water running off the adjacent landscape. A couple hundred feet of buffer area along the creek was regraded to a more gentle slope and replanted with prairie plants. The entire project, including the canoe launch, cost approximately $100,000. It was important to plant both upland species and wet prairie species on the site because during high water periods the canoe launch is under water. The water-tolerant prairie plants help maintain the integrity of the banks during high flow conditions, saving land from eroding and protecting the canoe launch.

Rain Barrels, Cisterns, and Rain Gardens – Using Rain as a Resource

Why is this Important?

In urban areas, impervious surfaces dominate the landscape and less rainwater is naturally absorbed into the ground. Most roof runoff is collected in gutters and discharged onto the ground or into storm sewers, picking up debris and pollutants and discharging them into nearby streams. Reducing the volume of stormwater by managing it onsite reduces the flow of pollutants to the stream.

Ideas for Implementation

Downspouts that normally transport rainwater from the roof to the ground or storm sewer can be disconnected and directed into rain barrels, cisterns, or rain gardens, where it can be stored for irrigation or slowly infiltrated into the ground. Sump pumps can also be redirected. Rain barrels and cisterns are most often positioned at building corners. A 1200-square-foot residential roof, for example, could use 55-gallon barrels to collect rainwater. Rain barrels and cisterns must be emptied regularly and cleaned to remove debris such as leaves or branches. Installing mesh screens on top of the barrels can prevent debris buildup. Barrels should be covered during summer months to prevent mosquito breeding and should be emptied before winter to avoid freezing. Normal costs

Rain barrels, such as this one in Chicago, capture roof runoff for other uses.

for pre-made rain barrels range from $20 to $150, but homeowners can reduce this cost by making their own.

Rain gardens collect runoff water, which the garden's soil and plants then slowly absorb. Plants can filter out many of the pollutants in runoff water and reduce runoff volume. Rain gardens are typically 6- to 18-inch deep depressions filled with attractive, native plants and wildflowers, which also serve as habitat for birds, butterflies, and dragonflies, which eat mosquitoes. Like rain barrels, rain gardens function best during small to moderate storms and should be constructed at least 10 feet away from building foundations. Weeding and planting needs are similar to that for typical gardens, and costs are similar to those for ordinary gardens ($3 – 4 per square foot per year).

Success Stories

Thanks to funding from the Illinois Environmental Protection Agency, the Brookfield Zoo was able to plant demonstration rain gardens at various locations around the park. At the Reptile House, water from the roof was eroding soil and washing it onto the pathway. With the roof's downspout now turned into a low area planted with native plants, the rain garden absorbs the excess rain. At the North Gate, a rain garden helps absorb excess water before it reaches the storm drain. At Hamill Family Play Zoo, a small garden is being converted to a wet garden using some rainwater from the roof downspout.

Brookfield Zoo's new rain garden after planting.

Homeowners with wet areas in yards also are learning to go with the flow and build rain gardens. This was the case in Brookfield where one resident suffering from flooding on a portion of his yard constructed a 20-foot by 25-foot rain garden planted with native plants and shrubs and a few boulders between his driveway and neighbor's yard. In its first growing season, the rain garden flowered and attracted a variety of birds and butterflies, and even hosted a bathing Coopers Hawk. Summer downpour storms generate a surge of water that is collected in the rain garden and absorbed into the soil within 12 hours. The project took approximately one day to design and four days to install, costing approximately $1,400 for materials.

Reduced Road Salt Impacts – Salt Creek Shouldn't be Salty

Why is this Important?

Here in the Midwest, salt is heavily depended upon to melt ice and snow from roadways, driveways, and parking lots. However, dissolved salt collects in puddles on paved surfaces where its corrosive effects damage roadways, bridges, and vehicles. It also runs off into road side ditches, sewers, and water bodies. As a result, soils, groundwater aquifers used for water supply, and fish and other aquatic organisms, plant communities, and wetland systems are all negatively impacted. Few species

of plants and wildlife can tolerate salty water, but impacts are greatest in smaller water bodies and streams.

Ideas for Implementation

Rock salt is the most typical material used to clear ice and snow, primarily due to its low cost. However, a number of alternatives exist.

- Calcium chloride, typically used in combination with regular salt, is an effective alternative. Unfortunately, it is three to ten times more expensive than salt and because it is highly corrosive it is not the most feasible alternative.
- Calcium magnesium acetate and abrasives have both proven to be more benign alternatives to road salt. Calcium magnesium acetate costs $600 to $700 per ton versus about $25 per ton for road salt and is less corrosive.
- Abrasives such as sand or cinders can be used to improve traction in snowy conditions. They are significantly less costly but also less effective than salt, and they don't melt ice. Abrasives also may build up in water bodies and also may contribute to dust and associated air quality concerns.

Anti-icing, or preventative salting, involves the application of ice control chemicals before a storm to prevent ice from forming on roads. Approximately 70 percent less salt is needed to prevent icing than is needed to melt ice once it has formed. The material stays on pavement with little or no dispersion, and the anti-icing effects can last for a few days. The downside is that anti-icing measures may be taken in anticipation of a storm event that never materializes.

If road salt still proves to be the most feasible solution for snow and ice removal in your community, these practices can help reduce the environmental impacts:

- Provide adequate training for road work staff on minimizing the over-application of salt. The American Public Works Association provides training opportunities.
- Use correctly calibrated salt truck spreaders to apply only what is needed for expected temperature and precipitation conditions. Deicing agents should be applied at a rate that is governed by truck speed so that piles of salt do not accumulate at stop lights and signs.
- Prioritize heavily-traveled roads and intersections for salting. On less-traveled roads, switch to straight plowing and/or abrasives.
- Apply salt only to loosen snow and ice from the road, and follow with repeated plowing to remove it. Do not continue to apply salt without clearing the accumulated snow and ice first.
- Minimize salt and use alternative methods in especially sensitive areas such as near streams and wetlands, remnant prairies, and groundwater recharge zones. Even a small amount of salinity can seriously affect sensitive plant species.
- Store salt as far as possible from water bodies and other sensitive areas and recharge zones, outside of the floodplain, and on impermeable soils. Storage facilities should be built on an impervious surface to prevent infiltration. Salt piles should be placed on a concrete pad and covered, and any spillage during truck loading should be promptly cleaned up.

Success Stories

Elk Grove Village is replacing old salt trucks with new, computerized trucks that are calibrated to spread salt according to conditions and truck speed. This reduces the amount of salt used, the amount of salt being carried into Salt Creek during winter months, and the cost of salt to the Village.

Bioengineered Streambank Stabilization – Nature Does it Best

Why is this Important?

Salt Creek's banks experience unnaturally high erosion due to high water velocities and fluctuating water levels. Trees along streambanks shade out deep-rooted ground cover, weakening the bank and leading to erosion. Some invasive plant species such as reed canary grass have shallow root systems that do not stabilize stream banks. These impacts destroy natural habitats, impair water quality, damage property, and threaten infrastructure.

The conventional solution to bank erosion has been to armor channels with concrete, steel, or rock. While such techniques may reduce erosion locally, they destroy water habitat, and push water volume and velocity problems downstream. Natural stabilizing approaches reduce streambank erosion and failure through natural, vegetative and bioengineered methods, so-called because they incorporate living plant material rather than concrete or rip rap. Native plants have deep root systems that grow into soil and hold it in place. While conventional stabilization measures are strongest when installed and get weaker over time, bioengineered

Streambank stabilization using bioengineering methods.

installations get stronger over time. Natural, vegetative bank stabilization is self-sustaining and self-repairing, since the plants are adapted to grow along streambanks. It also provides much needed stream habitat for wildlife, and is a more attractive alternative to concrete or rock. Bioengineered stabilization methods are also substantially less expensive than conventional methods, most often costing significantly less than the $100 or more per linear foot for conventional methods.

Ideas for Implementation

A variety of factors including severity of erosion, bank slope, water flow velocities, adjacent land uses, and aesthetic considerations will determine which methods to use. The following techniques can be used alone or in combination.

Vegetative stabilization involves planting appropriate native vegetation along streambanks and in shallow

water. It is most effective on relatively flat slopes (less than 30 percent) where erosion problems are not severe. This practice may be used as a preventive measure to replace conventional turf grass before serious erosion occurs, and in conjunction with other structural bioengineering techniques for heavier erosion.

To be successful, the shade canopy along the stream bank must be reduced (to 50 percent or less) to allow more sunlight to penetrate and encourage plant growth. Plants can be introduced as plugs or seeds, though plugs are recommended for lower bank areas because they provide quicker stabilization and are less likely to wash away. Temporary soil stabilization measures such as erosion control matting should be used until the plants are fully established, particularly if seed is used. Vegetative stabilization can often be installed by volunteers and is relatively inexpensive, typically $10 to $20 per linear foot.

In stream corridors where water velocities are low, wetland plants can be useful in stabilizing bank toes and slopes to a depth of about one foot. Stream-adapted shrubs such as willow and dogwood can provide a substantial degree of streambank stabilization and erosion prevention. Their deep root systems bind soil and their thick vegetation deflects stream flows away from banks. They are often planted as dormant cuttings or live fascines stakes harvested and planted during winter months when the shrubs are dormant. Dormant cuttings are very cost-effective when compared to traditional techniques, costing only $10 to $20 per linear foot. Vegetative stabilization measures may need occassional maintenance over time so that sprouting stumps and shrub plantings do not grow into larger trees that overshadow the creek and banks.

In areas with heavier erosion potential and higher stream velocity, cuttings often function best when used in conjunction with structural bank stabilization techniques such as fiber rolls. Roughly the diameter of a basketball, **fiber rolls** are cylinders of compacted coconut husk fiber wrapped in coconut fiber mesh used to stabilize the toe of the bank. They are placed in shallow water at the base of the streambank, staked securely in place, and planted with water-tolerant shrubs and sedges. Fiber rolls trap eroding bank soils and keep larger sediment particles out of the stream, as well as provide a good medium for native plant growth. They are more effective at erosion control than vegetation alone, and can be used for areas with moderate erosion. The cost of fiber roll installations ranges from $25 to $35 per linear foot.

A single A-Jacks piece.

A-Jacks also provide bank toe stabilization and are appropriate for moderate- to high-velocity stream flow areas and steep slopes. A-Jacks are comprised of pre-cast concrete pieces that are fitted together and can be nested in a shallow trench along an eroding stream bank. After they are installed, spaces around them are filled with soil planted with water-tolerant shrubs and grasses. Over time, the roots of these plants wrap around the buried A-Jacks structures, creating a living erosion control system. Though A-Jacks installations are more expensive than fiber rolls, costing between $30 and $75 a linear foot, they are still significantly less expensive than traditional stabilization methods.

Stabilization using A-Jacks, fiber rolls, and erosion control matting.

Lunkers, used primarily for fish habitat and secondarily as a stabilizatioin measure, provide a significant degree of bank toe stabilization in moderate to heavy erosion areas. Lunkers are 4 to 8 foot long structures comprised of oak or Eco-wood (recycled plastic) planks stabilized by rebar stakes. They are installed in trenches at bank toes, which are then backfilled with soil, and they should always be under water, even during low flow conditions. Lunkers function best when used in conjunction with other bank stabilization practices, such as native vegetation, and benefit from relatively shallow grading (30 percent) on the streambanks above them. Due to their structure and placement at the bank toe, they also provide shelter and habitat for aquatic species. The material components of lunkers typically cost approximately $15 per linear foot, but excavation and installation makes their installation significantly more expensive.

Success Stories

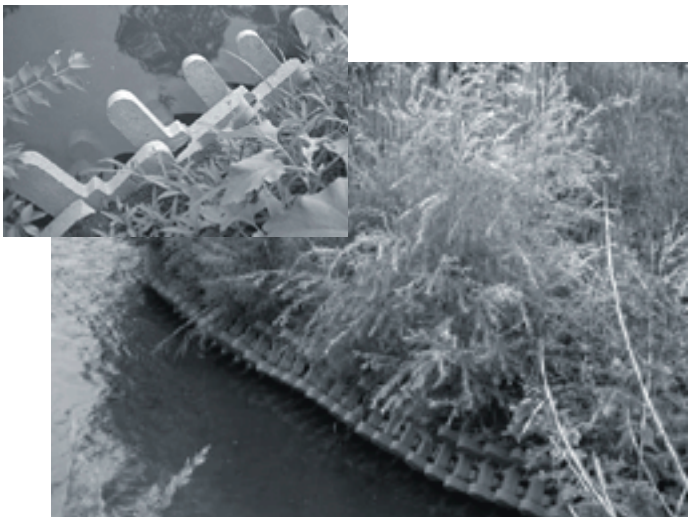
Numerous private backyards in Elk Grove Village were eroding into Salt Creek during flooding events. Water quality was diminishing due to increased sedimentation and fallen trees were creating snags that blocked water flow and required frequent removal by the Village. By the late 1990s, Village staff began looking into regulations and funding for remediation. An engineering study determined that a two-phase, $1.5 million program to use bioengineering to stabilize 14,700 linear feet of streambank was needed. Phase 1 of the project stabilized approximately 12,000 feet of streambank with A-Jacks, fiber rolls, lunkers, erosion control matting,

Elk Grove stabilization before new growth.

Elk Grove stabilization after new growth.

seeding and sod, and bank regrading. The Village also worked to educate property owners on the merits of maintaining vegetated buffers along the creek instead of typical turf grass lawns. Overall the project has been a success, and the Village hopes that the stabilized streambanks will continue to preserve private yards and improve water quality, fish habitat, and aesthetics. The first phase of the project, which is partially funded by the Illinois Environmental Protection Agency, cost $791,000, approximately $66 per linear foot.

The City of Wood Dale began its streambank stabilization work in 1992, when the degree of erosion damage by flood waters along public and private properties became too severe to ignore. A 1996 preliminary study by DuPage County called for a three-phase project to design and install appropriate bioengineering techniques



A-Jacks stabilizing a streambank in Wood Dale.

to stabilize 5,650 feet of streambank. The Illinois Environmental Protection Agency supplied $600,000 of project costs, while the City of Wood Dale, DuPage County, and the Kane-DuPage Soil and Water Conservation District picked up the rest of the total $1,000,000 cost. Wood Dale is currently setting aside funds for long-term maintenance of the newly-stabilized banks. The project has been a success on many levels: improved water quality, attractive private yards, and reduced sediment pollution to help the city comply with stormwater management regulations. This project, which employed A-Jacks, lunkers, fiber rolls, erosion control matting, live stakes, seed, sod, trees, and shrubs, resulting in a cost of approximately $177 per linear foot.

Naturalized Detention Basins – Improving the Function

Why is this Important?

Naturalized detention basins are similar to typical wet detention basins containing a permanent pool of water, but areas along the water's edges and the side slopes are planted with native plant buffers. Some naturalized detention basins include water of varying depth and wetland vegetation planted in the bottom and near the edges.

Like conventional detention basins, naturalized detention basins can effectively control runoff rates and volumes from both small and very large storm events. Unlike conventional detention, however, naturalized basins are more effective at filtering, settling, and absorbing stormwater runoff pollution. Some pollutants can be reduced by up to 90 percent. In addition to runoff remediation, naturalized detention basins provide valuable habitat for wildlife and aesthetic benefits for nearby property owners. Native vegetation planted around naturalized detention basins also discourages geese, whose unpleasant waste contributes a substantial amount of phosphorous to water.

Ideas for Implementation

Naturalized detention basins are appropriate for almost all development types requiring stormwater storage, but on very small sites rain gardens or infiltration practices may be more appropriate. Existing detention basins can be retrofitted to include features of a naturalized detention basin. However, these basins may be restricted to using the existing engineering specifications and design, though riprap and other artificial bank stabilization can be replaced with gentle slopes and native vegetation.

Natural detention basin at Prairie Stone business park in Hoffman Estates.

New detention basins present a good opportunity to use a highly natural design up front, including such elements as a basin bottom of varying depths, which replicates a natural pond. Wet detention basins should include sedimentation basins at major inlets, an area of open water at the basin outlet, and fairly flat, irregularly graded bottoms, all or part of which can be planted with wetland vegetation. Using native vegetation in these basins requires a good understanding of the hydroperiod (water depth and duration for a specific storm event) to determine which plants can survive in the basin, and where to plant aquatic wetland or upland species.

Naturalized detention basins often cost less than other basin techniques that utilize riprap for stabilization. Average cost ranges from $17,000 to $22,000 per acre-foot of active detention storage. Naturalized detention basins require annual mowing or burning of native vegetation around the edges, which, with the assistance of natural areas management personnel, typically costs roughly $500 per acre. Due to their substantial sediment removal capabilities, naturalized detention basins may require dredging, though this should only be necessary every 10 to 15 years.

Infiltration Practices – Let the Soil do its Thing

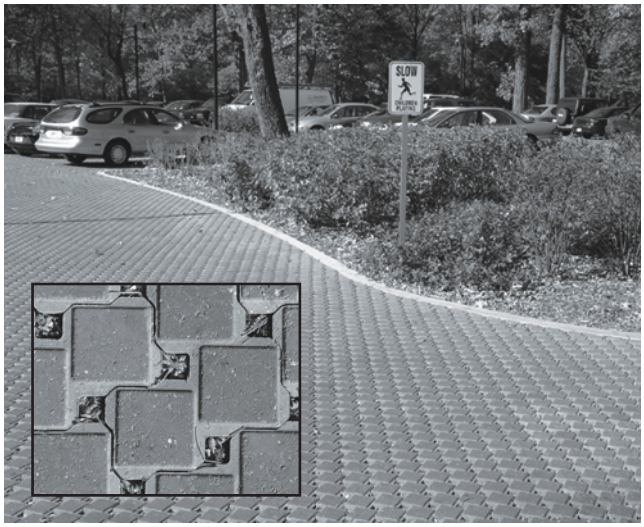
Why is this Important?

Runoff and non point source pollution are directly related to the amount of impervious surface in a watershed. Stormwater flows over asphalt and cement without being absorbed by the soil, picking up pollutants such as fertilizer, pet waste, and oil and grease on its way to nearby bodies of water. Well-designed infiltration practices can reduce the volume of stormwater runoff by allowing it to slowly infiltrate into the ground naturally and improve its quality. This can reduce the need for stormwater detention, reduce flooding, and enhance groundwater recharge. Infiltration practices can reduce both surface runoff volume and pollutants by up to 95 percent.

Ideas for Implementation

Techniques for minimizing the area of impervious surfaces, such as clustered development, narrower streets, and reduced setbacks, usually occur during the design stages of new development. However, it is often difficult to significantly reduce impervious area in urbanized watersheds such as Salt Creek, so reducing the effects of impervious surfaces by capturing, filtering, and infiltrating runoff becomes an important practice.

Permeable paving with blocks made of concrete, stone, or plastic allows rain and snowmelt to soak into the ground. Paving blocks contain openings that are filled with sand or soil to support grass or other vegetation. Runoff is trapped in the blocks' depressions and filters through the vegetation into the soil below. The benefits of permeable paving vary according to the size of the block openings and the infiltration capacity of the soil below; sandy soils are better. Runoff volumes from the blocks should be lower than from conventional pavement, but higher than from totally pervious areas.



Permeable pavers such as these at Dominican University are attractive and functional.

The DuPage County government complex uses permeable paving techniques for an emergency access road.

Because paving blocks are less strong and durable than normal paving, they are best suited to areas which receive relatively lightweight or infrequent traffic such as emergency access roads, walkways, and supplemental parking. Though experience in this region is limited, national usage indicates that paving blocks may cost as much as two to three times more than normal paving techniques, and most likely take longer to install. However, because they can substantially reduce runoff volume, stormwater infrastructure costs are lower, which can offset the higher installation costs. They also may require more frequent repair, and snow plowing may require extra care due to the slightly uneven surface of the blocks.

Though the complete removal of parking lots is often unfeasible, especially in a heavily urbanized watershed, the large amount of impervious area of parking lots makes them a good target for **parking lot retrofit** efforts. Reduced parking stall dimensions allow more cars to fit into existing space, lessens the demand for large parking lots. Shared parking between businesses

also can result in decreased demand for total parking area. For example, a bank parking lot can serve as parking for a restaurant in the evening hours.

One technique for reducing the impact of parking lots is to direct runoff into depressional medians or islands planted with native plants or through curb cuts into naturally landscaped areas instead of into storm sewers. This increases infiltration, reduces runoff pollution, and adds aesthetic features to parking facilities, and can be done on a small scale for nearly any parking lot. These medians also can be planted with trees that shade the lot in summer reducing the urban heat island effect. Parking lot retrofits are relatively inexpensive if the medians already exist, more expensive if they have to be installed. Maintenance requirements of these features are minimal – typically only weeding and debris removal are required.

Success Stories

The DuPage County government complex in Wheaton installed permeable paving blocks on an emergency access roadway. The roadway now produces less runoff and blends in with adjacent turf grass areas.

The Village of Brookfield Runoff Pollution Prevention project will reduce non point source pollution by treating runoff from the parking lot and the roof of the Village Hall (approximately 2.28 acres.) The Village is constructing a swale planted with native vegetation to filter pollutants and reduce the volume and velocity of runoff. A manufactured treatment system of oil and grit separators will further filter suspended sediment, metals, oil and grease, and nutrients and reduce pollutant loading in Salt Creek.

Green Roofs – The Earth above your Head

Why is this Important?

Green roofs are living systems of soil and vegetation that absorb stormwater and filter up to 95 percent of pollutants found in the atmosphere and rainwater. They also insulate the building below, reduce cooling and heating costs, and reduce the urban heat island effect of reflective roof materials. As an added bonus, roof life can be extended by 2 to 3 times with a green roof due to less exposure to the sun's radiation and fluctuating temperatures. In built up areas and properties with small lot sizes, green roofs can provide compensatory storage needed to comply with local stormwater management ordinances.

Ideas for Implementation

Green roofs can be implemented on many types of buildings, but the major considerations for selecting a green roof system are the structural integrity and load-bearing capability of the building, types of plants, soil depth and weight, waterproofing, and drainage system. The load-bearing capacity of the roof is usually the determining factor.

Two different types of green roofs are common. In *extensive systems* soil is 2 to 4 inches deep and weighs 12 to 40 pounds per square foot. Plants are short, have shallow root systems, and are easy to maintain. *Intensive systems* are more similar to typical residential gardens, with 6 to 12 inches of soil weighing 80 to 150 pounds per square foot. Plants can be deeper-rooted than for extensive systems, and trees and shrubs may be used.

Intensive systems absorb more stormwater and provide more insulation and water filtration than extensive systems.

Once established green roofs need little maintenance beyond that for a typical garden such as watering, weeding, and replanting. The roof waterproof membrane and drainage system should be inspected periodically to ensure proper function. Green roofs typically cost between $18 and $24 per square foot. Initial capital costs are offset by long-term cost savings for roof maintenance and heating and cooling costs. They can be installed as a retrofit to existing buildings or built as part of new construction.

Success Stories

The Villa Park Police Station was designed to be a model "green" building using innovative stormwater management practices. The site's stormwater management system features a porous paver parking area with an underground infiltration system to allow stormwater to percolate back into the groundwater table. The system also contains natural rain gardens to help maintain, cleanse, and infiltrate stormwater on site. A green roof will utilize plants in a lightweight growing medium to hold water in place for slow release through evaporation back into the air. The goal of the system is to produce zero runoff of stormwater from the site, which helps the development meet DuPage County stormwater runoff regulations. The project is budgeted to cost the same as a conventional design. The only identifiable cost which exceeded expectations was the porous pavers, but in light of their long-term durability as compared to asphalt, they were considered a valued addition to the project. The opportunity to show how these techniques for stormwater management could be used in infill development led to an Illinois Environmental Protection Agency grant to help design, build, and exhibit the techniques. In addition, DuPage County Department of Environmental Concerns awarded a grant to help quantify the runoff reduction resulting from the stormwater practices. The project will be an important opportunity to monitor these ideas and show their value in future developments in the region.

Resources

1. The Northeastern Illinois Planning Commission produces numerous resources related to water resource protection and natural resource management. Call the NIPC Publications Department at 312.454.0400 to order copies, or visit www.nipc.org.

- The Best Management Practice Guidebook for Urban Development (NIPC, 1992) provides proven techniques for reducing the impact of urban development on natural resources.
- The Conservation Design Resource Manual (NIPC, 2003) presents guidelines and language for updating municipal ordinances to incorporate conservation design.
- Draft Technical Policy Directive for Maintenance and Monitoring of Naturalized Stormwater Management Facilities Vegetated with Wetland and Prairie Plantings (NIPC and the Butterfield Creek Steering Committee, 1999) provides information on maintaining naturalized detention basins.
- Environmental Considerations in Comprehensive Planning – A Manual for Local Officials (NIPC, 1994) provides information on incorporating environmental protection into comprehensive plans.
- A Guide to Illinois Lake Management (NIPC, 1991) describes Illinois' lake ecosystems, problems and solutions, and costs and benefits of lake management.
- Landscaping Techniques and Materials for Urban Illinois Stream Corridors and Wetland Edges (NIPC, 1991) provides basic information, via case studies, about stream management and bank stabilization, buffer strips, greenway planning, landscape design, stream restoration, and recommended plant materials for such projects.
- Pavement Deicing: Minimizing the Environmental Impact (NIPC) provides information about the effects of and alternatives to ice as a deicing agent.
- Protecting Nature in Your Community (NIPC, 2000) provides numerous tools and techniques for preserving and enhancing local habitats, green space, and water quality.
- Reducing the Impacts of Urban Runoff: The Advantages of Alternative Site Design Approaches (NIPC, 1997) presents alternative development techniques that help protect water quality.
- Restoring and Managing Stream Greenways: A Landowner's Handbook (NIPC, 1998) provides information for stream management and protection.
- The Tool Kit on Natural Landscaping (NIPC, 1997) contains an attractive poster-brochure that summarizes benefits and principles of natural landscaping; a slide show; and Natural Landscaping for Public Officials: A Sourcebook (NIPC, 1996 and updated in 2004) that explains the principles, benefits and feasibility of natural landscaping, the role of local governments and leadership, tools and techniques for installation of natural landscapes, and case studies.
- The Urban Stormwater Best Management Practices for Northeastern Illinois (NIPC, 2000) is a course curriculum for designing and installing stormwater BMPs.

2. NIPC also publishes a number of model ordinances to help local governments protect water resources:

- Model Floodplain Ordinance (Illinois Department of Natural Resources and NIPC, 1996.)
- Model Stormwater Drainage and Detention Ordinance (NIPC, 1994.)
- Model Stream and Wetland Protection Ordinance for the Creation of a Lowland Conservancy Overlay District (NIPC, 1988.)
- Model Soil Erosion and Sediment Control Ordinance. NIPC 1991.
- Model Watershed Management Strategy for the Control of Urban Waterbody Use Impairments in Lake County, Illinois. NIPC 1994

3. Information is also available at the Salt Creek Watershed Network website at www.saltcreekwatershed.org.

4. The United States Environmental Protection Agency National Pollutant Discharge Elimination System (NPDES) website contains a number of fact sheets related to pollution control. The factsheets can be viewed at cfpub.epa.gov/npdes/stormwater/menuofbmps.

For *Post-Construction Storm Water Management in New Development & Redevelopment*, the following topics are addressed:

- Dry extended detention ponds
- Wet ponds
- Storm Water Wetlands
- Wet Detention Ponds
- Infiltration basin
- Infiltration trench
- Porous pavement
- Bioretention
- Storm water wetland
- Grassed swales
- Vegetative Swales
- Grassed filter strip
- On-Lot treatment
- Buffer zones
- Open space design
- Urban forestry
- Conservation easements
- Infrastructure planning
- Narrower residential streets
- Eliminating curbs and gutters
- Green parking
- Alternative turnarounds
- Alternative pavers
- BMP inspection and maintenance
- Ordinances for post construction runoff
- Zoning

For *Pollution Prevention and Good Housekeeping for Municipal Operations*, the following topics are addressed:

- Pet waste collection
- Automobile maintenance
- Vehicle washing

- Illegal dumping control
- Landscaping and lawn care
- Pest control
- Parking lot and street cleaning
- Roadway and bridge maintenance
- Septic system controls
- Storm drain system cleaning
- Alternative discharge options for chlorinated water
- Materials management
- Alternative products
- Hazardous materials storage
- Road salt application and storage
- Spill response and prevention
- Used oil recycling
- Materials management
- Environmental Effects from Highway Ice and Snow Removal Operations

5. The Low Impact Development (LID) Urban Design Tools website at www.lid-stormwater.net provides tools and techniques for water protection including bioretention, green roofs, permeable pavement, rain barrels and cisterns, soil amendments, and tree box filters.

6. The Stormwater Managers Resource Center at www.stormwatercenter.net provides a good selection of resources related to water quality protection and best management practices. The topic areas and specific resources are as follows:

Aquatic Buffers

- Buffer Zones Factsheet
- Stream Buffer Ordinances
- Practice articles on Aquatic Buffers
- Aquatic Buffers Slideshow

Better Site Design

- Better Site Design Factsheets
- Introduction to Better Site Design Slideshow
- Practice articles on Better Site Design

Erosion & Sediment Control

- Erosion and Sediment Control Factsheets
- Erosion and Sediment Control Ordinances
- Practice articles on Erosion and Sediment Control
- Erosion and Sediment Control Slideshow

Impacts of Urbanization

- Impacts of Urbanization Slideshow
- Indicator Profiles
- RSAT
- Simple Method
- Practice articles on the Impact of Urbanization

Land Conservation

- Open Space Ordinances
- Conservation Easements Factsheet
- Practice articles on Land Conservation

Land Use

- Introduction to the Eight Tools of Watershed Protection Slideshow
- Watershed-Based Zoning Factsheet
- Impervious Cover Model
- Practice articles on Land Use

Non-Stormwater Discharges

- Septic Systems Factsheet
- Illicit Detection Ordinances
- Practice article on Non-Stormwater Discharges

Restoration Practices

- Stream Restoration Factsheets
- Assessment of Urban Stream Restoration Practices Slideshow

Stormwater Management Practices

- The Manual Builder Section
- The Sizing of Stormwater Treatment Practices Slideshow
- Stormwater Retrofitting: The Art of Opportunity Slideshow
- Design of Stormwater Ponds and Wetlands
- Design of Vegetative Filtering Systems: Open Channels and Filter Strips Slideshow
- Stormwater Management Practices Factsheets
- Post-Construction Stormwater Management Ordinances
- Operation and Maintenance Criteria Ordinances
- Resource Protection Templates
- Practice articles on Stormwater Management Practices
- Stormwater Practices for Cold Climates

Watershed Stewardship

- Pollution Prevention Factsheets
- Practice articles on Watershed Stewardship
- Watershed Education Program Resources
- Watershed Education Slideshow

7. Additional Resources

- Better Site Design: A Handbook for Changing Development Rules in Your Community (Center for Watershed Protection, 1998) presents principles for reducing impervious cover, conserving natural areas, and reducing stormwater pollution from new development. See www.cwp.org.
- Chicago's Green Rooftops: A Guide to Rooftop Gardening. (City of Chicago Department of Environment, 2001) and other information. See www.cityofchicago.org/Environment/rooftopgarden.
- A Citizen's Streambank Restoration Handbook (The Izaak Walton League of America, 1995) helps residents and local government planners and officials plan and implement stream restoration projects. Visit www.iwla.org for more information.
- Controlling Urban Runoff: A Practical Manual for Planning and Designing Urban BMPs (Metropolitan Washington Council of Governments, 1987) provides detailed guidance for engineers and site planners on how to plan and design urban best management practices (BMPs) to remove pollutants and protect stream habitats. Visit www.mwcog.org for details.

- Deicing Salt and Our Environment (The Salt Institute, 1990) and The Snowfighter's Handbook (The Salt Institute, 1991) can be downloaded from www.saltinstitute.org.
- Fight Winter and Win: A Survival Guide for Public Officials (American Public Works Association, 1992) can be ordered from www.state.me.us/mdot/mlrc/mlrc-pubs.php.
- The Greenroof Industry Resource Portal is the international greenroof industry's resource and online information portal and can be accessed at www.greenroofs.com.
- The City of Chicago's online Guide to Disconnecting Downspouts can be viewed at www.cityofchicago.org/environment/html/DownspoutDisconnect.html.
- A Guide to Stormwater Best Management Practices: Chicago's Water Agenda (City of Chicago, 2003) can be downloaded from www.cityofchicago.org/Environment/html/WhatsNew.html.
- The Illinois Urban Manual: A Technical Manual Designed for Urban Ecosystems Protection and Enhancement (Natural Resources Conservation Service, 2003) provides detailed BMP information for soil erosion and sediment control, stormwater management, and special area protection. The manual can be viewed at www.il.nrcs.usda.gov/engineer/urban/index.
- The Indiana Drainage Handbook (Indiana Department of Natural Resources Department of Water, 1996) provides detailed information on drainage, including BMPs. The document can be downloaded at www.in.gov/dnr/water/surface_water/DrainageHandbook/.
- The Lake County Watershed Development Ordinance (Lake County Stormwater Management Commission, 1999) demonstrates one regulatory means of implementing water resource protection measures. www.co.lake.il.us/ smc/regulatory/wdo/default.asp
- Living With Wetlands. A Handbook for Homeowners in Northeastern Illinois (The Wetlands Initiative, 1998) is designed to provide basic information about wetlands as natural systems, wetland protection, and wetland management techniques. The handbook can be downloaded from www.co.lake.il.us/smc/publications.
- The United States Golf Association and the Audubon International are partnering to support the Audubon Cooperative Sanctuary Program for Golf Courses, and environmental stewardship program highlighting habitat and water resource protection on golf courses. Visit www.usga.org/green/environment/audubon_program.html for more information. The following golf courses in Illinois are currently enrolled in the program:
  - Aldeen Golf Club in Rockford
  - Arrowhead Golf Club in Wheaton
  - Aurora Country Club in Aurora
  - Biltmore Country Club in North Barrington
  - Brae Loch Golf Course in Grayslake
  - Cantigny Golf Club in Wheaton
  - Countryside Golf Course in Mundelein
  - Elgin Country Club in Elgin

  - Emerald Hill Golf & Learning Center in Sterling
  - Flossmoor Country Club in Flossmoor
  - Forest Hills Country Club in Rockford
  - Heritage Bluffs Public Golf Course in Channahon
  - Jackson Park Golf Course in Chicago
  - The Ivanhoe Club in Ivanhoe
  - Kemper Lakes Golf Course in Long Grove
  - Naperville Country Club in Naperville
  - North Shore Country Club in Glenview
  - Olympia Fields Golf Club in Olympia Fields
  - Park Hills Golf Club in Freeport
  - Pottawatomie Golf Course in St. Charles
  - Prairie Landing Golf Club in West Chicago
  - Rock River Country Club in Rock Falls
  - Sandy Hollow Golf Course in Rockford
  - Settlers Hill Golf Course in Batavia
  - St. Charles Country Club in St. Charles
  - Silver Lake Country Club in Orland Park
  - Skokie Country Club in Glencoe
  - The Den in Bloomington
  - Village Links of Glen Ellyn in Glen Ellyn
- The Urban Small Sites Best Management Practice Manual (Metropolitan Council Environmental Services, 2001) provides details on 40 BMPs that are aimed at managing stormwater pollution for small urban sites in a cold-climate setting. View the manual at www.metrocouncil.org/environment/watershed/bmp/manual.htm.
- The Native Plant Guide for Streams and Stormwater Facilities in Northeastern Illinois (United States Department of Agriculture, Natural Resources Conservation Service, 1997) provides information for selection and placement of native species and species mixes along streams and stormwater facilities. Contact 847.468.0071 in north Cook County or 630.584.7961 in DuPage County for the Soil and Water Conservation District.
- Nonpoint Source Pollution: A Handbook for Local Governments (American Planning Association Planning Advisory Service Report Number 476, 1998) provides officials with strategies and approaches to reduce the effects of nonpoint source pollution. Visit www.planning.org.
- The Practice of Watershed Protection (Center for Watershed Protection, 2000) is a manual covering many aspects of watershed protection and can be ordered from the Center's website at www.cwp.org.
- Rain Gardens of West Michigan provides good general information on rain gardens at www.raingardens.org.
- Rain Gardens: A household way to improve water quality in your community (brochure) and Rain Gardens: A how-to manual for homeowners (technical manual) are available for downloading from the University of Wisconsin-Extension website at clean-water.uwex.edu/pubs/raingarden/.
- Site Planning for Urban Stream Protection (Schueler, T.R., for the Metropolitan Washington Council of Governments, 1995) can be downloaded from www.cwp.org/SPSP/TOC.htm or purchased from the Center for Watershed Protection at 410.461.8323.

- The United States Environmental Protection Agency natural landscaping website provides information on landscaping with native plants. See www.epa.gov/greenacres.
- Wild Ones-Natural Landscapers is a non-profit organization that provides information and support for those interested in natural landscaping. Visit www.for-wild.org.

Acknowledgements

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Other Salt Creek Documents include:

Guide for Funding Watershed Improvements and Projects
Salt Creek Watershed Map

Northeastern Illinois Planning Commission
222 South Riverside Plaza
Suite 1800
Chicago, Illinois 60606
(312) 454-0400
www.nipc.org

Salt Creek Watershed Network
8738 Washington Avenue
Brookfield, Illinois 60513
(708) 485-4190
www.saltcreekwatershed.org

Illinois Environmental Protection Agency
1021 North Grand Avenue East
P.O. Box 19276
Springfield, Illinois 62794-9276
(217) 782-3397
www.epa.state.il.us

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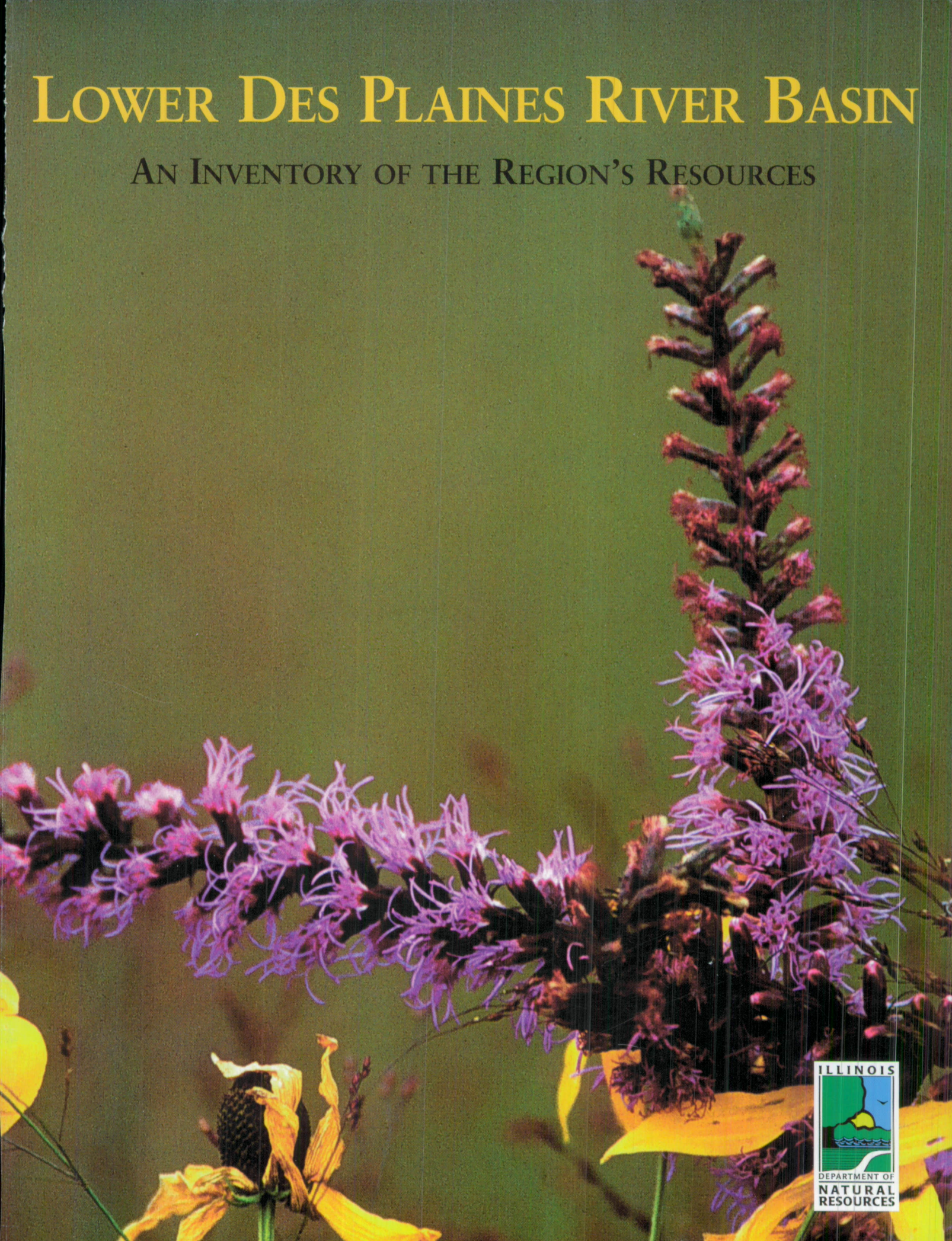
APPENDIX 12

Lower Des Plaines River Basin: An Inventory of the Region's Resources

Lower Des Plaines River Basin

An Inventory of the Region's Resources



ILLINOIS
DEPARTMENT OF
NATURAL
RESOURCES

About This Report

Lower Des Plaines River Basin: An Inventory of the Region's Resources is a product of the Critical Trends Assessment Program (CTAP) and the Ecosystems Program of the Illinois Department of Natural Resources (IDNR). Both are funded largely through Conservation 2000, a State of Illinois program to enhance nature protection and outdoor recreation by reversing the decline of the state's ecosystems.

Conservation 2000 grew out of recommendations from the 1994 CTAP report, *The Changing Illinois Environment*, the 1994 Illinois Conservation Congress, and the 1993 *Water Resources and Land Use Priorities Task Force Report*.

The Critical Trends report analyzed existing environmental, ecological, and economic data to establish baseline conditions from which future changes might be measured. The report concluded that:

- the emission and discharge of regulated pollutants over the past 20 years has declined in Illinois, in some cases dramatically;
- existing data suggest that the condition of natural systems in Illinois is rapidly declining as a result of fragmentation and continued stress;
- data designed to monitor compliance with environmental regulations or the status of individual species are not sufficient to assess ecological health statewide.

The Illinois Conservation Congress and the Water Resources and Land Use Priorities Task Force came to broadly similar conclusions. For example, the Conservation Congress concluded that better stewardship of the state's land and water resources could be achieved by managing them on an ecosystem basis. Traditional management and assessment practices focus primarily on the protection of relatively small tracts of land (usually under public ownership) and the cultivation of single species (usually game animals or rare and endangered plants and animals). However, ecosystems extend beyond the boundaries of the largest parks, nature preserves, and fish and wildlife areas. Unless landscapes are managed on this larger scale, it will prove impossible to preserve, protect, and perpetuate Illinois' richly diverse natural resource base.

Because more than 90% of the state's land area is privately owned, it is plainly impossible for Illinois governments to acquire resources on the ecosystem scale. Therefore, the Task Force and the Congress called for public agencies and private landowners to cooperate in a new approach to natural resource protection and enhancement. If landowners can protect, enhance, or restore precious natural resources through enlightened private management, the need for public acquisition can be reduced.

The Congress and the Task Force agreed that this new approach ought to be:

- organized on a regional scale;
- voluntary and based on incentives;
- guided by comprehensive and comprehensible ecosystem-based scientific information;
- initiated at the grassroots rather than in Springfield.

Finally, the Congress and the Task Force agreed that natural resource protection need not hamper local economic development but can enhance it through tourism and outdoor recreation.

CTAP described the reality of ecosystem decline in Illinois, while the Congress and the Task Force laid out principles for new approaches to reversing that decline. And Conservation 2000, designed to achieve that reversal, has implemented a number of their recommendations by funding several programs, one of which is IDNR's Ecosystems Program. The program redirects existing department activities to support new resource protection initiatives such as Ecosystems Partnerships. These partnerships are coalitions of local and regional interests seeking to maintain and enhance ecological and economic conditions in local landscapes. A typical Ecosystem Partnership project merges natural resource stewardship (usually within a given watershed) with compatible economic and recreational development.

(continued on inside back cover)

A Project of the Critical Trends Assessment Program

Lower Des Plaines River Basin

An Inventory of the Region's Resources

November 2003
Published by the Illinois Department of Natural Resources
Office of Realty and Environmental Planning

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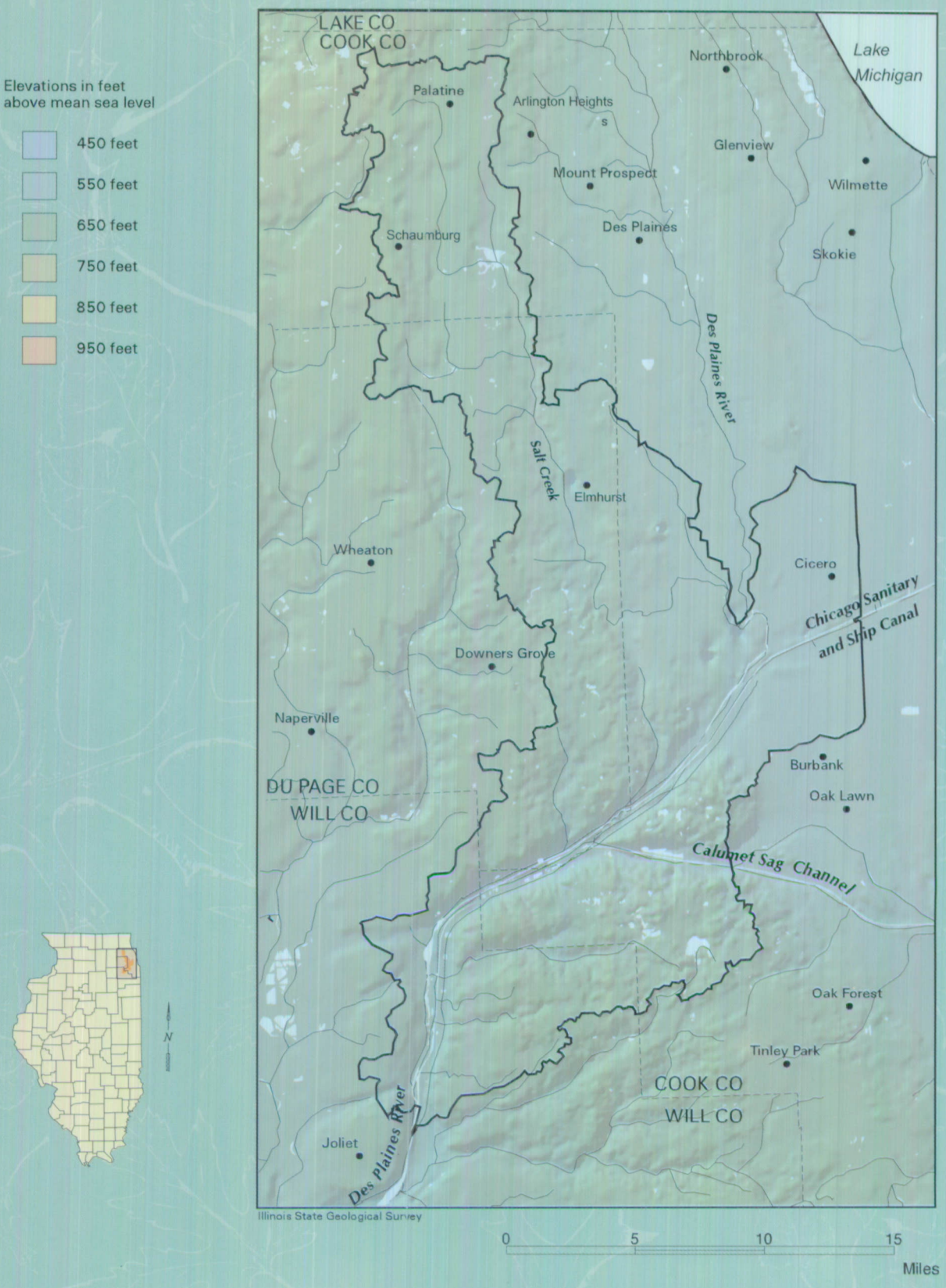
Landforms in the Lower Des Plaines River Basin



Lisa Smith • Illinois State Geological Survey

Michael R. Jeffords

The Illinois and Michigan Canal near Lockport

Lower Des Plaines River Basin

An Inventory of the Region's Resources

The Lower Des Plaines River basin contains a hidden world of ancient nature and history. Consider these snapshots:

- Not far from Woodfield Mall, muskrats escort your canoe as you paddle along a clear-water stretch of Salt Creek.
- Take a turn off the highway onto the Salt Creek Greenway and you are ages away from nearby downtown Oak Brook, riding an old Indian trail route through woods that include a Civil War-era Underground Railroad stop and a pioneer cemetery.
- Meander off the Harlem Avenue commercial strip and you enter the winding streets of Riverside, whose cathedral-like trees enable squirrels to leap from Harlem to the Des Plaines River in record time.
- Visit the Chicago Portage National Historic Site and stand on the same ground where all the discoverers, explorers, and creators of Chicago once walked.
- In the heart of the Palos Forest Preserves, you help cut back weeds in a wetland area, where sandhill cranes have returned because of restoration efforts.
- Visit Long Run Seep Nature Preserve and you might get a glimpse of the Hine's emerald dragonfly, one of the most endangered dragonflies in the U.S.

The natural forces that shaped this hidden world of the Lower Des Plaines watershed are millennia old and still at work. Many modern residents are now realizing that they are a part of those forces, and that the quality of the environment can be a major economic resource.

With riches to protect, the basin has become a national leader in nature preservation and restoration, with projects ranging from prairie and savanna restoration in the Palos Forest Preserves to the country's first National Heritage Corridor. The role is fitting because in times past the Des Plaines valley's barge and land traffic were the economic lifelines shaping Chicago as America's first major industrial metropolis. And for

thousands of years before that, the basin was an important transportation corridor for Native Americans, a gateway between the North Woods and the Gulf of Mexico.

The Lower Des Plaines watershed extends from north central Cook County down through eastern DuPage County and western Cook County into northern Will County. Major waterways include the Lower Des Plaines River (from the point where the Salt Creek joins it near the Brookfield Zoo), Salt Creek, and portions of the Chicago Sanitary and Ship Canal and the Calumet-Sag Channel. Smaller drainages include Addison Creek, Flag Creek, Sawmill Creek, and Long Run Creek. This 357-square-mile area unites some of Illinois' most affluent suburbs and historically important industrial towns. Twenty-eight Superfund sites, one of them on the National Priority List, are reminders of the area's heavily industrial past. While the leading economic sector today is services, manufacturing is still prominent.

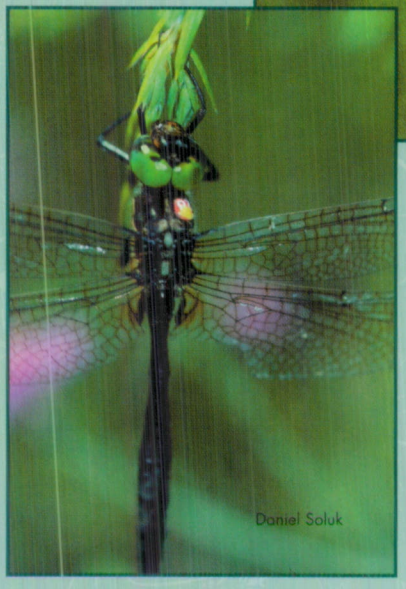
Human development now covers two-thirds of the area's surface. Preglacial bedrock supplied the material for this growing metropolis. The area is famous for its old limestone buildings and also supplied the stone for Chicago landmarks such as the Water Tower. The basin's one million residents comprise 9% of the state's population and at least one of every ten employed Illinoisans works here.

A Relatively Young Landscape

The landscape of the Lower Des Plaines basin, relatively new in terms of geologic time, was formed by the last glacial advance that ended about 13,000 years ago. The region includes some outstanding scenery and geological features such as seeps, ponds and hills formed by glaciers, and dolomite cliffs and canyons eroded into ancient Silurian dolomite more than 400 million years old.

The eastern part of the Lower Des Plaines region includes part of the flat basin of ancient Lake Chicago and, to the west of that, closely grouped moraines (ridges formed by glacial action). In the western portion, the moraines were dissected by the rivers of water overflowing from lakes formed by melting glaciers. The northern third of the basin features broader upland areas, level between tributaries and somewhat poorly

Daniel Soluk



Daniel Soluk

Hine's Emerald Dragonfly

The Lower Des Plaines River is one of the few places in the country where breeding populations of Hine's emerald dragonflies are found. The state- and federally-endangered Hine's emerald dragonfly has in some ways become a symbol of conservation in the Lower Des Plaines valley. The Hine's emerald—so named because of its brilliant emerald green eyes—appears to begin its life in cool shallow, slow-moving waters, spring-fed marshes, and seepage sedge meadows. Most larvae have been found along the edges of and in the shallow water of narrow channels. Adults usually fly over open areas of herbaceous vegetation and feed in meadows and fields that have groups of shrubs near breeding habitat (small areas of shallow water). Adults may live from five to six weeks.

drained. Historically these featured farmland, but their latest crops are subdivisions and strip malls.

The ridge that divides the Chicago River drainage basin from the Des Plaines basin runs through the eastern half of the region, but the two dominant moraines are the Valparaiso Morainic System, along the Des Plaines River valley's western edge, and the Tinley Moraine, near the DuPage-Cook County line. The Salt Creek Valley runs between those two glacial ridges. Areas of high topographic relief such as bluffs — some of which feature bedrock outcrops — are found along the major water drainages, especially the Des Plaines.

Much of the quality of life on the surface is determined by ancient developments far beneath. As staff of the Illinois State Geological Survey noted in their assessment of the area: "Imagine that you are standing on the valley side overlooking the floodplain of the Des Plaines River.... Now imagine that 100 feet below that surface... lies another landscape, complete with rolling hills, flat plains, and valleys." This is the bedrock surface, which plays a key role in "where flora and fauna prefer to grow, where streams flow, where humans build their homes, factories, cities, and where land is set aside for parks and natural areas."

In the southern part of the Lower Des Plaines basin, for example, bedrock valleys that were buried and changed by the glaciations in the past 1.5 million years lie below the modern Des Plaines River, with the modern streams eroding into them. Within the bedrock layers, far below the bedrock surface, lies the massive Deep Tunnel and Reservoir Project (TARP) that was started in the late 20th century to reduce flooding and pollution in northeastern Illinois. The tunnels were bored into the solid dolomite to act as storage reservoirs during storms. The tunnel follows the northern portion of the Chicago Sanitary and Ship Canal, which was built at the turn of the 20th century to reverse the flow of the Chicago River and carry sewage away from Lake Michigan and into the Mississippi watershed.

The clay-rich local soils tend to absorb water relatively slowly and flooding has been a concern dating back to early settlement. Since much of the land has been paved over in the last century, flooding is often exacerbated and numerous detention basins have been built to alleviate the problem. Erosion exposes clayey sediments that are unlikely to be revegetated naturally. As a result, preserving and restoring wetlands in river and stream lowlands is considered an important priority in the basin. With the help of native plants, wetlands cleanse runoff and slow its flow, allowing it to seep naturally into the ground and replenish groundwater supplies.

Historically, residents have made extensive use of these groundwater resources. The water levels in wells open to the deepest aquifers were drawn down sharply during the middle decades of the 20th century as suburbs grew and more and more wells were constructed. The high content of dissolved minerals in the water from the deep aquifers and the high cost of pumping water from great depths caused many communities to begin piping in water from Lake Michigan in the 1980s. Given the limits to lake water use, however, clean groundwater resources could be crucial again in future years.

A relatively large portion of the area has very thin soils. Romeoville

The Area at a Glance

Δ The Lower Des Plaines watershed extends from north central Cook County down through eastern DuPage County and western Cook County into northern Will County.

Δ Major waterways include the Lower Des Plaines River (from the point where the Salt Creek joins it near the Brookfield Zoo), Salt Creek, and portions of the Chicago Sanitary and Ship Canal and the Calumet-Sag Channel.

Δ The 357-square-mile area unites some of Illinois' most affluent suburbs and historically important industrial towns. Twenty-eight Superfund sites, one of them on the National Priority List, are reminders of the area's heavily industrial past.

Δ While the leading economic sector today is services, manufacturing is still prominent, providing almost one in five jobs in 1995.

Δ Human development now covers two-thirds of the area's surface. The basin's one million residents comprise 9% of the state's population and at least one of every ten employed Illinoisans works here.

Δ The landscape of the Lower Des Plaines basin was formed by the last glacial advance that ended about 13,000 years ago.

Prairie (Will County) and Lockport Prairie (Cook County) Nature Preserves show the distinctive meld of wetland communities that thrive in these shallow-soil areas. The preserves are located on a former outlet that drained ancient Lake Chicago into the Mississippi River drainage basin. Large volumes from the overflow and draining of Lake Chicago eroded glacial deposits and carved bluffs up to 50 feet high, leaving bedrock exposed or covered only by thin tattered remnants of the thick glacial blanket. A tapestry of wet- to mesic-dolomite prairie, marsh, sedge meadow, fens, floodplain forest, and a high-quality spring can be found at the preserves.

A Prairie River

Before modern canal building and the Deep Tunnel, area waterways were forged with the natural landscape in the wake of the last Ice Age. During the high point of glacial melting, Lake Michigan was as much as 30 feet higher than today, expanding into what is now called Lake Chicago, which covered the eastern part of the Lower Des Plaines basin. As its shores receded over time, separate drainage basins developed for the lake and the Des Plaines River, the latter of which became the outflow or "drain" for the glacial waters. In the resulting post-glacial topography, water tends to drain from the west to east, as well as from north to south. Before urbanization, lowlands remained largely wetlands, and before it was channelized the Des Plaines behaved like a meandering "prairie river," splitting and flowing toward both Lake Michigan and the Illinois River during flood events.

Michael R. Jeffords

Black-crowned night-heron

Today in its lower basin, the Des Plaines River flows in a channelized course parallel to the Sanitary and Ship Canal. North of Lockport, the river's channel is flanked by 80–100 foot natural bluffs within 2,500 feet of each bank of the river, reminders of this section's past as the key drainage point for ancient Lake Chicago — the "Straits of Gibraltar" for the Great Lakes. Salt Creek remains less naturally well defined in its valley, which did not share meltwater draining duties on a similar scale. Lacking the bluffs of the Lower Des Plaines, it has been a source of more persistent flooding problems for suburbs now along its banks.

Besides the river and its tributaries, there are also 18 lakes in the region greater than 20 acres — some of them naturally occurring, some manmade — with hundreds more small lakes and ponds, most under two acres each. Most of the larger lakes in the southern Lower Des Plaines area are former quarry pits.

Michael R. Jeffords

Cranberry Slough, a Palos wetland

Approximately 10,633 acres of wetlands remain in the area, about 21% of the presettlement amount. Disappearing with the wetlands were the nesting areas of now rare bird species. A symbol of the lost avian resources of that wetlands system is the Eskimo curlew, now thought to be extinct or nearly so, which was found in the area near Summit in 1872. State-threatened or endangered species that historically have bred in the Lower Des Plaines wetlands include the pied-billed grebe, the American bittern and least bittern, the black-crowned night-heron and yellow-crowned night-heron, the northern harrier, king rail, common moorhen, black tern, and yellow-headed blackbird. Many of these are now rare or no longer breed here, but are considered good candidates for returning to the area as wetlands are preserved and restored.

Among birders, the region is notable for its potential as habitat for wetland bird communities. Despite rapid development, there are still some 7,500 acres of nonforested wetlands in the basin, including notable marshes and sloughs in the Palos Preserves, in

Natural Areas and Nature Preserves

Illinois Nature Preserves

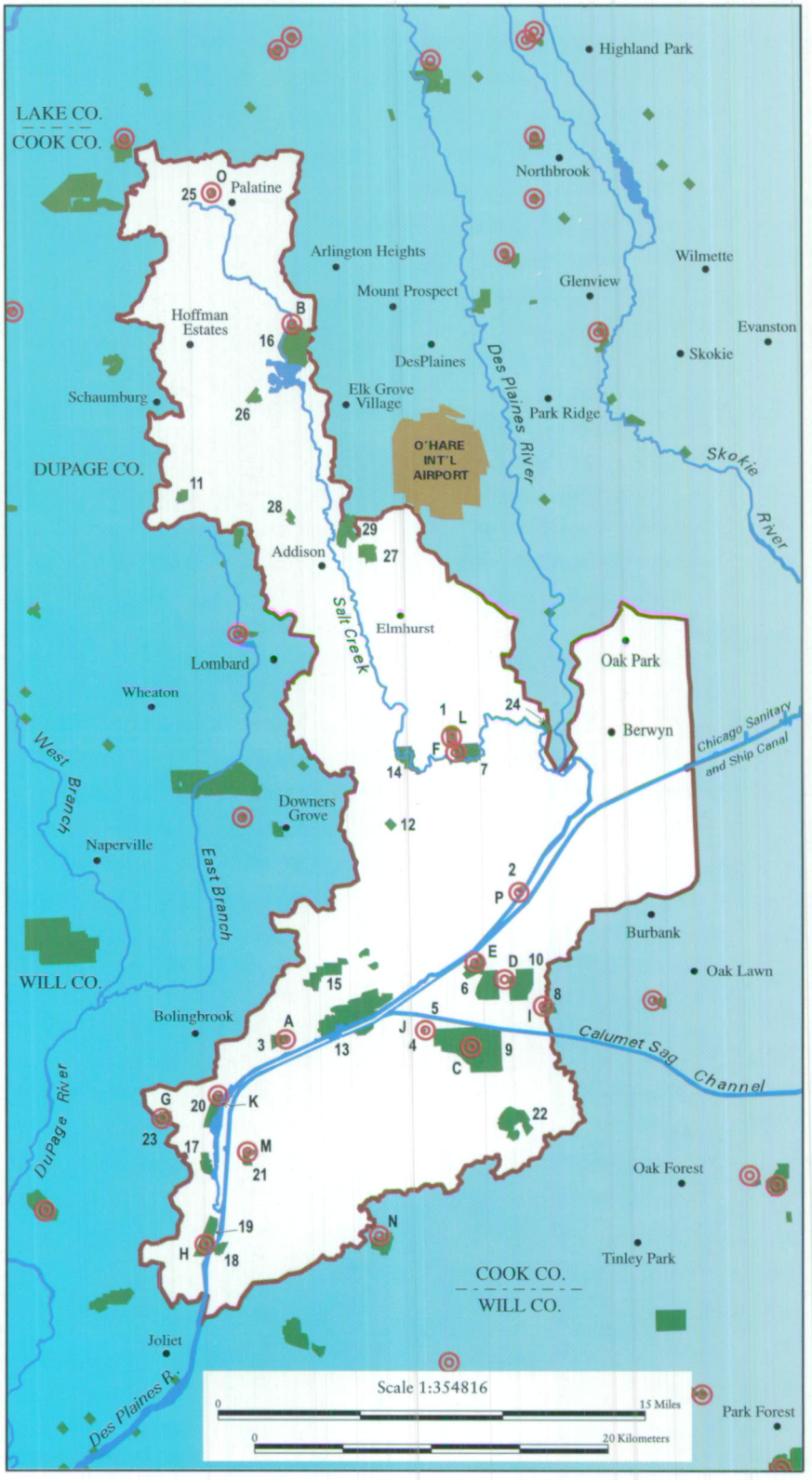
- A Black Partridge Woods
- B Busse Woods
- C Cap Sauers Holdings
- D Cranberry Slough
- E Paw Paw Woods
- F Salt Creek Woods
- G O'Hara Woods
- H Lockport Prairie
- I Palos Fen
- J Sagawau Canyon
- K Romeoville Prairie
- L Wolf Road Prairie
- M Long Run Seep
- N Messenger Woods
- O Palatine Prairie
- P Santa Fe Prairie

Illinois Natural Areas Inventory Sites

1 Wolf Road Prairie Nature Preserve
2 Santa Fe Prairie
3 Black Partridge Woods
4 Sagawau Canyon
5 Little Red Schoolhouse Nature Center
6 Paw Paw Woods
7 Salt Creek Woods Nature Preserve
8 Palos Fen Nature Preserve
9 Cap Sauers Holdings Nature Preserve
10 Cranberry Slough Nature Preserve
11 Meacham Grove
12 Hinsdale Prairie
13 Lemont East Geological Area
14 Fullersburg Woods Nature Center
15 Waterfall Glen
16 Busse Woods
17 Material Services Prairie
18 Lockport Prairie East
19 Lockport Prairie
20 Romeoville Prairie
21 Long Run Seep
22 McGinnis Slough
23 O'Hara Woods Nature Preserve
24 Brookfield Prairie
25 Palatine Prairie
26 WGN Marsh
27 Wood Dale Grove
28 Songbird Slough
29 Fischer Woods

Nature preserve

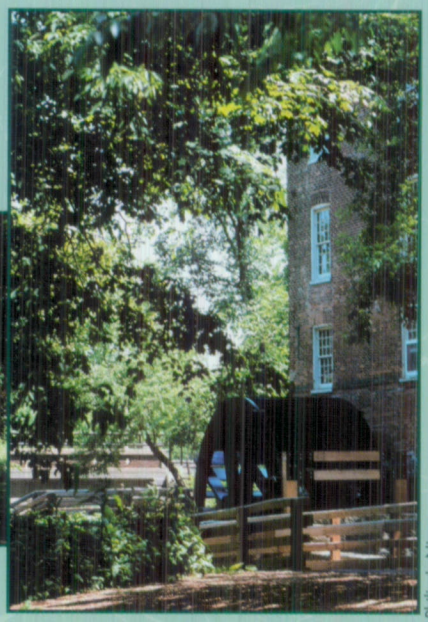
Natural area



Salt Creek

Philip L. Nixon

Canada geese and mallards on bank of Salt Creek



Philip L. Nixon

Graue Mill

The 29-mile Salt Creek corridor centers on a waterway that in recent times has been much-maligned for its flooding and poor water quality, although some old-timers who grew up in vanished rural areas of DuPage and Cook counties still recall swimming in it regularly.

Today, a new band of residents, allied with government officials and scientists, are at work to make such memories realities again by turning Salt Creek into a recreational waterway for the hundreds of thousands of suburbanites living in its watershed.

By some measures, they are not very far from their goal. Members of the new public-private Salt Creek Watershed Network have been sponsoring canoe and kayak trips down the clear waters of the creek just downstream from the Busse Woods dam in Elk Grove Village, where the sandy bottom is visible and muskrats often accompany boaters.

Another favorite canoeing area is downstream of Graue Mill in the Hinsdale-Oak Brook area, where the creek flows through forest preserves and great blue heron, deer, beaver, and migratory warblers are visible to water travelers.

The long-term restoration envisioned by the Network (which includes about 150 resident-activists and a similar number of staff from public sector agencies) involves mitigating flood damage and improving water quality. Projects and plans to restore the creek that are well underway include: wetland restoration, developing "water trail" facilities for canoes and kayaks, proposed dam removals and, long-term, improving sewer systems that now dump polluted water into Addison Creek, which feeds into Salt Creek.

In addition:

- the Network has prepared a watershed plan, and is working on educational projects such as its "Experience Salt Creek" water tours,
- DuPage County has drafted a Salt Creek Greenway Plan,
- Sierra Club volunteers are helping to monitor water quality in the DuPage section of the creek,
- the Northeastern Illinois Planning Commission and Openlands Project has released a "water trails" report that suggests how recreational facilities can be easily developed along the creek, and
- the Illinois Environmental Protection Agency is preparing a study that itemizes significant sources of pollution.

It was in the 1960s and the 1970s that the creek's problems multiplied. Accelerated development and channelization led to greater storm runoff while pollution from factories and sewage systems continued. Environmental regulations since then have helped spur improvements, and citizen activism has made tangible progress in restoration. Sometimes fearsome floods have been a factor as well. In Elmhurst, for example, wetlands were restored where flood-damaged property that lay in the creek's floodplain was purchased.

Jeff Swano of Brookfield, executive director of the Salt Creek Watershed Network, says that stormwater runoff remains the creek's number 1 problem, although the Deep Tunnel and Reservoir Project (TARP) and Elmhurst quarry floodwater storage projects should reduce both flooding and pollution in the creek.

It is not just the creek that is getting attention as a recreation corridor. Two decades ago Westchester resident Valerie Spale and a friend decided that something more than piecemeal work was needed to preserve the Salt Creek corridor as an attractive place to live. Local forest preserve and park district officials got involved and today a 30-mile trail is being developed that links Cook and DuPage counties along the creek, ultimately with links to the Illinois Prairie Path and the Illinois & Michigan Centennial Trail. The former Mayslake monastery and grounds have also been preserved as a key cultural center and park along the corridor.

"The whole thing is win-win," says Swano, who cites increased property values and stronger local economies as results of turning Salt Creek from a flood-prone problem into a community asset. "Recreation is its greatest potential."

forest preserves in the Schaumburg-Elk Grove Village area, and at Campbell Slough near Addison.

Other animals dependent on wetlands have also had a difficult time in recent decades. For example, the prognosis for reptile and amphibian populations in the valley is poor unless steps are taken to restore fishless woodland ponds, wet-prairie habitats, and river wetlands to replace breeding grounds and habitat lost to development. Even so, 16 amphibian and 22 reptile species are known or likely to occur here, 39% and 37% of the state's amphibian and reptile species, respectively. These include the state endangered spotted turtle and Blanding's turtle as well as the state threatened Kirtland's snake.

The Area at a Glance

Δ The region includes some outstanding scenery and geological features such as seeps, ponds and hills formed by glaciers, and dolomite cliffs and canyons eroded into ancient Silurian dolomite more than 400 million years old.

Δ The eastern part of the Lower Des Plaines region includes part of the flat basin of ancient Lake Chicago and, to the west of that, closely grouped moraines. In the western portion, the moraines were dissected by the rivers of water overflowing from lakes formed by melting glaciers. The northern third of the basin features broader upland areas, level between tributaries and somewhat poorly drained.

Δ The clay-rich local soils tend to absorb water relatively slowly and flooding has been a concern since early settlement. In the last century much of the land has been paved over, exacerbating flooding.

Δ In the southern part of the Lower Des Plaines basin, far below the bedrock surface, lies the massive Deep Tunnel and Reservoir Project, which stores excessive water during storms.

Δ While numerous detention basins have also been built to alleviate the problem, preserving and restoring wetlands is a priority to slow runoff.

Michael R. Jeffords

The muskrat is one of several species that depends on wetlands for survival.

Urban pollution has also degraded the habitats of aquatic species such as fish and mussels; as a result, the basin has a low diversity of aquatic life today. While records show 49 species of fish, 31 of mussels, and 10 of larger crustaceans, some species have disappeared in recent decades. Mussel populations have become very small, with only one of the 31 species having been collected in the past 20 years. Two state-endangered fishes recorded here have not been seen since 1901.

Over-enrichment from treated and untreated sewage is a major threat to the Lower Des Plaines River, which since the turn of the 20th century has been a conduit for most of Chicago's (usually treated) wastewater. Up to 1996, the Illinois Environmental Protection Agency (IEPA) had assessed 213 river miles in the watershed and rated them as being good or fair. Fourteen percent were found to meet the needs of designated uses, about half were impaired to a minor degree, and 17% were severely impaired. However, according to the Illinois Natural History Survey, "with improvements in water quality, species that have been extirpated could return and natural communities could become reestablished in areas where they have been eliminated or altered." Indeed, fish communities in the Des Plaines have registered increases in tandem with water-quality improvements in recent years. Of 13 Lower Des Plaines subwatersheds prioritized by IEPA, 11 — including the Des Plaines and Salt Creek — were identified as restorable.

A few ways to further that goal: discharge wastewater into treatment lagoons and wetlands before releasing it into area waterways; use primary and secondary detention basins before releasing stormwater into the waterways; remove some additional dams that degrade water quality by obstructing flow.

Some ecologists hope to see the royalty of Midwestern aquatic life — namely the river otter — regularly playing in streams in the basin again. At the top of the aquatic food chain, the otter's ability to survive is the ultimate test of a water system's restoration to health. The animal is now modestly spreading along selected streams with help from a state release program. The last official sighting of an otter in the Lower Des Plaines basin was in 1988 at Waterfall Glen Forest Preserve in DuPage County. However, until further advances are made — in restoring wetlands, treating water, and reducing siltation and chemical runoff — residents sadly may still have to go to the Shedd Aquarium to see live otters in person, in a "prairie river" exhibit modeled in part on the Des Plaines River as it once was.

Natural Communities Weakened

In the past 200 years, native ecosystems have been weakened or destroyed by agents such as industry, agriculture, urbanization, fire suppression, fragmentation and destruction of habitat, grazing by farm animals and by deer without predators, and the "invasion" of aggressive non-native species such as buckthorn, garlic mustard and multiflora rose. Together they have reduced the number of plant species flourishing in the area.

Very few acres of native ecosystems remain intact. Only a dozen high-quality natural sites totaling some 516 acres have been identified in the basin. The potential for ecological restoration is huge, however, especially given the significant preserve landholdings in the area. Prairie and savanna restoration projects are already underway at the Palos Forest Preserves in Cook County.

Because of the distinctive topography of the area, and its large amount of preserved land relative to areas of the state that were more intensively farmed, the highly urbanized basin retains a relatively high number of rare plant species. There are 10 state-threatened, 15 state-endangered, three federally threatened, and one federally endangered plant species in the valley. Most of these plants live in prairie and wetland habitats. For example, the basin supports a rare pop-

ulation of the nearly extinct prairie bush clover, which is considered endangered nationwide.

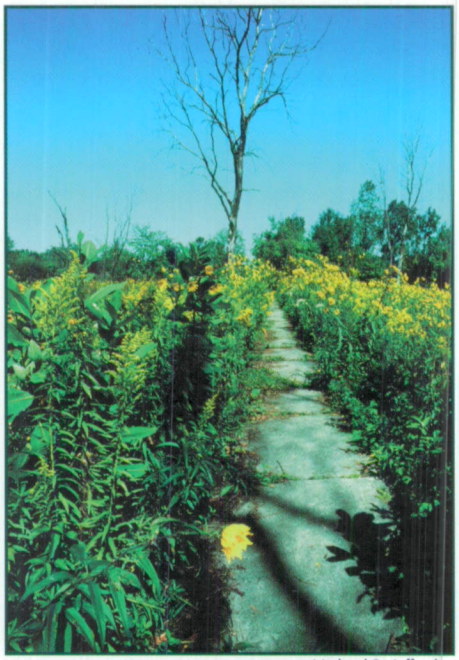
Midwesterners often do not realize that the disappearance of the prairie in the 19th century occurred so quickly and on such a large scale that it was comparable to the disappearance of tropical rain forest ecosystems in South America today. It was the first example of large-scale destruction of a major continental ecosystem by a modern industrial society. Some of the most important remnants of that ecosystem, alongside some of the most important efforts to preserve and revive it, are in northeastern Illinois and especially in the Lower Des Plaines River basin.

More than four-fifths of the Lower Des Plaines basin was covered by tallgrass prairie at the time of Euro-American settlement, but only small acreages of high-quality prairie remain in the region today. About half of this is categorized as mesic prairie, which grows in moderately wet soil and was originally only a small percentage of the whole area. Farming has destroyed almost all of the tallgrass prairie on rich silt-loam soils, which once dominated the area. In addition, only traces of rarer gravel, dolomite, and shrub prairies are left.

The biodiversity of such prairie remnants, however, illustrates the rich ecological resources that many naturalists and volunteers are working to restore in areas throughout the Lower Des Plaines basin. Wolf Road Prairie, for example, is the site of a subdivision that was never completed and whose empty lots form an island of native plants that survived the urbanization around them. The 80-acre prairie preserve boasts a species list of 320 plants and includes the only remaining high-quality undegraded mesic prairie found in the basin. Those 37 acres also constitute almost half of all high-quality prairie remaining in the area. The state endangered and federally threatened prairie white-fringed orchid is found there.

Rare Prairies

Other types of high-quality prairie preserved in the Lower Des Plaines basin include one acre of dry-mesic gravel prairie and four acres of mesic gravel prairie (22% of all that remains in the state) at Santa Fe Prairie Nature Preserve. The Santa Fe Prairie, which lies on the edge an industrial park between an interstate, a railyard, and the Des Plaines Diversion Channel, has been called the birthplace of the prairie restoration movement. The prairie was virtually untouched when the Atchison, Topeka & Santa Fe Railway acquired it in 1886, and it remained that way for



Michael R. Jeffords

Wolf Road Prairie

The Area at a Glance

Δ A relatively large portion of the area has very thin soils. Romeoville Prairie and Lockport Prairie Nature Preserves show the distinctive meld of wetland communities that thrive in these shallow-soil areas. A tapestry of wet- to mesic-dolomite prairie, marsh, sedge meadow, fens, floodplain forest, and a high-quality spring can be found at the preserves.

Δ In its lower basin the Des Plaines River flows in a channelized course parallel to the Sanitary and Ship Canal. North of Lockport, the river's channel is flanked by 80–100 foot natural bluffs within 2,500 feet of each bank of the river, reminders of this section's past as the key drainage point for ancient Lake Chicago.

Δ Salt Creek remains less naturally well defined in its valley, and is a source of more persistent flooding problems for suburbs now along its banks.

Δ There are 18 lakes in the region greater than 20 acres — some of them naturally occurring, some man-made — with hundreds more small lakes and ponds, most under two acres each. Most of the larger lakes in the southern Lower Des Plaines area are former quarry pits.

The Area at a Glance

Palos Restoration

The 14,000-acre Palos Preserve in Cook County is perhaps the most famous single natural tract in the Lower Des Plaines region. Cited by the 1939 WPA Guide to Illinois as a landmark for hikers, it is known for its seasonal carpets of wildflowers and its migratory birds.

Yet even here, in this extensive piece of wildness in the southwest suburbs of Chicago, the ecological effects of surrounding urbanization have taken their toll.

Native ecosystems such as oak savanna and prairie became degraded because of the "island" effect of surrounding development and the absence of fire. Naturalists and ecological activists determined that active human involvement was needed to preserve the region's native plant and animal species. In the early 1980s, volunteers began tending sites in the area.

Dennis Nyberg, volunteer steward at Cranberry Slough Nature Preserve in the Palos complex, says restoration management has dramatically improved both the appearance and ecology of the Cranberry Slough area. Volunteers have burned, trimmed and girdled brush and trees, primarily to reduce non-native buckthorn and to re-open vistas between sedge meadows, wetlands and oak woodlands, which had become overgrown due to a lack of fire and invasion of foreign species. They also planted native species and repaired eroded natural ponds.

Since the 1980s, Nyberg estimates that he has visited the site about 50 times each year, for a few hours per visit. That's typical of the dedication of many volunteer restorationists. He feels his efforts paid off when sandhill cranes returned to nest at the slough in 1998, probably the first cranes to nest in Cook County since the Civil War. The impressive birds prefer open wetlands surrounded by oak savanna, the 19th-century landscape of the slough area, brought back by restoration.

Restoration work in the Palos area has been politically controversial, however. In 1989 a major project was announced for Swallow Cliff Preserve, but the tree cutting called for in the project became a focus of criticism, leading to a 1998 moratorium on volunteer restoration work in preserves. Some restrictions have since been lifted, but Nyberg and other volunteers say more education is needed that will persuade the public of the benefits of restoration management.

According to Nyberg, restored native ecosystems tend to be more biologically diverse than unmanaged overgrown tracts. While aspects of the work at Swallow Cliff could have been done differently (removing fewer trees for example), he says the areas that were worked on in the 1990s do show greater ecological health today than they would have otherwise.

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the next 75 years as the railway protected it with benign neglect. Sante Fe Prairie was approximately 40 to 50 pristine acres when Dr. Floyd Swink first conducted a botanical survey in 1946. Thirteen years later biologist Robert Betz visited Dr. Swink at the prairie. "The Santa Fe Prairie was the first real prairie I'd seen and the plant variety astounded me....That first visit with Floyd Swink was what made me decide to dedicate the next 35 years of my life to prairies. He transmitted his excitement as he found each rare prairie plant. I began speaking to groups about saving our vanishing prairies...."

Several years later, when Betz learned that the prairie might be destroyed so that an industrial park could be developed, he began a decades-long campaign to save the site. By 1976, when the Illinois Natural Areas Inventory described the prairie as being a high-quality natural community, only 11 acres remained. The rest had been filled in by the railroad to raise the grade above floods.

Michael R. Jeffords

Blue flag is a common wetland plant found in the basin.

Two decades later, the Burlington Northern Santa Fe Railway—the owner at the time—donated the prairie to the I&M Canal Civic Center Authority. So, after 35 years of effort by many people and organizations, the Santa Fe Prairie was designated an Illinois Nature Preserve on October 3, 1997.

The moist calcareous (calcium rich) soils and gravelly well-drained portions of the preserve host more than 250 native plant species—the variations in soil moisture support far greater diversity than would generally be expected of a site its size. Characteristic plants in dry-mesic gravel prairies include little bluestem, porcupine grass, few-flowered goldenrod, scurf-pea, and stiff sandwort. In mesic gravel prairies are found big bluestem, prairie brome grass, low calamint, common valerian, and prairie dock. Common to both communities are Indian grass, prairie dropseed, and small skullcap. Because of habitat degradation and quarrying, the gravel prairie is one of the rarest prairie communities in Illinois.

Examples of rare dolomite prairies can be seen near Lockport and Romeoville. Dolomite prairie occurs where dolomite, a form of limestone, is usually less than a few feet below the soil surface. Only 42 acres remain in the state; most sites were either destroyed by quarrying for flagstone or mining for gravel. The lakeside daisy, a federally endangered species, is unique to this type of prairie. It is only found at one location in Will County, where it has been reintroduced into the Lockport Prairie. It is also being grown in a recreated prairie at the Morton Arboretum. Slender sandwort, a state endangered species associated with this type of prairie, is also found at four sites within the basin.

Δ Approximately 10,633 acres of wetlands remain in the area, about 21% of the presettlement amount. Disappearing with the wetlands were the nesting areas of now rare bird species such as the pied-billed grebe, the American bittern and least bittern, the black-crowned night-heron and yellow-crowned night-heron, the northern harrier, king rail, common moorhen, black tern, and yellow-headed blackbird.

Δ Despite rapid development, there are still some 7,500 acres of non-forested wetlands in the basin, including notable marshes and sloughs in the Palos Preserves, in forest preserves in the Schaumburg-Elk Grove Village area, and at Campbell Slough near Addison.

Δ Sixteen amphibian and 22 reptile species are known or likely to occur here, 39% and 37% of the state's amphibian and reptile species, respectively. These include the state endangered spotted turtle and Blanding's turtle as well as the state threatened Kirtland's snake.

Δ Because urban pollution has degraded the habitats of aquatic species such as fish and mussels, the basin has a low diversity of aquatic life today. While records show 49 species of fish, 31 of mussels, and 10 of larger crustaceans, some species have disappeared in recent decades. Mussel populations have become very small, with only one of the 31 species having been collected in the past 20 years.

The Area at a Glance

Michael R. Jeffords

Prairie dock

Lockport Prairie contains eight acres of high-quality mesic dolomite prairie, the only remnant left in Illinois. A rare plant that can be found in mesic dolomite prairies is the leafy prairie clover, a federal endangered species that is known to survive only in areas along the Des Plaines River and in limestone glades in central Tennessee and northern Alabama. Likewise the only examples of high-quality wet-mesic dolomite prairie remaining in Illinois are found at four sites in the Lower Des Plaines basin.

Ironically, it is the native plants at such remnant sites that are now, in a popular sense, considered "exotic" due to their rarity. Yet their very names evoke a kind of ecological poetry: rattlesnake master, compass plant, purple coneflower, black-eyed Susan, big bluestem, and prairie dock, to name a few. Such names come with stories, too. The compass plant, for example, has a pattern of leaf growth that was used by travelers to orient themselves in prairie and savanna.

Unlike prairies, forests today cover more of the land than they did at settlement. Approximately 16.5% of the area was once forested; now about 19.4% (44,430 acres) is forested, but only about 432 acres are high quality and undegraded. About 94% of the forest is upland forest; some of the threatened and endangered species found in these types of forests include the northern grape fern, pretty sedge, dwarf raspberry, and Canada violet.

Northern flatwoods in Illinois are found on poorly drained sites within the Valparaiso Morainic System, largely within this basin. A total of 31 acres of high-quality northern flatwoods (36% of the statewide total) have been identified at a single site here. Common canopy species include swamp white oak, white oak, and Hill's oak. Threatened or endangered species that can be found here include Tuckerman's sedge, purple fringed orchid, and dwarf raspberry.

Two savanna community types were probably present in the basin, the dry-mesic and mesic savanna. Savanna, characterized by scattered trees and grasses and sedges (intermediate between open prairie and closed woodland), and former savanna still occur here where restoration is underway. Although none are high-quality, some degraded remnants have strong restoration potential.

The basin's natural history of rich prairie, wetland, and forest resources made it a haven for birds, with 150 species recorded as breeding in the basin. Today, however, 61 of these are either locally extinct or rare during the breeding season, probably due to loss of habitat.

Still, the area contains a greater diversity of bird species than most urbanized areas in Illinois, in part a legacy of days when prairies and savannas dominated the basin and wetlands stretched from the Lower Des Plaines into the vast Calumet Marshes, linking Lake Michigan and the Illinois Valley for birds as well as for people.

The region's large forest areas, notably the Palos Preserves, are a signifi-

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The prairie white fringed orchid is a state endangered and federally threatened species.

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The fox squirrel is one of several mammals that do well in urban areas.

cant home for birds, and the potential for reintroducing state-threatened and endangered species in woods and prairies is thought to be still good. Such birds include the osprey and red-shouldered hawk, Swainson's hawk, the upland sandpiper, the brown creeper, short-eared owls, and the loggerhead shrike. Some of these have not been found breeding in the area in decades, but could return to restored woods, savannas, and prairies in the next century.

The area could also be restored as an important bird migration corridor, naturalists say, by using techniques such as improving oak woods and shrubby areas on developed lands and linking existing preserves into larger habitats.

Despite the urbanization—two-thirds of the area is developed—some resilient species have expanded their numbers greatly in recent decades. White-tailed deer, coyotes, and raccoons have thrived as suburban residential areas and parklands have replaced industrial and agricultural land in the area. (Farmland declined from 46% of the basin's land cover in 1925 to 16% today; manufacturing employment fell by 12% since 1980.) The numbers of these species may be higher now than they were 200 years ago. Other mammals that do well in urban areas include the Virginia opossum, eastern cottontail, fox and gray squirrels, red fox, and striped skunk. The area is also home to eight species of bats, 19 rodents, and five insectivores.

The exploding deer population has caused new problems; deer have become a nuisance in developed areas and a danger on roads and highways, as well as a threat to native plants in prairie and savanna remnants, which they often over-graze. Still, there is a certain thrill for humans to spot deer in suburban neighborhoods, especially given the spread of development around the region.

In the Forefront of Preservation

The presence of wandering deer in suburbia is a symptom of massive habitat destruction and fragmentation and loss of predators, and should be more a source of sadness than of wonder or annoyance, however. Indeed, the changes that have occurred in the basin during the past 200 years, by their very size and speed, have stimulated a human response that places the Lower Des Plaines River basin in the forefront of nationwide efforts to preserve and restore regional landscape.

Stephen Packard, who helped galvanize restoration efforts in the Palos Preserves and other areas in northeastern Illinois, put it this way: "When you see something about to pass out of existence, it calls out to you."

Statistics illustrate the problem. In northeastern Illinois as a whole, be-

Δ Up to 1996, the IEPA had assessed 213 river miles in the watershed and rated them as being good or fair. Fourteen percent were found to meet the needs of designated uses, about half were impaired to a minor degree, and 17% were severely impaired. Of 13 Lower Des Plaines subwatersheds prioritized by IEPA, 11 — including the Des Plaines and Salt Creek — were identified as restorable.

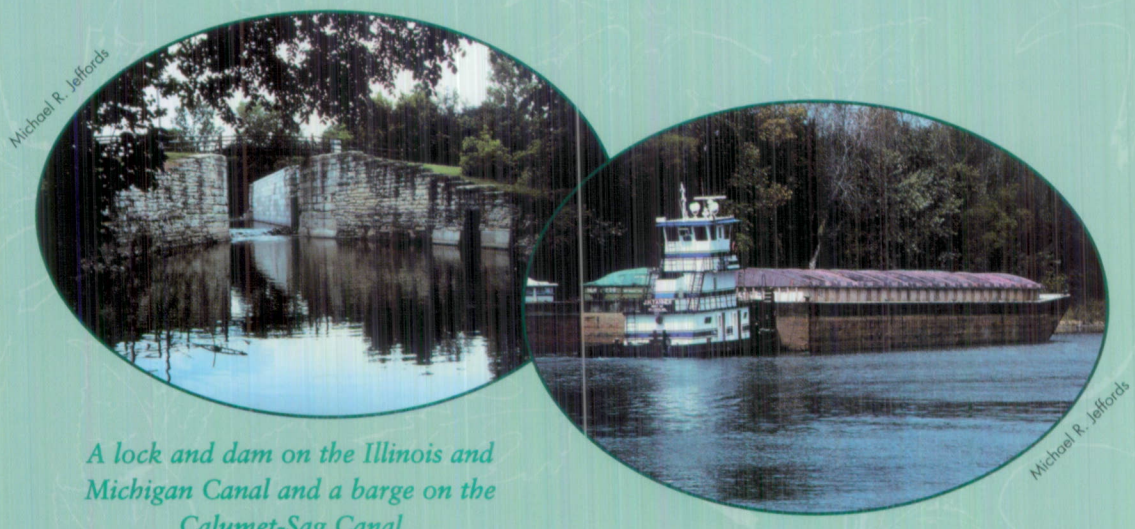
Δ The basin retains a relatively high number of now-rare plant species. There are 10 state-threatened, 15 state-endangered, three federally threatened, and one federally endangered plant species in the valley. Most of these plants live in prairie and wetland habitats.

Δ A dozen high-quality natural sites, totaling some 516 acres, have been identified in the basin.

Δ More than four-fifths of the basin was covered by tallgrass prairie at the time of Euro-American settlement, but only small acreages of high-quality prairie remain in the region today. About half of this is categorized as mesic prairie, which grows in moderately wet soil and was originally only a small percentage of the whole area.

The Area at a Glance

Canal Gateway



A lock and dam on the Illinois and Michigan Canal and a barge on the Calumet-Sag Canal

After the Ice Age, the next single greatest impact on the Lower Des Plaines landscape was the construction of manmade waterways, which in turn led to the growth of Chicago and the suburban development now filling the valley. Today, historic preservation and interpretation of the canal corridor is helping to turn the basin into a tourist destination.

The area is distinctive as an intersection of four major manmade waterways: The Illinois & Michigan Canal, built in the 1840s, the Sanitary & Ship and Calumet-Sag canals, built around the turn of the 20th century, and the Lower Des Plaines itself, which, while a natural river originally, has been significantly redirected and channeled by human efforts in the past century and a half. This complex of constructed waterways, which still carries barge traffic and made the Chicago River "run backwards" into the Des Plaines for sanitation purposes, grew up around a key topographical break in the continental divide between the Atlantic watershed of the Great Lakes and the Mississippi watershed of the Illinois and Des Plaines rivers.

The Chicago Portage National Historic Site, one of only two Illinois sites with the highest National Park Service designation (the other being the Lincoln Home in Springfield), marks that connection point. At the site—at Harlem Avenue and 51st Street—stands a 1990 statue that depicts the French explorers Marquette and Joliet with their anonymous Native American teen-aged guide, who showed them the "secret" of the portage long-used by area Indians.

In the late 17th century Marquette and Joliet were the first Europeans to report using the portage, and they envisioned cutting a canal between the South Branch of the Chicago River and the Des Plaines in the area where the portage park stands today.

In pre-urban times, it was possible to paddle down the South Branch of the Chicago River to what at times was a continuous body of water known as Mud Lake, stretching from around Kedzie to Harlem. A small creek ran from the east side of Harlem into a little bend in the Des Plaines River (which has since been diverted away from the historic site). Through this portage, explorers, traders, and missionaries could paddle or carry their canoes from one watershed to the other. The Saganaskee Valley provided another such route between the Little Calumet and Des Plaines rivers.

Gary Mechanic, general manager of the Illinois & Michigan Canal Civic Center Authority, notes the organization is raising funds to develop the portage site as an interpretive center for the area's rich history. While other landmarks of Chicago's pioneer past are buried under concrete or drained away, the portage site is a rare remnant of that history, Mechanic explains, but "none of that history is interpreted" for visitors yet.

The portage site is centrally located in the Illinois & Michigan Canal National Heritage Corridor, which runs from LaSalle-Peru to Chicago, but has its heart in the lower Des Plaines basin in the Lockport-Lemont-Summit area. Designated in 1984 and the first of its kind in the nation, the national heritage corridor was founded largely through the efforts of Gerald Adelmann, who grew up in Lockport where his family has lived since pioneer times. Seeing the area's industrial economy on the skids in the late 1970s, Adelmann helped pioneer the idea of using history and natural landscape as the basis for a new kind of economy, based both on tourism and nurturing a quality of life that can attract investment and skilled workers in a new global marketplace. The corridor is "an on-the-ground example of regional approaches, of voluntary incentive rather than a regulatory program," to foster "smart growth" (and combat sprawl) in a way suited to the politics of the Chicago area, Adelmann says.

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Chicago Portage National Historic Site

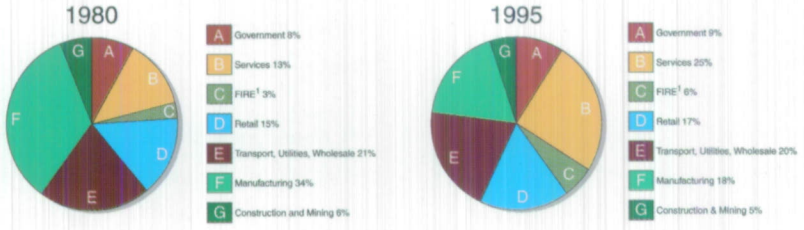
Δ Wolf Road Prairie boasts a species list of 320 plants and includes the only remaining high-quality undegraded mesic prairie found in the basin.

Δ Other types of high-quality prairie preserved in the Lower Des Plaines basin include one acre of dry-mesic gravel prairie and four acres of mesic gravel prairie (22% of all that remains in the state) at Santa Fe Prairie Nature Preserve. The preserve hosts more than 250 native plant species—the variations in soil moisture support far greater diversity than would generally be expected of a site its size.

Δ Examples of rare dolomite prairie can be seen near Lockport and Romeoville. Dolomite prairie occurs where dolomite is usually less than a few feet below the soil surface. Only 42 acres remain in the state; most sites were either destroyed by quarrying for flagstone or mining for gravel. The lakeside daisy, a federally endangered species that is unique to this type of prairie, is only found at one location in Will County, where it has been reintroduced into the Lockport Prairie.

The Area at a Glance

Employment Distribution



[1] Finance, insurance, and real estate

tween 1970 and 1990, population grew by only about 4%, yet acres of developed land increased by about 50% and now cover 66% of the land. Whereas prairie covered some 83% of the basin 175 years ago, remnants are found on only a few acres today. This area of the "meeting of the waters," the link between Lake Michigan and the Mississippi Valley, now has no waterways rated as high-quality. It has no state-designated biologically significant streams. Natural wetlands have all but disappeared, and development has increased flooding problems along Salt Creek.

The basin's very geography as a funnel for intercontinental transportation accelerated its industrialization and urbanization. Construction of the Illinois & Michigan Canal in the 1840s (a transportation predecessor to the Sanitary & Ship Canal) led to a string of canal towns exchanging raw materials and manufactured goods with Chicago and Great Lakes markets. The railroads followed the canal. And where the French explorers La Salle, Joliet and Marquette once followed Native American guides, today truckers cross the continent on I-80 and I-55, and commuters ride the Heritage Corridor train line into Chicago. The second busiest airport in the world, O'Hare International, is also located in the Lower Des Plaines River basin.

Meanwhile, the pre-European history of the area lies largely hidden from modern residents. Native people, including some effigy mound-building cultures, lived in the Lower Des Plaines basin for some 12,000 years before the arrival of Euro-Americans. At the turn of the 20th century amateur archaeologists Charles Dilg and Albert Scarf surveyed Indian sites in the region, as did forest preserve historian Ed Lace in the latter part of the century. Most archaeological work in recent years has occurred in response to state and federal regulations on new construction projects. In comparison with some other regions in Illinois, archaeologists have done only a relatively small amount of work in the basin, examining only about five percent of its area, mainly in isolated sites. No specific museum or center in the basin is devoted to its rich Native American historical past.

Yet the experience of seeing nature as Native Americans once did remains imaginable to modern residents who encounter restored savanna and preserved prairie remnants in bloom. The diversity of colors, smells, butterflies, and other life forms is dramatically different from the often overgrown and less diverse woods that are now more common in local preserves. English emigrant George Flower described what the experience was like when he wrote of seeing his first prairie in 1817:

"Bruised by the brushwood and exhausted by the extreme heat we almost despaired, when a small cabin and a low fence greeted our eyes. A few steps more, and a beautiful prairie suddenly opened to view. At first, we only received the impression of its general beauty....Its indented and irregular outline of wood, its varied surface interspersed with clumps of oaks of centuries' growth, its tall grass, with seed stalks from six to ten feet high, like tall and slender reeds waving in a gentle breeze, the whole presenting a magnificence of park scenery, completely from the hand of Nature, and unrivaled by the same sort of scenery by European art. For once, the reality came up to the picture of imagination....the beautiful flowers, the transparent atmosphere, the soft zephyrs wafted from the South in bland and rich volume, all combine to impress the enchanted beholder with pleasing feelings, even to delusion."

Efforts to preserve the natural biodiversity glimpsed by Flower began early in the Lower Des Plaines basin, led by a few visionary immigrants of European background. In one sense a hopeless fight against larger currents of history, these efforts nonetheless helped shape the current resurgence of interest in ecological preservation and restoration in the area. In fact, such activists helped pioneer the nascent science of ecology in the late 19th and early 20th centuries, struck as they

were by the disappearance of native ecosystems in the region.

In the post-Civil War era, the landscape architect Frederick Law Olmsted helped design what has since become a federally designated landmark, the town of Riverside. It was one of the first attempts to "get back to nature" on the part of residents of industrial America. The community's wooded curving streets and common park areas, incorporating the river, sought to combine human culture and nature. It showed future generations how development and a sense of place could be nurtured together.

The experience of Riverside, together with Frank Lloyd Wright's perfection of his Prairie Style of architecture in Oak Park and environs, also in the Lower Des Plaines basin, influenced American development patterns nationwide. Paradoxically, the work of both men provided inspiration for ecological approaches to human community alongside suburban development that often isolated and distanced people from nature and one another. Wright's architecture, aimed at developing an organic style of design suited to Midwestern landscape, became in popularized form the prototype for the suburban ranch home. Olmsted's model became in degraded form the model for suburban subdivisions.

It was a sometime partner of Wright's, landscape architect Jens Jensen, who helped focus attention on larger issues of conservation in the Des Plaines basin. Bringing from Denmark a more communitarian vision of conservation, Jensen, and other Chicago-area conservationists, notably architect Dwight Perkins, helped establish a ring of preserves around Chicago, including the landmark corridor of forest preserves along the Des Plaines River and Salt Creek. Their success is measured partly by the increase of forestland in the basin, from an estimated 16% of land area in presettlement times to about 19% today. About 10% of the area's land (23,202 acres) is now held in county conservation preserves including—in addition to the largest, Palos Preserves—Salt Creek Preserve and Waterfall Glen and the smaller preserves such as Burr Oak, Mayslake, Wood Ridge and Songbird Slough.

In the 1920s, Jensen went even further, proposing a public plan for preserving nature and people together in the Des Plaines basin, in a quilt of forest and farmland, parks and communities, stretching from the river into Chicago's industrial West Side. Without such natural connections, he warned, the inner city would suffer. He was right, but the plan was never implemented.

Michael R. Jeffords

The green frog is common in ponds and streams with aquatic vegetation.

A New Generation

Today, nearly a century after Jensen's agrarian vision was swept aside by real-estate development, his basic vision of reuniting nature and human community has been taken up by a new generation of valley residents. Heron rookeries, a reconstructed French voyageur en-

The Area at a Glance

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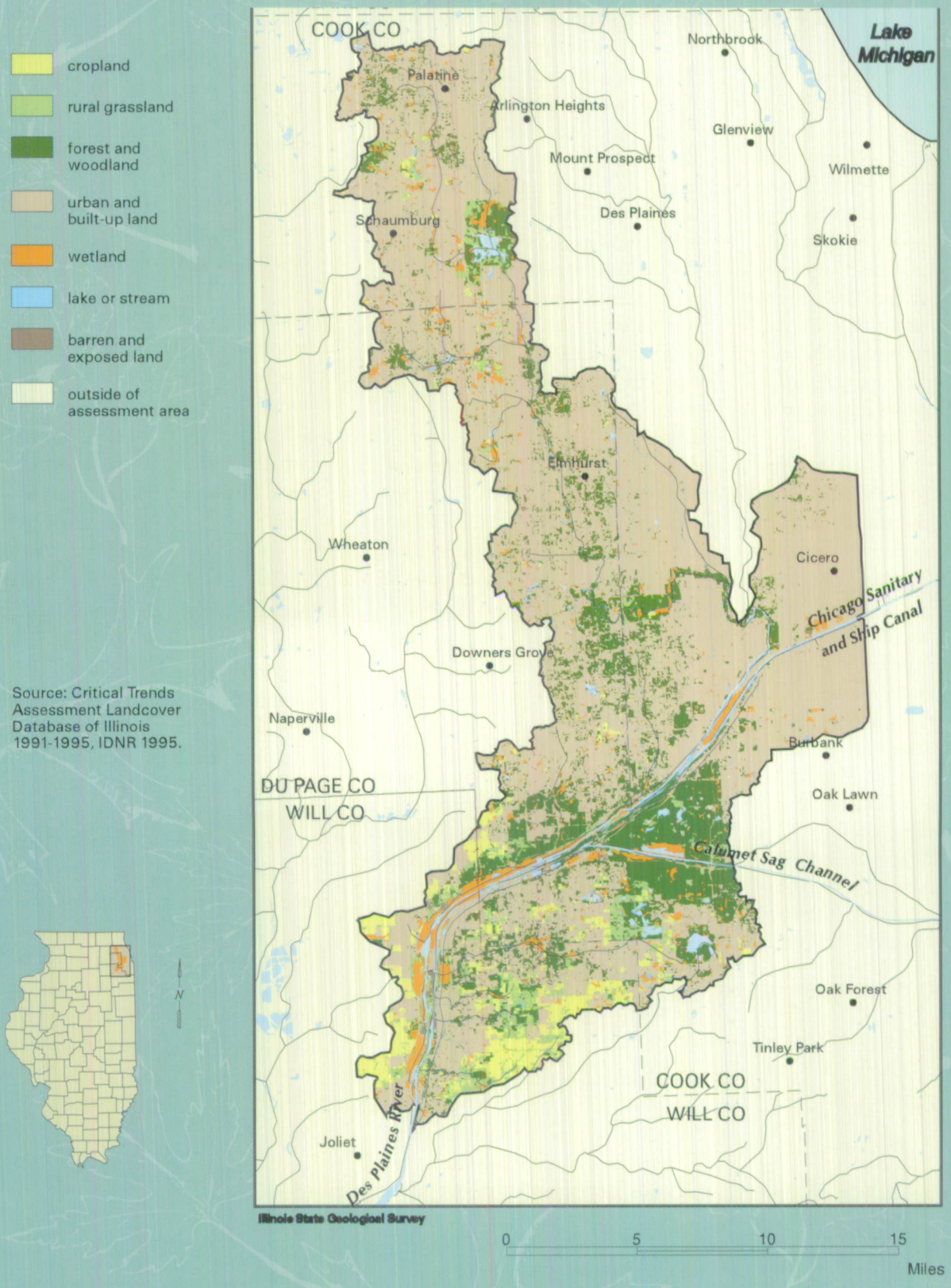
Δ Despite the fact that two-thirds of the area is developed, some resilient species have expanded their numbers in recent decades. White-tailed deer, coyote, and raccoons have thrived as suburban residential areas and parklands have replaced industrial and agricultural land. (Farmland declined from 46% of the basin's land cover in 1925 to 16% today; manufacturing employment fell by 12% since 1980.)

Land Cover



Source: Critical Trends Assessment Landcover Database of Illinois 1991-1995, IDNR 1995.

Lisa Smith • Illinois State Geological Survey

Michael R. Jeffords

Great blue heron

campment, restored prairie and savanna tracts, ever-more-popular bike trails, and restored historic downtowns now mingle with often-rusted remains of the Industrial Revolution. In the last quarter of the 20th century, in addition to earlier county preservation efforts, 16 state nature preserves and 29 state natural areas have been established within the Lower Des Plaines watershed. These high-quality natural areas include remnants of upland and floodplain forests, prairie, marsh, and cliff ecosystems.

Even more important in terms of larger regional vision for the landscape was the founding of the Illinois & Michigan Canal National Heritage Corridor in the 1980s. The first of its kind in the nation, it seeks to coordinate both public and private preservation efforts in protecting a distinct natural and historic landscape along a broad corridor that stretches from La Salle-Peru in the west to Lake Michigan in the east. The heart of the corridor lies in the Lower Des Plaines basin.

The corridor helped stimulate the growth of other "greenway" projects in the basin. For example, in the 1980s the Salt Creek Greenway project gained attention as a national model. Today, a regional greenways plan developed by the Northeastern Illinois Planning Commission and the Openlands Project and a regional water-trails plan encourage further development of river corridors for recreational and ecological purposes.

Specifically, the Northeastern Illinois Regional Water Trail Plan calls for converting 90% of Salt Creek's 29 miles into water trails by making minor improvements such as new or improved signs and bank stabilization. Currently the Lower Des Plaines counties rate among the lowest in terms of boat ownership per capita in Illinois. Voyageur re-enactors and local canoe enthusiasts may soon have more company when they trace the routes of early French and Native American water travelers.

Δ Other mammals that do well in urban areas include the Virginia opossum, eastern cottontail, fox and gray squirrels, red fox and striped skunk. The area is also home to eight species of bats, 19 rodents, and five insectivores.

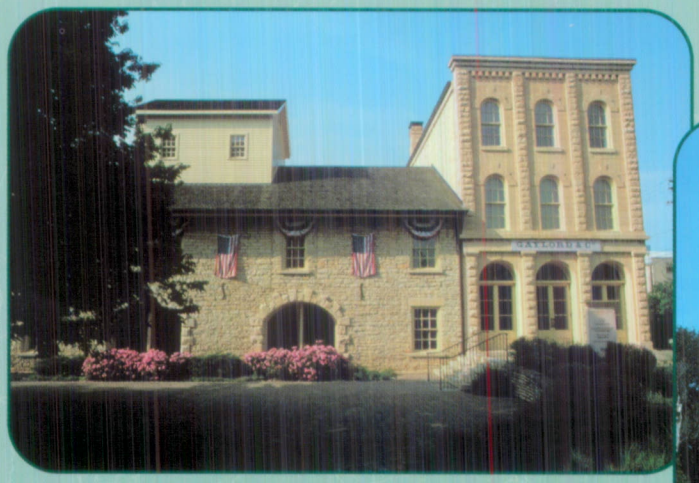
Δ Between 1970 and 1990, population in northeastern Illinois grew by about 4%, yet acres of developed land increased by about 50% and now cover 66% of the land. Residents have responded to the speed and size of the changes, and the basin has become a national leader in nature preservation and restoration.

Δ As early as the post-Civil War era, Frederick Law Olmsted helped design what has since become a federally designated landmark, the town of Riverside. The wooded curving streets and common park areas incorporating the river, sought to combine human culture and nature. It showed future generations how development and a sense of place could be nurtured together.

Δ A century ago, Jens Jensen and other Chicago-area conservationists helped establish a ring of preserves around Chicago, including the landmark corridor of forest preserves along the Des Plaines River and Salt Creek.

The Area at a Glance

Canal Towns



Michael R. Jeffords

The Gaylord Building in Lockport

Michael R. Jeffords

The St. James of the Sag Catholic Church outside Lemont

A series of photographs of downtown Lockport, taken around 1915 by a local pharmacist, shows surprising similarity to the look of the town's historic buildings today. Like its sister canal towns of Joliet and Lemont, Lockport built its important buildings solidly—from local limestone.

The material, in fact, became known as Joliet or Lemont limestone, and came into demand after workers building the Illinois & Michigan Canal discovered the yellow stone was easily accessible in the area, near the surface of the earth. After the canal was opened, some 50 quarries operated in the Lower Des Plaines region. Most famously they helped supply Chicago with building stone after the 1871 Chicago Fire. Local quarries still supply builders with gravel and crushed stone.

Hubs of 19th century commerce and industry, by post-World War II, canal towns like Lockport seemed in danger of watching the late 20th century pass them. Yet the way in which new development often skipped the old canal centers helped preserve their old character, a character that is increasingly in demand among both tourists and suburbanites in search of a distinctive sense of place in the outer Chicago ring of "edge cities."

Downtown Lockport has blossomed. The Gaylord Building has been restored as exhibit and restaurant space alongside the I&M Canal, and the nearby headquarters of the old I&M Canal is now a museum. Gourmet dining and loft apartments in restored buildings are now part of the downtown Lockport "experience."

Another good example of a classic limestone structure undergoing creative re-use is the Fitzpatrick House. Built by an immigrant Irish canal worker, the Greek Revival structure now houses the offices of the I&M National Heritage Corridor commission.

Lockport's first incarnation was as a canal and grain hub. In 1848, a basin was constructed as part of the canal that provided waterpower for paper, lumber and flour mills. Lockport then boasted the largest flour-milling complex in

Illinois. With the opening of canal-side railroads that made Joliet the area's biggest city, followed by construction of the Sanitary & Ship Canal in the 1890s, Lockport turned to other shipping-dependent industries, such as petroleum refining, as a source of employment.

Lemont, a canal-construction center in the 1840s, became a center for the thousands of immigrant limestone-quarrying workers who came to the area. In the 1890s, it turned into a boom town again as thousands more immigrant workers came to build the Sanitary & Ship Canal. Its distinctive limestone buildings and historic downtown area bear testimony today to those colorful earlier eras in its history.

Perhaps the most striking manmade stone structure in the area is St. James of the Sag Catholic Church outside of Lemont. It is prominently perched atop the Mount Forest Island glacial highlands at the juncture of the Calumet-Sag and Sanitary & Ship canals. The 1853 church building sits in a graveyard (complete with ghost stories) that holds the remains of immigrant Irish I&M Canal workers from the 1830s. Sometimes paid in farmland, these workers settled the community of Sag, of which the church is the only surviving landmark today. From the heights of the historic churchyard, visitors can contemplate the intensity of both the manmade and natural histories of the Lower Des Plaines basin—and the limestone that links both worlds.

Carl Sandburg wrote about this stretch of canal-town culture:

"Part of the valley is God's.
And part is man's.
The river course laid out a thousand years ago.
The canal ten years back."

For pictures and history of the canal towns and their limestone architecture, see the book *Prairie Passage* (University of Illinois Press 1998), a collection of the photos of Edward Ranney with text by Emily Harris.

The greatest single ecological challenge facing the Lower Des Plaines is fragmentation. When ecosystems are broken into small islands by development, native plants and animals are not able to thrive. So too the accompanying political and social divisions tend to isolate people from each other and from their natural surroundings. The Chicago metropolitan area, which in many ways pioneered patterns of modern urban and suburban growth in America, is also one of the most politically divided in the nation in terms of the number of political units.

A jigsaw puzzle of municipalities, townships, counties, and special taxing districts often compete for tax revenue and prestige. Their plans don't often connect and the regional landscape has suffered as a result. Many

Δ Today about 10% of the area's land (23,202 acres) is set aside as county conservation areas, forest preserves, etc. In addition, 16 state nature preserves and 29 state natural areas have been established within the watershed.

Δ The Illinois & Michigan Canal National Heritage Corridor, designated in the 1980s, was the first of its kind in the nation. It stretches from La Salle-Peru in the west to Lake Michigan in the east. The heart of the corridor lies in the Lower Des Plaines basin. The corridor helped stimulate the growth of other "greenway" projects in the basin, such as the Salt Creek Greenway Project and the Northeastern Illinois Regional Water Trail Plan.

Δ Current residents are looking at the Lower Des Plaines basin and at their place in it differently from previous generations. They see what makes the area distinctive, and have set about trying to save those special features.

Chicago-area political divisions have historically reflected economic, social and racial separation. As in most places, residents identify themselves as being from one small suburb or another—whose boundaries often cut across ancient natural features—and not from the Salt Creek Valley, from the "moraines west of the Des Plaines," or from the Des Plaines River basin.

This is beginning to change, however. Local nature centers, school environmental programs, area greenway and restoration projects, bike trail and canoe networks, the National Heritage Corridor, the Chicago Wilderness consortium, and the Lower Des Plaines River Ecosystem Partnership are all encouraging new generations of residents to take a different look at the Lower Des Plaines basin and at their place in it. The underlying issue is finding what makes the area distinctive, and how those special features can be saved. Global economics and the electronic culture are increasingly placeless, yet ironically they put a higher premium on sense of place—it is becoming more valuable because it is becoming more rare.

One can only hope that the impression George Flower described when he first glimpsed the Illinois prairie nearly two centuries ago will be true of restored prairies in the future: "For once, the reality came up to the picture of imagination." Re-uniting imagination and reality to establish a sense of the metropolis as a part of nature, not merely incorporating it, is the community challenge for residents in the new millennium.

Long Run Creek

Long Run Creek meanders through the backyards of many residents in southwestern Cook County and northern Will County. Because of concerns about flooding and the area's natural resources, citizens and government officials began meeting in December 1998 to develop a plan for the Long Run Creek Watershed. Over the past few years the group has been actively addressing many of the concerns listed in the plan as well as educating property owners, townships, and municipalities about these concerns. For example, the Long Run Creek Watershed Committee has held workshops to teach property owners about the best management practices for creek maintenance. It has also partnered with the Village of Homer Glen to enhance and restore a wetland on the Creek, and to incorporate watershed resource concerns in the village's comprehensive plan.

(continued from inside front cover)

In addition to coordinating IDNR programs with those of Ecosystem Partnerships, the Ecosystems Program:

- provides technical assistance to the partnerships, such as resource management plans for use by participating landowners;
- assesses resources in the area encompassed by each Ecosystem Partnership, collecting data that the local partners themselves may use to set project priorities and design projects, and supplying scientific support to ecosystem partners, including on-going monitoring of Ecosystem Partnership areas;
- funds site-specific ecosystem projects recommended by each partnership. Such projects may involve habitat protection and improvement, technical assistance, and research and education, including projects that seek to expand the relationships between natural resources, economic development, and recreation.

To provide focus for the program, IDNR developed and published the *Inventory of Ecologically Resource-Rich Areas in Illinois*, and is conducting regional assessments for areas in which a public-private partnership is formed.

Lower Des Plaines River Basin: An Inventory of the Region's Resources is based on one of these assessments, the *Lower Des Plaines River Area Assessment*. The assessment was compiled by staff of IDNR's Office of Realty and Environmental Planning; and the Illinois State Museum, the Illinois Waste Management and Research Center, and the Illinois Natural History, State Geological, and State Water Surveys of IDNR's Office of Research and Scientific Analysis.

The *Lower Des Plaines River Area Assessment* and all other CTAP and Ecosystems Program documents are available from the IDNR Clearinghouse at (217)782-7498 or TTY (217)782-9175. Some are also available on the World Wide Web at:

http://dnr.state.il.us/orep/ctap and
http://dnr.state.il.us/orep/c2000

For more information about CTAP, call (217)524-0500 or e-mail at ctap2@dnrmail.state.il.us; for information on the Ecosystems Program, call (217)782-7940 or e-mail at ecoprg@dnrmail.state.il.us.

Equal opportunity to participate in programs of the Illinois Department of Natural Resources (IDNR) and those funded by the U.S. Fish and Wildlife Service and other agencies is available to all individuals regardless of race, sex, national origin, disability, age, religion or other non-merit factors. If you believe you have been discriminated against, contact the funding source's civil rights office and/or the Equal Employment Opportunity Officer, IDNR, One Natural Resources Way, Springfield, Ill. 62702-1271; 217/785-0067; TTY 217/782-9175. This information may be provided in an alternative format if required. Contact the DNR Clearinghouse at 217/782-7498 for assistance.

AUTHOR: ALFRED SIEWERS
PUBLICATION DESIGN: CAROLYN NIXON
COVER PHOTO: MICHAEL JEFFORDS

APPENDIX 13

Sample Inspection Forms: ILR40 and ILR10

NPDES Site Audit Report for ILR10

General Information			
Project Name		Approximate Acreage	
Operator			
Project Location			
Date of Site Visit		NPDES Permit No. ILR10	
Observer's Name(s) & Title(s)			
Construction phase(s) at time of visit	☐ Pre-Construction ☐ Vertical Construction ☐ Post Construction	☐ Land Development ☐ Roadway Construction ☐ Other: _____	

Type of Site Visit:

☐ Initial Visit ☐ Follow-up ☐ Other: _____

Weather Information

Weather conditions during the site visit:

SWPPP/Soil Erosion and Sediment Control (SESC) Plan

1.	Has the SWPPP been updated/amended as required by the NPDES Permit and/or local requirements?	☐ Yes ☐ No ☐ N/A
2.	Is the Operator Certification Form signed and maintained with SWPPP?	☐ Yes ☐ No ☐ N/A
3.	Are Contractor Certification Forms signed and maintained with SWPPP?	☐ Yes ☐ No ☐ N/A
4.	Have inspection reports been completed and signed every 7 calendar days and after ≥0.5 inch precipitation events?	☐ Yes ☐ No ☐ N/A

SWPPP/SESC Plan Comments: _____

Site Observations – Describe Location and Recommend Corrective Measures Below

No.	BMP/Activity	Implemented & Maintained
1	Are discharge points and receiving waters free of sediment deposits and other pollutants (from the construction site)?	☐ Yes ☐ Action Item ☐ N/A
2	Have BMPs specified in the SWPPP been installed and maintained?	☐ Yes ☐ Action Item ☐ N/A
3	Are stabilized entrances installed and are adjacent roads clear of sediment?	☐ Yes ☐ Action Item ☐ N/A
4	Are outlets protected/stabilized?	☐ Yes ☐ Action Item ☐ N/A
5	Have stormwater management systems been constructed, stabilized, and verified to be functioning appropriately?	☐ Yes ☐ Action Item ☐ N/A
6	Are Special Management Areas (e.g., creeks, wetlands, buffers, etc.) adequately protected?	☐ Yes ☐ Action Item ☐ N/A
7	Are storm drain inlets adequately protected?	☐ Yes ☐ Action Item ☐ N/A
8	Have all idle, disturbed areas been stabilized within 14 days of cessation of construction activities in that area (or more restrictive time period per local ordinance requirement)?	☐ Yes ☐ Action Item ☐ N/A
9	Are erodible stockpiles (e.g., topsoil) properly located and adequately protected?	☐ Yes ☐ Action Item ☐ N/A
10	Are washout facilities (e.g., concrete washouts, etc.) available and maintained?	☐ Yes ☐ Action Item ☐ N/A
11	Is waste, including building materials and construction debris, collected and placed in approved receptacles?	☐ Yes ☐ Action Item ☐ N/A
12	Are non-stormwater discharges (e.g., wash water, dewatering) properly controlled?	☐ Yes ☐ Action Item ☐ N/A
13	Are vehicle and equipment fueling, cleaning, and maintenance areas free of spills, leaks, or any other potential pollutants?	☐ Yes ☐ Action Item ☐ N/A
14	Are portable toilets, material storage areas, and materials that are potential stormwater contaminants managed appropriately?	☐ Yes ☐ Action Item ☐ N/A
15	Other, based on site conditions:	☐ Yes ☐ Action Item ☐ N/A

No.	Location and Recommended Corrective Measure

General Notes and Comments: _____

NPDES Site Audit Report for ILR40

General Information			
Project Name			Approximate Acreage
Operator			
Project Location			
Date of Site Visit		NPDES Permit No. ILR10 (If Applicable)	
Observer's Name(s) & Title(s)			
Construction phase(s) at time of visit	☐ Pre-Construction	☐ Land Development	
	☐ Vertical Construction	☐ Roadway Construction	
	☐ Post Construction	☐ Other:	

Type of Site Visit:

☐ Initial Visit ☐ Follow-up ☐ Other: _____

Weather Information

Weather conditions during the site visit:

SWPPP/Soil Erosion and Sediment Control (SESC) Plan

1.	Is an NPDES Permit required for construction site activities? (e.g., Does the construction activity disturb ≥ 1 acre?)	☐ Yes ☐ No ☐ N/A
2.	Is the SWPPP on site (or accessible with location posted)?	☐ Yes ☐ No ☐ N/A
3.	Is the SWPPP/SESC Plan updated/amended as required by the NPDES Permit and/or local requirements?	☐ Yes ☐ No ☐ N/A
4.	Are Operator and Contractor Certification Forms signed and maintained with SWPPP?	☐ Yes ☐ No ☐ N/A
5.	Have inspection reports been completed and signed every 7 calendar days and after ≥0.5 inch precipitation events?	☐ Yes ☐ No ☐ N/A

SWPPP/SESC Plan Comments: _____

Site Observations – Describe Location and Recommend Corrective Measures Below

No.	BMP/Activity	Implemented & Maintained
1	Are discharge points and receiving waters free of sediment deposits and other pollutants (from the construction site)?	☐ Yes ☐ Action Item ☐ N/A
2	Have BMPs specified in the SWPPP been installed and maintained?	☐ Yes ☐ Action Item ☐ N/A
3	Have stabilized construction entrances been installed and are adjacent roads clear of sediment track out?	☐ Yes ☐ Action Item ☐ N/A
4	Are outlets protected/stabilized?	☐ Yes ☐ Action Item ☐ N/A
5	Have stormwater management systems been constructed, stabilized, and verified to be functioning appropriately?	☐ Yes ☐ Action Item ☐ N/A
6	Are Special Management Areas (e.g., creeks, wetlands, buffers, etc.) adequately protected?	☐ Yes ☐ Action Item ☐ N/A
7	Are storm drain inlets adequately protected?	☐ Yes ☐ Action Item ☐ N/A
8	Have all idle, disturbed areas been stabilized within 14 days of cessation of construction activities in that area (or more restrictive time period per local ordinance requirement)?	☐ Yes ☐ Action Item ☐ N/A
9	Are erodible stockpiles (e.g., topsoil) properly located and adequately protected?	☐ Yes ☐ Action Item ☐ N/A
10	Are washout facilities (e.g., concrete washouts, etc.) available and maintained?	☐ Yes ☐ Action Item ☐ N/A
11	Is waste, including building materials and construction debris, collected and placed in approved receptacles?	☐ Yes ☐ Action Item ☐ N/A
12	Are non-stormwater discharges (e.g., wash water, dewatering) properly controlled?	☐ Yes ☐ Action Item ☐ N/A
13	Are vehicle and equipment fueling, cleaning, and maintenance areas free of spills, leaks, or any other potential pollutants?	☐ Yes ☐ Action Item ☐ N/A
14	Are portable toilets, material storage areas, and materials that are potential stormwater contaminants managed appropriately?	☐ Yes ☐ Action Item ☐ N/A
15	Other, based on site conditions:	☐ Yes ☐ Action Item ☐ N/A

No.	Location and Recommended Corrective Measure

General Notes and Comments: _____

CHRISTOPHER B. BURKE ENGINEERING, LTD.
CBBEL NPDES REPORT

Date of Site Visit: _____
Date of Last Site Visit: _____
NPDES Permit No.: _____
Client: _____
Site Name: _____
CBBEL Project Number: _____
CBBEL Staff Member & Title: _____

Estimated Date of Last Significant Rain Event: _____

Response to Previous Report(s):

Erosion and Sedimentation
Minor ☐ Moderate ☐ Severe ☐ N/A ☐
Observations/Recommended Action:

Condition of Site Discharge Point(s)
Good ☐ Fair ☐ Poor ☐ N/A ☐
Observations/Recommended Action:

Condition of Roadways and Locations where vehicles enter or exit the site
Good ☐ Fair ☐ Poor ☐ N/A ☐
Observations/Recommended Action:

Silt Fence
Good ☐ Fair ☐ Poor ☐ N/A ☐
Observations/Recommended Action:

Inlet/Outlet Protection
Good ☐ Fair ☐ Poor ☐ N/A ☐
Observations/Recommended Action:

Ditch Checks/Check Dams
Good ☐ Fair ☐ Poor ☐ N/A ☐
Observations/Recommended Action:

Concrete Washouts
Good ☐ Fair ☐ Poor ☐ N/A ☐
Observations/Recommended Action:

Housekeeping/Material Storage
Good ☐ Fair ☐ Poor ☐ N/A ☐
Observations/Recommended Action:

General Comments:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Printed Name & Title: _____

Signature: _____ Date: _____

PLEASE CALL IF YOU NEED ADDITIONAL INFORMATION -- PHONE: (847) 823-0500 FAX (847) 823-0520

APPENDIX 14

Sample Contractor Certification Forms

SWPPP CERTIFICATION

Insert Name of Project

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

_____ _____

Signature of Operator Date

_____

Printed Name of Operator

CONTRACTOR CERTIFICATION

I certify under penalty of law that I understand the terms and conditions of the general National Pollutant Discharge Elimination System (NPDES) permit (ILR10) that authorizes the storm water discharges associated with industrial activity from the construction site identified as part of this certification.

Project: ***Insert Project Name***

Permit #: ***Insert NPDES Permit Number***

_____ _____

Contractor's Signature Date

_____ _____

Printed Name & Title Telephone Number

_____

Name of Contracting Firm

_____

Street Address

_____

City, State, Zip Code

Trade/Responsibilities: _____

_____

_____

_____

APPENDIX 15

IEPA Forms – NOI, ION, and NOT

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
Construction Site Storm Water Discharge Incidence of Non-Compliance (ION)

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. You may email this completed form to:
epa.swnoncomp@illinois.gov

For Office Use Only

Permit No. ILR10_____

Permittee Information:

Name: _____

Street Address: _____ P.O. Box: _____

City: _____ State: IL Zip Code: _____ County: _____

Phone: _____ Email: _____

Construction Site Information:

Site Name: _____

Street Address: _____

City: _____ State: IL Zip Code: _____

Latitude: _____ _____ _____ Longitude: _____ _____ _____ _____ _____ _____

(Deg) (Min) (Sec) (Deg) (Min) (Sec) Section Township Range

Cause of Non-Compliance

_____
_____
_____
_____

Actions Taken to Prevent Any Further Non-Compliance

_____
_____
_____
_____

Environmental Impact Resulting From the Non-Compliance

_____
_____
_____
_____

Actions Taken to Reduce the Environmental Impact Resulting From the Non-Compliance

_____
_____
_____
_____

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))

_____ _____
Owner Signature: Date:

_____ _____
Printed Name: Title:

IL 532 2105 WPC
624 Rev. 10/2011

This Agency is authorized to require this information under Section 4 and Title X of the Environmental Protection Act (415 ILCS 5/4, 5/39). Failure to disclose this information may result in: a civil penalty of not to exceed $50,000 for the violation and an additional civil penalty of not to exceed $10,000 for each day during which the violation continues (415 ILCS 5/42) and may also prevent this form from being processed and could result in your application being denied. This form has been approved by the Forms Management Center.

DIVISION OF WATER POLLUTION CONTROL
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
FIELD OPERATIONS SECTION

GUIDELINES FOR COMPLETION OF INCIDENCE OF NON-COMPLIANCE (ION) FORM

Complete and submit this form for any violation of the Storm Water Pollution Prevention Plan observed during any inspection conducted, including those not required by the SWPPP. Please adhere to the following guidelines:

Initial submission within 24 hours by email, telephone or fax (see region fax numbers) of any incidence of non-compliance for any violation. Submit email copy to: epa.swnoncomp@illinois.gov. After 24 hours notification, submit signed original ION within 5 days to the following address:

Illinois Environmental Protection Agency
Division of Water Pollution Control
Compliance Assurance #19
Post Office Box 19276
Springfield, Illinois 62794-9276

FIELD OPERATIONS HEADQUARTERS
Bruce Yurdin, Manager
Phone: 217/782-3362 Fax: 217/785-1225
EMAIL: epa.swnoncomp@illinois.gov

Region 1 - ROCKFORD
Chuck Corley, Manager
Phone: 815/987-7760 Fax: 815/987-7005

Region 2 - DESPLAINES
Jay Patel, Manager
Phone: 847/294-4000 Fax: 847/294-4058

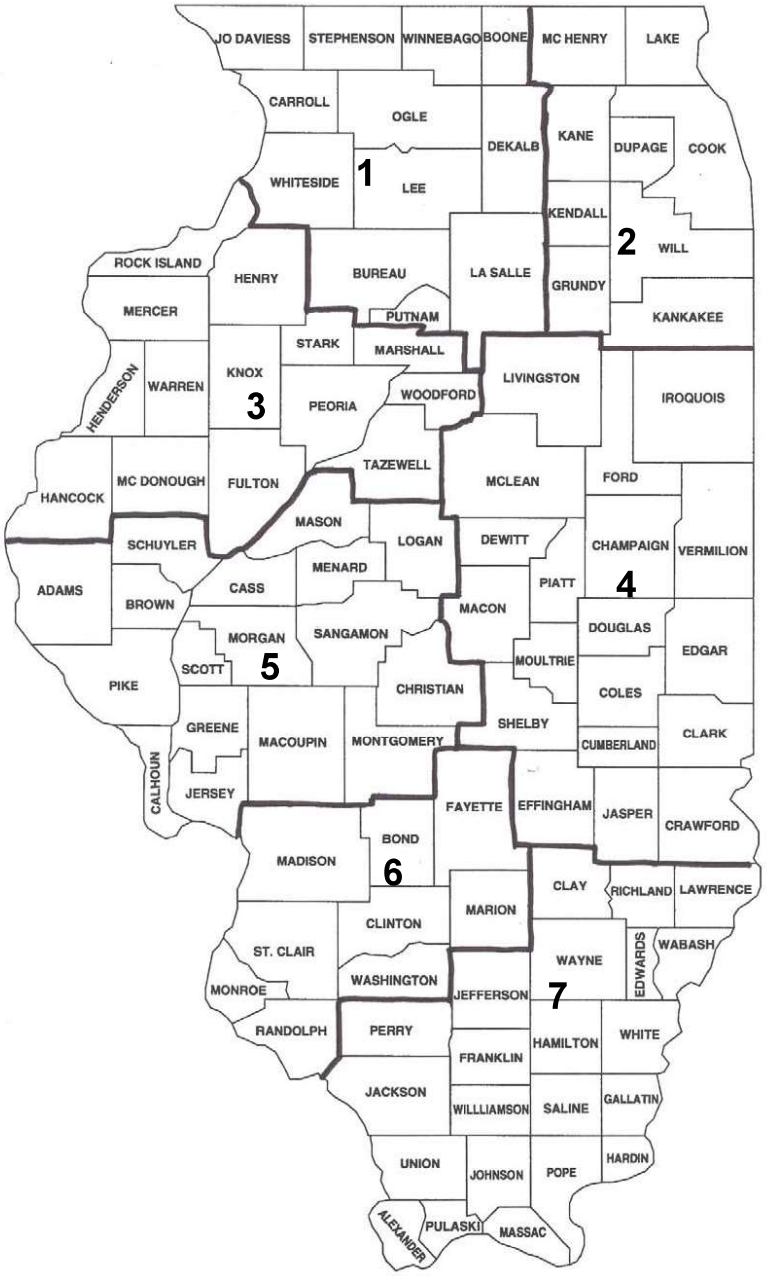
Region 3 - PEORIA
Jim Kammueller, Manager
Phone: 309/693-5463 Fax: 309/693-5467

Region 4 - CHAMPAIGN
Joe Koronkowski, Manager
Phone: 217/278-5800 Fax: 217/278-5808

Region 5 - SPRINGFIELD
Bruce Yurdin, FOS Manager
Phone: 217/782-3362 Fax: 217/785-1225

Region 6 - COLLINSVILLE
Bruce Yurdin, FOS Manager
Phone: 217/782-3362 Fax: 217/785-1225

Region 7- MARION
Byron Marks, Manager
Phone: 618/993-7200 Fax: 618/997-5467



Illinois Environmental Protection Agency

1021 North Grand Avenue East • P.O. Box 19276 • Springfield • Illinois • 62794-9276 • (217) 782-3397

Division of Water Pollution Control
Notice of Intent (NOI) for General Permit
to Discharge Storm Water Associated with Construction Site Activities

This fillable form may be completed online, a copy saved locally, printed and signed before it is submitted to the Permit Section at the above address.

For Office Use Only

Permit No. ILR10 _____

OWNER INFORMATION

Company/Owner Name: _____

Mailing Address: _____ Phone: _____

City: _____ State: ___ Zip: _____ Fax: _____

Contact Person: _____ E-mail: _____

Owner Type (select one) _____

CONTRACTOR INFORMATION

MS4 Community: ◯ Yes ◯ No

Contractor Name: _____

Mailing Address: _____ Phone: _____

City: _____ State: ___ Zip: _____ Fax: _____

CONSTRUCTION SITE INFORMATION

Select One: ◯ New ◯ Change of information for: ILR10 _____

Project Name: _____ County: _____

Street Address: _____ City: _____ IL Zip: _____

Latitude: _____ _____ _____ Longitude: _____ _____ _____ _____ _____ _____

(Deg) (Min) (Sec) (Deg) (Min) (Sec) Section Township Range

Approximate Construction Start Date _____ Approximate Construction End Date _____

Total size of construction site in acres: _____

If less than 1 acre, is the site part of a larger common plan of development?

◯ Yes ◯ No

Fee Schedule for Construction Sites:
Less than 5 acres - $250
5 or more acres - $750

STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

Has the SWPPP been submitted to the Agency? ◯ Yes ◯ No

(Submit SWPPP electronically to: epa.constilr10swppp@illinois.gov)

Location of SWPPP for viewing: Address: _____ City: _____

SWPPP contact information:

Inspector qualifications:

Contact Name: _____ _____

Phone: _____ Fax: _____ E-mail: _____

Project inspector, if different from above

Inspector qualifications:

Inspector's Name: _____ _____

Phone: _____ Fax: _____ E-mail: _____

This Agency is authorized to require this information under Section 4 and Title X of the Environmental Protection Act (415 ILCS 5/4, 5/39). Failure to disclose this information may result in: a civil penalty of not to exceed $50,000 for the violation and an additional civil penalty of not to exceed $10,000 for each day during which the violation continues (415 ILCS 5/42) and may also prevent this form from being processed and could result in your application being denied. This form has been approved by the Forms Management Center.

TYPE OF CONSTRUCTION (select one)

Construction Type _____

SIC Code: _____

Type a detailed description of the project:

HISTORIC PRESERVATION AND ENDANGERED SPECIES COMPLIANCE

Has the project been submitted to the following state agencies to satisfy applicable requirements for compliance with Illinois law on:

Historic Preservation Agency ◯ Yes ◯ No

Endangered Species ◯ Yes ◯ No

RECEIVING WATER INFORMATION

Does your storm water discharge directly to: ☐ Waters of the State or ☐ Storm Sewer

Owner of storm sewer system: _____

Name of closest receiving water body to which you discharge: _____

Mail completed form to: Illinois Environmental Protection Agency
Division of Water Pollution Control
Attn: Permit Section
Post Office Box 19276
Springfield, Illinois 62794-9276
or call (217) 782-0610
FAX: (217) 782-9891

Or submit electronically to: epa.constilr10swppp@illinois.gov

I certify under penalty of law that this document and all attachments were prepared under my direction and supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage this system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. In addition, I certify that the provisions of the permit, including the development and implementation of a storm water pollution prevention plan and a monitoring program plan, will be complied with.

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))

_____ _____

Owner Signature: Date:

_____ _____

Printed Name: Title:

INSTRUCTIONS FOR COMPLETION OF CONSTRUCTION ACTIVITY NOTICE OF INTENT (NOI) FORM

Submit original, electronic or facsimile copies. Facsimile and/or electronic copies should be followed-up with submission of an original signature copy as soon as possible. Please write "copy" under the "For Office Use Only" box in the upper right hand corner of the first page.

This fillable form may be completed online, a copy saved locally, printed and signed before it is submitted to the Permit Section at:

Illinois Environmental Protection Agency
Division of Water Pollution Control
Permit Section
Post Office Box 19276
Springfield, Illinois 62794-9276
or call (217) 782-0610

FAX: (217) 782-9891

Or submit electronically to: epa.constilr10swppp@illinois.gov

Reports must be typed or printed legibly and signed.

Any facility that is not presently covered by the General NPDES Permit for Storm Water Discharges From Construction Site Activities is considered a new facility.

If this is a change in your facility information, renewal, etc., please fill in your permit number on the appropriate line, changes of information or permit renewal notifications do not require a fee.

NOTE: FACILITY LOCATION IS NOT NECESSARILY THE FACILITY MAILING ADDRESS, BUT SHOULD DESCRIBE WHERE THE FACILITY IS LOCATED.

Use the formats given in the following examples for correct form completion.

	Example	Format
Section	12	1 or 2 numerical digits
Township	12N	1 or 2 numerical digits followed by "N" or "S"
Range	12W	1 or 2 numerical digits followed by "E" or "W"

For the Name of Closest Receiving Waters, do not use terms such as ditch or channel. For unnamed tributaries, use terms which include at least a named main tributary such as “Unnamed Tributary to Sugar Creek to Sangamon River.”

Submission of initial fee and an electronic submission of Storm Water Pollution Prevention Plan (SWPPP) for Initial Permit prior to the Notice of Intent being considered complete for coverage by the ILR10 General Permits. Please make checks payable to: Illinois EPA at the above address.

Construction sites with less than 5 acres of land disturbance - fee is $250.

Construction sites with 5 or more acres of land disturbance - fee is $750.

SWPPP should be submitted electronically to: epa.constilr10swppp@illinois.gov. When submitting electronically, use Project Name and City as indicated on NOI form.

Illinois Environmental Protection Agency

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

Division of Water Pollution Control
NOTICE OF TERMINATION (NOT)
of Coverage under the General Permit for Storm Water Discharges Associated with Construction Site Activities

This fillable form may be completed online, a copy saved locally, printed and signed before it is submitted to the Permit Section at the above address.

Permit No. ILR10 _____

OWNER INFORMATION

Owner Name: _____

Owner Type (select one) _____

Mailing Address: _____ Phone: _____

City: _____ State: ___ Zip: _____ Fax: _____

Contact Person: _____ E-mail: _____

CONTRACTOR INFORMATION

Contractor Name: _____

Mailing Address: _____ Phone: _____

City: _____ State: ___ Zip: _____ Fax: _____

CONSTRUCTION SITE INFORMATION

Facility Name: _____

Street Address: _____

City: _____ IL Zip: _____ County: _____

NPDES Storm Water General Permit Number: ILR10 _____

Latitude: _____ _____ _____ Longitude: _____ _____ _____ _____ _____ _____

(Deg) (Min) (Sec) (Deg) (Min) (Sec) Section Township Range

DATE PROJECT HAS BEEN COMPLETED AND STABILIZED: _____

NOTE: Coverage under this permit cannot be terminated without the completion date.

I certify under penalty of law that disturbed soils at the identified facility have been finally stabilized or that all storm water discharges associated with industrial activity from the identified facility that are authorized by an NPDES general permit have otherwise been eliminated. I understand that by submitting this notice of termination, that I am no longer authorized to discharge storm water associated with industrial activity by the general permit, and that discharging pollutants in storm water associated with industrial activity to Waters of the State is unlawful under the Environmental Protection Act and the Clean Water Act where the discharge is not authorized by an NPDES Permit.

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))

_____ _____

Owner Signature: Date:

Mail completed form to: Illinois Environmental Protection Agency
Division of Water Pollution Control, Attn: Permit Section
1021 North Grand Avenue East
P.O. Box 19276
Springfield, Illinois 62794-9276

(Do not submit additional documentation unless requested)

This Agency is authorized to require this information under Section 4 and Title X of the Environmental Protection Act (415 ILCS 5/4, 5/39). Failure to disclose this information may result in: a civil penalty of not to exceed $50,000 for the violation and an additional civil penalty of not to exceed $10,000 for each day during which the violation continues (415 ILCS 5/42) and may also prevent this form from being processed and could result in your application being denied. This form has been approved by the Forms Management Center.

GUIDELINES FOR COMPLETION OF NOTICE OF TERMINATION (NOT) FORM

Please adhere to the following guidelines:

Submit original, electronic or facsimile copies. Facsimile and/or electronic copies should be followed-up with submission of an original signature copy as soon as possible.

Submit completed forms to:

Illinois Environmental Protection Agency
Division of Water Pollution Control, Attn: Permit Section
1021 North Grand Avenue East
P.O. Box 19276
Springfield, Illinois 62794-9276
or call (217) 782-0610
FAX: (217) 782-9891

Or submit electronically to: epa.constilr10swppp@illinois.gov

Reports must be typed or printed legibly and signed.

NOTE: FACILITY LOCATION IS NOT NECESSARILY THE FACILITY MAILING ADDRESS, BUT SHOULD DESCRIBE WHERE THE FACILITY IS LOCATED.

Use the formats given in the following examples for correct form completion.

	Example	Format
Section	12	1 or 2 numerical digits
Township	12N	1 or 2 numerical digits followed by "N" or "S"
Range	12W	1 or 2 numerical digits followed by "E" or "W"

Final stabilization has occurred when:

(a) all soil disturbing activities at the site have been completed;

(b) a uniform perennial vegetative cover with a density of 70% of the native background vegetative cover for the area has been established on all unpaved areas not covered by permanent structures; or

(c) equivalent permanent stabilization measures have been employed.

APPENDIX 16

Outfall Screening Checklist, Forms, Instructions, and Reports

Section 1: Background Data

Subwatershed:	Outfall ID:	
Date:	Time (Military):	
Temperature:	Inspector(s):	
Previous 48 Hours Precipitation:	Photo's Taken (Y/N)	If yes, Photo Numbers:
Land Use in Drainage Area (Check all that apply): ☐ Industrial ☐ Residential ☐ Commercial	☐ Open Space ☐ Institutional Other: _____ Known Industries: _____	

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
Storm Sewer (Closed Pipe)	☐ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Clay / draintile ☐ Other: _____	☐ Circular ☐ Elliptical ☐ Box ☐ Other: ____	☐ Single ☐ Double ☐ Triple ☐ Other:_____	Diameter/Dimensions: _____	In Water: ☐ No ☐ Partially ☐ Fully With Sediment: ☐ No ☐ Partially ☐ Fully
Open drainage (swale/ditch)	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other:	☐ Trapezoid ☐ Parabolic ☐ Other:		Depth: Top Width: Bottom Width:	

Section 3: Physical Indicators

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe algea/growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	
Do physical indictors suggest an illicit discharge is present (Y/N):			

Flow Present?	☐ Yes	☐ No	**If No, Skip to Section 7 and Close Illicit Discharge Investigation**
Flow Description	☐ Trickle	☐ Moderate	☐ Substantial

Section 4: Physical Indicators (Flowing Outfalls Only)

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Sulfide ☐ Petroleum/gas ☐ Laundry ☐ Other:	☐ 1–Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color (color chart)	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange/Red ☐ Multi-Color ☐ Other:	☐ 1–Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1–Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage ☐ Suds and Foam ☐ Petroleum (oil sheen) ☐ Grease ☐ Other:	☐ 1–Few/slight; origin not obvious	☐ 2 – Some; indications of origin	☐ 3 - Some; origin clear
Do physical indictors (flowing) suggest an illicit discharge is present (Y/N):					

Section 5: On-Site Sampling / Testing (Flowing Outfalls Only)

PARAMETER	RESULT	ACCEPTABLE RANGE	WITHIN RANGE (Y/N)	EQUIPMENT
Temperature		NA	NA	Thermometer
pH		6 – 9		5-in-1 Test Strip
Ammonia		<3 mg/L April – Oct < 8 mg/L Nov - March		Test Strip
Free Chlorine		NA	NA	5-in-1 Test Strip
Total Chlorine		< 0.05 mg/L		5-in-1 Test Strip
Phenols		< 0.1mg/L		Test Kit
Detergents as Surfactants		> 0.25 mg/L residential > 5 mg/L non-residential		Test Kit
Copper		<0.025 mg/L		Test Strip
Alkalinity		NA	NA	5-in-1 Test Strip
Hardness		NA	NA	5-in-1 Test Strip
Sample Location				

(Note NA values used for future tracing procedures)

Section 6: Data Collection for Lab Testing (see flow chart)

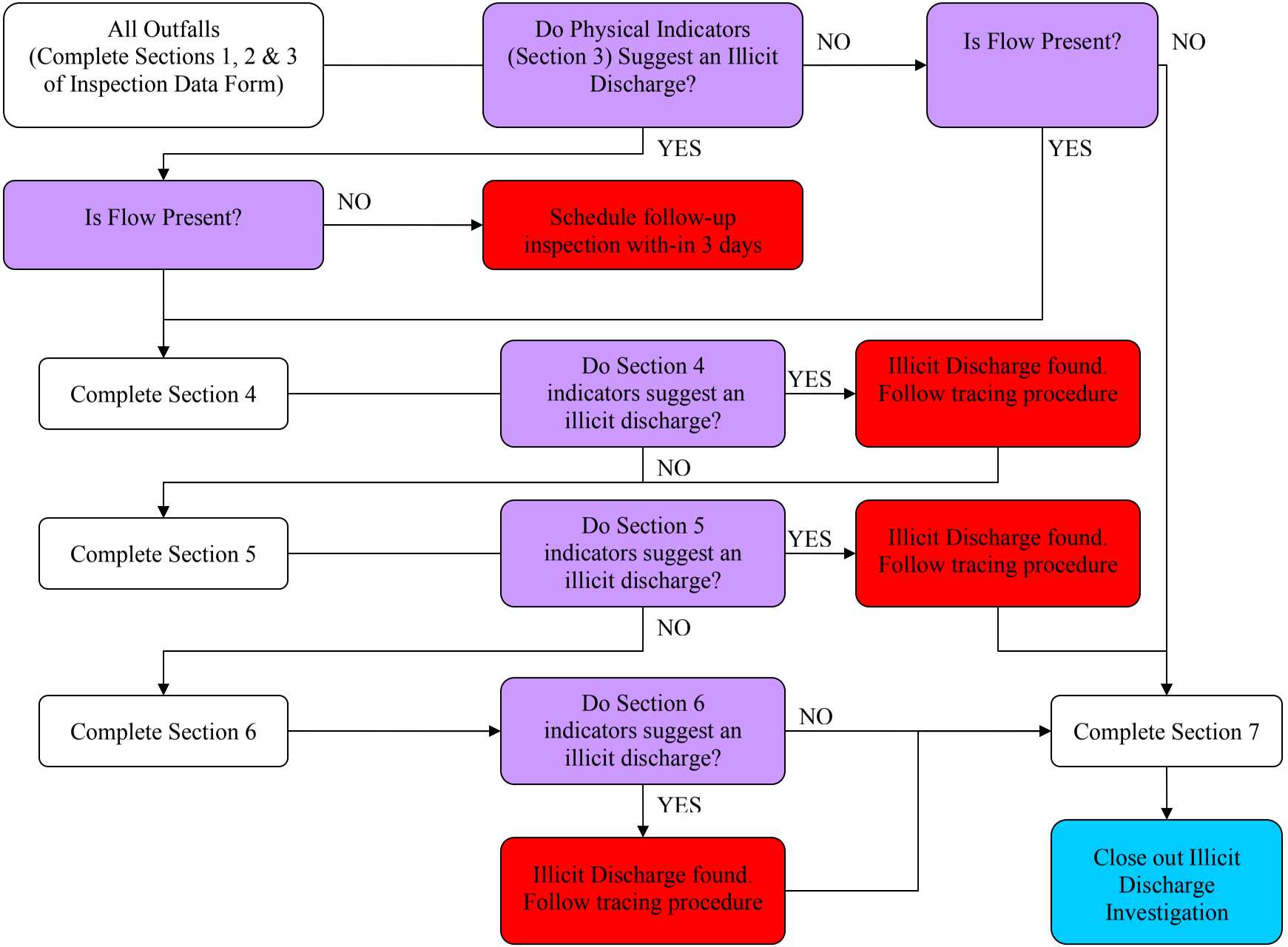
1. Sample for the lab?	☐ Yes	☐ No
2. If yes, collected from:	☐ Flow	☐ Pool

PARAMETER	RESULT (from lab)	ACCEPTABLE RANGE	WITHIN RANGE (Y/N)
Fecal Coliform		400 per 100 mL	
Flouride		0.6 mg/l	
Potassium		Ammonium/Potassium ratio or > 20mg/l	

*note label sample with outfall number

Section 7: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

Figure 4: Outfall Inspection Procedure Flow Chart



Instructions for completing the *Stormwater Outfall Inspection Data Form*

Strike out incorrect entries with a single line; correct values or descriptions are written above or near the struck-out entries. Do not use a new data entry form to correct an incorrect entry. At the completion of each outfall inspection, the field crews are responsible for ensuring that a ***Stormwater Outfall Inspection Data Form*** has been completely and correctly filled out and that all data and remarks are legible. **It is important to check that values for all chemical parameters have been entered.**

Section 1: Background Data

Subwatershed: The receiving water from the stormwater outfall inventory to be entered here.

Outfall ID: Enter the outfall identification number from the stormwater outfall inventory.

Date: To avoid confusion, dates are be written in the following manner: DAY MONTH YEAR. For example, 10 MARCH 2007.

Time: Military time (24-hour clock) to be used (for example, 8:30 a.m. would be written as 0830; likewise, 1:30 p.m. would be written as 1330).

Temperature: A concise description of the weather conditions at the time of the screening is to be recorded (for example, Clear, 75○ F).

Inspector: The name(s) of the field personnel.

Previous 48 Hours Precipitation: The total amount of precipitation during the 48 hours preceding the inspection is to be noted (for example, none-72 Hours or 0"=4 days). If the total precipitation is not known, it is appropriate to enter a qualitative assessment if the precipitation was minor. For example, *Drizzle-36 Hours* if appropriate. If the precipitation amount was significant, actual precipitation totals is obtained from a local rain gage, if available.

Photo's Taken (Yes/No): Photographs are to be taken with a camera that superimposes a date and time on the film. The date and time should correspond to the date and time recorded on the data form.

Photo Numbers: If photographs are taken, the number(s) is recorded.

Land Use: Check all that apply, noting which land use is predominate. If the industrial box is checked, any known industries are listed to facilitate potential tracing efforts.

Section 2: Outfall Description

Type of Outfall: Storm Sewer (Closed Pipe) or Open Drainage (Swale/Ditch):
First check if the outfall is either from a Closed Pipe or Open Drainage. Then complete the following row to describe outfall characteristics.

Section 3: Physical Indicators

Indicators: Complete rows describing outfall characteristics (Outfall Damage, Deposits/Stains, Abnormal Vegetation, Poor pool quality, Pipe algea/growth). This section is filled out regardless of current flow conditions. No flow during the time of the inspection, does not rule out the potential of illicit discharges. Corroding or stained pipes, dead or absence of vegetation, are potential indicators of illicit discharges from direct or indirect (i.e. dumping) sources.

Likelyhood: After inspecting the physical conditions of the outfall, the likelihood of an illicit discharge is assessed.

Flow Present (Yes/No): A *Yes* or *No* is entered here to indicate the presence or absence of dry-weather flow. If the outfall is submerged or inaccessible, "See Notes" is entered and an explanation provided in the "Notes" section.

Flow Description: A description of the quantity of the dry-weather flow is provided. Refer to Figure 6 of the SMPP.

Flow Chart Procedure:

- If *No* is entered in the "Flow Present" block and no non-flowing physical indicators appear present the inspection can be closed, skip to Section 7 of the form.
- If *No* is entered in the "Flow Present" block but indicators appear present, place the outfall on the follow-up inspection log, then the current inspection can be closed, skip to Section 7 of the form.
- If *Yes* is entered in the "Flow Present" block (regardless of the presence of non-flowing physical indicators), complete remainder of Section and proceed to Section 4.

Section 4: Physical Indicators (Flowing Outfalls Only)

Complete rows describing outfall characteristics (Odor, Color, Turbidity, Floatables). This section is filled out for flowing outfalls only.

Odor: The presence of an odor is to be assessed by fanning the hand toward the nose over a wide-mouth container of the sample, keeping the sample about 6 to 8 inches from the face. Be careful not to be distracted by odors in the air. Provide a description of the odor, if present. Refer to Table 2 of the SMPP.

Color: The presence of color in the discharge is to be assessed by filling a clean glass sample container with a portion of the grab sample and comparing the sample with a color chart, if color is present. If a color chart is used, the number corresponding to the color matching the sample is to be entered in this blank. Color is not assessed by looking into the discharge. Refer to Table 3 of the SMPP.

Turbidity "clarity": Turbidity is a measure of the clarity of water. Turbidity may be caused by many factors, including suspended matter such as clay, silt, or finely divided organic and inorganic matter. Turbidity is a measure of the optical properties that cause light to be scattered and not transmitted through a sample. The presence of turbidity is to be assessed by comparing the sample to clean glass sample container with colorless distilled water. Refer to Table 4 of the SMPP.

Floatables: The presence of floating scum, foam, oil sheen, or other materials on the surface of the discharge are to be noted. Describe of any floatables present that are attributable to discharges from the outfall. Do not include trash originating from areas adjacent to the outfall in this observation. Refer to Figure 5 and Table 4 of the SMPP.

Likelyhood: After inspecting the physical conditions of the outfall discharge, the likelihood of an illicit discharge is assessed. If flowing physical indicators are present the tracing procedure are immediately implemented by one of the field crew. The second member of the field crew continues with the inspection by performing the on-site testing in Section 5.

Flow Chart Procedure:

- If flowing physical indicators are present the tracing procedure is immediately implemented by one of the field crew. The second member of the field crew continues with the inspection by performing the on-site testing in Section 5.
- If flowing physical indicators do not suggest an illicit discharge continue with the inspection by performing the on-site testing in Section 5.

Section 5: On-Site Sampling/Testing (Flowing Outfalls Only)

Parameters: Test strip or kit chemical analyses are conducted for the following parameters in accordance with the Flow Chart, refer to Figure 7 of the SMPP.

- Color, color chart,
- Chlorine, test strip,
- Copper, test strip,
- Ammonia, test strip,
- Phenols, test kit, and
- Detergents, test kit.

Testing is done by either a test strip or test kit as applicable (refer to the equipment column). The results are compared with the "acceptable range" and the "within range" column is filled out with a Yes or No. Note that the Temperature, Alkalinity and Hardness are determined although these results do not need to be compared with an "acceptable range". These values are used to assist in determining the source of the illicit discharge during the tracing procedure.

Sampling Location: A description of the actual sampling location is to be recorded (for example, at end of outfall pipe). If the outfall is submerged or is inaccessible for sampling, an upstream sampling location may be required. A description of any upstream sampling locations is recorded here. Grab samples are collected from the middle, both vertically and horizontally, of the dry-weather flow discharge in a critically cleaned glass container. Samples can be collected by manually dipping a sample container into the flow.

Sampling Procedures: Detailed, step-by-step instructions for using the test strips and kits are available through the Public Works Department. Please also refer to Chapter 3.3.B.7.b. for test kit safety information. Use the following procedures for all test kit analyses:

1. Take a grab sample and swirl to ensure that the sample is well mixed.
2. Rinse the sample cup (25ml) twice with distilled water. Next, rinse the sample cup twice with water from the grab sample.
3. Fill the sample cup to the 25 ml mark, or as required by the instructions for the test kits. Hold the sample cup at eye level to ensure that measurements are accurate.
4. Conduct the test kit analyses following the manufacturer's instructions.
5. Dispose of the sample as follows:
   - If no chemical or reagents have been added to the sample, the water can be poured on the ground.
   - If any chemical or reagent is added to the sample, pour the water into a container marked "Liquid Waste" for proper disposal to a sanitary sewer system at the end of the day.
6. Rinse the sample cup three times with tap water and dry with a paper towel.

Flow Chart Procedure:

- If any parameter is outside of the "acceptable range" then an illicit discharge has likely been found. The tracing procedure is immediately implemented by one of the field crew. Testing can be stopped, and the second member of the field crew continues with the inspection by completing Section 7.
- If none of the parameters are outside of the acceptable range, proceed to Section 6.

Section 6: Data Collection for Lab Testing

Determine if the Village's Waste Water Treatment Plant (WWTP) has adequate staff capacity to analyze the samples.

- If the WWTP has adequate staff capacity, collect grab samples and provide them to the WWTP. Note the location of the sample. Label the sample with the outfall ID number. Proceed to Section 7 while in the field and complete the remainder of Section 6 after the lab results are available.
- If the WWTP does not currently have adequate capacity, determine if Sections 3 or 4 of the inspection form suggest an illicit discharge.
  - If Sections 3 or 4 suggest an illicit discharge contact and outside lab to perform the testing. Proceed to Section 7 while in the field and complete the remainder of Section 6 after the lab results are available.
  - If Sections 3 or 4 do not suggest an illicit discharge, note the outfall ID number. Place the outfall on the follow-up inspection log and proceed to Section 7 of the form. Re-inspect and sample the discharge when the WWTP has adequate capacity.

Sample Location: The location of the sample is noted. Additionally, the sample is labeled with the outfall ID number. Use the insert MS4 type's sampling procedures and refer to Chapter 3.3.B.7.b. for test kit safety information. . The following additional items are noted.

1. When you collect any samples you must fill out an ***Outfall Sampling Report*** **(Appendix 5.4).** The report must document time you arrive on location, take the sample and get to the plant to drop off the sample.
2. A 500-ml glass bottle sample is used to collect the sample. If you are collecting a sample that has grease 2-250ml samples taken with a glass container are required.
3. If you use the sampling container that is on a rope, it must be washed with soap and water after every use.

Parameters: Grab samples and lab testing is performed. After lab results are available enter the results here.

- If any parameter is outside of the "acceptable range" then an illicit discharge has likely been found. The tracing procedure should be immediately implemented.

- If none of the parameters are outside of the acceptable then the investigation can be closed.

Section 7 Any Non-Illicit Discharge Concerns

Any problems or unusual features are to be entered here. If the outfall appears to be potentially impacted by inappropriate discharges, this can be recorded here. This section is to be completed even if no flow is observed.

Outfall Sampling Report

Structure ID # Date:

Outfall ID # Time of Sample:

Sampled By: AM PM

Glass Bottle Size: 250 ml 500 ml 32 ml

Tests requested: Flouride Potassium Fecal Coliform

Relinquished By:	Date:
Comments:	Time:
Received By:	Date:
Comments:	Time:
Relinquished By:	Date:
Comments:	Time:
Received By:	Date:
Comments:	Time:

APPENDIX 17

Sample Inspection Checklists

Roadway Culvert / Bridge Checklist

Inspected by:	**Date:**
	Weather Conditions:

Number	**Location**	**Size**	**Flood Height** *(low/medium/high)*	**Condition** *(Good/Fair/Poor)*	**Comments**
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

Detention/Retention Pond Checklist

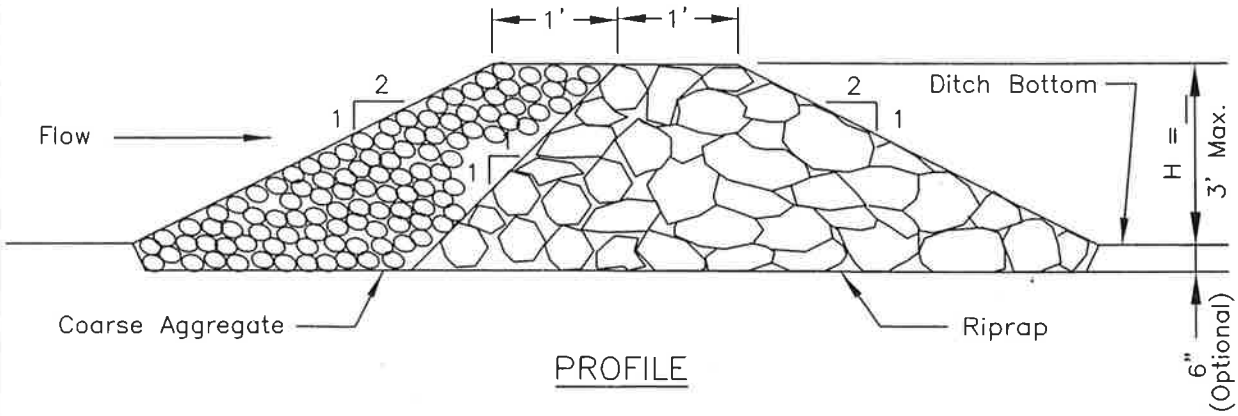
Inspected by:	**Date:**
	Weather Conditions:

Number	**Name/Location**	**Flood Height** *(low/medium/high)*	**Condition** *(Good / Fair / Poor)*	**Comments**
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				

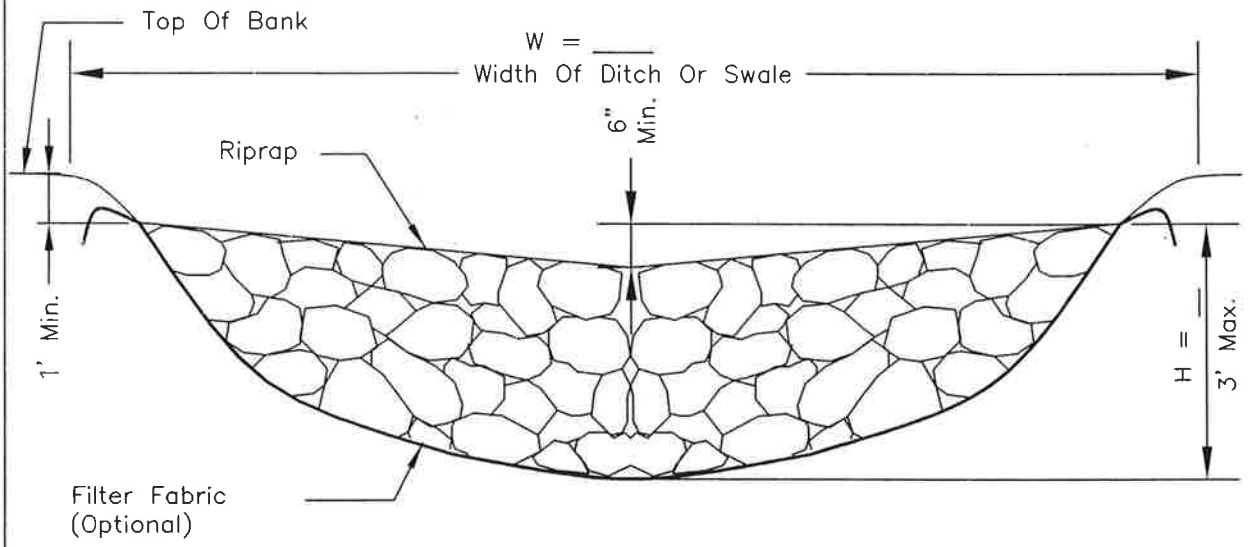
APPENDIX 18

Typical Soil Erosion and Sediment Control Details

ROCK CHECK DAM - RIPRAP



PROFILE



CROSS SECTION
CENTERLINE LOOKING DOWNSTREAM

NOTES;

1. Filter fabric shall meet the requirements of material specification 592 GEOTEXTILE, Table 1 or 2, Class I, II, or IV and shall be placed over the cleared area prior to the placing of rock.
2. Coarse aggregate shall meet one of the following IDOT gradations, CA-1, CA-2, CA-3, or CA-4.
3. Riprap shall meet IDOT gradation RR-3 or RR-4 and meet Quality Designation A.
4. Coarse aggregate and riprap shall be placed according to construction specification 25 ROCKFILL using placement Method 1 and Class III compaction.
5. For added stability, the base of the dam may be keyed 6 inches into the soil.
6. See plans for spacing of dams and H dimensions.
7. Maximum drainage area to each dam is 10 acres.
8. ROCK CHECK DAM-COARSE AGGREGATE IL-605CA may be used for drainage areas under 2 acres.

REFERENCE				NRCS Natural Resources Conservation Service	STANDARD DWG. NO.
Project					IL-605R
Designed		Date			SHEET 1 OF 1
Checked		Date			DATE 1-29-99
Approved		Date			

INLET FILTER SYSTEM w/Hydrocarbon Removal

PART 1 GENERAL

1.01 WORK REQUIRED

An inlet filter system, as shown in the details, shall be installed and maintained in open grate frames as directed by the engineer.

1.02 SUBMITTALS

The contractor shall make submittals of the manufacturer's literature, shop drawings, installation and maintenance instructions, and other items in accordance with the provisions of the Standard Specifications.

PART 2 PRODUCTS

2.01 INLET FILTER SYSTEM HR

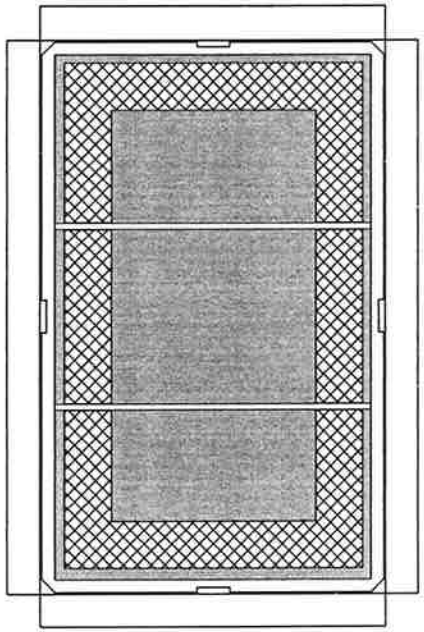
Inlet filter system HR shall consist of a replaceable reinforced filter bag with hydrocarbon removal capabilities suspended from a retainer ring, or frame. Inlet Filter Systems shall be the Catch-All **HR**, with Overflow, as furnished by Marathon Materials, Inc., or pre-approved equal.

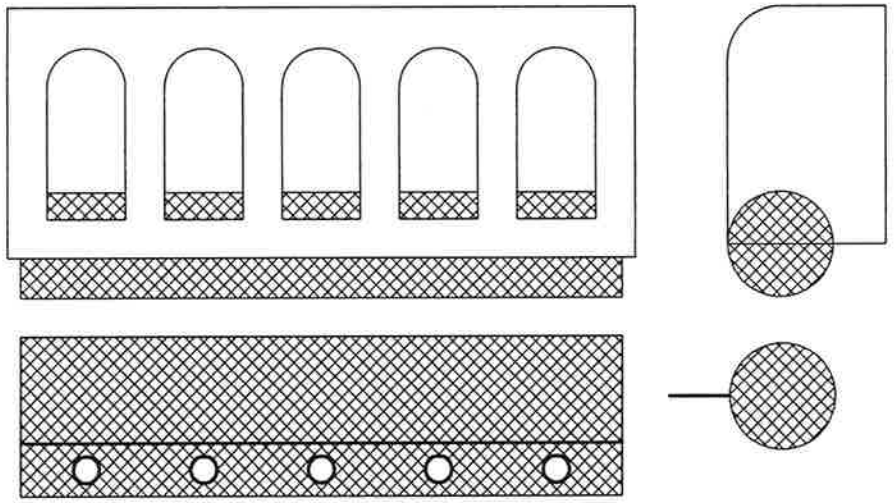
The filter bag shall be constructed of a non-woven polypropylene filter geotextile fabric with a minimum weight of 4 oz./yd.^{2}, a minimum flow rate of 145 gal./min./ft.^{2}, and designed for a minimum silt and debris capacity of 2 cu. ft. The filter bag shall be reinforced with a polyester mesh fabric with a minimum weight of 4 oz./yd.^{2} and shall be fitted with a hydrocarbon removal pillow. The hydrocarbon removal pillow shall be hemmed around the entire perimeter of the sediment bag and extend a minimum of four inches towards center. The pillow shall have the capacity to adsorb a minimum seven times its own weight of hydrocarbon-based pollutants. *Curb boxes shall be fitted with a separate pillow, meeting the same requirements, that extends the full width of the box.* The filter bag shall be suspended from a galvanized steel ring, or frame, conforming to ASTM-A36, utilizing a stainless steel band and locking clamp. The frame shall be designed with an overflow feature to prevent any ponding during heavy rainfall.

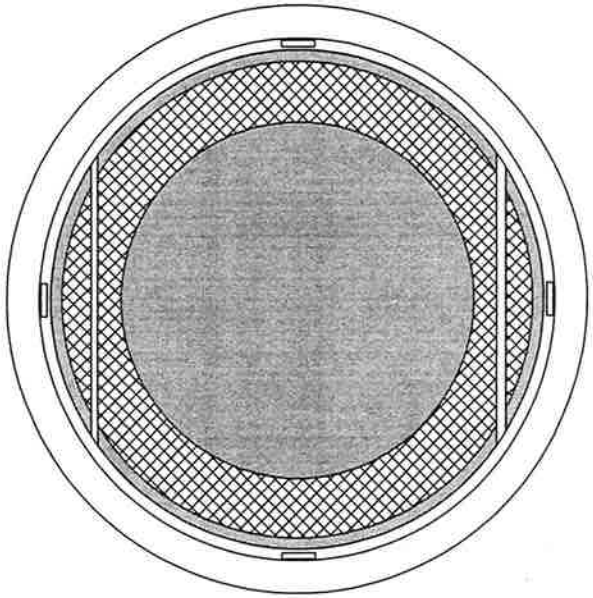
PART 3 MEASUREMENT AND PAYMENT

3.01 INLET FILTER SYSTEM

All costs for furnishing and installing the inlet filter system HR shall be included in the unit bid price. Periodic cleaning and new bags shall be paid for separately.

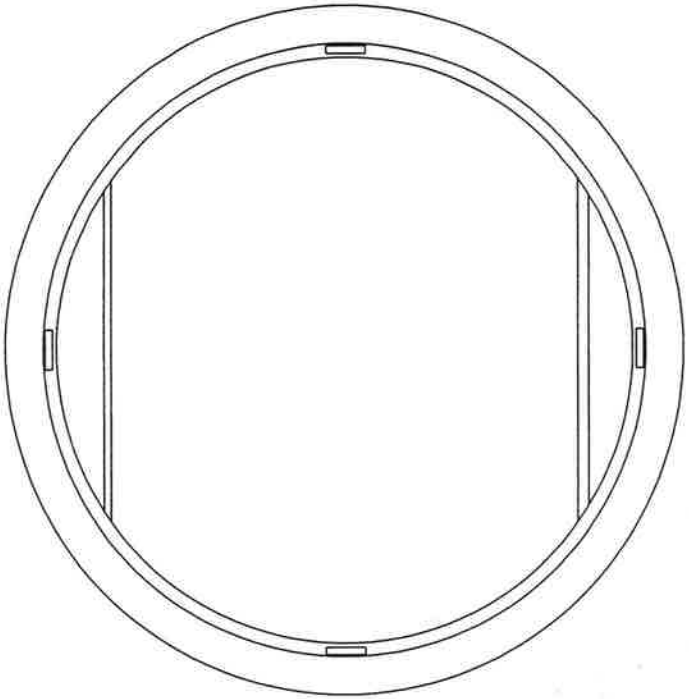


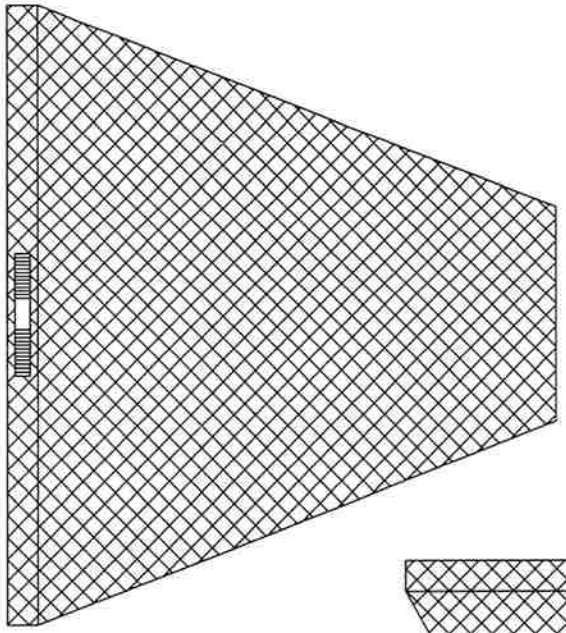


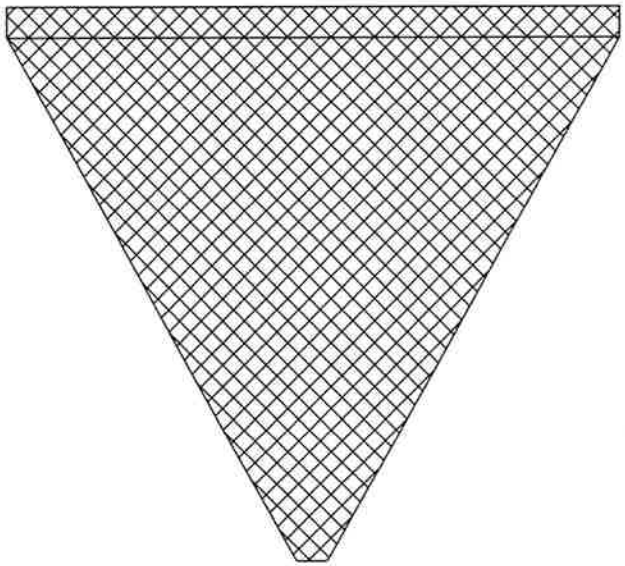


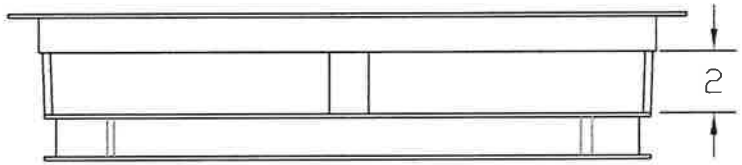
This detail depicts the typical placement of the HR (hydrocarbon removal) pillow. An HR pillow is hemmed to the entire perimeter of the sediment bag +/- 4" from the top of the bag and extends +/- 4" towards center. Curb boxes are protected with a separate pillow that is secured to either the curb box vanes or the top flange of the Catch-All frame.

DATE	REVISIONS	Catch-All HR Adsorbent Pillow
5.12.04	Original	
		Marathon Materials, Inc.







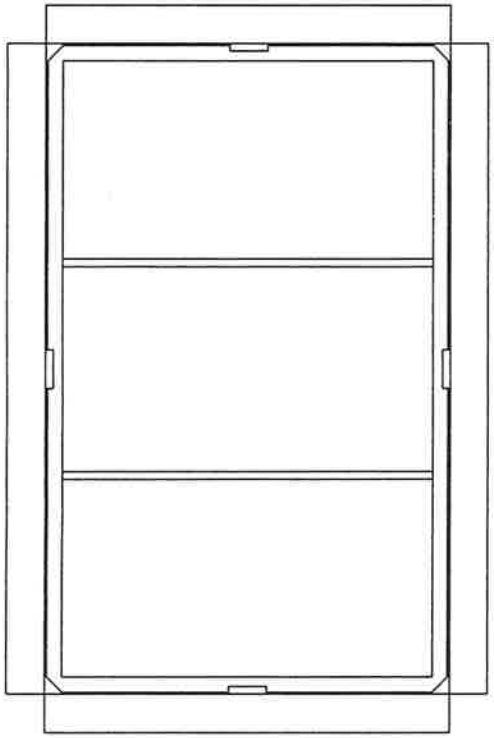


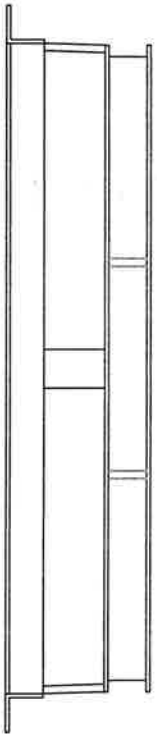
GENERAL NOTES:
FRAME: Top flange fabricated from 1¼"x1¼"x⅛" angle. Base rim fabricated from 1½"x½"x⅛" channel. Handles and suspension brackets fabricated from 1¼"x¼" flat stock. All steel conforming to ASTM-A36.
SEDIMENT BAG: Bag fabricated from 4 oz./sq.yd. non-woven polypropylene geotextile reinforced with polyester mesh. Bag secured to base rim with a stainless steel band and lock.

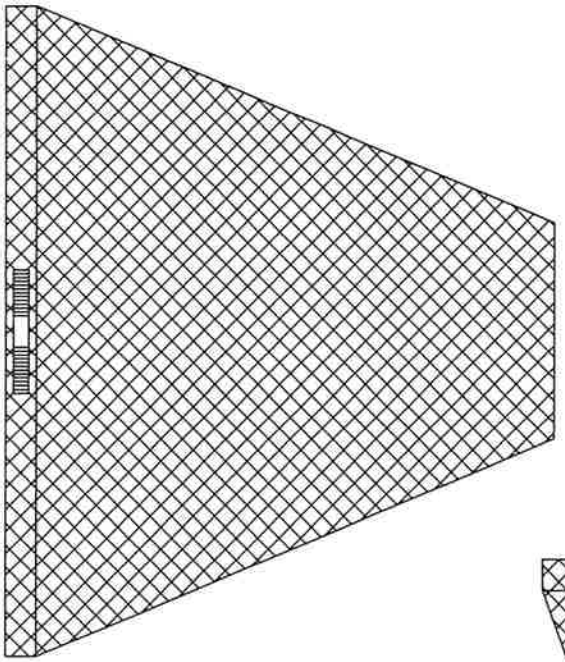
DATE	REVISIONS
01-11-02	Original

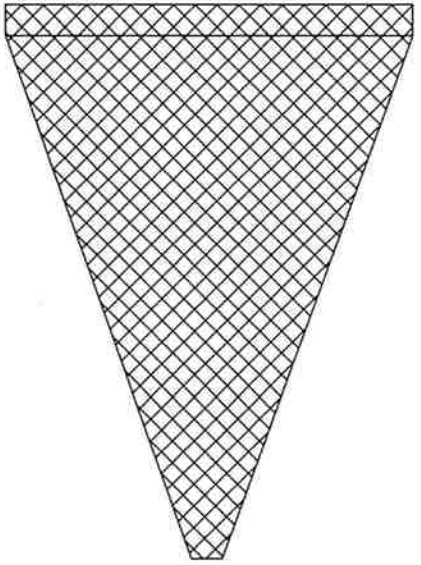
Typical Round
Catch-All

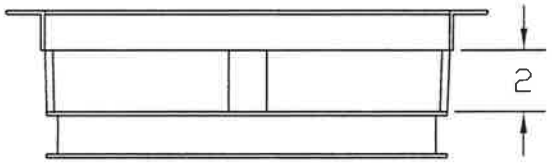
Marathon Materials, Inc.











GENERAL NOTES:

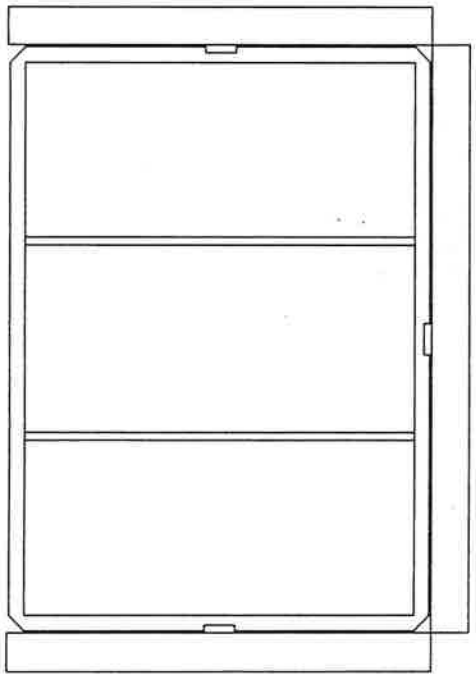
FRAME: Top flange fabricated from 1¼"x1¼"x⅛" angle. Base rim fabricated from 1½"x½"x⅛" channel. Handles and suspension brackets fabricated from 1¼"x¼" flat stock. All steel conforming to ASTM-A36.

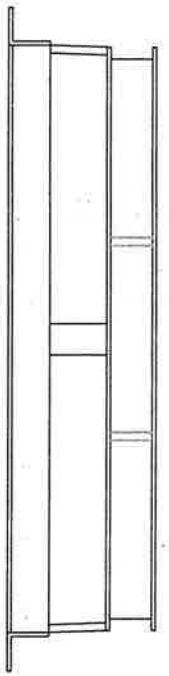
SEDIMENT BAG: Bag fabricated from 4 oz./sq.yd. non-woven polypropylene geotextile reinforced with polyester mesh. Bag secured to base rim with a stainless steel band and lock.

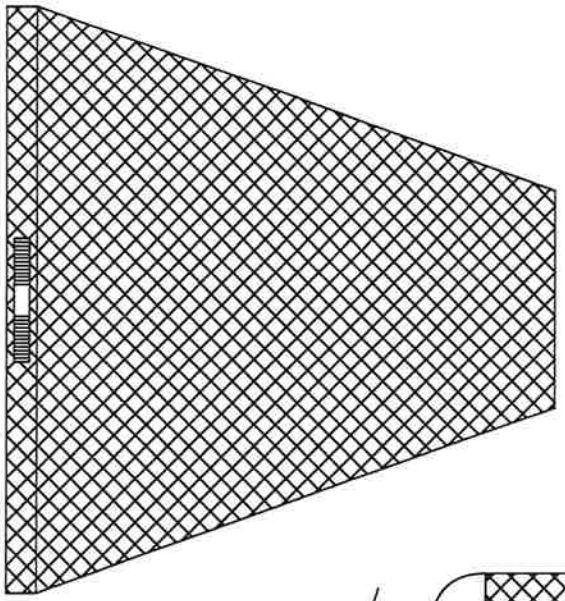
DATE	REVISIONS
01-22-02	Original

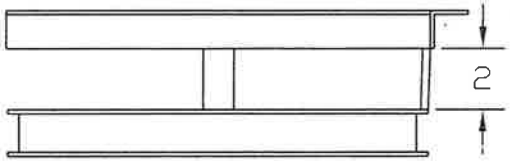
Typical Rectangular Catch-All

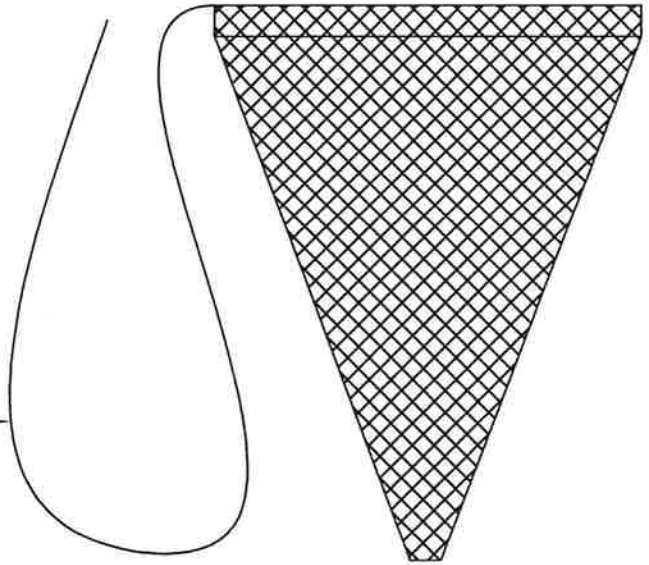
Marathon Materials, Inc.











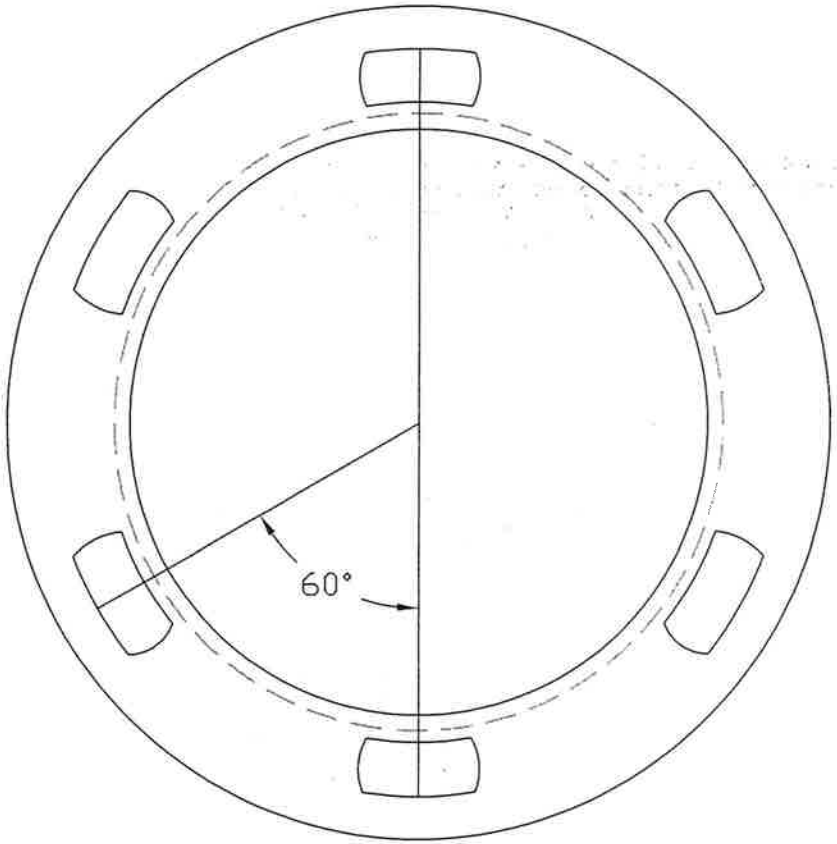
Fabric Flap to cover curb box

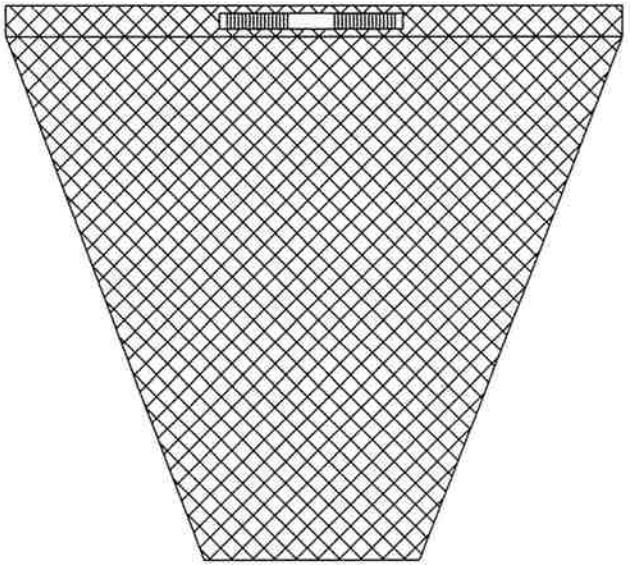
GENERAL NOTES:
FRAME: Top flange fabricated from 1¼"x1¼"x⅛" angle. Base rim fabricated from 1½"x½"x⅛" channel. Handles and suspension brackets fabricated from 1¼"x¼" flat stock. All steel conforming to ASTM-A36.
SEDIMENT BAG: Bag fabricated from 4 oz./sq.yd. non-woven polypropylene geotextile reinforced with polyester mesh. Bag secured to base rim with a stainless steel band and lock.

DATE	REVISIONS
01-11-02	Original
05-07-04	Remove Back Rail

Typical Curb Box Catch-All

Marathon Materials, Inc.





GENERAL NOTES:

FRAME: Top flange fabricated from 1¼"x1¼"x⅛" angle. Base rim fabricated from 1½"x½"x⅛" channel. Handles and suspension brackets fabricated from 1¼"x¼" flat stock. All steel conforming to ASTM-A36.

SEDIMENT BAG: Bag fabricated from 4 oz./sq.yd. non-woven polypropylene geotextile reinforced with polyester mesh. Bag secured to base rim with a stainless steel band and lock.

DATE	REVISIONS
01-22-02	Original

Typical Beehive Catch-All

Marathon Materials, Inc.

MMI

Catch-All Inlet Protector

INLET FILTER SYSTEM MATERIALS

I. Non-Woven Polypropylene Filter Geotextile

Property	Test Method	Units	Minimum Average Roll Value (English)
Grab Tensile Strength	ASTM-D-4632	lbs	100
Grab Tensile Elongation	ASTM-D-4632	%	50
Mullen Burst	ASTM-D-3786	psi	225
Puncture	ASTM-D-4833	lbs	65
Trapezoidal Tear	ASTM-D-4533	lbs	45
UV Resistance	ASTM-D-4355	% @ hrs	70 @ 500
Hydraulic			
Apparent Opening Size	ASTM-D-1420	US Sieve	70
Permittvity	ASTM-D-4491	Sec. – 1	2.0
Flow Rate	ASTM-D-4491	Gal/min/ft²	145

II. Reinforcing Polyester Outer Mesh Fabric

Property	Test Method	Value
Content	ASTM-D-629	Polyester
Weight (oz/yd²)	ASTM-D-3776	4.55 ± 15%
Whales (holes) inch	ASTM-D-3887	7.5 ± 2
Chorses (holes) inch	ASTM-D-3887	15.5 ± 2
Instronball Burst (psi)	ASTM-D-3887	120 min
Thickness	ASTM-D-1777	.040 ± .005

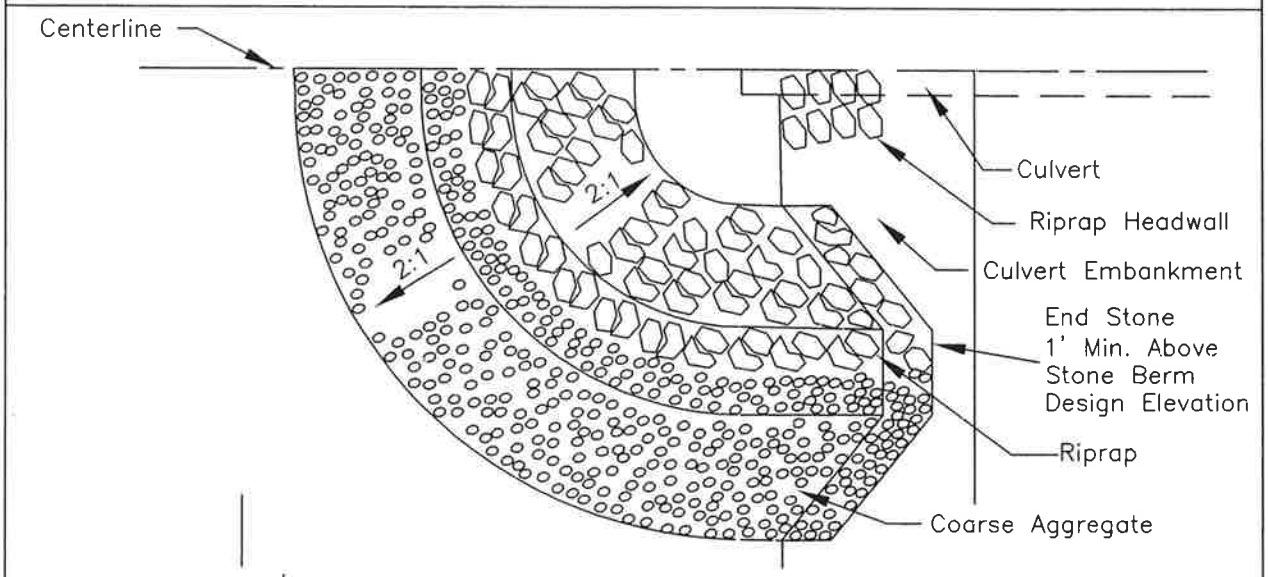
III. HR (*Hydrocarbon Removal*) Pillow Capacities

HR Pillow - 2.6 oz. Adsorbent/lf.

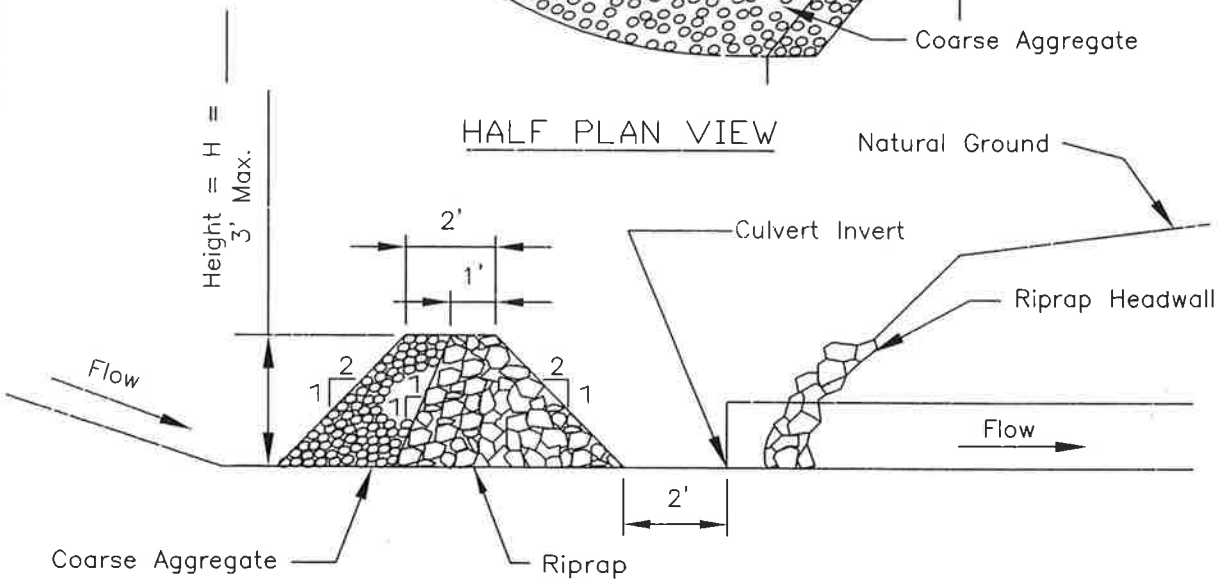
Type of Oil	Capacity by Weight – Oil / Adsorbent
Diesel	10:1
Fuel Oil	9:1
Machine Oil	8:1
30W Motor Oil	7:1

All capacities are rounded down

CULVERT INLET PROTECTION - STONE



HALF PLAN VIEW

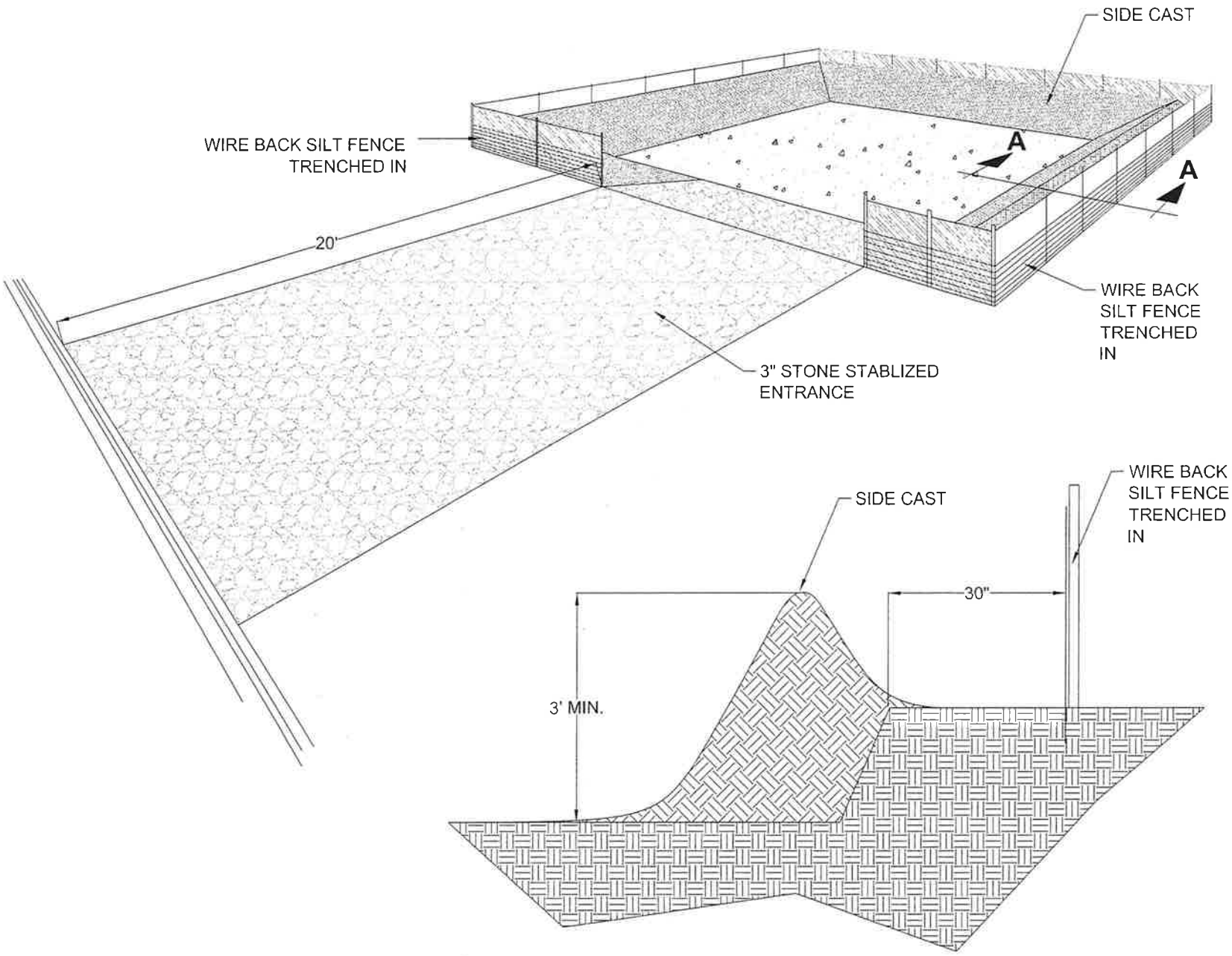


CENTERLINE CROSS SECTION

Notes:

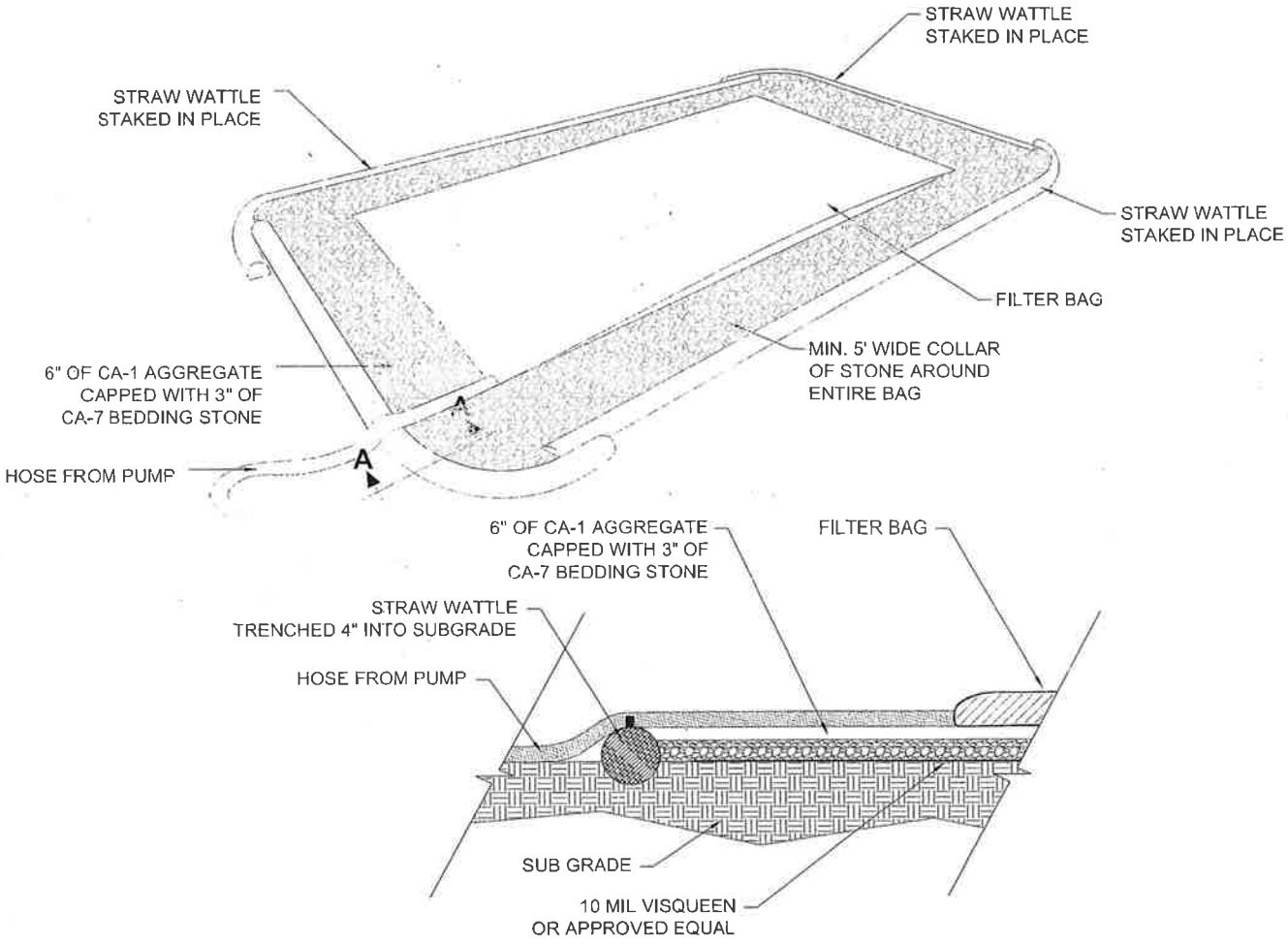
1. Sediment shall be removed when the sediment has accumulated to one-half the height of the stone berm.
2. Coarse aggregate shall meet one of the following IDOT coarse aggregate gradations, CA-1, CA-2, CA-3 or CA-4.
3. Riprap shall meet IDOT gradation RR-3 or RR-4. Any permanent riprap, such as for the culvert headwall, shall meet IDOT Quality Designation A.
4. Coarse aggregate and riprap shall be placed according to construction specification 25 ROCKFILL using placement Method 1 and Class III compaction.
5. The maximum drainage area to the culvert being protected is 3 acres.
6. See plans for H dimension.
7. Tie the stone berm into the culvert embankment a minimum of 1 foot above the design elevation of the stone berm.

REFERENCE				NRCS Natural Resources Conservation Service	STANDARD DWG. NO.
Project					IL-508ST
Designed		Date			SHEET 1 OF 1
Checked		Date			DATE 1-29-99
Approved		Date			



CONCRETE WASH OUT BASIN

SECTION 'A'

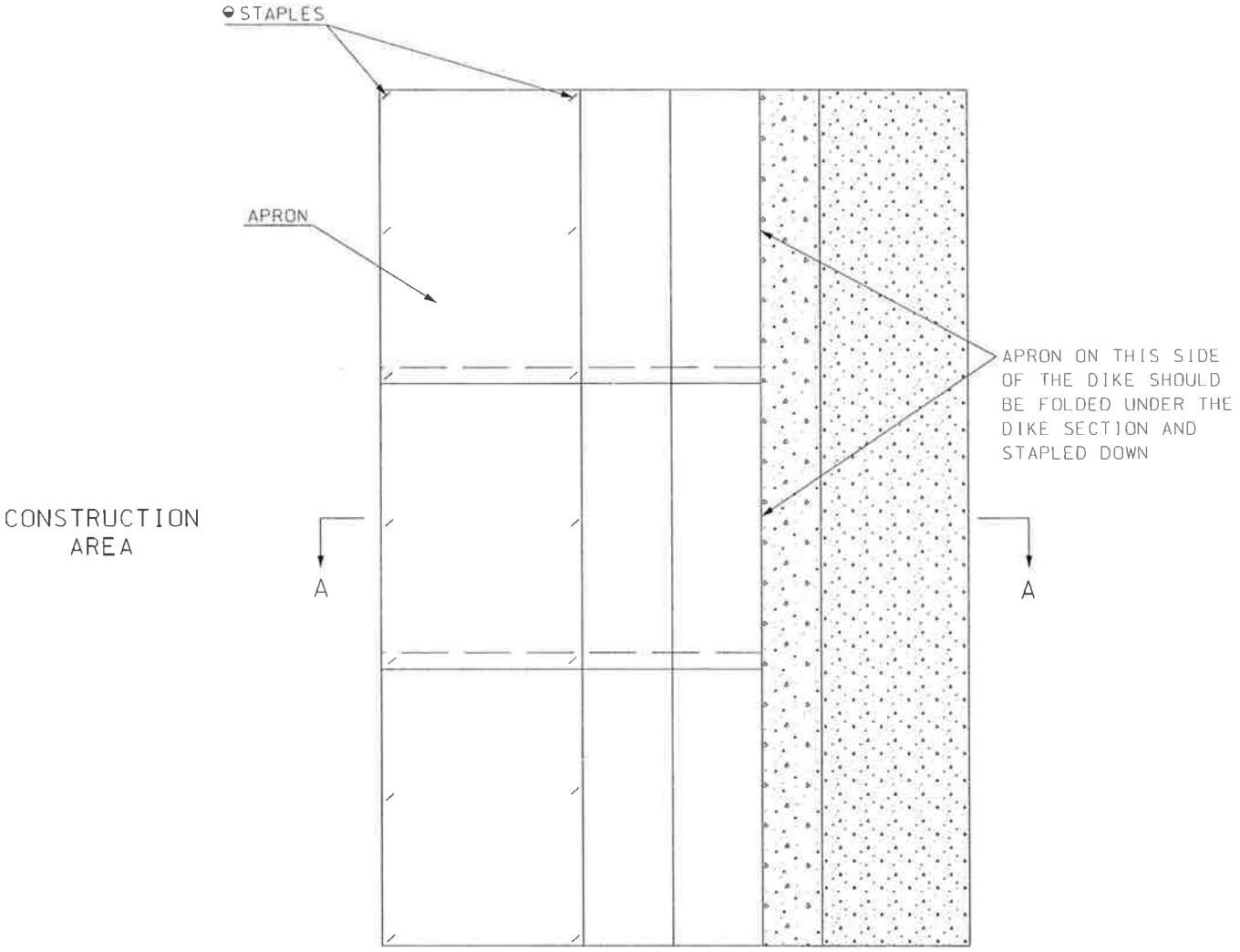


SECTION 'A'

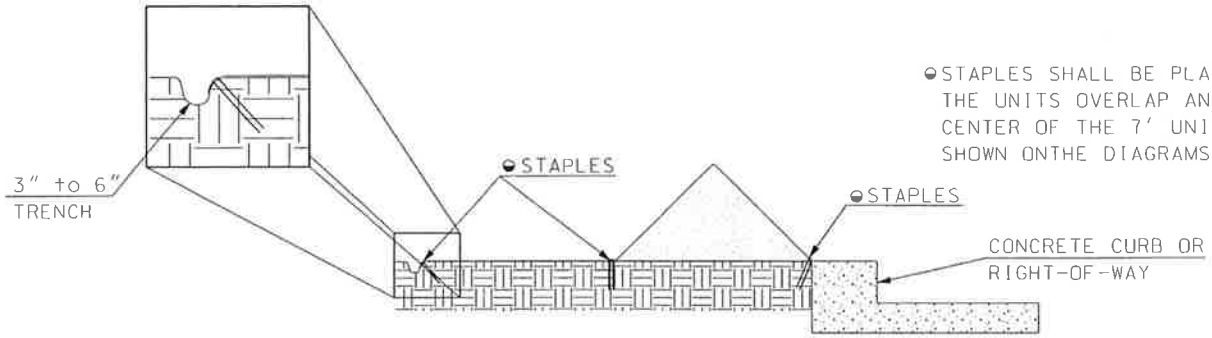
NOTES:
(1) ACTUAL SIZE AND LAYOUT DETERMINED IN THE FIELD
(2) PUMP INTAKE HEAD SHOULD BE FLOATED AT SURFACE OR PLACED IN A STABILIZED SUMP PIT

DEWATERING FILTER PAD

TRIANGULAR SILT DIKE INSTALLATION FOR CONTINUOUS BARRIER

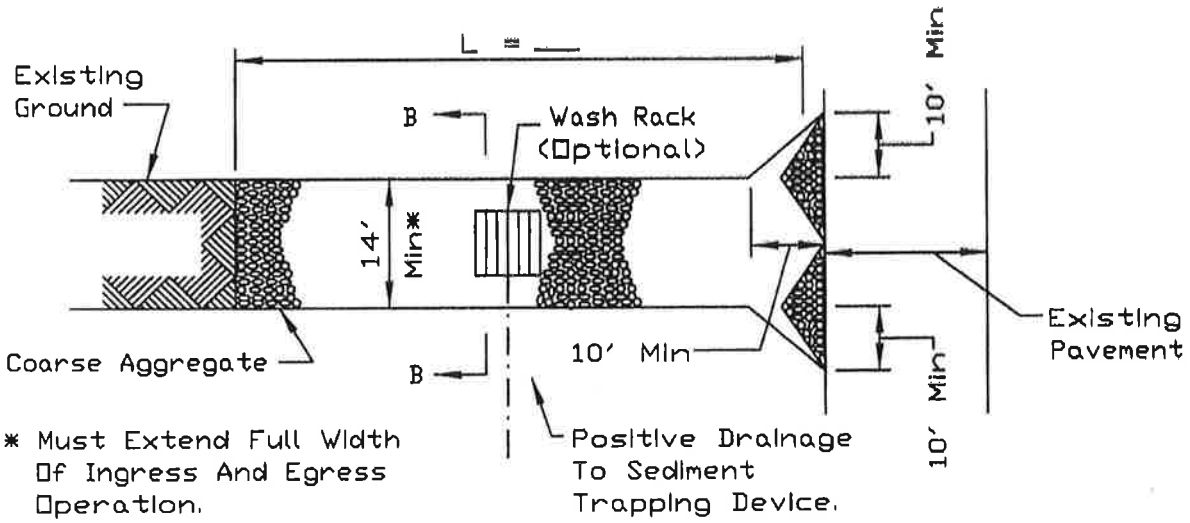


DIKE SECTION

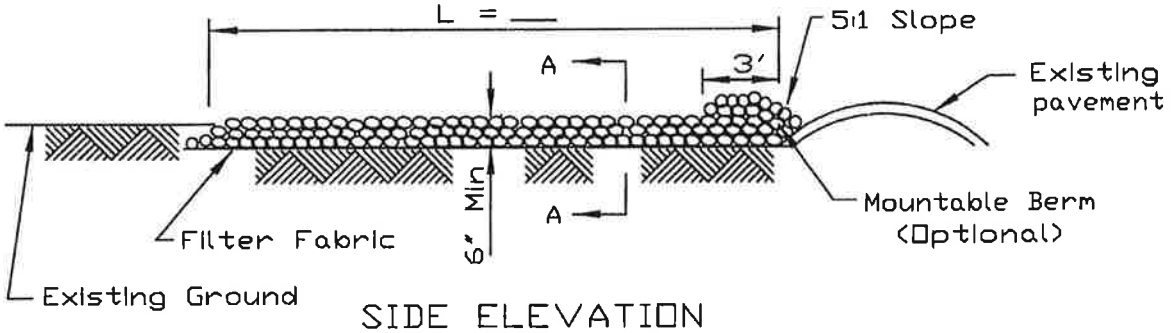


DETAIL A-A

STABILIZED CONSTRUCTION ENTRANCE PLAN



PLAN VIEW



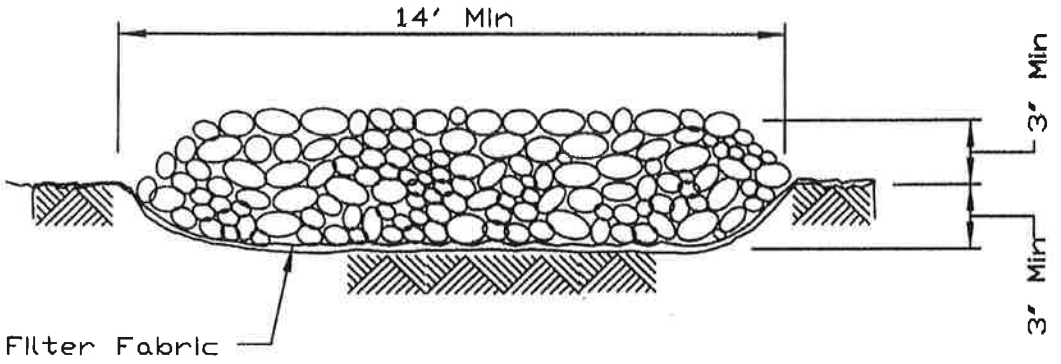
SIDE ELEVATION

NOTES:

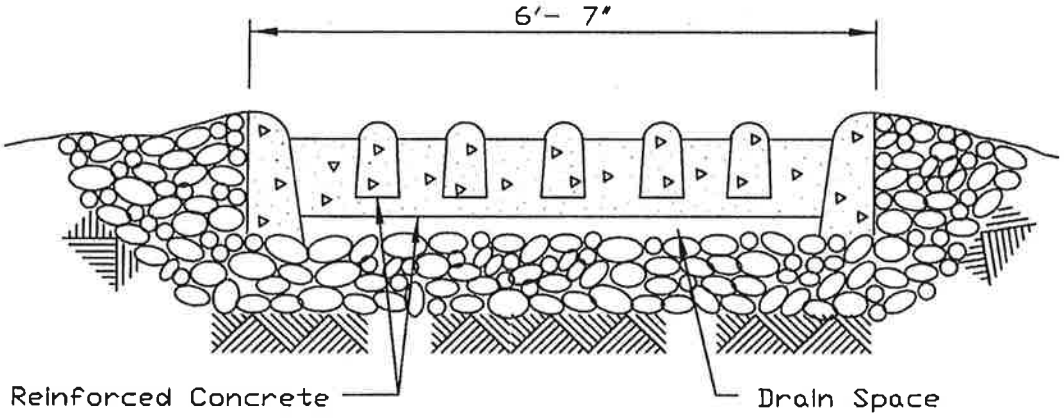
1. Filter fabric shall meet the requirements of material specification 592 GEOTEXTILE, Table I or 2, Class I, II or IV and shall be placed over the cleared area prior to the placing of rock.
2. Rock or reclaimed concrete shall meet one of the following IDOT coarse aggregate gradation, CA-1, CA-2, CA-3 or CA-4 and be placed according to construction specification 25 ROCKFILL using placement Method 1 and Class III compaction.
3. Any drainage facilities required because of washing shall be constructed according to manufacturers specifications.
4. If wash racks are used they shall be installed according to the manufacturer's specifications.

REFERENCE				NRCS Natural Resources Conservation Service	STANDARD DWG. NO. IL-630
Project					SHEET 1 OF 2
Designed		Date			DATE 8-18-94
Checked		Date			
Approved		Date			

STABILIZED CONSTRUCTION ENTRANCE PLAN



SECTION A-A



SECTION B-B

REFERENCE Project _____ Designed _____ Date _____ Checked _____ Date _____ Approved _____ Date _____	NRCS Natural Resources Conservation Service	STANDARD DWG. NO. IL-630 SHEET 2 OF 2 DATE 8-18-94

Illinois Urban Manual

PRACTICE STANDARD

STABILIZED CONSTRUCTION ENTRANCE

CODE 630

DEFINITION

A stabilized pad of aggregate underlain with filter fabric located at any point where traffic will be entering or leaving a construction site to or from a public right-of-way, street, alley, sidewalk, or parking area.

PURPOSE

The purpose of this standard is to reduce or eliminate the tracking of sediment onto public right-of-ways or streets.

CONDITIONS WHERE PRACTICE APPLIES

A stabilized construction entrance shall be used at all points of construction ingress and egress.

CRITERIA

Stabilized construction entrance shall meet the following requirements:

Aggregate size - IDOT coarse aggregate gradations: CA-1, CA-2, CA-3, or CA-4.

Thickness - 6 inches or more.

Stone placement - The stone entrance for the entrance shall be placed according to construction specification 25 ROCKFILL. Placement will be by Method 1 and compaction will be class III.

Width - 14 feet minimum but not less than the full width of ingress or egress points.

Length - As required, but not less than 70 feet, except on a single residence lot where a 30 feet minimum shall apply.

Filter fabric shall be used under the aggregate to minimize the migration of stone into the underlying soil by heavy vehicle loads. The filter fabric shall meet the requirements of materials specification 592 GEOTEXTILE Table 1 or 2, class I, II, or IV.

All surface water flowing or diverted toward construction entrances shall be piped across the entrance. If piping is impractical, a mountable berm with 5:1 slopes will be permitted.

Washing - If conditions on the site are such that the vehicles traveling over the gravel do not remove the majority of the mud, then the tires of the vehicles must be washed before entering a public road. Wash water must be carried away from the entrance to a sediment trapping facility such as practice standards IMPOUNDMENT STRUCTURE-ROUTED 842 or TEMPORARY SEDIMENT TRAP 960. All sediment shall be prevented from entering storm drains, ditches, watercourses, or surface waters including wetlands. A wash rack may be used to make washing more convenient and effective.

Location - the washing station should be located to provide for maximum utility by all construction vehicles.

Timing - the graveled access shall be installed as soon as practical after the start of site disturbance.

Removal - the entrance shall remain in place and be maintained until the disturbed area is stabilized by permanent best management practices.

CONSIDERATIONS

Improperly planned and maintained construction entrances can become a continual erosion problem.

The tracking of mud from active building sites onto paved roads by construction vehicles can be greatly reduced, and in some cases eliminated, by the use of a stabilized construction entrance. These entrances provide an area where mud can be removed from construction vehicle tires before they enter a public road.

If the action of the vehicle tires traveling over the stone is not sufficient to remove the majority of the mud, then the tires must be washed before the vehicle enters a public road. When washing is required it shall be done on an area stabilized with aggregate, or using a wash rack underlain with gravel. Provisions shall be made to intercept the wash water and trap the sediment before it is

carried off-site. Construction entrances should be used in conjunction with the stabilization of construction roads, and other exposed areas, to reduce the amount of mud picked up by construction vehicles.

PLANS AND SPECIFICATIONS

Plans and specifications for installing stabilized construction entrances shall be in keeping with this standard and shall describe the requirements for applying the practice to achieve its intended purpose. At a minimum include the following items:

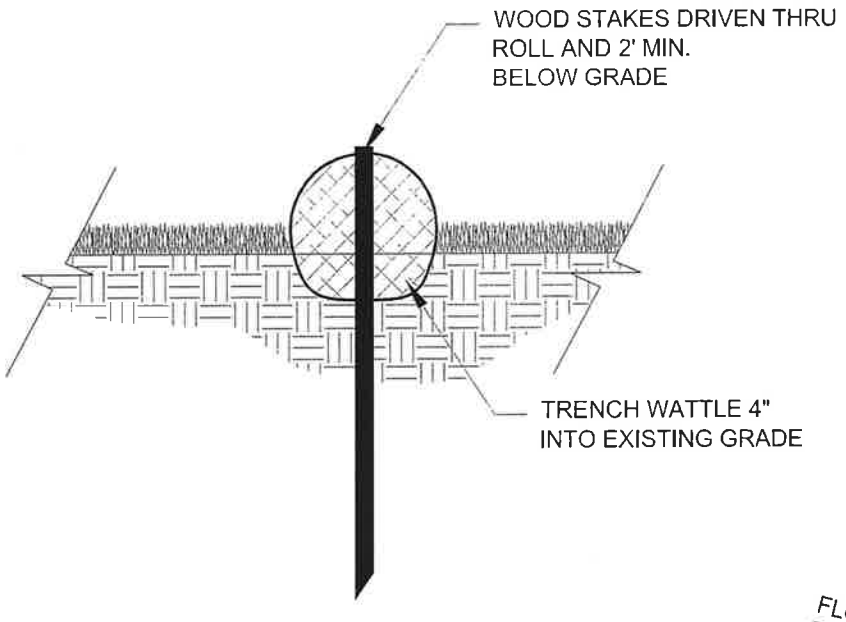
1. Location
2. Length
3. Width
4. Thickness
5. Type of materials

All plans shall include the installation, inspection, and maintenance schedules with the responsible party identified.

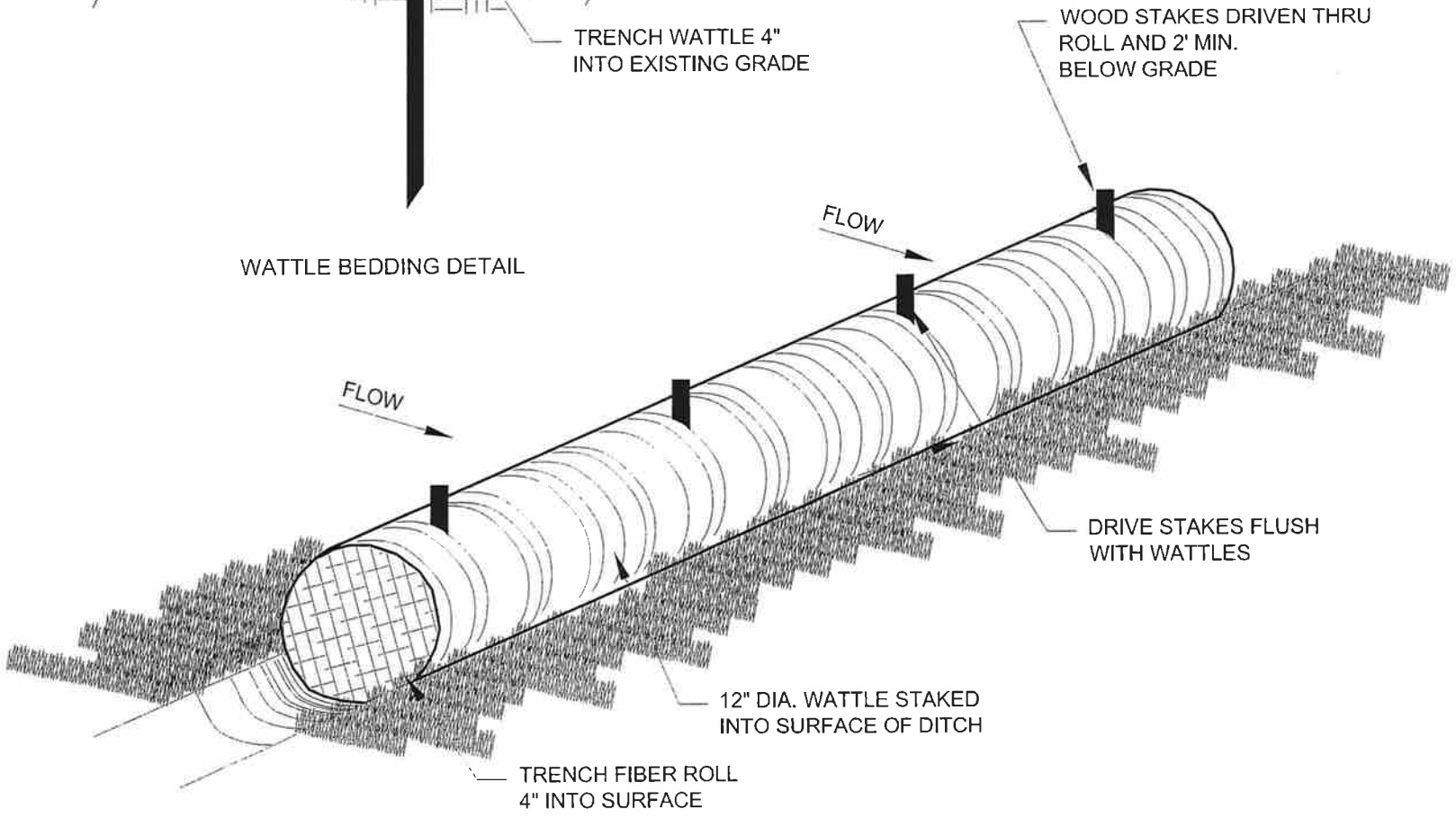
Standard drawing STABILIZED CONSTRUCTION ENTRANCE PLAN IL-630 may be used as the plan sheet.

OPERATION AND MAINTENANCE

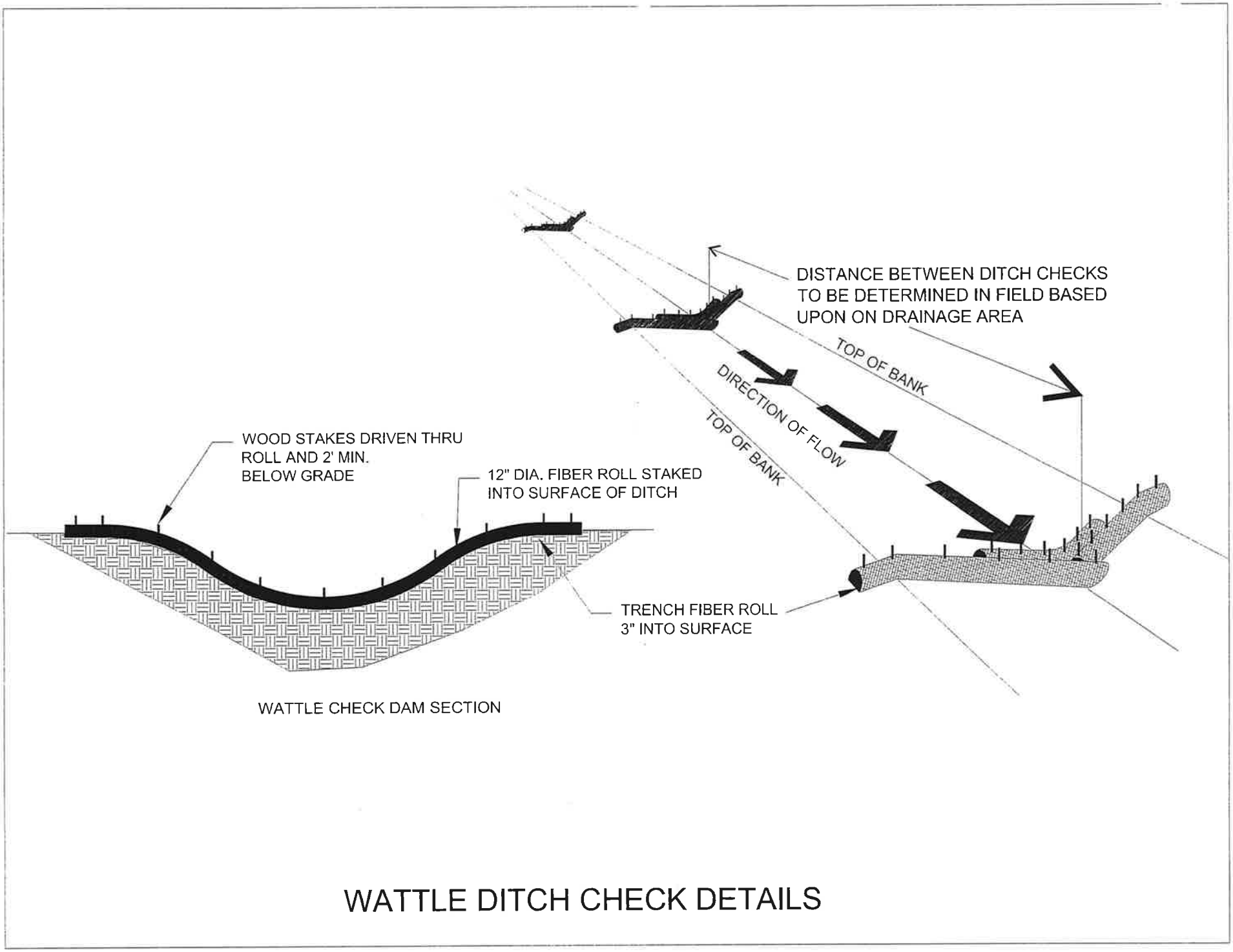
The entrance shall be maintained in a condition that will prevent tracking of sediment onto public right-of-ways or streets. This may require periodic top dressing with additional aggregate. All sediment spilled, dropped, or washed onto public right-of-ways must be removed immediately. Periodic inspection and needed maintenance shall be provided after each rain.



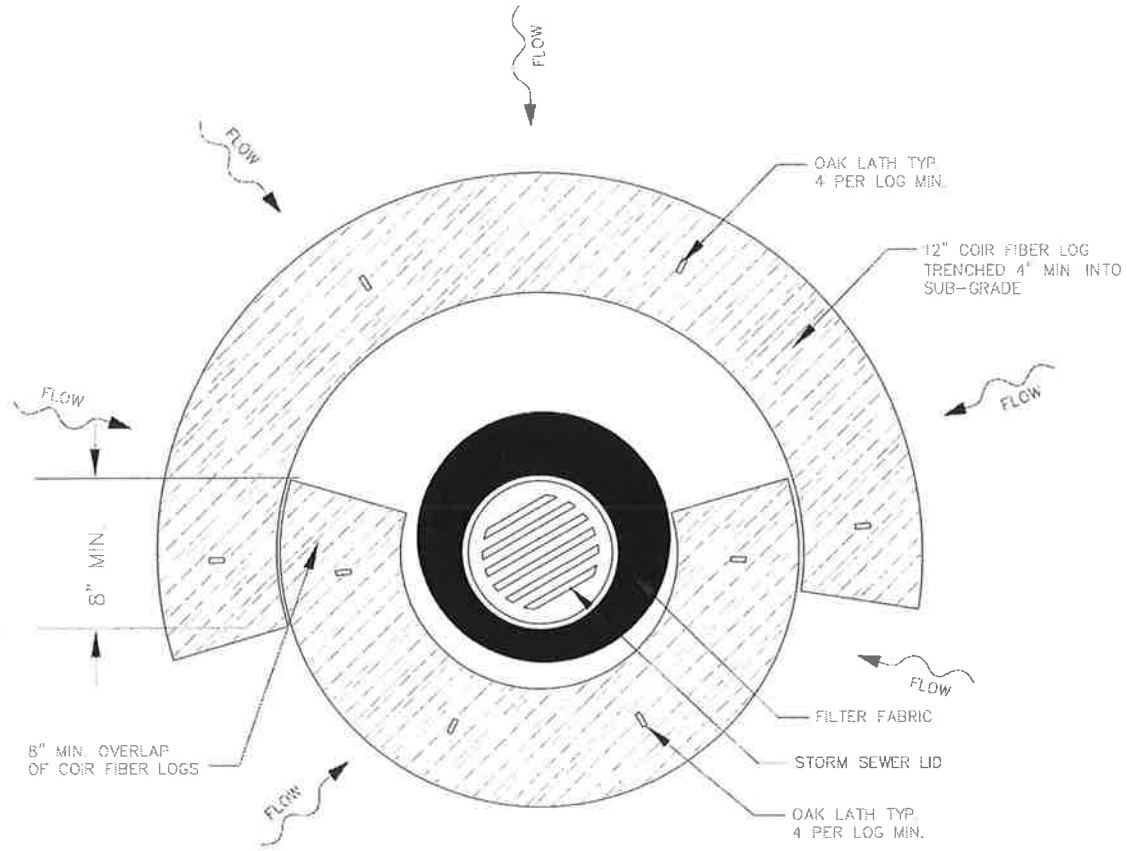
WATTLE BEDDING DETAIL



WATTLE BARRIER PLAN

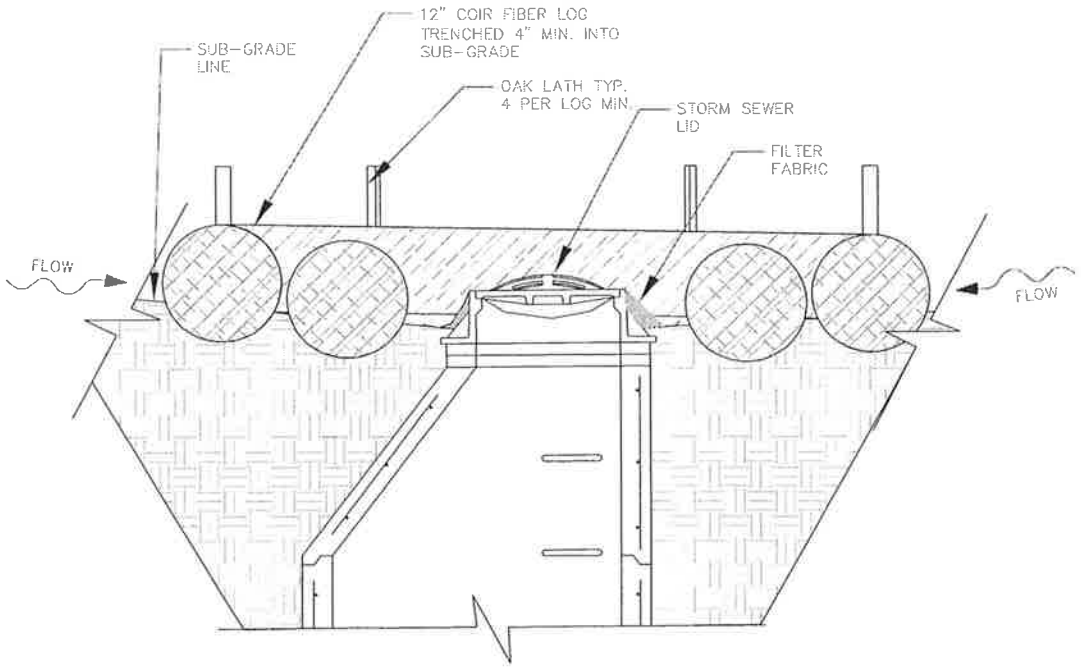


WATTLE DITCH CHECK DETAILS



YARD GRATE INLET PROTECTION

PLAN VIEW



YARD GRATE INLET PROTECTION

SECTION

APPENDIX 19

Example Public Education and Outreach Materials

▼ Administrative Online Forms

- Block Party Application
- J. Kenneth Sloan Memorial Triangle Banner Request Form
- Village Meeting Room Reservation Form

▼ Annexation & Zoning

- Development Review Application (PDF)
- Annexation Process (PDF)
- Building Codes
- Cost Recovery Form (PDF)
- Municipal Code, including Zoning Code (see Chapter 20)
- Planned Unit Development Process (PDF)
- Rezoning & Special Use Process (PDF)
- Subdivision Process (PDF)
- Variation Checklist (PDF)
- Variation Process (PDF)

▼ Board of Trustees

- Agenda Packets, Minutes and Podcasts
- Trustee Topics Newsletter
- Citizen Transparency Center

▼ Building Codes

- ICC Codes
- National Fire Protection Association
- DuPage County Coop CORS Network
- Village Municipal Code
- DuPage County Stormwater Management Permit Application (PDF)
- Accessory Structures: Patios, Decks & Detached Garages
- Fire Pits Ordinance

▼ Business Licensing

- Business License Application
- Business License Fees
- Clarendon Hills Chamber of Commerce
- State of Illinois Small Business Jobs Tax Credit Program

▼ Clarendon Hills Middle School Project

- Clarendon Hills Middle School DTMP Essay Contest (PDF)
- Clarendon Hills Middle School DTMP Redevelopment Models

▼ Community Development

- Village Municipal Code
- Chapter 20 - Zoning Regulations
- Maps (zoning, etc)
- Building Permit Standards & Applications

Categories

- All Categories
- Administrative Online Forms
- Annexation & Zoning
- Board of Trustees
- Building Codes
- Business Licensing
- Clarendon Hills Middle School Project
- Community Development
- CP - Functionality Test
- Downtown Development
- Economic Development
- Economic Development Subcommittee
- Education Garden Project
- External Planning Links
- Fire Department Website Links
- Helpful Links
- Maps
- Municipal Electric Aggregation
- Planning Links
- Police Department
- Police Department Reference Links
- Severe Weather
- Stormwater Program
- Summer Concert Series
- Sustainability
- Useful Website Links
- West Nile Virus
- Zoning Maps

- Business License Requirements & Applications
- Code Enforcement
- Economic Development
- Planning, Zoning, and Development Review

▼ CP - Functionality Test

- CivicPlus
- CivicPlus Support
- CivicPlus University

▼ Downtown Development

- 2014 Downtown Master Plan - Amended 12/19/2016 (PDF)
- Ordinance 14-11-36 in Regard to Official Comprehensive Plan (PDF)
- Community Outreach Plan (PDF)
- Subcommittee Defined Roles (PDF)
- 2013 Downtown Master Plan Update (PDF)
- 2012 Train Station Redevelopment Plan (PDF)
- Ordinance Rezoning Various Properties (PDF)
- Ordinance Establishing a Downtown Design Review Commission (PDF)
- Ordinance Creating the Downtown Design Review Overlay District (PDF)
- Ordinance Adopting the Downtown Master Plan (PDF)
- 2001 Downtown Design Review Guidelines (PDF)
- Ordinance Adopting the Comprehensive Plan (PDF)
- 1991 Comprehensive Plan (PDF)

▼ Economic Development

- DuPage County Resource Map

▼ Economic Development Subcommittee

- Experts Review Downtown Master Plan Process (PDF)
- ED Subcommittee Findings (PDF)
- Downtown Commercial Property Inventory (PDF)
- 2006 DTMP Figure Summary (PDF)
- Subcommittee Roles and Objectives (PDF)

▼ Education Garden Project

- Food Land and People
- Growing Minds Farm to School
- Growing Power
- Chicago Seed Library
- Angelic Organic Learning Center
- Slow Food Chicago
- Illinois Master Gardeners
- The Edible School Yard Project
- Garden Based Education

▼ External Planning Links

- CMAP - GOTO 2040 Plan (PDF)
- CMAP - Arts & Culture Planning (PDF)
- CMAP - Community Data Snapshot (PDF)

- Community Profile for Village of Clarendon Hills
- DuPage County GIS Map Viewer
- Kane-DuPage County Soil and Water Conservation District
- Land Use Opinion Letter Request
- Regulatory Flood Map (PDF)

▼ Fire Department Website Links

- Federal Emergency Management Agency (FEMA)
- Illinois Emergency Management Agency (IEMA)
- U.S. Centers for Disease Control & Prevention
- Illinois Fire Chiefs Association
- Pandemic Flu & Avian Flu Information
- National Fire Protection Association
- Sparky the Fire Dog
- International Association of Fire Chiefs
- Mutual Aid Box Alarm System (MABAS)
- MABAS Division 10
- Illinois Fire Marshal Kids Web Page
- LifeSource
- Safe Kids

▼ Helpful Links

- Mission
- Accessibility
- Privacy
- Copyright Notices
- Government Websites by CivicPlus®

▼ Maps

- Zoning Map (Interactive)
- Zoning Map (PDF)
- DuPage County Parcel Viewer
- DuPage County Bikeways and Trails Maps
- U.S. Census - TIGERweb
- Regulatory Flood Map

▼ Municipal Electric Aggregation

- Citizen's Utility Board Guide to Electric Aggregation
- Operation and Governance (PDF)
- Electric Aggregation Press Release (PDF)
- Electric Aggregation Presentation (PPT)
- Electric Aggregation Press Release 11-7-12 (PDF)

▼ Planning Links

- 55th Street Sub Area Plan Page
- Downtown Master Plan Page
- Downtown Overlay District (2007)
- Downtown Master Plan (2014, Amended 3/7/2016)
- Downtown Design Review Guidelines (PDF)
- Ogden Avenue Redevelopment Strategy (PDF)
- Comprehensive Plan (PDF)

▼ Police Department

- Severe Weather Siren Warning Information Video
- DuPage County OffenderWatch
- Secretary of State: Graduated Driver Licensing Program
- Secretary of State: Parental Access to Teen Driving Records

▼ Police Department Reference Links

- Too Good to be True (a "must see" website for seniors)
- Federal Trade Commission Identity Theft Website

▼ Severe Weather

- FloodSmart Community Resources
- Red Cross Disaster Safety Checklist
- How to Protect Your Home From Flood Damage
- Emergency Planning - Protect Your Pet
- How to Avoid Flood Damaged Cars
- STEM Challenge for Kids - Building Flood Resistant Homes
- Homeowner's Guide to Lightning Safety
- Outdoor Warning Siren Activation Video

▼ Stormwater Program

- Homeowners Best Management Practices - DuPage County
- DuPage County Stormwater Management
- DuPage County Stormwater Ordinance Revision Effective April 23, 2013 (PDF)

▼ Summer Concert Series

- Dancin' in the Street on Facebook
- Concert Details

▼ Sustainability

- The Conservation Foundation (DuPage County)
- School & Community Assistance for Recycling and Composting Education
- Seven Generations Ahead

▼ Useful Website Links

- AT&T
- Burlington Northern Santa Fe Railway
- Chicago Tribune
- City of Chicago
- Clarendon Hills Chamber of Commerce
- Comcast
- Commonwealth Edison (Electric)
- Daily Herald
- Doings Newspaper
- Downers Grove Township
- DuPage County
- DuPage Convention and Visitors Bureau
- Dupage Crime Stoppers
- DuPage Election Commission
- DuPage Water Commission

- Edward Hospital
- Fire Department Links
- Good Samaritan Hospital
- Hinsdale Hospital
- Illinois General Assembly
- Illinois General Assembly
- Illinois State Board of Elections
- Illinois State Police Sex Offender Database
- Illinois State Tollway Authority
- Mapquest
- Metra - Schedules & Information
- Midway Airport
- The Morton Arboretum
- National Weather Service
- NICOR Gas
- O'Hare International Airport
- Pace Bus
- State of Illinois
- Suburban Life
- Sun-Times
- Chicago Tribune - Clarendon Hills Edition
- United States Census Bureau
- United States House of Representatives
- United States Postal Service
- United States Senate
- The Weather Channel

▼ West Nile Virus

- Center for Disease Control
- DuPage Health Department
- CDC - Questions & Answers
- Illinois Department of Public Health
- West Nile Fever website
- Press Releases

▼ Zoning Maps

- Official Zoning Map - 2015 (PDF)
- Official Zoning Map - 2015 Online Map
- Special Service Area Map - 2015 (PDF)
- DuPage County Interactive GIS Mapping
- DuPage County Bikeways and Trails Maps

CONNECT WITH US

Publications

Brochures & Information

- Adopt-A-Stream
- Best Management Practices
- Car Wash Discharge Guidelines
- Celebrating 25 Years of Stormwater Management
- Conservation@Home
- Driveway Sealcoat BMPs
- Emergency Flood Control Operations
- Falling Into Winter (BMPs for Fall & Winter)
- Flood-Proofing Guidebook for Residents
- Greening Urban Areas
- Homeowners Guide to Naturalized Areas
- Illicit Discharge Detection & Elimination Public Awareness
- Know Your Watershed
- PCBMP Brochure for Homeowners
- Pet Waste Guidelines
- Rain Barrels
- Rain Barrel Installation Guide
- Springing Into Summer (BMPs for Spring & Summer)
- Storm Drain Stenciling
- Streambank Stabilization
- Sustainable Lawn Care
- Wetlands & Streams

Reports

- Annual Report 2016
- Annual Report 2015
- Annual Report 2014
- Annual Report 2013
- Annual Report 2012
- Annual Report 2011
- Annual Report 2010
- Annual Report 2009
- Annual Report 2009 Attachments
- DuPage County Natural Hazards Mitigation Plan 2012
- DuPage County Stormwater Management Plan 1989
- Stormwater Fee Feasibility Study 2007
- 2015 Stormwater Management Program Assessment

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.

DUPAGECOUNTY

DUPAGE COUNTY

STORMWATER MANAGEMENT

DUPAGE COUNTY
STORMWATER MANAGEMENT

421 North County Farm Road
Wheaton, IL 60187

(630) 407-6673

Email: stormwatermgmt@dupageco.org

www.facebook.com/lovebluedupage

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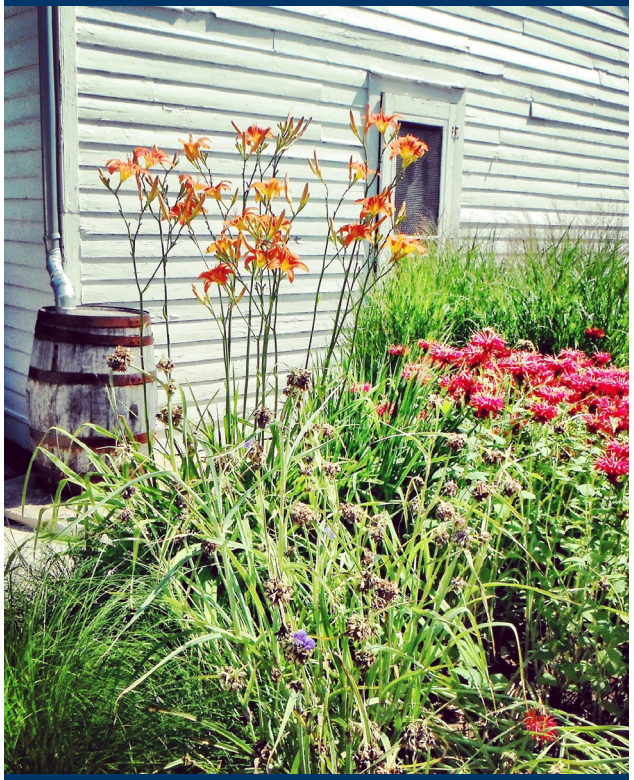
Tag your BMPs! #LoveBlueDuPage

Love Blue. Live Green.
DuPage County

www.dupageco.org/swm

DUPAGE COUNTY

STORMWATER MANAGEMENT



BEST MANAGEMENT PRACTICES

(630) 407-6673
stormwatermgmt@dupageco.org

www.dupageco.org/swm

BEST MANAGEMENT PRACTICES

TO LEARN MORE

Visit us at: www.dupageco.org/swm

— or —

Call us: (630) 407-6673

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!

REMEMBER...

- Use permeable pavers instead of asphalt or concrete.
- Plant rain gardens using native species.
- Mix composts into lawns and gardens to use for fertilizer.
- Install rain barrels and use it to water your plants and lawn.
- Don't use your hose as a broom.
- Build green vegetated roofs.
- Keep your vehicle regularly maintained and free of leakage.
- Use phosphate-free products outdoors.
- Put litter in its place.
- Use alternative deicing methods on your driveway in the winter.
- Clean up animal waste.
- Properly dispose of grass clippings and leaves.
- Wash your car on the lawn.
- Report illicit discharge into sewers and streams.

DECORATE YOUR RAIN BARREL!

DUPAGECOUNTY

DUPAGE COUNTY

STORMWATER MANAGEMENT

DUPAGE COUNTY
STORMWATER MANAGEMENT

421 North County Farm Road
Wheaton, IL 60187

(630) 407-6673

stormwatermgmt@dupageco.org

@lovebluedupage

@lovebluedupage

@lovebluedupage

Tag your rain barrel! #LoveBlueDuPage

Love Blue. Live Green.
DuPage County

www.dupageco.org/swm

DUPAGE COUNTY

STORMWATER MANAGEMENT

RAIN BARREL BENEFITS

(630) 407-6673
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www.dupageco.org/swm

RAIN BARREL BENEFITS

TO LEARN MORE

Visit us at: www.dupageco.org/swm

— or —

Call us: (630) 407-6673

Q: What is a rain barrel?

A: A rain barrel is a container used to capture and store rainwater from roofs and other impervious surfaces.

Q: What are the benefits?

A: A substantial amount of household water is used for watering our lawns and gardens during throughout the summer months. A way to combat high water bills is to invest in a rain barrel. The water it captures after a rainfall can later be used on lawns and gardens. In fact, it's actually better for your gardens to use rainwater!

Furthermore, the installation is simple and the cost is comparatively low.

Q: Why is rainwater better for your garden than tapwater?

A: There are some inorganic ions and fluoride that can be traced in regular tapwater. These ions and other compounds can cause damage to plant roots in the long run. By using an organic alternative, your garden will be more sustainable and ultimately grow to be healthier. Not only will your garden flourish, but limiting your use of tapwater will save you money! It's a win-win.

Q: What about runoff reduction?

A: Another perk of having a rain barrel is that you are benefiting the greater community and environment as a whole. Since rain barrels catch rainwater, they also reduce stormwater runoff. Stormwater runoff can drag different fertilizers, pesticides and other contaminants straight into nearby bodies of water.

Even if a rain barrel doesn't have the capicity to capture all rainwater, it is a definite help!

Remember

- Rainwater is a natural way to provide nutrients to your garden and your lawn.
- The entire community can benefit from your green efforts. Rain barrels reduce the amount of stormwater runoff that carry contaminants into our streams and rivers.
- You can decorate your rain barrel to become a part of your lawn décor.
- Water in rain barrels can be used on lawns and gardens, which may reduce your water bill!
- You can purchase rain barrels at local non-profits and retailers.

GUIDELINES FOR DRAINING SWIMMING POOLS

Your swimming pool is filled with chlorinated water. Chlorinated water discharged directly to surface waters (wetlands, lakes, streams, and rivers), roadways or storm sewers has an adverse impact on local water quality. High concentrations of chlorine, as are present in swimming pools, are toxic to wildlife and fish. Appropriate preparations should be made prior to draining down a pool during pool winterizing. It is recommended that one of the following measures be used:

- **De-chlorinate the water in the pool prior to draining. This can be done through mechanical or chemical means. These types of products are readily available at local stores.**

Or,

- **Drain the pool over a period of several days across your lawn using the following additional guidelines:**

1) Allow pool water to sit at least 2 days while receiving a reasonable amount of sunlight, and without further addition of chlorine or bromine. It is recommended that the chlorine level be tested after 2 days to ensure that safe levels are met (below 0.1 mg/l).

2) Pool discharge should be directed across your lawn, not down your driveway or into nearby storm sewer inlets. Our storm sewer system leads directly to wetlands, streams, lakes or rivers.

These recommendations are based on guidance from the Illinois Environmental Protection Agency. Visit www.epa.state.il.us/water for additional information.

You may also contact the Village Public Works Department at 949-3270.

Please do your part to help promote cleaner wetlands, streams, lakes and rivers.

Thank you.

APPENDIX 20

Construction Site Inspection Forms

CHRISTOPHER B. BURKE ENGINEERING, LTD.
CBBEL NPDES REPORT

Date of Site Visit: _____

Date of Last Site Visit: _____

NPDES Permit No.: _____

Client: _____

Site Name: _____

CBBEL Project Number: _____

CBBEL Staff Member & Title: _____

Estimated Date of Last Significant Rain Event: _____

Response to Previous Report(s):

Erosion and Sedimentation

Minor ☐ Moderate ☐ Severe ☐ N/A ☐

Observations/Recommended Action:

Condition of Site Discharge Point(s)

Good ☐ Fair ☐ Poor ☐ N/A ☐

Observations/Recommended Action:

Condition of Roadways and Locations where vehicles enter or exit the site

Good ☐ Fair ☐ Poor ☐ N/A ☐

Observations/Recommended Action:

Silt Fence

Good ☐ Fair ☐ Poor ☐ N/A ☐

Observations/Recommended Action:

Inlet/Outlet Protection

Good ☐ Fair ☐ Poor ☐ N/A ☐

Observations/Recommended Action:

Ditch Checks/Check Dams

Good ☐ Fair ☐ Poor ☐ N/A ☐

Observations/Recommended Action:

Concrete Washouts

Good ☐ Fair ☐ Poor ☐ N/A ☐

Observations/Recommended Action:

Housekeeping/Material Storage

Good ☐ Fair ☐ Poor ☐ N/A ☐

Observations/Recommended Action:

General Comments:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Printed Name & Title: _____

Signature: _____ Date: _____

PLEASE CALL IF YOU NEED ADDITIONAL INFORMATION -- PHONE: (847) 823-0500 FAX (847) 823-0520

NPDES Site Audit Report for ILR10

General Information			
Project Name			Approximate Acreage
Operator			
Project Location			
Date of Site Visit		NPDES Permit No. ILR10	
Observer's Name(s) & Title(s)			
Construction phase(s) at time of visit	☐ Pre-Construction	☐ Land Development	
	☐ Vertical Construction	☐ Roadway Construction	
	☐ Post Construction	☐ Other: _____	

Type of Site Visit:

☐ Initial Visit ☐ Follow-up ☐ Other: _____

Weather Information

Weather conditions during the site visit:

SWPPP/Soil Erosion and Sediment Control (SESC) Plan

1.	Has the SWPPP been updated/amended as required by the NPDES Permit and/or local requirements?	☐ Yes ☐ No ☐ N/A
2.	Is the Operator Certification Form signed and maintained with SWPPP?	☐ Yes ☐ No ☐ N/A
3.	Are Contractor Certification Forms signed and maintained with SWPPP?	☐ Yes ☐ No ☐ N/A
4.	Have inspection reports been completed and signed every 7 calendar days and after ≥0.5 inch precipitation events?	☐ Yes ☐ No ☐ N/A

SWPPP/SESC Plan Comments: _____

Site Observations – Describe Location and Recommend Corrective Measures Below

No.	BMP/Activity	Implemented & Maintained
1	Are discharge points and receiving waters free of sediment deposits and other pollutants (from the construction site)?	☐ Yes ☐ Action Item ☐ N/A
2	Have BMPs specified in the SWPPP been installed and maintained?	☐ Yes ☐ Action Item ☐ N/A
3	Are stabilized entrances installed and are adjacent roads clear of sediment?	☐ Yes ☐ Action Item ☐ N/A
4	Are outlets protected/stabilized?	☐ Yes ☐ Action Item ☐ N/A
5	Have stormwater management systems been constructed, stabilized, and verified to be functioning appropriately?	☐ Yes ☐ Action Item ☐ N/A
6	Are Special Management Areas (e.g., creeks, wetlands, buffers, etc.) adequately protected?	☐ Yes ☐ Action Item ☐ N/A
7	Are storm drain inlets adequately protected?	☐ Yes ☐ Action Item ☐ N/A
8	Have all idle, disturbed areas been stabilized within 14 days of cessation of construction activities in that area (or more restrictive time period per local ordinance requirement)?	☐ Yes ☐ Action Item ☐ N/A
9	Are erodible stockpiles (e.g., topsoil) properly located and adequately protected?	☐ Yes ☐ Action Item ☐ N/A
10	Are washout facilities (e.g., concrete washouts, etc.) available and maintained?	☐ Yes ☐ Action Item ☐ N/A
11	Is waste, including building materials and construction debris, collected and placed in approved receptacles?	☐ Yes ☐ Action Item ☐ N/A
12	Are non-stormwater discharges (e.g., wash water, dewatering) properly controlled?	☐ Yes ☐ Action Item ☐ N/A
13	Are vehicle and equipment fueling, cleaning, and maintenance areas free of spills, leaks, or any other potential pollutants?	☐ Yes ☐ Action Item ☐ N/A
14	Are portable toilets, material storage areas, and materials that are potential stormwater contaminants managed appropriately?	☐ Yes ☐ Action Item ☐ N/A
15	Other, based on site conditions:	☐ Yes ☐ Action Item ☐ N/A

No.	Location and Recommended Corrective Measure

General Notes and Comments: _____

NPDES Site Audit Report for ILR40

General Information			
Project Name			Approximate Acreage
Operator			
Project Location			
Date of Site Visit		NPDES Permit No. ILR10 (If Applicable)	
Observer's Name(s) & Title(s)			
Construction phase(s) at time of visit	☐ Pre-Construction ☐ Vertical Construction ☐ Post Construction	☐ Land Development ☐ Roadway Construction ☐ Other:	

Type of Site Visit:

☐ Initial Visit ☐ Follow-up ☐ Other: _____

Weather Information

Weather conditions during the site visit:

SWPPP/Soil Erosion and Sediment Control (SESC) Plan

1.	Is an NPDES Permit required for construction site activities? (e.g., Does the construction activity disturb ≥ 1 acre?)	☐ Yes ☐ No ☐ N/A
2.	Is the SWPPP on site (or accessible with location posted)?	☐ Yes ☐ No ☐ N/A
3.	Is the SWPPP/SESC Plan updated/amended as required by the NPDES Permit and/or local requirements?	☐ Yes ☐ No ☐ N/A
4.	Are Operator and Contractor Certification Forms signed and maintained with SWPPP?	☐ Yes ☐ No ☐ N/A
5.	Have inspection reports been completed and signed every 7 calendar days and after ≥0.5 inch precipitation events?	☐ Yes ☐ No ☐ N/A

SWPPP/SESC Plan Comments: _____

Site Observations – Describe Location and Recommend Corrective Measures Below

No.	BMP/Activity	Implemented & Maintained
1	Are discharge points and receiving waters free of sediment deposits and other pollutants (from the construction site)?	☐ Yes ☐ Action Item ☐ N/A
2	Have BMPs specified in the SWPPP been installed and maintained?	☐ Yes ☐ Action Item ☐ N/A
3	Have stabilized construction entrances been installed and are adjacent roads clear of sediment track out?	☐ Yes ☐ Action Item ☐ N/A
4	Are outlets protected/stabilized?	☐ Yes ☐ Action Item ☐ N/A
5	Have stormwater management systems been constructed, stabilized, and verified to be functioning appropriately?	☐ Yes ☐ Action Item ☐ N/A
6	Are Special Management Areas (e.g., creeks, wetlands, buffers, etc.) adequately protected?	☐ Yes ☐ Action Item ☐ N/A
7	Are storm drain inlets adequately protected?	☐ Yes ☐ Action Item ☐ N/A
8	Have all idle, disturbed areas been stabilized within 14 days of cessation of construction activities in that area (or more restrictive time period per local ordinance requirement)?	☐ Yes ☐ Action Item ☐ N/A
9	Are erodible stockpiles (e.g., topsoil) properly located and adequately protected?	☐ Yes ☐ Action Item ☐ N/A
10	Are washout facilities (e.g., concrete washouts, etc.) available and maintained?	☐ Yes ☐ Action Item ☐ N/A
11	Is waste, including building materials and construction debris, collected and placed in approved receptacles?	☐ Yes ☐ Action Item ☐ N/A
12	Are non-stormwater discharges (e.g., wash water, dewatering) properly controlled?	☐ Yes ☐ Action Item ☐ N/A
13	Are vehicle and equipment fueling, cleaning, and maintenance areas free of spills, leaks, or any other potential pollutants?	☐ Yes ☐ Action Item ☐ N/A
14	Are portable toilets, material storage areas, and materials that are potential stormwater contaminants managed appropriately?	☐ Yes ☐ Action Item ☐ N/A
15	Other, based on site conditions:	☐ Yes ☐ Action Item ☐ N/A

No.	Location and Recommended Corrective Measure

General Notes and Comments: _____

APPENDIX 21

Outfall Inspection Data Forms and Reports

Section 1: Background Data

Subwatershed:	Outfall ID:	
Date:	Time (Military):	
Temperature:	Inspector(s):	
Previous 48 Hours Precipitation:	Photo's Taken (Y/N)	If yes, Photo Numbers:
Land Use in Drainage Area (Check all that apply): ☐ Industrial ☐ Residential ☐ Commercial	☐ Open Space ☐ Institutional Other: _____ Known Industries: _____	

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
Storm Sewer (Closed Pipe)	☐ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Clay / draintile ☐ Other: _____	☐ Circular ☐ Elliptical ☐ Box ☐ Other: ____	☐ Single ☐ Double ☐ Triple ☐ Other:_____	Diameter/Dimensions: _____	In Water: ☐ No ☐ Partially ☐ Fully With Sediment: ☐ No ☐ Partially ☐ Fully
Open drainage (swale/ditch)	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other:	☐ Trapezoid ☐ Parabolic ☐ Other:		Depth: Top Width: Bottom Width:	

Section 3: Physical Indicators

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe algea/growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	
Do physical indictors suggest an illicit discharge is present (Y/N):			

Flow Present?	☐ Yes	☐ No	**If No, Skip to Section 7 and Close Illicit Discharge Investigation**
Flow Description	☐ Trickle	☐ Moderate	☐ Substantial

Section 4: Physical Indicators (Flowing Outfalls Only)

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Sulfide ☐ Petroleum/gas ☐ Laundry ☐ Other:	☐ 1–Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color (color chart)	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange/Red ☐ Multi-Color ☐ Other:	☐ 1–Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1–Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage ☐ Suds and Foam ☐ Petroleum (oil sheen) ☐ Grease ☐ Other:	☐ 1–Few/slight; origin not obvious	☐ 2 – Some; indications of origin	☐ 3 - Some; origin clear
Do physical indictors (flowing) suggest an illicit discharge is present (Y/N):					

Section 5: On-Site Sampling / Testing (Flowing Outfalls Only)

PARAMETER	RESULT	ACCEPTABLE RANGE	WITHIN RANGE (Y/N)	EQUIPMENT
Temperature		NA	NA	Thermometer
pH		6 – 9		5-in-1 Test Strip
Ammonia		<3 mg/L April – Oct < 8 mg/L Nov - March		Test Strip
Free Chlorine		NA	NA	5-in-1 Test Strip
Total Chlorine		< 0.05 mg/L		5-in-1 Test Strip
Phenols		< 0.1mg/L		Test Kit
Detergents as Surfactants		> 0.25 mg/L residential > 5 mg/L non-residential		Test Kit
Copper		<0.025 mg/L		Test Strip
Alkalinity		NA	NA	5-in-1 Test Strip
Hardness		NA	NA	5-in-1 Test Strip
Sample Location				

(Note NA values used for future tracing procedures)

Section 6: Data Collection for Lab Testing (see flow chart)

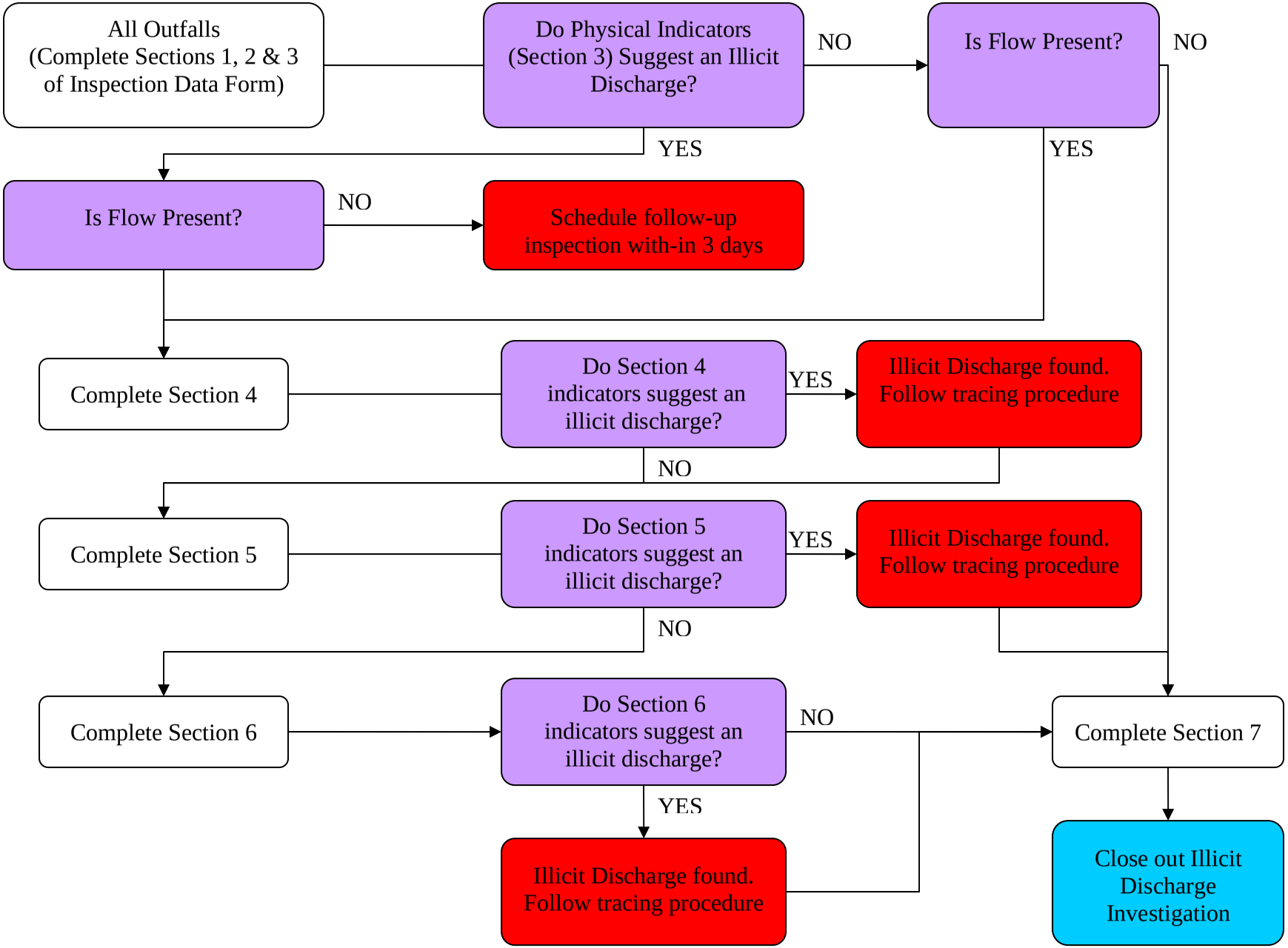
1. Sample for the lab?	☐ Yes	☐ No
2. If yes, collected from:	☐ Flow	☐ Pool

PARAMETER	RESULT (from lab)	ACCEPTABLE RANGE	WITHIN RANGE (Y/N)
Fecal Coliform		400 per 100 mL	
Flouride		0.6 mg/l	
Potassium		Ammonium/Potassium ratio or > 20mg/l	

*note label sample with outfall number

Section 7: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

Figure 4: Outfall Inspection Procedure Flow Chart



Instructions for completing the *Stormwater Outfall Inspection Data Form*

Strike out incorrect entries with a single line; correct values or descriptions are written above or near the struck-out entries. Do not use a new data entry form to correct an incorrect entry. At the completion of each outfall inspection, the field crews are responsible for ensuring that a ***Stormwater Outfall Inspection Data Form*** has been completely and correctly filled out and that all data and remarks are legible. **It is important to check that values for all chemical parameters have been entered.**

Section 1: Background Data

Subwatershed: The receiving water from the stormwater outfall inventory to be entered here.

Outfall ID: Enter the outfall identification number from the stormwater outfall inventory.

Date: To avoid confusion, dates are be written in the following manner: DAY MONTH YEAR. For example, 10 MARCH 2007.

Time: Military time (24-hour clock) to be used (for example, 8:30 a.m. would be written as 0830; likewise, 1:30 p.m. would be written as 1330).

Temperature: A concise description of the weather conditions at the time of the screening is to be recorded (for example, Clear, 75○ F).

Inspector: The name(s) of the field personnel.

Previous 48 Hours Precipitation: The total amount of precipitation during the 48 hours preceding the inspection is to be noted (for example, none-72 Hours or 0"=4 days). If the total precipitation is not known, it is appropriate to enter a qualitative assessment if the precipitation was minor. For example, *Drizzle-36 Hours* if appropriate. If the precipitation amount was significant, actual precipitation totals is obtained from a local rain gage, if available.

Photo's Taken (Yes/No): Photographs are to be taken with a camera that superimposes a date and time on the film. The date and time should correspond to the date and time recorded on the data form.

Photo Numbers: If photographs are taken, the number(s) is recorded.

Land Use: Check all that apply, noting which land use is predominate. If the industrial box is checked, any known industries are listed to facilitate potential tracing efforts.

Section 2: Outfall Description

Type of Outfall: Storm Sewer (Closed Pipe) or Open Drainage (Swale/Ditch):
First check if the outfall is either from a Closed Pipe or Open Drainage. Then complete the following row to describe outfall characteristics.

Section 3: Physical Indicators

Indicators: Complete rows describing outfall characteristics (Outfall Damage, Deposits/Stains, Abnormal Vegetation, Poor pool quality, Pipe algea/growth). This section is filled out regardless of current flow conditions. No flow during the time of the inspection, does not rule out the potential of illicit discharges. Corroding or stained pipes, dead or absence of vegetation, are potential indicators of illicit discharges from direct or indirect (i.e. dumping) sources.

Likelyhood: After inspecting the physical conditions of the outfall, the likelihood of an illicit discharge is assessed.

Flow Present (Yes/No): A *Yes* or *No* is entered here to indicate the presence or absence of dry-weather flow. If the outfall is submerged or inaccessible, "See Notes" is entered and an explanation provided in the "Notes" section.

Flow Description: A description of the quantity of the dry-weather flow is provided. Refer to Figure 6 of the SMPP.

Flow Chart Procedure:

- If *No* is entered in the "Flow Present" block and no non-flowing physical indicators appear present the inspection can be closed, skip to Section 7 of the form.
- If *No* is entered in the "Flow Present" block but indicators appear present, place the outfall on the follow-up inspection log, then the current inspection can be closed, skip to Section 7 of the form.
- If *Yes* is entered in the "Flow Present" block (regardless of the presence of non-flowing physical indicators), complete remainder of Section and proceed to Section 4.

Section 4: Physical Indicators (Flowing Outfalls Only)

Complete rows describing outfall characteristics (Odor, Color, Turbidity, Floatables). This section is filled out for flowing outfalls only.

Odor: The presence of an odor is to be assessed by fanning the hand toward the nose over a wide-mouth container of the sample, keeping the sample about 6 to 8 inches from the face. Be careful not to be distracted by odors in the air. Provide a description of the odor, if present. Refer to Table 2 of the SMPP.

Color: The presence of color in the discharge is to be assessed by filling a clean glass sample container with a portion of the grab sample and comparing the sample with a color chart, if color is present. If a color chart is used, the number corresponding to the color matching the sample is to be entered in this blank. Color is not assessed by looking into the discharge. Refer to Table 3 of the SMPP.

Turbidity "clarity": Turbidity is a measure of the clarity of water. Turbidity may be caused by many factors, including suspended matter such as clay, silt, or finely divided organic and inorganic matter. Turbidity is a measure of the optical properties that cause light to be scattered and not transmitted through a sample. The presence of turbidity is to be assessed by comparing the sample to clean glass sample container with colorless distilled water. Refer to Table 4 of the SMPP.

Floatables: The presence of floating scum, foam, oil sheen, or other materials on the surface of the discharge are to be noted. Describe of any floatables present that are attributable to discharges from the outfall. Do not include trash originating from areas adjacent to the outfall in this observation. Refer to Figure 5 and Table 4 of the SMPP.

Likelyhood: After inspecting the physical conditions of the outfall discharge, the likelihood of an illicit discharge is assessed. If flowing physical indicators are present the tracing procedure are immediately implemented by one of the field crew. The second member of the field crew continues with the inspection by performing the on-site testing in Section 5.

Flow Chart Procedure:

- If flowing physical indicators are present the tracing procedure is immediately implemented by one of the field crew. The second member of the field crew continues with the inspection by performing the on-site testing in Section 5.
- If flowing physical indicators do not suggest an illicit discharge continue with the inspection by performing the on-site testing in Section 5.

Section 5: On-Site Sampling/Testing (Flowing Outfalls Only)

Parameters: Test strip or kit chemical analyses are conducted for the following parameters in accordance with the Flow Chart, refer to Figure 7 of the SMPP.

- Color, color chart,
- Chlorine, test strip,
- Copper, test strip,
- Ammonia, test strip,
- Phenols, test kit, and
- Detergents, test kit.

Testing is done by either a test strip or test kit as applicable (refer to the equipment column). The results are compared with the "acceptable range" and the "within range" column is filled out with a Yes or No. Note that the Temperature, Alkalinity and Hardness are determined although these results do not need to be compared with an "acceptable range". These values are used to assist in determining the source of the illicit discharge during the tracing procedure.

Sampling Location: A description of the actual sampling location is to be recorded (for example, at end of outfall pipe). If the outfall is submerged or is inaccessible for sampling, an upstream sampling location may be required. A description of any upstream sampling locations is recorded here. Grab samples are collected from the middle, both vertically and horizontally, of the dry-weather flow discharge in a critically cleaned glass container. Samples can be collected by manually dipping a sample container into the flow.

Sampling Procedures: Detailed, step-by-step instructions for using the test strips and kits are available through the Public Works Department. Please also refer to Chapter 3.3.B.7.b. for test kit safety information. Use the following procedures for all test kit analyses:

1. Take a grab sample and swirl to ensure that the sample is well mixed.
2. Rinse the sample cup (25ml) twice with distilled water. Next, rinse the sample cup twice with water from the grab sample.
3. Fill the sample cup to the 25 ml mark, or as required by the instructions for the test kits. Hold the sample cup at eye level to ensure that measurements are accurate.
4. Conduct the test kit analyses following the manufacturer's instructions.
5. Dispose of the sample as follows:
   - If no chemical or reagents have been added to the sample, the water can be poured on the ground.
   - If any chemical or reagent is added to the sample, pour the water into a container marked "Liquid Waste" for proper disposal to a sanitary sewer system at the end of the day.
6. Rinse the sample cup three times with tap water and dry with a paper towel.

Flow Chart Procedure:

- If any parameter is outside of the "acceptable range" then an illicit discharge has likely been found. The tracing procedure is immediately implemented by one of the field crew. Testing can be stopped, and the second member of the field crew continues with the inspection by completing Section 7.
- If none of the parameters are outside of the acceptable range, proceed to Section 6.

Section 6: Data Collection for Lab Testing

Determine if the Village's Waste Water Treatment Plant (WWTP) has adequate staff capacity to analyze the samples.

- If the WWTP has adequate staff capacity, collect grab samples and provide them to the WWTP. Note the location of the sample. Label the sample with the outfall ID number. Proceed to Section 7 while in the field and complete the remainder of Section 6 after the lab results are available.
- If the WWTP does not currently have adequate capacity, determine if Sections 3 or 4 of the inspection form suggest an illicit discharge.
  - If Sections 3 or 4 suggest an illicit discharge contact and outside lab to perform the testing. Proceed to Section 7 while in the field and complete the remainder of Section 6 after the lab results are available.
  - If Sections 3 or 4 do not suggest an illicit discharge, note the outfall ID number. Place the outfall on the follow-up inspection log and proceed to Section 7 of the form. Re-inspect and sample the discharge when the WWTP has adequate capacity.

Sample Location: The location of the sample is noted. Additionally, the sample is labeled with the outfall ID number. Use the insert MS4 type's sampling procedures and refer to Chapter 3.3.B.7.b. for test kit safety information. . The following additional items are noted.

1. When you collect any samples you must fill out an ***Outfall Sampling Report*** **(Appendix 5.4).** The report must document time you arrive on location, take the sample and get to the plant to drop off the sample.
2. A 500-ml glass bottle sample is used to collect the sample. If you are collecting a sample that has grease 2-250ml samples taken with a glass container are required.
3. If you use the sampling container that is on a rope, it must be washed with soap and water after every use.

Parameters: Grab samples and lab testing is performed. After lab results are available enter the results here.

- If any parameter is outside of the "acceptable range" then an illicit discharge has likely been found. The tracing procedure should be immediately implemented.

- If none of the parameters are outside of the acceptable then the investigation can be closed.

Section 7 Any Non-Illicit Discharge Concerns

Any problems or unusual features are to be entered here. If the outfall appears to be potentially impacted by inappropriate discharges, this can be recorded here. This section is to be completed even if no flow is observed.

Outfall Sampling Report

Structure ID # Date:

Outfall ID # Time of Sample:

Sampled By: AM PM

Glass Bottle Size: 250 ml 500 ml 32 ml

Tests requested: Flouride Potassium Fecal Coliform

Relinquished By:	Date:
Comments:	Time:
Received By:	Date:
Comments:	Time:
Relinquished By:	Date:
Comments:	Time:
Received By:	Date:
Comments:	Time:

APPENDIX 22

Detention Pond Checklists

Detention/Retention Pond Checklist

Inspected by:	**Date:**
	Weather Conditions:

Number	**Name/Location**	**Flood Height** *(low/medium/high)*	**Condition** *(Good / Fair / Poor)*	**Comments**
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				

Detention/Retention Pond Checklist

Inspected by:	**Date:**	
	Weather Conditions:	

Number	**Name/Location**	**Flood Height** *(low/medium/high)*	**Condition** *(Good / Fair / Poor)*	**Comments**
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
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20				

APPENDIX 23

Pre-Construction Meeting Forms

Village of Clarendon Hills

Christopher B. Burke Engineering, Ltd.

Preconstruction Meeting Agenda Items

Date: _____
Location: _____
Start Time: _____
Adjourn Time: _____

Project: _____
Building Permit #: _____
Developer: _____

Attendees: See Attached "Sign In Sheet"

Development Coordinator:		24 hr. Emergency Contact:	
Address:		Address:	
City:		City:	
Zip Code:		Zip Code:	
Cell Phone #:		Cell Phone #:	
Office Phone #:		Office Phone #:	
Fax #:		Fax #:	
Email address:		Email address:	

( ) 1. Certificate of Insurance
- ( ) A. Completed By DEVELOPER/CONTRACTOR as requested by the Village
- ( ) B. Required from DEVELOPER/CONTRACTOR prior to Notice to Proceed and/or Building Permit
- ( ) C. Submitted (YES) (NO)
- ( ) D. Additionally Insured to be listed
  - ( ) i. The Village of Clarendon Hills
  - ( ) ii. Other _____

( ) 2. Contractors
- ( ) A. All Contractors Named
  - ( ) i. Sub #1_____(Underground)_____
  - ( ) ii. Sub #2_____(Paving) _____
  - ( ) iii. Sub #3_____(Earthwork) _____
  - ( ) iv. Sub #4_____(Street Lighting)_____
  - ( ) v. Sub #5_____(Other) _____

Village of Clarendon Hills

Christopher B. Burke Engineering, Ltd.

Preconstruction Meeting Agenda Items

( ) 3. Engineer's Authority
- ( ) A. Furnish DEVELOPER all desired assistance in interpreting plans and specifications.
- ( ) B. Assistance does not relieve the DEVELOPER and/or CONTRACTORS of any responsibility for the Work. Faulty work must be corrected by the DEVELOPER and/or CONTRACTOR.
- ( ) C. ENGINEER does not have control over or charge/supervision of, nor be responsible for construction means, methods, techniques, sequences, procedures or controls, or the safety precautions or programs in connection with the Work.
- ( ) D. Village Contacts:

( ) 4. Drawings
- ( ) A. APPROVED FOR CONSTRUCTION ENGINEERING
- ( ) B. APPROVED FINAL PLAT
- ( ) C. ENGINEER'S SURFACE DRAINAGE WATER CERTIFICATE (signed)
- ( ) D. CONTRACTOR'S CERTIFICATE (NPDES)
- ( ) E. DEVELOPER / CONTRACTOR to field verify for accuracy of all Drawings pertinent to this project. Any discrepancies found shall be brought to the attention of the VILLAGE/OWNER immediately.
- ( ) F. Construction set of Drawings provided to Village
- ( ) G. Additional Drawings requested by Village: _____
- ( ) H. Electronic Copy of drawings provided to Village

( ) 5. Responsibilities of DEVELOPER / CONTRACTORS
- ( ) A. Work schedule to be submitted prior to Start of Construction
- ( ) B. Existing Utilities: Joint J.U.L.I.E. meeting to be coordinated by CONTRACTOR prior to Notice To Proceed
  - ( ) i. Date of Joint J.U.L.I.E. meet _____

( ) 6. Submittals
- ( ) A. Required Submittals
  - ( ) i. NPDES Documentation (ILR10 or Letter of Coverage)
  - ( ) ii. IEPA Operating Permits
    - (1) Sanitary
    - (2) Water
  - ( ) iii. Shop Drawings for Street Lighting System (publicly maintained system only)

Village of Clarendon Hills

Christopher B. Burke Engineering, Ltd.

Preconstruction Meeting Agenda Items

( ) 7. NPDES – Sediment & Erosion Control
- ( ) A. Inspections by Developer Forwarded to Village via email to dungerleider@clarendonhills.us
- ( ) B. Developer Contact = _____ email = _____

( ) 8. Mobilization and Demobilization
- ( ) A. Date of Mobilization _____
- ( ) B. Access

( ) 9. Project Progress/Coordination Meetings
- ( ) A. Bi-Weekly: every other _____
- ( ) B. First meeting to be held on _____

( ) 10. Working Hours per Village Ordinance
- ( ) A. Weekdays 7AM – Dusk
- ( ) B. Saturdays 8AM – Dusk
- ( ) C. Sundays 8AM - Dusk

( ) 11. Temporary Construction Facilities
- ( ) A. Detours
  - ( ) i. Route & Signage Per Approved Plan
  - ( ) ii. Notification to public (CC: Village)
    - (1) School Districts
    - (2) Fire & Police & Sheriffs Departments
    - (3) USPS
- ( ) B. Maintenance of Traffic Control
  - ( ) i. Name of Traffic Control Sub:_____
  - ( ) ii. Responsible Traffic Control Contact:_____
  - ( ) iii. Phone #:_____
- ( ) C. Maintenance of Erosion Control
  - ( ) i. Name of Erosion Control Sub:_____
  - ( ) ii. Responsible Erosion Control Contact:_____
  - ( ) iii. Phone #:_____

( ) 12. Street Cleaning – Daily if needed

( ) 13. Approved Material List

Village of Clarendon Hills

Christopher B. Burke Engineering, Ltd.

Preconstruction Meeting Agenda Items

( ) 14. General Subdivision Ordinance Requirements

( ) A. Items listed below **do not constitute all requirements** as listed in the Village's Subdivision Ordinance.

( ) B. All Subcontractors should be made aware of the following general requirements included in the Village Subdivision Ordinance.

( ) C. SANITARY

( ) i. *Sewer Depth.* Min. depth of 3½ feet to the sewer invert shall be required. Max. depth of 25 feet.

( ) ii. Prior to pipe laying and jointing, the trench shall be sufficiently dewatered to maintain the water level in the trench at or below the base of the bedding.

( ) iii. Manholes shall be no less than 48 inches in dia. and shall be constructed with an external chimney seal in accordance with the sanitary manhole detail.

( ) iv. Allowable service materials are ductile iron and PVC.

( ) v. The contractor shall keep a record of the location of branch fittings, riser pipes, and service lines by measurement to the nearest downstream manhole. Location information shall be included on record drawings.

( ) vi. Testing Requirements

(1) Low Pressure Air Test
(2) MH Vacuum
(3) Mandrill
(4) Videotaping

( ) D. WATER DISTRIBUTION

( ) i. Fire Hydrants

(1) Hydrants shall be installed no closer than 3 feet to the face of the hydrant, steamer port (pumper nozzle), nor further than 8 feet from the back curb.
(2) No hydrant shall be installed within 4 feet of any obstruction, nor shall any obstruction be placed within 4 feet of a hydrant.
(3) FLAGS – to be installed on lower portion of bonnet & on opposite side of steamer port

( ) ii. Valves - All valves 12 inches and larger shall be butterfly valves iron body rubber seat type. All valves shall open counter clockwise with non-rising stem (except hand valves).

( ) iii. Vaults

(1) All valves proposed to be placed under pavement shall be installed in precast concrete vaults as specified in the valve vault detail.
(2) Vaults shall be constructed with an external chimney seal.
(3) All other valves and auxiliary valves shall be installed within cast iron valve boxes fitted with a valve box stabilizer.
(4) Vaults and boxes shall not be allowed within driveway limits.

( ) iv. Pipe - All plastic water main shall be installed with a minimum ten (10) gauge solid copper tracer wire. The wire shall be continuous through valve vaults and boxes and shall be accessible up to the inside top of all vault frames and/or valve box covers.

( ) v. Water Service Lines
- (1) Service lines shall be continuous with no splices or change in material between either the corporation and the curb stop or the curb stop and the house meter.

( ) vi. Testing Requirements
- (1) Static Pressure
- (2) Leakage
- (3) Chlorination - (results to be delivered to McHenry Analytical by CONTRACTOR

( ) E. COMBINATION CONC C&G

( ) i. All C&G shall be continuously reinforced using two No. 4 bars.

( ) ii. Stamped with "W" indicating the location of a water service & Stamped with "S" indicating the location of a sanitary sewer service.

( ) F. DRIVEWAYS / APPROACHES

( ) i. No manholes, inlets, valve vaults or other types of structures shall be allowed to be constructed in a driveway or driveway approach unless approved by the Director of Public Works

( ) ii. Constructed with air-entrained Portland Cement – 4% to 6% in accordance with the IDOT "Standard Specifications". The concrete mix shall be a min. of six bags of Portland Cement per CY of concrete and shall use fiberglass reinforcement additives. The use of welded wire fabric is prohibited.

( ) iii. The final surface of all concrete driveway approaches shall have an appropriate sealant applied in accordance with the IDOT "Standard Specifications".

( ) iv. When the subgrade has been prepared & no sooner than 24 hours prior to placing concrete, the contractor shall notify the Village Inspector that forms are in place and the subgrade is ready for inspection. No concrete shall be placed until the subgrade has been inspected and approved

( ) v. *Cold Weather Requirements.* No concrete shall be placed when the air temperature is below 40° F. or is between 40° and 45° F. and falling unless approved by the Village Engineer. In no case shall concrete be placed on frozen subgrade.

( ) G. *SIDEWALKS*

( ) i. MATERIAL - All sidewalks shall be constructed of PCC Concrete & shall be at least a 6 bag mix. 4% to 6% air- entrained & Slump of not less than 2 inches or more than 4 inches. Fiberglass reinforced additives shall be used on all sidewalks extending through driveways.

( ) ii. *SUBGRADE PREPARATION* When the subgrade has been prepared and no sooner than 24 hours prior to placing concrete, the contractor shall notify the Village Inspector that forms are in place and the subgrade is ready for inspection. No concrete shall be placed until the subgrade has been inspected and approved.

( ) iii. *COLD WEATHER REQUIREMENTS – Same as for C&G and Driveways*

( ) iv. When the temperature of the air is expected to drop below 40° F. within 24 hours after placing the concrete shall be protected with 9 inches of loose, dry straw and a layer of burlap, or other acceptable material, for a period of at least five days.

( ) H. STREET LIGHTING

( ) i. Street lighting systems shall be guaranteed from date of acceptance for a period of 3 years.

( ) ii. Submit for review Shop Drawings / Catalog Cuts to Village for review (poles, luminaries, conduit, controller, foundations, etc.)

( ) iii. Streetlights shall be no closer than 8 feet away from any fire hydrant.

( ) iv. SPARE POLES, LUMINARES & LAMPS - The Village shall be provided with spare poles and luminaries for streetlight installations in the ratio of 1 for every 20 in the system to be installed. A payment in lieu of spare poles and luminaries, at the unit cost of a said streetlight installation, can be made when determined by the Director of Public Works that a sufficient inventory of the same type of pole and luminaries exists at Public Works.

( ) I.WIRE/CABLE REQUIREMENTS

( ) i. All wire and cable installed for street lighting system from the power source to the lighting poles, shall be contained in either three conductor 1¼ inch minimum diameter unit-duct manufactured from high density smooth wall polyethylene electrical plastic duct or heavy-walled galvanized steel conduit.

( ) ii. All wire, cable and unit-duct to be furnished are to be installed with a min. burial of **30 inches** in locations on the right-of-way side of the front set-back limit and are to be installed with a min. burial of **48 inches** in locations on the rear yard side of the front set-back limit.

( ) iii. All circuits shall be tested in the presence of the Village Electrical Inspector.

( ) iv. Cable slack shall be provided such that there is a min. of 3 feet of slack at the base of all light poles.

( ) v. When passing under concrete or asphalt surfaces, rigid galvanized steel conduit not less than 2 inches in diameter shall be used for raceways for unit-duct.

( ) J. Wetland Improvements
- ( ) i. Annual Reports – To be forwarded to the Village for review (dungerleider@clarendonhills.us)

( ) K. FINAL ACCEPTANCE
- ( ) i. Request in writing prior to August 15th directed to Village Engineer
- ( ) ii. Punch list work completed and re-inspected prior to Oct. 1st
- ( ) iii. One year Maintenance Period

( ) L. OTHER ITEMS

APPENDIX 24

Employee Training Agendas or Course Information

Clarendon Hills NPDES Compliance Seminar Outline

I. NPDES Program Overview
   a. What is NPDES?
   b. What is MS4?
      - Aspects of MS4s
   c. What is a BMP?
   d. Why are we here?

II. Regulation of Discharges to the MS4
   a. Illicit Discharges
      - Examples
      - Detergents
      - Sanitary Sewer Waste
      - Naturally Occurring Discharges
      - Exemptions

   b. Construction Runoff Control
      - Silt Fence
      - Dust Control
      - Wattles vs. Straw Bales
      - Inlet Protection
      - Riprap
      - Check Dams
      - Diversion Dikes
      - Washouts
      - Dewatering Activities

   c. Pollution Prevention and Good Housekeeping
      - Salt Storage
      - Municipal Projects
      - Material Storage
      - Street Sweeping
      - Chemical Storage
      - Proper Disposal

   d. Consequences of Non-Compliance

NPDES Phase II MS4 Training Seminar

Darren T. Olson, PE, CFM
Travis M. Parry, PE, CFM, CMS4S
Christopher B. Burke Engineering, Ltd.

What is NPDES?

National Pollutant Discharge Elimination System

Permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States (construction sites, WWTP, industrial sites, municipalities)

- Point sources are discrete conveyances such as pipes or man-made ditches
- Not for individual homes that are connected to a municipal system or use a septic system
- Industrial, municipal, and other facilities must obtain permits if their discharges go directly to surface waters.

What is an MS4?

Municipal Separate Storm Sewer System

A conveyance or system of conveyance within a state, city, or other public entity that discharges to waters of the United States:

- Designed or used for collecting storm water;
- Is not a combined sewer; and
- Is not part of a Publicly Owned Treatment Works (POTW)

Aspects of the MS4

- Not Always A System of Storm Sewers
- MS4's May Include:
  - Ditches
  - Curbs
  - Gutters
  - Streams
  - Wetlands
  - Detention Basins
  - Drainage Swales
  - Any Storm Water Conveyance

Other MS4 - Examples

- Highway Departments
- Universities
- Local Sewer Districts
- Hospitals
- Military Bases
- Prisons
- Airports

Best Management Practices

- A BMP is a method, device, or practice for removing, reducing, or preventing pollution in stormwater runoff from reaching receiving waters.
- Examples:
- Flyers on Fertilizer Usage
- Public Meetings on Stormwater
- Construction – Silt Fence
- Municipal – Street Sweeping

Stormwater Management Program Plan (SMPP)

- Required to develop a SMPP comprised of BMPs and measurable goals for each of the following six minimum control measures:

1. Public education and outreach on storm water impacts
2. Public involvement and participation
3. Illicit discharge detection and elimination
4. Construction site storm water runoff control
5. Post construction storm water management in new development and redevelopment
6. Pollution prevention/good housekeeping for municipal operations

Qualifying Local Programs

- MS4s can team together or work with outside organizations that are a Qualifying Local Program (QLP) to implement BMPs
- Examples:
  - Public service announcements at DuPage County
  - Watershed scale stream monitoring
  - Adopt-a-Highway Program
  - Cannot rely solely on QLPs!

Recent Permit Updates

- 5-Year Permit Cycles
- First Permit Cycle for Small MS4s: 2003-2008
- Latest Permit issued February 10, 2016 and became effective March 1, 2016!

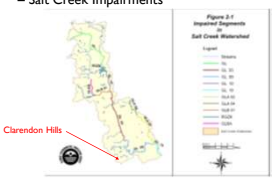
Permit requirements did not get easier…but world is not ending

Recent Permit Updates

- Chloride and Fertilizer Requirements
  - Must participate in watershed group to implement chloride control measures – DuPage River Salt Creek Workgroup
  - Handling and storage requirements for municipal chloride and fertilizer supplies
- Total Maximum Daily Load (TMDL) Requirements – Salt Creek Impairments
  - Chloride, dissolved oxygen
  - New permit must specify TMDL and impaired stream segments
  - Assessment of Village program with respect to TMDL must continue for two NPDES permit cycles
  - Annual Report must address TMDL compliance

Recent Permit Updates

- Total Maximum Daily Load (TMDL) Requirements – Salt Creek Impairments



Recent Permit Updates

- One Public Stormwater Meeting per Year
- Annual Training for Municipal Staff

Recent Permit Updates

- Assess impacts to stormwater within municipality from Climate Change
  - Educational materials
  - Best Management Practices
  - Flood control projects

Recent Permit Updates

- Identify Environmental Justice Areas
  - Low income or minority areas within municipality
  - Targeted public involvement required

Like the Hall of Justice, Environmental Justice requires the fair treatment of all people, regardless of race or income

Recent Permit Updates

- Storm sewer outfall inspections must now be completed under dry weather flow conditions.
- Development and implementation of a stream monitoring and assessment program
  - If population >25,000, water quality monitoring is required
  - If population <25,000 visual assessment is sufficient
  - Monitoring results must be used to evaluate effectiveness of stormwater plan
  - DuPage County and the DuPage River Salt Creek Workgroup are currently completing monitoring

Why Are We Here?

- ❑Village must regulate ALL discharges to the MS4
  - Construction Sites
  - Commercial Uses
  - Industrial Uses
  - Private Residences
  - Municipal Facilities and activities

Why Are We Here?

Enforcement = Compliance Audit

- June 15, 2017
- 15 Page Checklist
- Municipal Facilities Audit
- Private Field Inspections
- Outfall Receiving Streams

Minimum Control Measure #3

- Illicit Discharge Detention and Elimination Program

Illicit Discharges

- Any discharge to the MS4 that is not composed entirely of stormwater

Outfall Inspections

1. Background Data
2. Outfall Description
3. Quantitative Characterization
4. Physical Indicators – Flowing Only
5. Physical Indicators – Both
6. Overall Outfall Characterization
7. Data Collection
8. Other Concerns

Outfall Inspections

1. Background Data
   a) Personnel
   b) Weather (temp, rainfall, etc)
   c) Location
   d) Land Use

Outfall Inspections

2. Outfall Descriptions
   a) Type (open, closed)
   b) Material (RPC, PVC, etc)
   c) Shape
   d) Size
   e) Submerged

Outfall Inspections

Outfall Inspections

3. Quantitative Characterization
   a) Flow Parameter (volume, depth, etc)
   b) Result
   c) Unit
   d) Equipment

Outfall Inspections

4. Physical Indicators - Flowing
   a) Indicator (odor, color, etc)
   b) Presence
   c) Description (sewage, sulfur, etc)
   d) Severity

Outfall Inspections

Outfall Inspections

5. Physical Indicators - Both
   a) Indicator (Damage, stains, etc)
   b) Presence
   c) Description (cracking, oily, etc)
   d) Comments

Outfall Inspections

Outfall Inspections

6. Overall Outfall Characterization
   a) Unlikely
   b) Potential
   c) Suspect
   d) Obvious

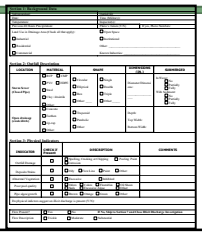
Outfall Inspections

7. Overall Outfall Characterization
   a) Sample collected
   b) Where

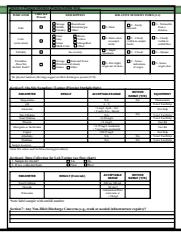
8. Non Illicit Discharge Concerns
   a) Trash
   b) Erosion
   c) Etc.

Outfall Inspections

Outfall Inspections

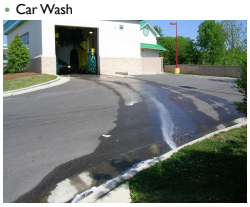


Outfall Inspections



Illicit Discharges - Examples

- Car Wash



Illicit Discharges

- Paint spills

Illicit Discharges

- Sanitary Sewer Overflows

Illicit Discharges

- Grass Clippings/Yard Waste

Illicit Discharges

- Motor Oil

Illicit Discharges

- Leaking Dumpster

Illicit Discharges

- Detergents

Illicit Discharges

- Animal Waste

Illicit Discharges

- Leaking Drums

Illicit Discharges

- Suds

Illicit Discharges

- Oil and Grease

Illicit Discharges
Sanitary Sewer Waste

- Gray Water

Illicit Discharges Sanitary Sewer Waste

- Foam

Illicit Discharges Sanitary Sewer Waste

- Staining

Illicit Discharges Sanitary Sewer Waste

- Failing Septic System or cheater pipes

Illicit Discharges

- Petroleum Sheen

Illicit Discharges

- Spills

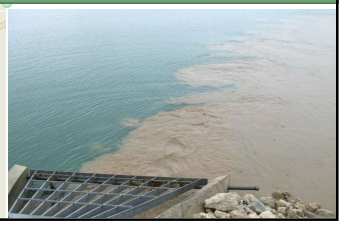
Illicit Discharges

Trash and Debris

Illicit Discharges Industrial

- Chemical Odor

Illicit Discharge: Outfalls



Illicit Discharge: Oil Sheen

Illicit Discharges Industrial

- Discolored water

Illicit Discharges Agricultural Runoff

- Excessive Vegetation

Illicit Discharges Fertilizers

- Blue Green Algae

Illicit Discharges or Naturally Occurring?

- Fish kills

Illicit Discharges or Naturally Occurring?

- Foam or Suds

Illicit Discharges or Naturally Occurring?

- Staining and Discoloration

Illicit Discharges or Naturally Occurring?

- Algae Blooms

Illicit Discharges or Naturally Occurring?

- Sheens and Deposits

Illicit Discharges - Exemptions

- water line flushing
- landscape irrigation
- diverted stream flows
- rising ground waters
- uncontaminated ground water infiltration
- discharges from potable water sources
- foundation drains
- air conditioning condensation
- irrigation water
- springs
- water from crawl space pumps
- footing drains
- lawn watering
- individual residential car washing
- flows from riparian habitats and wetlands

Minimum Control Measure #4 & 5

- Construction Site Runoff Control – During and After Contstruction

Construction Site Runoff Control – During and Post

- A BMP is a method, device, or practice for removing, reducing, or preventing pollution in stormwater runoff from reaching receiving waters.
- Effectiveness of BMP's
- Selection
- Installation
- Maintenance

Silt Fence

- Tributary area to fence is appropriate
- Trenched into ground
- Backfilled
- Stake spacing w/ lath
- Wire Backing (if required)
- Not for Concentrated Flow
- **NOT A FIX ALL!**

Silt Fence Indicating an Erosion Problem…

Silt Fence Failure: Use Alternative

Wattles to Replace Straw Bales

- Can be used in different applications
  - Inlet Protection
  - Ditch Checks
  - Bank Stabilization
  - Perimeter Control

Wattles to Replace Straw Bales

Inlet Protection

- A variety of inlet protecting BMPs exist. Choose the appropriate BMP for each situation.
- Types of inlet protection include:
  - Filter fabric (Woven Monofilament)
  - Wattles
  - Pre-fabricated Devices
  - Filter Baskets
  - Silt fence
  - Stone
  - Vegetated Buffers
  - Any combination of the above

Inlet Protection

Inlet Protection

Result of Failing to Maintain Inlet Protection

Inlet Protection: Wattles

Prefabricated: Long Term and High Flow

Prefabricated: Long Term and High Flow

Street Inlet Protection

Street Inlets

Street Inlet Protection: Filter Fabric

- Woven Monofilament
- Low flow inlets
- Wrap around back
- Staple
- Don't puncture
  - May cause flooding
- Require Maintenance

Filter Basket

Filter Basket Cleanout

Stone Inlet Protection

Street Sweeping

- Streets are scraped, and swept to maintain sediment free roadways
- Curb ramps are constructed of non-erodible materials
- Removes dirt and debris before entering a stormwater management facility.
  - Reduces catch basin maintenance.

Dirt Ramps

Construction Entrance / Exit

- Install at:
  - Concrete Washout
  - Soil Stock Piles
  - Construction Roads
- Proper size
- Correct materials used to construct
  - DO NOT CAP WITH GRAVEL
  - Fabric Installed
- Remove accumulated sediment, install stone

Construction Entrance / Exit

Concrete/Construction Washouts

Concrete/Construction Washouts

Concrete/Construction Washouts

- Make the drivers aware
- Washout area is located at least 50' from storm drains or drainageways
- Stone driveways don't count…

Concrete/Construction Washouts

Concrete/Construction Washouts

Construction Washout

De-Watering Illicit Discharge

Dewatering…Floating the Pump

Dewatering…Floating the Pump

Filter Bag…Onsite

Filter Bag…At Capacity

Filter Bag…Fine Clays

Filter Bag…Fine Clays

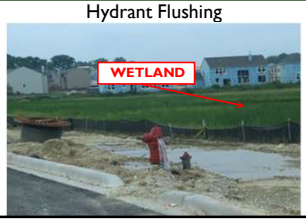
Dewatering Activities

Dewatering Activities

Illicit Discharge From Pumping

Non-Storm Water Runoff

Hydrant Flushing



Non-Storm Water Runoff

Water Main Flushing

Unprotected Inlet

Next Stop…Violationville

Illicit Discharge

Pollutant Storage

- Store possible pollutants in an upland area, away from inlets
- Have MSDS onsite
- Include storage area in SWPPP
- Document possible pollutants in SWPPP

Pollutant Storage

Designate chemical storage area(s) onsite to store:

- Fuel Trucks
- Fuel Tanks
- Form Oil
- Hydraulic Oil
- Tar Buckets
- Port-a-Potty's

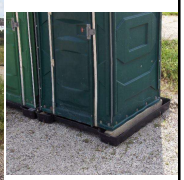
Pollutant Storage Violation

Pollutant Storage Violation

Pollutant Storage Example

Port-A-Potty

Pollutant Storage



Secondary Containment

Soil Stockpiles

- Stockpiles are surrounded by silt fence
- Stockpiles are stabilized
- Stabilized Entrances
- Location!

Stockpiles Are More Than Soil

Minimum Control Measure #6

- Pollution Prevention and Good Housekeeping

Pollution Prevention and Good Housekeeping

- Procedures or activities that municipalities and their employees can do to prevent or reduce stormwater contamination from municipal operations.

Pollution Prevention and Good Housekeeping

Municipal Activity	Potential Pollutants							
	Sediment	Nutrients	Trash	Metals	Oil & Grease	Organics	Pesticides	Oxygen Demanding Substances
Building and Grounds Maintenance and Repair	X	X	X	X	X	X	X	X
Parking/Storage Area Maintenance	X	X	X	X	X	X		X
Waste Handling and Disposal	X	X	X	X	X	X	X	X
Vehicle and Equipment Fueling			X	X		X	X	
Vehicle and Equipment Maintenance and Repair				X		X	X	
Vehicle and Equipment Washing and Steam Cleaning	X	X	X	X		X	X	
Outdoor Loading and Unloading of Materials	X	X	X	X		X	X	X
Outdoor Container Storage of Liquids		X		X		X	X	X
Outdoor Storage of Raw Materials	X	X	X			X	X	X
Outdoor Process Equipment	X		X	X		X	X	
Overwinter Activities			X	X	X	X	X	X
Landscape Maintenance	X	X	X			X		X

Pollution Prevention and Good Housekeeping

- Inventory and Assessment
  - Location of all municipal facilities
  - Activities at each site
  - Potential Pollutants

Pollution Prevention and Good Housekeeping

- Fixed Facilities
  - Public Works, Village Hall, Police Stations, Storage Yards, Golf Courses etc.
- Field Activities
  - Street Sweeping, watermain breaks, road projects, pesticides, etc.

Pollution Prevention and Good Housekeeping

Field Program Activities and Associated Potential Pollutants

Field Programs	Activities	Potential Pollutants							
		Sediment	Nutrients	Trash	Metals	Oil & Grease	Organics	Pesticides	Oxygen Demanding Substances
Roads, Streets, and Highways Operation and Maintenance	Sweeping (curb cleaning)	X	X	X	X		X		X
	Street Repair, Maintenance, and Striping / Painting	X		X	X		X	X	
	Bridge and Structure Maintenance	X		X	X		X	X	
Plaza, Sidewalk, and Parking Lot Maintenance and Cleaning	Sidewalk Cleaning	X	X			X			X
	Pedestrian Cleaning	X	X		X		X		
	Sidewalk Repair	X		X					
	Landscaping Tasks	X		X	X	X			X

Pollution Prevention and Good Housekeeping

| | | | | | | |

Pollution Prevention and Good Housekeeping

Pollution Prevention and Good Housekeeping

Pollution Prevention and Good Housekeeping

- Store piles under a roof or impermeable layer
- No Floodplain or Wetlands
- Stored on impermeable surfaces
- Contained within a curb or berm
- Store at least 50 feet from wetlands or streams

Salt Application

- Identify Environmentally sensitive areas on salt routes
  - Wetlands, streams, drainage swales, prairies, lakes, ground water recharge
- Install impermeable barriers along sensitive areas
- Reduce plowing speed
- Reduce application rates at sensitive areas
- Clean out storm drains before the spring rains

Pollution Prevention and Good Housekeeping

Pollution Prevention and Good Housekeeping

Pollution Prevention and Good Housekeeping

- Municipal Projects

Pollution Prevention and Good Housekeeping

- Watermain Breaks

Pollution Prevention and Good Housekeeping

- Dewater CORRECTLY!

Pollution Prevention and Good Housekeeping

- Salt box next to inlet

Pollution Prevention and Good Housekeeping

- Uncovered drums

Pollution Prevention and Good Housekeeping

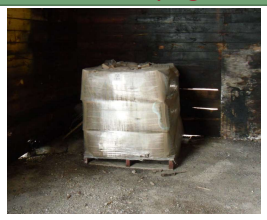
- Oil Recycling Storage Tanks

Pollution Prevention and Good Housekeeping

Pollution Prevention and Good Housekeeping

Pollution Prevention and Good Housekeeping

Pollution Prevention and Good Housekeeping



Pollution Prevention and Good Housekeeping

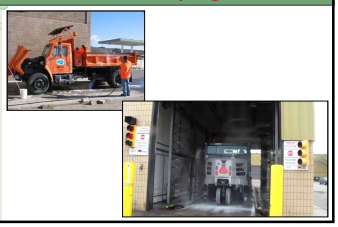
Pollution Prevention and Good Housekeeping

Pollution Prevention and Good Housekeeping

Pollution Prevention and Good Housekeeping

Pollution Prevention and Good Housekeeping

Pollution Prevention and Good Housekeeping



Pollution Prevention and Good Housekeeping

Pollution Prevention and Good Housekeeping

- Clearly Marked Procedures and Equipment
- Signage

Pollution Prevention and Good Housekeeping

- Proper Disposal of Municipal Generated Wastes

Pollution Prevention and Good Housekeeping

- Inspection and maintenance procedures and schedules
  - Create and follow!

Pollution Prevention and Good Housekeeping

- Pet Waste Pick Up Station

Pollution Prevention and Good Housekeeping

- Demonstration Areas

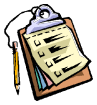
How to Help

Identification – Be aware

Notification – Alert the appropriate person

Documentation – Photos, Work Orders, Emails

Elimination – React or Follow up



Failure to Comply

- Municipalities and governmental entities NOT exempt from enforcement actions

$$$

Questions ?

Photo References

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www.aot.state.vt.us
www.nwequipsales.com
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www.nscc.govt.nz
www.google.com/images

Clarendon Hills 2/28/17

NPDES Training

Dave Perdill

Collin Franco

GLEN DOLGNER

Mike Bueser

Ed Tomhauser

Roger Heidemann

Joseph R. Ferrel

Joe Cross

National Pollutant Discharge Elimination System Program

Annual Public Meeting

The Village of Clarendon Hills (Village) is an operator of a Municipal Separate Storm Sewer System (MS4) as defined by the Illinois Environmental Protection Agency's (IEPA) National Pollutant Discharge Elimination System (NPDES) Phase II program. The Village has applied for and obtained coverage under the IEPA's General NPDES Permit for Discharges from Small Municipal Separate Storm Sewer Systems.

A central requirement of the NPDES Phase II Permit is the development, implementation and enforcement of a stormwater management program designed to reduce or prevent the discharge of pollutants from their MS4 to the maximum extent practicable, to protect water quality and to meet the applicable water quality requirements of the Illinois Pollution Control Board, Clean Water Act and associated standards. The permittee's stormwater management program must be based on the following 6 minimum control measures:

1) Public Education and Outreach on Stormwater Impacts,
2) Public Involvement and Participation,
3) Illicit Discharge Detection and Elimination,
4) Construction Site Stormwater Runoff Control,
5) Post Construction Stormwater Management in New Development and Redevelopment, and
6) Pollution Prevention and Good Housekeeping for Municipal Operations.

The NPDES Phase II program for small MS4's began in 2003 and runs in 5 year permit cycles. The most recent permit cycle ended in 2013 and the revised permit was issued by the IEPA on February 10, 2016. The permit became effective on March 1, 2016 and runs through March 1, 2021. The revised permit included more than 44 updates, revisions or additions. Provided below is a brief summary of the significant additions to the permit:

- MS4's that perform de-icing activities must participate in a watershed group,
- Perform outfall inspections during dry weather conditions,
- Annual training for municipal staff and contractors,
- Storage and handling requirements for fertilizers, pesticides, etc. and
- Minimum of one public meeting per year.

APPENDIX 25

Compliance Documentation – Public Education and Outreach

CLARENDON HILLS NPDES - WORKING DRAFT

National Pollution Discharge Elimination System (NPDES) is a permit program to control water pollution by regulating point sources that discharge pollutants into waters of the United States.

Polluted stormwater runoff is commonly transported through municipal separate storm sewer systems (MS4s), and then often discharged, untreated, into local water bodies. An MS4 is a conveyance or system of conveyances that is:

- owned by a state, city, town, village, or other public entity that discharges to waters of the U.S.,
- designed or used to collect or convey stormwater (e.g., storm drains, pipes, ditches),
- not a combined sewer, and
- not part of a sewage treatment plant, or publicly owned treatment works (POTW).

To prevent harmful pollutants from being washed or dumped into specific types of MS4s, operators are required to obtain an NPDES permit and develop a stormwater management program plan (SMPP). The Village of Clarendon Hills is an MS4 operator under the IEPA's General Permit for Discharges.

- A copy of the [year] IEPA Notice of Intent can be found **[here]**.
- A copy of the Village of Clarendon Hills Annual Report can be found **[here]**.
- Village of Clarendon Hills Stormwater Management Program Plan can be found **[here]**.
- Village of Clarendon Hills Illicit Discharge Detection and Elimination Program can be found **[here]**.

Report a Concern

Contact the Village of Clarendon Hills regarding problems with drainage features or illegal dumping into the storm sewer system. You can report anonymously **[here].**

Climate Change Description and EPA Link

Climate change refers to any significant change in the measures of climate lasting for an extended period of time. Climate change includes major changes in temperature, precipitation, or wind patterns, among other effects, that occur over several decades or longer. As a requirement of the Village's general NPDES Permit ILR40, consideration of impacts and effects of climate change on storm water, storm water controls, flood management and BMP implementation. A link to the EPA's climate change website is located **[here]**.

Public Outreach Links

- Protecting Water Quality from Urban Runoff
- Drainage Around Your Home
- After the Storm - A Citizen's Guide to Managing Stormwater

EPA
United States
Environmental Protection
Agency

EPA 841-F-03-003

Protecting Water Quality *from* URBAN RUNOFF

Clean Water Is Everybody's Business

In urban and suburban areas, much of the land surface is covered by buildings and pavement, which do not allow rain and snowmelt to soak into the ground. Instead, most developed areas rely on storm drains to carry large amounts of runoff from roofs and paved areas to nearby waterways. The stormwater runoff carries pollutants such as oil, dirt, chemicals, and lawn fertilizers directly to streams and rivers, where they seriously harm water quality. To protect surface water quality and groundwater resources, development should be designed and built to minimize increases in runoff.

The most recent National Water Quality Inventory reports that runoff from urbanized areas is the leading source of water quality impairments to surveyed estuaries and the third-largest source of impairments to surveyed lakes.

Did you know that because of impervious surfaces like pavement and rooftops, a typical city block generates more than 5 times more runoff than a woodland area of the same size?

How Urbanized Areas Affect Water Quality

Increased Runoff

The porous and varied terrain of natural landscapes like forests, wetlands, and grasslands traps rainwater and snowmelt and allows them to filter slowly into the ground. In contrast, impervious (nonporous) surfaces like roads, parking lots, and rooftops prevent rain and snowmelt from infiltrating, or soaking, into the ground. Most of the rainfall and snowmelt remains above the surface, where it runs off rapidly in unnaturally large amounts.

Storm sewer systems concentrate runoff into smooth, straight conduits. This runoff gathers speed and erosional power as it travels underground. When this runoff leaves the storm drains and empties into a stream, its excessive volume and power blast out streambanks, damaging streamside vegetation and wiping out aquatic habitat. These increased storm flows carry sediment loads from construction sites and other denuded surfaces and eroded streambanks. They often carry higher water temperatures from streets, roof tops, and parking lots, which are harmful to the health and reproduction of aquatic life.

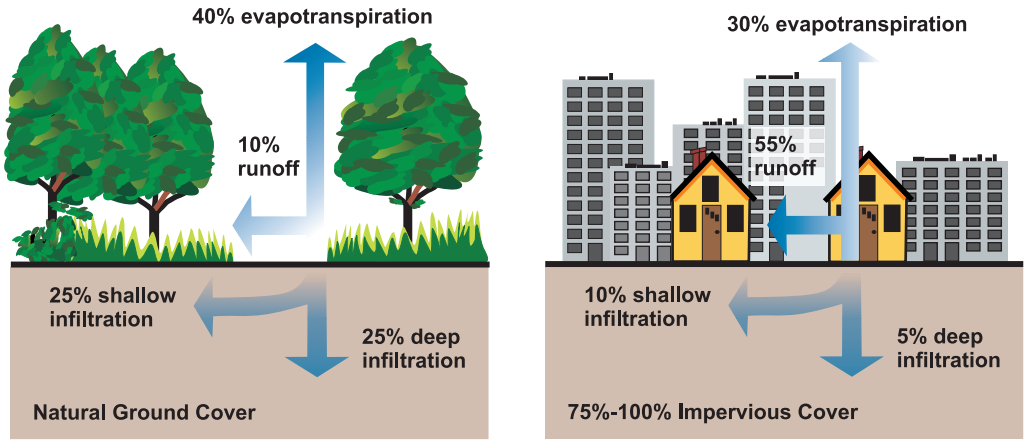
The loss of infiltration from urbanization may also cause profound groundwater changes. Although urbanization leads to great increases in flooding during and immediately after wet weather, in many instances it results in lower stream flows during dry weather. Many native fish and other aquatic life cannot survive when these conditions prevail.

Increased Pollutant Loads

Urbanization increases the variety and amount of pollutants carried into streams, rivers, and lakes. The pollutants include:

- Sediment
- Oil, grease, and toxic chemicals from motor vehicles
- Pesticides and nutrients from lawns and gardens
- Viruses, bacteria, and nutrients from pet waste and failing septic systems
- Road salts
- Heavy metals from roof shingles, motor vehicles, and other sources
- Thermal pollution from dark impervious surfaces such as streets and rooftops

These pollutants can harm fish and wildlife populations, kill native vegetation, foul drinking water supplies, and make recreational areas unsafe and unpleasant.



Relationship between impervious cover and surface runoff. Impervious cover in a watershed results in increased surface ruunoff. As little as 10 percent impervious cover in a watershed can result in stream degradation.

Managing Urban Runoff

What Homeowners Can Do

To decrease polluted runoff from paved surfaces, households can develop alternatives to areas traditionally covered by impervious surfaces. Porous pavement materials are available for driveways and sidewalks, and native vegetation and mulch can replace high maintenance grass lawns. Homeowners can use fertilizers sparingly and sweep driveways, sidewalks, and roads instead of using a hose. Instead of disposing of yard waste, they can use the materials to start a compost pile. And homeowners can learn to use Integrated Pest Management (IPM) to reduce dependence on harmful pesticides.

In addition, households can prevent polluted runoff by picking up after pets and using, storing, and disposing of chemicals properly. Drivers should check their cars for leaks and recycle their motor oil and antifreeze when these fluids are changed. Drivers can also avoid impacts from car wash runoff (e.g., detergents, grime, etc.) by using car wash facilities that do not generate runoff. Households served by septic systems should have them professionally inspected and pumped every 3 to 5 years. They should also practice water conservation measures to extend the life of their septic systems.

Controlling Impacts from New Development

Developers and city planners should attempt to control the volume of runoff from new development by using low impact development, structural controls, and pollution prevention strategies. Low impact development includes measures that conserve natural areas (particularly sensitive hydrologic areas like riparian buffers and infiltrable soils); reduce development impacts; and reduce site runoff rates by maximizing surface roughness, infiltration opportunities, and flow paths.

Controlling Impacts from Existing Development

Controlling runoff from existing urban areas is often more costly than controlling runoff from new developments. Economic efficiencies are often realized through approaches that target "hot spots" of runoff pollution or have multiple benefits, such as high-efficiency street sweeping (which addresses aesthetics, road safety, and water quality). Urban planners and others responsible for managing urban and suburban areas can first identify and implement pollution prevention strategies and examine source control opportunities. They should seek out priority pollutant reduction opportunities, then protect natural areas that help control runoff, and finally begin ecological restoration and retrofit activities to clean up degraded water bodies. Local governments are encouraged to take lead roles in public education efforts through public signage, storm drain marking, pollution prevention outreach campaigns, and partnerships with citizen groups and businesses. Citizens can help prioritize the clean-up strategies, volunteer to become involved in restoration efforts, and mark storm drains with approved "don't dump" messages.

Related Publications

Turn Your Home into a Stormwater Pollution Solution!

www.epa.gov/nps

This web site links to an EPA homeowner's guide to healthy habits for clean water that provides tips for better vehicle and garage care, lawn and garden techniques, home improvement, pet care, and more.

National Management Measures to Control Nonpoint Source Pollution from Urban Areas

www.epa.gov/owow/nps/urbanmm

This technical guidance and reference document is useful to local, state, and tribal managers in implementing management programs for polluted runoff. Contains information on the best available, economically achievable means of reducing pollution of surface waters and groundwater from urban areas.

Onsite Wastewater Treatment System Resources

www.epa.gov/owm/onsite

This web site contains the latest brochures and other resources from EPA for managing onsite wastewater treatment systems (OWTS) such as conventional septic systems and alternative decentralized systems. These resources provide basic information to help individual homeowners, as well as detailed, up-to-date technical guidance of interest to local and state health departments.

Low Impact Development Center

www.lowimpactdevelopment.org

This center provides information on protecting the environment and water resources through integrated site design techniques that are intended to replicate preexisting hydrologic site conditions.

Stormwater Manager's Resource Center (SMRC)

www.stormwatercenter.net

Created and maintained by the Center for Watershed Protection, this resource center is designed specifically for stormwater practitioners, local government officials, and others that need technical assistance on stormwater management issues.

Strategies: Community Responses to Runoff Pollution

www.nrdc.org/water/pollution/storm/stoinx.asp

The Natural Resources Defense Council developed this interactive web document to explore some of the most effective strategies that communities are using around the nation to control urban runoff pollution. The document is also available in print form and as an interactive CD-ROM.

For More Information

U.S. Environmental Protection Agency
Nonpoint Source Control Branch (4503T)
1200 Pennsylvania Avenue, NW
Washington, DC 20460

www.epa.gov/nps

February 2003

VILLAGE OF CLARENDON HILLS

TRUSTEE TOPICS

www.clarendonhills.us **May / June 2017**

Message from the President -

Village President
Len Austin

Dear Friends and Neighbors:

This issue is filled with our upcoming summer events. Every year I am proud of our community's ability to come together to put on great volunteer led events. I would like to personally thank Mark Rediehs and Laura Marquardt for all of their work putting together Daisy Days and the upcoming Farmer's Market (Starting May 11th). Through their volunteer work with the Chamber of Commerce, we continue to have great events in the downtown. The Village sponsors the *Dancin' in the Street* concert series, which also has a great volunteer committee to help with planning. If you get a chance, please thank them personally at the concert. They will be the ones in the beer tent every week.

Water rates have come up as an issue recently at Village Board meetings. You may recall that the Village Board made the decision to freeze water rates last fall, along with a freeze on property taxes aside from capturing new growth (construction) in the community. Despite this freeze, our water rates are high when compared to our neighbors. The main reason for this is that the Village does not have large water users to spread out the capital costs. Single family homes tend to be the most expensive users as they require the most water main feet per user, and have more peak usage which requires more pumps and water towers. The other major factor is that the Village is in the middle of a major water main replacement program in conjunction with the road replacement program. The water main that is being replaced is mostly original with an age of as much as 90 years. This water main is located under the Village streets, and therefore it is more cost effective to replace it when the roads will already be torn up. Previous Village Boards determined it was better to pay for these improvements with cash rather than issue debt, which we will be able to do through the last year of replacements in 2020. The final factor is that water usage has been on a long term downward trend seemingly independent of normally weather related fluctuations. We believe this is occurring as newer homes replace old fixtures with new high efficiency/low flow appliances.

At this point, it looks as though the Village will be able to continue to freeze water rates for the near future. This is conditioned on no unforeseen increases by our water provider (DuPage Water Commission) or other unanticipated costs. The Village Board and Village staff continue to look at ways to lower our costs. One issue currently being discussed is switching to bi-monthly water billing which will provide some savings.

However, the best way an individual can control water costs is to lower usage. Switching to lower flow fixtures, efficient washing machines and dishwashers, smart water sprinklers and drought resistant landscaping can save water and money. ComEd and Nicor offer free onsite efficiency programs that can help you save energy and water. To schedule an appointment call ComEd at (877) 886-4239. If you see a spike in your bill, make sure that your toilets or sinks are not consistently running or leaking. Simple behavior changes like not running the water when you shave or brush your teeth can also save water.

Finally, in May we will be losing two Trustees, Paul Flood and Eric Stach. We appreciate the expertise that they brought to the board and look forward to acknowledging their service at the May 15th meeting. I wish them both well, and look forward to working with new Trustees Wil Freve and Ken Hall.

See you at the concert series in June! Until then, enjoy this spring weather!

Len Austin
Village President

SUMMER FUN IN CLARENDON HILLS!

Keep up with all the events this summer by following us on Facebook! www.facebook.com/VillageofCH

Daisy Days

Mark your calendar for June 16th and 17th, when the Chamber of Commerce hosts its' annual Daisy Days event in the downtown. This event is for the entire family offering carnival rides, live music, Daisy Idol competition, crafts, reptiles and more!

**** Event Schedule subject to change***

Friday, June 16th (6 PM – 10 PM)

6 PM	Food/Rides Open
7 PM	Band ~ New Odyssey

For more information go to *www.clarendonhillschamber.com*

Saturday, June 17th (8:30 AM - 10 PM)

8:30 AM	Police Bike Auction
10 AM - 11 AM	Dave DiNaso Reptile Show
11 AM	Rides open
11:15 AM	Cloggers on stage
1 PM	Clarendon Hills Idol on stage
2 PM - 4 PM	Park District Face Painting
3 PM - 4 PM	Dave DiNaso Reptile Show
7 PM	Band ~ Whiskey & Harmony

Daisy Dash

A Father's Day tradition here in Clarendon Hills is the Daisy Dash 5k walk/run. This year is no exception. The event will be held on Sunday, June 18th starting at 8 am. This fund raising event starts off from the downtown. Registration is strongly recommended. To register and/or find out more about this great event go to www.daisydash.com

Dancin' in the Street

That's right, we dance in the street (Prospect Ave.) on Wednesday nights starting June 21st! Bring your appetite and favorite lawn chair. Tasty food and beverages will be sold while live music is played. This is a great time to get out of the house, see some neighbors and meetup with old and new friends. Arrive at 6:30 PM to get a bite to eat and be ready by 7 PM for the live music.

6/21 - Heartsfield (Southern Rock)
6/28- Scramble (Classic Rock)
7/5 - ***NO CONCERT THIS NIGHT***
7/12 - Frankie B (Local singer/song writer)
7/19 - Spoken Four (Variety)
7/26 - Rhythm Rockets (Jazz and Blues Swing)
8/2 - Libido Funk Circus (Dance, Disco, 60's thru today)
8/9 - ***NOTHING SCHEDULED - THIS IS A MAKE-UP NIGHT***

Fire Works

Fire Works in Clarendon Hills are presented by the Hinsdale Golf Club. While the private golf club is not open to the public, residents are able to enjoy the fireworks from Prospect Park. Fireworks are held on July 4th around 9:30 pm.

Bicycle Riding

Summer is fast approaching and bike riding will be enjoyed by many of our residents.

Here are a few reminders:

- Residents may register their bicycles with the Police Department. By doing so, a serial number will be engraved on the bicycle. In the case that a bike is left unattended or found and brought to the attention of an officer, we will be able to locate the owner.
- Per Village Code, no person shall ride a bicycle on a sidewalk in the business district at any time. ***Bikes should be walked through the downtown business district.***
- Please use extreme caution when bicycling on public streets, around cars and pedestrians.

Around Town

Board Meetings
March 1st at 7 PM
March 15th at 7 PM
June 5th at 7 PM
June 19th at 7 PM

ZBA/Plan Commission
March 18th at 7:30 PM
April 20th at 7:30 PM

Public Works and Police Dept. Open House
May 19th from 2 PM - 6 PM
452 Park Avenue
FREE Family Event

Dancin' in the Street
June 21st 7 PM to 9 PM
June 28th 7 PM to 9 PM
July 5th - **NO CONCERT**
July 12th 7 PM to 9 PM
July 19th 7 PM to 9 PM
July 26th 7 PM to 9 PM
August 2nd 7 PM to 9 PM
August 9th **HELD FOR RAIN DATE**

www.clarendonhills.us

Farmers Market - *Chamber Event*
May 11th through October
Thursdays 7 AM - 1 PM
Downtown Triangle

Daisy Days - *Chamber Event*
June 16th 6 PM to 10 PM
June 17th 10 AM to 10 PM

www.clarendonhillschamber.com

Park District
June 23rd at 10:30 AM - 12:30 PM
Touch-A-Truck Event in Prospect Park
FREE Family Event

www.clarendonhillsparkdistriict.org

Library
May 22nd at 1:30 PM - 4PM
Movie : North by Northwest (1959)
Staring Cary Grant and Eva Marie Saint

www.clarendonhillslibrary.org

Emerald Ash Borer

Emerald Ash Borer (EAB) has led to the death of more than 20 million ash trees in Michigan, Ohio, Indiana and Illinois. In 2007, it was discovered in DuPage County. In 2011, it was confirmed in Clarendon Hills.

The Village started with approximately 836 public right of way Ash trees out of the 5,500 total trees in 2010. Treatment of 725 of these trees was started in the spring of 2012 with certified applicators within Public Works staff. The other infected trees were removed in hopes to slow down the infestation and allow the Village to reforest the parkways over the next 7-10 years. Since the start of treatment, the Public Works department has performed approximately 2,500 treatments, each tree being treated in the spring. The Village has also removed 628 Ash trees in 7 years. We currently have 208 Ash trees in the inventory for 2017.

During the same span of time, the Village has planted over 425 trees in right of ways with proper spacing and tree diversification. The Village has replaced the three types of Ash trees with 36 different species of trees in the past seven years to help promote a healthy and sustainable canopy.

Clarendon Hills Lions Club

At the March 6, 2017 Village Board meeting the Lions Club presented the Board with a check in the amount of $1,000 to help with reforestation within the Village. We feel very appreciative of the Lions Club contributions to the community.

Lions Park Pool

Mark your calendars for Saturday, May 27th as the official opening day of Lions Park Pool – a family friendly, splash-tastic aquatic facility in Clarendon Hills. The pool will be open 11:30 AM - 6 PM on May 27th-29th (Memorial Day weekend) weather permitting. Regular pool hours of 11:30 AM - 8 PM begin June 3rd. Lions Park Pool is located at 100 Byrd Ct.

Passes may be purchased at the Park District office or pool during regular operating hours. Daily fee for residents is $8 (3-59 years) and $12 for non-residents – proof of residency required to receive resident rates. Patrons 60+ years pay $5 daily.

Sea Lions Swim Team, Swim and Diving Lessons (private & group), Fluid Running, Pool Rentals and special events make Lions Park Pool a full service, family favorite.

For more information, contact the Clarendon Hills Park District at 630-323-2626.

Village Hall Closed

May 29th closed in observance of Memorial Day

July 4th closed in observance of Independence Day

No Garbage Pickup July 4th

Garbage pickup will not occur on Tuesday, July 4th but rather Wednesday, July 5th. Please plan accordingly.

Trustee Topics
Village of Clarendon Hills
1 North Prospect Avenue
Clarendon Hills, IL 60514

U.S. POSTAGE
PAID
Clarendon Hills,
Illinois 60514
Permit No. 45

Vehicle Stickers

Vehicles: Residents are required to purchase a village sticker for each vehicle they will have housed in Clarendon Hills *(Toy cars excluded)*. The stickers can be purchased beginning **May 1st** of each year. The annual license period begins July 1st of each year and ends on June 30th of the next year.

New residents must obtain a Village Sticker within 30 days of moving to the Village.

Passenger Car $40, Motorcycle $30, and Seniors (62+) 50% off. An additional 50% late fee will be added to stickers purchased after July 1st.

Block Parties

Are you planning your neighborhood block party? Please note that if your party involves closing off any part of the street you will need to fill out a Block Party Application.

Applications can be completed online at www.clarendonhills.us under Services or paper copies can obtained at the Village Hall.

Watering Restrictions

Water Restrictions are enforced from May 15th - September 15th. Residents south of the Burlington Railroad tracks may use water outdoors on odd numbered day (1st, 3rd, 5th, etc.) Residents north of the Burlington Railroad tracks may use water outdoors on even numbered days (2nd, 4th, 6th, etc.)

NO WATERING IS ALLOWED BETWEEN 10 AM AND 4 PM.

Please note that watering restrictions apply to lawns, trees, shrubs and gardens only.

Permits for watering newly installed lawns and landscaping are available for a $25.00 fee payable at the Village Hall.

Find Recent Village Board Actions at
www.clarendonhills.us/AgendaCenter

Contact Us

Village President:
Len Austin 630-286-5420

Village Trustees:
Don Knoll 630-286-5421
Greg Jordan 630-286-5422
Eric Stach 630-286-5423
Carol Jorissen 630-286-5424
Paul Flood 630-286-5425
Don McGarrah 630-286-5426

Village Clerk: ***(Tues & Fri AM)***
Dawn Tandle 630-286-5403

Village Hall: 630-286-5400
Finance Dept.: Press 2
Building Dept.: Press 3
Administration: Press 4

Public Works: 630-286-4750

Non-Emergency:
Police: 630-286-5460
Fire: 630-286-5430

www.clarendonhills.us

Community Numbers:
Park District: 630-323-2626
Public Library: 630-323-8188

Online Transaction Safe Zone Location:
Police Station (448 Park Ave.)

water flow, nearby homes may flood or experience surface ponding. *Runoff from areas as small as 1 acre can cause flooding.* Measures to remedy this kind of hazard usually require the cooperation of several homeowners.

Grade the yard so that surface water drains away from the house. A minimum grade of 1 foot in 100 feet is generally adequate. When filling in low areas, use the most permeable soil available. Save the topsoil and spread it over the newly filled and graded areas to help establish vegetation. To reduce soil compaction, limit construction traffic or use track equipment whenever possible on the lawn.

Installing roof gutters and downspouts to control roof water may prevent ponding in low yard areas. Downspouts can empty into outlet spreaders that discharge water in a thin layer over a grassy area.

Springs and Seeps...

On many sites, natural springs and seeps occur due to existing geology and landscape characteristics. Water may flow seasonally, throughout the year, or may flow into or around homes constructed over or near a spring or seep. For protection, install subsurface drains at least 4 inches in diameter surrounded by 6-12 inches of gravel or sand. Place gravel along the outside of the base of the foundation wall. Be sure to install an adequate gravity or pump outlet for the tile. An interceptor drain can divert seep or spring water before it reaches the structure.

Springs and seeps also affect lawns and onsite septic fields. You can install subsurface drains to collect groundwater and divert it. For guidance with septic field problems, contact your local health department. Typically, subsurface drains are made of plastic but older drain tile may be made of clay, concrete, or metal. Be sure to check local building codes for approved materials and other drainage regulations.

Slow Soil Permeability...

If the soil has a dense layer, especially a layer of clay or a severely compacted layer, water flow through the soil may be restricted and may cause ponding. If this layer is near the surface, use a soil aerator or deep-rooted native grass to increase infiltration and reduce surface ponding. Most lawn grasses have short root systems that only venture down a few inches. These shallow root systems dry out quickly and must be watered often. Native grass species with much deeper root systems thrive in dry weather and offer avenues for excess water to infiltrate deep into the soil rather than into your basement!

Remember to loosen the soil in the hole around the root ball when planting trees or shrubs to increase permeability which allows greater air and water movement in the soil. For larger wet areas, install subsurface drains about 4 inches in diameter at a depth of 2 to 5 feet. Use sand and gravel to backfill the drain trench to within a foot of the ground surface. Use topsoil to fill the surface layer. Restrict foot traffic during wet periods because even on well-drained soils, this can compact the soil and reduce permeability.

Where Do I Get Help?

Contact your local Natural Resources Conservation Service (NRCS), county Soil and Water Conservation District or Extension office, or your local county or municipal authorities or permit office for additional information on planning or installing drainage measures around your home. Keep in mind that local and state rules and drainage laws are different in each community and must always be considered.

The NRCS has more than 60 years of experience studying and managing the movement of soil and water. NRCS county Soil Survey reports contain valuable information for identifying the issues listed in this brochure. You can find your property on aerial photographs in the report and determine which soils make up the land you call home. Data in the soil survey identifies water table depths, drainage and permeability rates, ponding and flooding potentials, and much more.

Visit the Illinois NRCS Homepage for more information on soils and soil surveys at **www.il.nrcs.usda.gov**

September 1999 • Champaign, IL

The United States Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, political beliefs, sexual orientation, and marital or family status. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326W, Whitten Building, 14th and Independence Avenue SW, Washington DC 20250-9410 or call (202) 720-5964 (voice and TDD). USDA is an equal opportunity provider and employer.

Drainage around your home

USDA NRCS
Natural Resources Conservation Service

Have a Drainage Problem?

Is your basement wet?
Does your yard flood or pond periodically?
Do trees, shrubs, and plants grow poorly?

Don't be surprised! About 20% of the land in the United States is affected by excess water. The good news is that there are signs for homeowners to look for, situations to avoid, and solutions that reduce drainage problems. Investigate the problem by first checking your downspouts. Downspout water should be directed away from your house. Second, grade the ground adjacent to the foundation walls so that they direct water away from the house.

If these solutions are in place, but you still have a wet basement or a sump pump that never stops running, you may have a more complex problem. If controlling surface water doesn't help, the problem may be below the surface--a high water table, spring or seeps, or abandoned subsurface agricultural tile that is draining water from other areas and directing it to your foundation. This dilemma can be dealt with by redirecting the water to new subsurface drains.

What Causes These Drainage Problems?

The soil we rely on as a foundation for our homes and property is a complex natural system. When left alone, the deep and rich prairie soils of Illinois can effectively handle normal and excessive amounts of water. But when the natural soil structure is disturbed and a high percentage of the soil surface that once absorbed water is covered with impervious surfaces and the surrounding landscape is severely altered, then the natural environment cannot cope on its own. In some newer subdivisions, all of the topsoil and part of the subsoil material is removed during construction. Only a thin layer of topsoil is returned to the site--just enough to support the shallow root system of your lawn.

These sites usually have severe problems with soil droughtiness and surface runoff. The topsoil is too thin to hold adequate amounts of water and the subsoil has been so densely compacted that it cannot allow excess water to infiltrate into it. By adding more topsoil, aerating, composting, using deep-rooted, drought-resistant grasses and plants, you can overcome these common limitations and restore the health and functionality of soil resources on your property. Generally, wetness and water problems are caused by flooding, springs and seeps, seasonal high water tables, surface ponding, or slow soil permeability.

Flooding...

If your home is in a floodplain of a nearby stream or creek, it is at risk for flooding if the stream overflows during heavy or prolonged rainfall or rapid snowmelt. Even if you've taken precautions to "flood-proof" your home, you can never totally eliminate the potential for flooding, but you can reduce flood damage.

Usually, community-wide measures are needed to reduce effects of flooding and provide some protection, but there are actions you can take to reduce problems. Making your home more resistant to flood damage may include measures that block openings such as windows and doors, regulate drain outlets, and waterproof walls. These measures can be expensive and require careful evaluation to prevent structural damage. If you plan to build a house outside a subdivision or near a perennial stream, be sure the site is not in the floodplain. Check with the local building department for floodplain maps and/or options for homeowners located in floodplains. Keep in mind that for many communities, floodplain maps may be outdated and may not adequately reflect actual conditions in the area. A building site *near* the floodplain boundary in a rapidly developing area 10 years ago, may be *in* the floodplain today.

Seasonal High Water Table...

A water table can be defined as the upper surface of groundwater or the level below which the soil is saturated with water. This level may fluctuate by several feet throughout the year, depending on soil conditions, landscape, or weather. When selecting a new homesite, consider the level of the seasonal high water table. In many areas of Illinois the seasonal high water table may be at or near the ground surface for long periods. Building in these areas should be avoided. If the water table is 6 feet deep or more, high water table problems will be minimal.

When building a new house in an area with a seasonal high water table that is less than 6 feet from the surface, a sump pump with a system of foundation drains should be used to lower the water table. Create a good outlet for discharge flow from the pump and consider where you direct this water---you don't want to create problems for a neighbor! If the home is already built, install gravel and drains around the base of outside walls. Lowering the water table under the basement floor should be done only after analysis by experts, since unequal settlement may crack the walls.

In lawn areas affected by a high water table, a small excavated pond, a wetland garden, or collection of water-loving plants may be a suitable remedy. Transform the nuisance wet area into an attractive landscaping feature. Provisions of the federal Clean Water Act or state and local laws may apply to persons who propose to alter any wetlands or to dredge, dig, or fill in floodplain areas. For clarification/information, contact the U.S. Army Corps of Engineers or IDNR's Office of Water Resources prior to any earthmoving activities.

Surface Ponding...

If a significant amount of surface water ponds on your lawn or driveway for long periods, install small diversions or swales to channel off the water. In developed residential areas, these practices are usually installed near property lines in back of or alongside houses.

For low flows of surface water, redirect water to landscaped yard areas with thirsty trees and shrubs. Be sure not to direct water onto someone else's property! If only small amounts of surface ponding occurs for short periods, drains may not be needed. Consider solving the problem by planting the area with water-loving native grasses or trees.

Even in upland areas, a continually wet basement or flooding can occur if the house is built in the path of a natural drainageway, in a pothole, or if the site is lower than the surrounding area. A drainageway or low area may look fine in dry seasons but can carry runoff water in wet seasons. In developed areas where the landscape has been greatly modified, runoff has increased and natural drainageways are often blocked or altered. If man-made drainageways or storm sewers are not built to carry this additional seasonal

REFUSE & RECYCLING

Solid Waste & Recycling Program

Republic Services (Formerly Allied Waste)
Phone: 630-964-3232
Village: 630-286-5400

Refuse Pickup Days

Starting May 3, 2016 pickup days for resident refuse will be on Tuesdays. The Village will no longer have two separate pickup days within the Village. By having one pickup day the Village saves 2% on the contract which is passed on to the residents, so rates will not increase in July of 2016 as previously scheduled.

Refuse in the Village is contracted for with Republic Services. Republic Services directly bills for these services on a quarterly. The rates are as follows:

Refuse Rates

Service	Rates for July 1, 2015 - June 30, 2017
95 Gallon Weekly Service	$21.05
2 Can Weekly Service - Seniors	$18.05
Back Door 2 Can Service	$31.44
Yardwaste Sticker	$2.35
Yardwaste Toter	$26.64

Holidays

The normal service schedule may be affected by the following holidays:

- New Year's Day
- Memorial Day
- Independence Day
- Labor Day
- Christmas

If a holiday falls on a Sunday or Monday, service is delayed until Wednesday.

Bulk Items

The current contract allows for one bulk item per week to be put out with your garbage cans. Items too big for a 35-gallon bag are considered Bulk items. Additional Bulk items need a refuse sticker.

Yard Waste

Yard waste pickup starts in April of every year and ends in December. Yard waste should be placed in a 35-gallon container or Kraft paper yard waste bag not weighing more than 50 pounds with a yard waste sticker. It must be marked as "Yard Waste." Bundles of sticks must not exceed 2 feet in diameter or 4 feet in length. A yard waste sticker must be attached to each bundle. Yard waste stickers may be purchased from Village Hall, Jewel-Osco and the Clarendon Hills Hardware store.

Leaf Pick Up

Starting October 1st through the end of November, leaf pick-up in appropriate yard waste bags will be picked up without any stickers.

Electronics Recycling

Electronics are not allowed in Illinois Landfills. Go to the County recycling page for an up-to-date list on electronics recycling programs.

Hazardous Waste

Hazardous Waste is handled region-wide by the City of Naperville. Click here for information on their program.

Amnesty Day

No longer is there a set day for additional refuse. If you have additional refuse that does not fit into your refuse cart, it may be placed into 35-gallon or less bags and collected as part of the standard pickup without a refuse sticker. Items too big for a 35-gallon bag are considered Bulk items. Bulk items can be placed by the curb weekly. Residents are limited to one bulk item per week. Additional bulk items would need a refuse sticker.

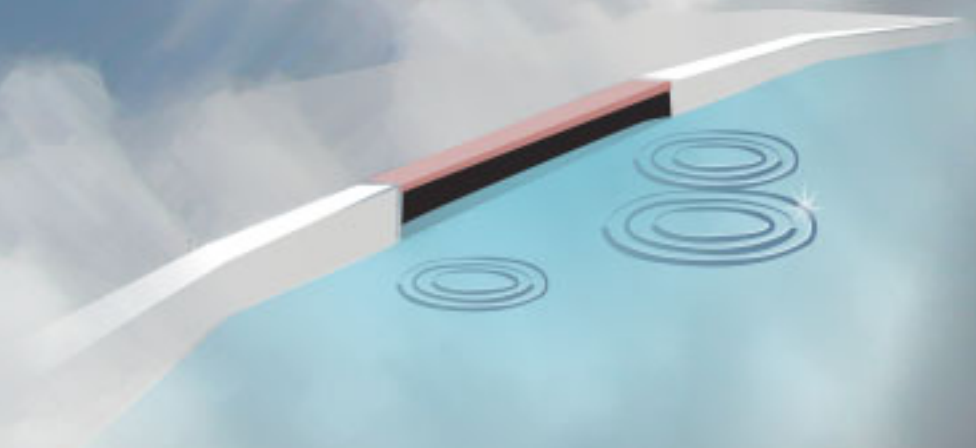
Resources

- New Clarendon Hills Reference Guide (PDF)

CONNECT WITH US

WHEN IT RAINS IT DRAINS

After the Storm



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

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THE YEAR OF CLEAN WATER
Celebration & Recommitment

A Citizen's Guide to Understanding Stormwater

WHEN IT RAINS IT DRAINS

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 pollution

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 to grow. Sediment also can destroy aquatic habitats.
- Excess nutrients can cause algae blooms. When algae die, they sink to the bottom and decompose in a process that removes oxygen from the water. Fish and other aquatic organisms can't exist in water with low dissolved oxygen levels.
- Bacteria and other pathogens can wash into swimming areas and create health hazards, often making beach closures necessary.

- Debris—plastic bags, six-pack rings, bottles, and cigarette butts—washed into waterbodies can choke, suffocate, or disable aquatic life like ducks, fish, turtles, and birds.
- Household hazardous wastes like insecticides, pesticides, paint, solvents, used motor oil, and other auto fluids can poison aquatic life. Land animals and people can become sick or die from eating diseased fish and shellfish or ingesting polluted water.
- Polluted stormwater often affects drinking water sources. This, in turn, can affect human health and increase drinking water treatment costs.

Stormwater Pollution Solutions

Residential

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.

Education is essential to changing people's behavior. Signs and markers near storm drains warn residents that pollutants entering the drains will be carried untreated into a local waterbody.

Residential landscaping

Permeable Pavement—Traditional concrete and asphalt don't allow water to soak into the ground. Instead these surfaces rely on storm drains to divert unwanted water. Permeable pavement systems allow rain and snowmelt to soak through, decreasing stormwater runoff.

Rain Barrels—You can collect rainwater from rooftops in mosquito-proof containers. The water can be used later on lawn or garden areas.

Rain Gardens and Grassy Swales—Specially designed areas planted with native plants can provide natural places for rainwater to collect and soak into the ground. Rain from rooftop areas or paved areas can be diverted into these areas rather than into storm drains.

Vegetated Filter Strips—Filter strips are areas of native grass or plants created along roadways or streams. They trap the pollutants stormwater picks up as it flows across driveways and streets.

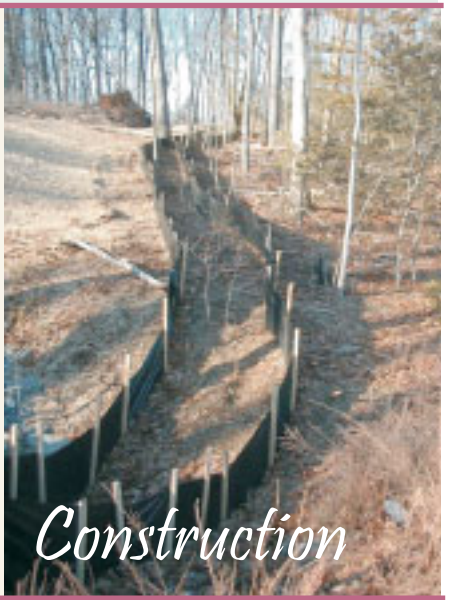
Commercial

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 can cause excessive amounts of sediment and debris to be carried into the stormwater system. Construction vehicles can leak fuel, oil, and other harmful fluids that can be picked up by stormwater and deposited into local waterbodies.

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

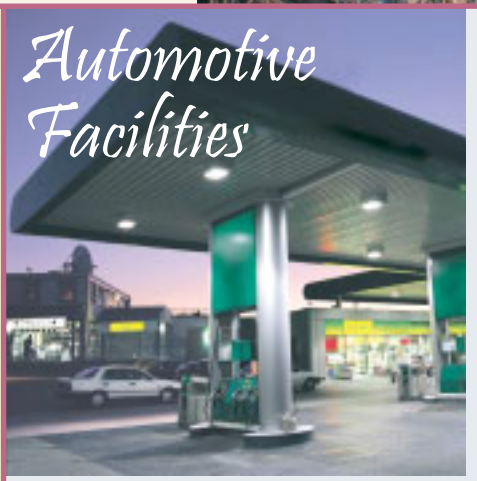


Construction

Agriculture

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.



Automotive Facilities

Uncovered fueling stations allow spills to be washed into storm drains. Cars waiting to be repaired can leak fuel, oil, and other harmful fluids that can be picked up by stormwater.

- Clean up spills immediately and properly dispose of cleanup materials.
- Provide cover over fueling stations and design or retrofit facilities for spill containment.
- Properly maintain fleet vehicles to prevent oil, gas, and other discharges from being washed into local waterbodies.
- Install and maintain oil/water separators.

Forestry

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.

Republic Services
CLARENDON HILLS NEWS

5050 W Lake St., Melrose Park, Illinois 60160
www.RepublicServices.com (630)964-3232

August 2014

EXPANDED SERVICES– TWO CART PROGRAM

The Village Board approved a new single-family refuse agreement with Republic Services in June. The agreement went into effect on July 1, 2014. With the new contract, some things will change while some things will remain the same.

Republic Services will now use a two cart program: one cart for refuse and one cart for recycling. Standard containers allow for a mechanized approach to garbage pickup and are designed to lower costs over time. If you have not already been provided a refuse cart by Republic Services as part of your current service plan, a refuse cart will be delivered to your home between August 18 and August 29. Effective October 1, 2014, the use of refuse carts is required.

In most cases, the new program will eliminate the need for using refuse stickers. If you have more household refuse than will fit in your cart, you may place it out in a garbage can or bag next to your cart without using a sticker. One large item, such as a piece of discarded furniture or a large appliance, will now be collected each week without a sticker. If you wish to dispose of more than one large item per week, you may do so by attaching a refuse sticker to each item.

If you have extra refuse stickers, they can be used instead of yard waste stickers during 2014. Also, until August 15, refuse stickers can be taken to the Village Hall for a refund.

New Refuse Collection Contract Summary

- Effective July 1, 2014
- Affects single-family and two-unit homes
- The use of a refuse cart will be required effective October 1, 2014.
- If you do not already have a refuse cart, one will be delivered to your home in August.
- Additional cans or bags of household refuse will be collected as part of the standard service without a refuse sticker.
- One bulk item will be collected each week as part of standard service. Additional bulk items require one refuse sticker. Amnesty Day will be eliminated.
- Leaf collection in paper yard waste bags or cans will continue to be provided in October and November without stickers.
- Back Door carry-out service continues to be an option. Call Republic Services at (630) 964-3232 for information.

For questions about waste collection or recycling, please feel free to contact Republic Services at (630) 964-3232. Allied Waste is now operating as Republic Services. The phone number and address are unchanged.

With the new agreement with Clarendon Hills, Republic Services will use a two cart program, one for refuse and one for recycling.

REPUBLIC SERVICES

Thanks to your efforts to recycle and properly dispose of your refuse. Clarendon Hills' environment improves more and more each year, enabling everyone to enjoy what our village has to offer. With your continued help, we can make greater strides toward improving our environment.

In the next coming weeks, we will distribute new refuse carts that will make refuse disposal more convenient.

Recycling is not always easy, but it is necessary to protect our environment. Remember, it is the actions of each of us that make Clarendon Hills a better place.

REFUSE DISPOSAL GUIDELINES

The rules for recycling and yard waste collection will continue to be the same under the new agreement. There will be some changes for refuse collection to accommodate the use of mechanized collection and carts.

REFUSE

- Effective October 1, 2014, the use of a refuse cart will be required.
- Additional household refuse should be placed in cans or bags no larger than 35 gallon, weighing no more than 50 pounds. No stickers are required. Garbage cans must have two handles.
- Refuse containers may not be set out before 6 p.m. the evening before collection day and must be brought in the evening following pickup.
- The following items may not be disposed of through regular garbage disposal: yard waste, electronic waste, hazardous wastes (such as explosives, paint, motor oil, or other liquids), and construction debris.

BULK ITEMS

- Includes items not able to fit into refuse carts such as furniture, fixtures and small amounts of construction and demolition debris (one cubic yard or less).
- One bulk items or household appliance will be collected each week without a refuse sticker. Additional items require one refuse sticker each.
- Electronic items cannot be collected. Please contact the Village at (630) 323-3500 for information on disposal of electronic items.
- Anything other than a suitable bulk items or acceptable refuse requires a "special pickup"- call Republic Services for more information at (630) 964-3232.

YARD WASTE

- May be placed in 35-gallon or smaller container, Kraft paper bags or in bundles, not exceeding 50 pounds with a yard waste sticker attached. If a garbage can is used, it must be marked as "Yard Waste."
- Bundles must not exceed two feet in diameter or four feet in length and branches must have diameters of no more than three inches. A yard waste sticker must be attached to each bundle.
- During October and November, yard waste stickers are not required for containers or Kraft paper bags of leaves.

OTHER

Residents have the option of paying for optional back door "Carry-out" service for refuse. Republic Services will pick up refuse at the back door instead of the curb. Call Republic Services at (630) 964-3232 for information.

RECYCLING

Republic Services furnishes each household with a recycling cart as part of their service plan. All approved recyclables can be mixed together. Please rinse all bottles and cans and flatten all boxes.

Please refer to the list below of items that can be recycled. Many items that are not on the list can be recycled by other means. Visit www.Earth911.com for tips and information on recycling items not on the list.

Recycling

Paper	Cartons	Glass	Metal	Plastic	Unacceptable Items
Yes: • Mixed paper: advertisements, direct mail, office paper, stationary, envelopes, paper bags, gift wrap • Magazines, newspaper, catalogs and telephone books **No:** • Disposable diapers or rags • Soiled items such as napkins and tissues	**Yes:** • Cardboard and boxboard • Soda and beer carrying cases • Milk and juice containers **No:** • Cardboard soiled with grease or food residue (i.e. pizza boxes. • Polystyrene foam materials coded #6 (i.e. egg cartons)	**Yes:** • Clear, green and brown glass bottles and jars **No:** • Mirrors, window glass, Pyrex glass or dinnerware • Compact fluorescent or other light bulbs • Ceramics	**Yes:** • Aluminum cans and foil • Tin and steel cans including empty aerosol cans **No:** • Needles or syringes • Pots and pans • Gas cans or other items containing hazardous chemicals	**Yes:** • Plastic bottles and containers coded #1 - #7, but not #6 • Six and twelve-pack rings **No:** • Plastic bags and film • Styrofoam or packing peanuts • Plastic take-out containers, cups, plates, or utensils • Insecticide and hazardous chemical containers • Toys	• Tires, engine parts, auto body or interior parts • Motor oil, paint, car batteries, antifreeze or liquids of any kind • Garbage and food waste • Wood pallets or construction lumber • Yard Waste such as grass clippings, leaves, and tree or plant branches • Electronic items, printer or toner cartridges

Publications

Brochures & Information

- Adopt-A-Stream
- Best Management Practices
- Car Wash Discharge Guidelines
- Celebrating 25 Years of Stormwater Management
- Conservation@Home
- Driveway Sealcoat BMPs
- Emergency Flood Control Operations
- Falling Into Winter (BMPs for Fall & Winter)
- Flood-Proofing Guidebook for Residents
- Greening Urban Areas
- Homeowners Guide to Naturalized Areas
- Illicit Discharge Detection & Elimination Public Awareness
- Know Your Watershed
- PCBMP Brochure for Homeowners
- Pet Waste Guidelines
- Rain Barrels
- Rain Barrel Installation Guide
- Springing Into Summer (BMPs for Spring & Summer)
- Storm Drain Stenciling
- Streambank Stabilization
- Sustainable Lawn Care
- Wetlands & Streams

Reports

- Annual Report 2016
- Annual Report 2015
- Annual Report 2014
- Annual Report 2013
- Annual Report 2012
- Annual Report 2011
- Annual Report 2010
- Annual Report 2009
- Annual Report 2009 Attachments
- DuPage County Natural Hazards Mitigation Plan 2012
- DuPage County Stormwater Management Plan 1989
- Stormwater Fee Feasibility Study 2007
- 2015 Stormwater Management Program Assessment

Job Board

More >>

There are no jobs posted for this department at this time.

Stormwater Management

A Message from the Chairman

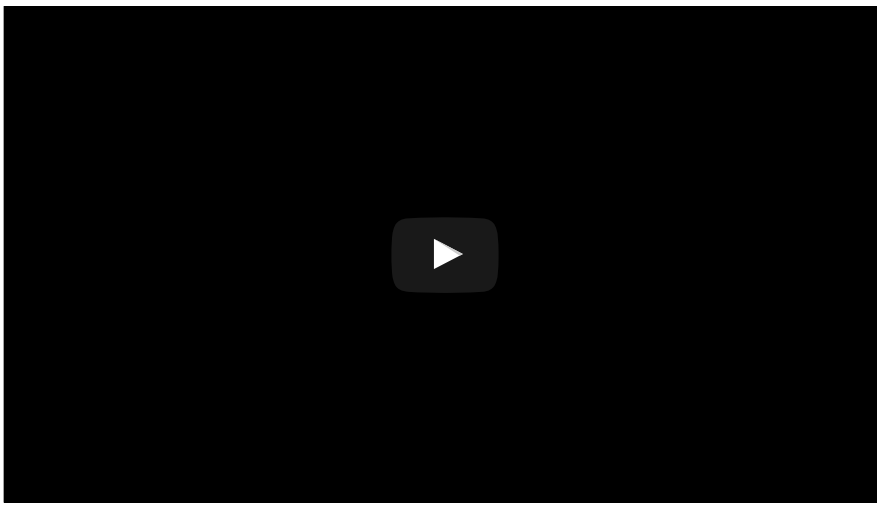
Welcome to Stormwater Management's webpage. Since the inception of DuPage County Stormwater Management 27 years ago, the County has been at the forefront of regional stormwater planning. As Chairman of the Stormwater Management Planning Committee, I work with the County Board, municipalities and staff to ensure DuPage County is providing its residents with the highest quality stormwater management in the department's five program areas-Watershed Management, Floodplain Mapping, Water Quality, Regulatory Services and Flood Operations.

I encourage you to explore Stormwater Management's ongoing regional projects and initiatives, including information on how you can become involved in preserving and enhancing our waterways. Together, we can ensure DuPage County remains a top-tier community to live, work and raise a family. Thank you for taking the time to visit Stormwater Management's webpage, and I encourage you to stop by often for the latest news, updates on current projects and more about the 2015 Stormwater Management Program Assessment.

Sincerely,
Jim Zay
Chairman, Stormwater Management Planning Committee

FEMA Preliminary Floodplain Data

FEMA issued preliminary maps on June 3, 2015 to all communities in DuPage County. DuPage County Stormwater Management and the County's GIS staff have created the Preliminary DFIRM Map Compare web application to quickly compare the new FEMA preliminary data to the effective DuPage County DFIRMs. For more information, please visit Floodplain Identification in DuPage County.



News

More »

- **Stormwater Management Monitoring Precipitation Friday Afternoon**
- **Stormwater Management Participating in Community Events**
- **Stormwater Management Releases Residential Flood-Proofing Guidebook**
- **Stormwater Management Operates Flood Control Facilities Early Thursday**

Professional Services

- **Professional Services Qualified Based Selection (QBS)**
- **Sign Up for Notifications**

Contact Us

More »

Director:
Anthony J. Charlton, P.E

Phone:
630-407-6700

Fax:
630-407-6701

Office Hours:
8 a.m. - 4:30 p.m.
Monday - Friday

Address:
Jack T. Knuepfer Bldg
421 N. County Farm Road
Wheaton, IL 60187

Email

Follow Us:

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  - Public Education & Outreach
    - Scarce
    - The Conservation Foundation
  - Public Participation & Involvement
  - Watershed Activities
  - Water Quality Archives
  - Water Quality Improvement Grant Program
- Watershed Management
- FOIA

Education and Outreach

The Education and Outreach control measure requires implementation of a public education program to distribute educational materials to the community, or perform outreach activities about the impacts of stormwater discharges on local waterbodies and steps to reduce stormwater pollution. An informed and knowledgeable community is crucial to the success of a stormwater management program.

Love Blue. Live Green. Campaign

Stormwater Management has created a campaign to protect and enhance the quality of DuPage County's rivers and streams. For daily updates on green infrastructure and other best management practices for stormwater runoff, follow the campaign on Facebook and Twitter.

Non-Profit Educational Partnerships

DuPage County has partnered with The Conservation Foundation and SCARCE to provide stormwater education and training

Water Quality Programs

The Water Quality Improvement Program provides a grant for financial assistance for projects providing a regional water quality benefit. In addition, the Adopt-a-Stream program promotes the cleanup of our local streams and tributaries within DuPage County through community outreach.

APPENDIX 26

Compliance Documentation – Public Participation/Involvement

PUBLIC WORKS

About the Department

Public Works Department maintains the roadways, water system, storm water system, sidewalks, parkway trees, and all Village facilities. The department also provide snow removal services.

Public Works Responsibilities

Often times it is very difficult to tell what falls under the duties of the Village's Public Works Department. Below is a helpful guide to getting your issue resolved as quickly as possible without frustrating transfers or second calls.

Public Works Responsibilities

- Parkways
- Village streets
- Storm sewers
- Sidewalks
- Municipal parking lots
- Trimming and removal of parkway trees
- Snow and ice control
- Business district street lighting
- Maintenance of Village buildings, grounds and vehicles
- Operation and maintenance of the Village water system
- Water main breaks

Not Responsible For

- Sanitary Sewer backups- Floor Drains, utility sinks, toilets etc. (Flagg Creek Water Reclamation District 630-323-3299)
- Removing snow on private driveways
- Trees on private property (non-parkway trees)
- Refuse and recycling (Republic Services/Allied Waste 630-964-3232)
- Dead or live animals on private property
- Street lights, other than business district (ComEd 800-477-4022)
- Pickup or removal of personal trees and branches (Republic Services/Allied Waste 630-964-3232)

Contact Us

Michael Millette

Public Works Director

Email

Phone: 630-286-4750

Public Works Department

Physical Address

452 Park Avenue

Clarendon Hills, IL 60514

- Home
- Overview
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  - **Public Participation & Involvement**
  - Watershed Activities
  - Water Quality Archives
  - Water Quality Improvement Grant Program
- Watershed Management
- FOIA

Public Participation and Involvement

Illinois Environmental Protection Agency (IEPA) Permit No. ILR40, General NPDES Permit for Discharges from Small Municipal Separate Storm Sewer Systems (PDF) offers numerous opportunities for public involvement and participation. Two areas where the public is able to learn more about DuPage County's compliance with ILR40 are listed below.

DuPage County's Construction Site Stormwater Control Activities

Stormwater discharges associated with industrial activity from construction sites that will result in the disturbance of one or more acres total land area or from construction sites less than one acre of total land that is part of a larger common plan of development or sale if the larger common plan will ultimately disturb one or more acres total land area require compliance with IEPA Permit No. ILR10, General NPDES Permit for Storm Water Discharges from Construction Site Activities (PDF). DuPage County submits a Notice of Intent (NOI) to IEPA in order to obtain coverage under ILR10 for projects where coverage is required. Additional information regarding DuPage County's construction site projects and associated stormwater discharges can be found here.

ILR40 Annual Reports

ILR40 requires DuPage County to submit an annual report to the IEPA by the first day of June each year that the permit is in effect. Each report, which covers the period from March of the previous year through March of the current year, should include the following; the status of compliance with permit conditions, an assessment of the appropriateness of identified best management practices and progress toward achieving the statutory goal of reducing the discharge of pollutants to the maximum extent practicable (MEP), identified measurable goals for each of the minimum control measures, and results of information collected and analyzed. The most recent annual report, as well as past reports, can be viewed by accessing the Water Quality Archives webpage.

Water Quality

Overview

DuPage County provides watershed planning often resulting in flood control projects that include water quality components to comply with federal regulations. The Clean Water Act requires all municipalities, townships and unincorporated areas of DuPage County to comply with National Pollutant Discharge Elimination System (NPDES) permitting to restore and protect the water quality of the Waters of the State from pollutants associated with stormwater runoff. Stormwater Management offers all municipalities and townships within the County the opportunity to utilize the County's water quality programs to comply with the requirements of NPDES, saving taxpayers millions of dollars based on economies of scale. The Clean Water Act also requires a Total Maximum Daily Load (TMDL) be developed for each pollutant of an impaired water body. It determines the load - or quantity - of any given pollutant allowed in a particular water body. A TMDL must consider all potential sources of pollutants - both point and non-point - while taking into account a margin of safety and the effects of seasonal variation.

Stormwater Permit

DuPage County is permitted to discharge stormwater to Waters of the State through its coverage under Illinois Environmental Protection Agency (IEPA) Permit No. ILR40, General NPDES Permit for Discharges from Small Municipal Separate Storm Sewer Systems. ILR40 includes six minimum control measures which are to be included in the County's stormwater management program:

1. Public Education and Outreach on Stormwater Impacts
2. Public Involvement / Participation
3. Illicit Discharge Detection and Elimination
4. Construction Site Storm Water Runoff Control
5. Post-Construction Storm Water Management in New Development and Redevelopment
6. Pollution Prevention / Good Housekeeping for Municipal Operations

Each of these minimum control measures, as well as the overall Phase II Municipal Separate Storm Sewer System (MS4) permitting program, is summarized by the United States Environmental Protection Agency (USEPA) through various fact sheets. These fact sheets are publications numbered EPA 833-F-00-001 through EPA 833-F-00-015.

Archives

Check out the Water Quality Archives for information regarding older water quality issues, such as presentations and seminars.

APPENDIX 27

Compliance Documentation
Illicit Discharge Detection and Elimination

Chapter 10
STORMWATER CONTROL

10.1: COUNTY ORDINANCE ADOPTED:

The DuPage County countywide stormwater and floodplain ordinance, as revised April 24, 2012, and effective April 25, 2012, as amended by section 10.2 of this chapter, is adopted by reference by the village for the regulation of stormwater management in the village. At least one copy of said ordinance has been, for at least thirty (30) days prior to its adoption, and is now, on file in the office of the village clerk and same is herein incorporated as fully as if set out at length herein, and the provisions thereof shall be controlling. (Ord. 99-09-24; amd. Ord. 06-06-22; Ord. 08-07-27; Ord. 12-08-27)

10.2: AMENDMENTS TO COUNTY ORDINANCE:

The following sections and tables of the DuPage County countywide stormwater and floodplain ordinance, as revised April 24, 2012, and effective April 25, 2012, are amended as follows: (Ord. 06-06-22; amd. Ord. 08-07-27; Ord. 12-08-27)

Section 15-42, entitled "Fees For Certification And Authorization By The County And Other Fees", is amended by adding the following thereto:

F. The fees due for review of stormwater management permit applications by the village of Clarendon Hills are listed below:
(Ord. 06-11-39; amd. Ord. 12-08-27)

Stormwater management permit application fee:		$500.00 for the first acre of land, and $300.00 for each additional acre or fraction thereof, plus cost recovery, as provided for by chapter 11 of the village code.

(Ord. 06-11-39)

G. All applicable fees for development in this partial waiver community shall be payable to the village of Clarendon Hills through the community development department.
(Ord. 06-11-39; amd. Ord. 12-08-27)

Section 15-63, entitled "Post Construction Best Management Practices", is amended as follows:

Section 15-63.A.1 - When comparing the impervious area of the pre-development site to the with-development impervious area of the same development, excluding any areas of the development site for which PCBMPs have already been provided and maintained, and the cumulative net new impervious area is less than three hundred (300) square feet in the aggregate since May 1, 2015; or

Section 15-64, entitled "Post Construction Best Management Practices Design Criteria", is amended by revising subsection C.6 to read in its entirety as follows:

Section 15-64.C.6 - For development sites, excluding any areas of the development site for which PCBMPs have already been provided and maintained, if the cumulative net impervious area exceeds 2,500 square feet in the aggregate since May 1, 2015, applicant shall identify the pollutants of concern that may be generated by the proposed development from the following list: total suspended soils (TSS): metals and oils; and nutrients consisting of nitrogen and phosphorous. Proposed PCBMPs shall only be required to treat those pollutants identified and agreed to by the director or administrator.

Section 15-64, entitled "Post Construction Best Management Practices Design Criteria", is amended by adding new subsections C.7 through C.11 thereto, which shall read in their entirety as follows:

Section 15-64-C.7 - Each development site shall provide the required PCBMP storage volume in a manner that promotes infiltration. Acceptable PCBMP storage systems include rain gardens, rainwater harvesting systems, and underground storage systems and/or any combination thereof or other design as approved by the village engineer. The location of the PCBMP storage system shall be approved by the village engineer. The runoff from the net new impervious area of the development site shall be directed into the PCBMP storage system.

Section 15-64-C.8 - If the village engineer determines the on-site soils are not suitable for infiltration of the PCBMP storage system within the required forty-eight (48) to ninety-six (96) hour draw down time, a pump can be installed. The pump outlet pipe shall discharge to the nearest village stormwater system.
(Ord. 14-11-37)

Section 15-64-C.9 - The PCBMP storage system shall be designed by a professional engineer licensed by the state of Illinois, and such PCBMP storage system must be shown on a signed and sealed site plan submitted to the village of Clarendon Hills at the time a building permit application is made. The village's stormwater and floodplain ordinance administrator may waive this requirement for developments where the net new impervious area does not exceed eight hundred (800) square feet.
(Ord. 15-09-49)

Section 15-64-C.10 - An initial inspection of the installed and operational PCBMP storage system shall be completed by the village engineer at the expense of the property owner. The village engineer will send to the property owner a list of deficiencies if appropriate. The property owner shall rectify any noted deficiencies within sixty (60) days. The village engineer will make another inspection at the expense of the property owner to verify that the deficiencies have been corrected. Once the village engineer approves the PCBMP storage system, a letter from the village will be sent to the property owner formally memorializing the approval.

Section 15-64-C.11 - After receiving the village engineer approval, the PCBMP storage system will be inspected by the village engineer on a bi-annual basis (every 2 years) at the expense of the property owner. The village engineer will send to the property owner a list of deficiencies if appropriate. The property owner shall rectify any noted deficiencies within sixty (60) days. The village engineer will make another inspection at the expense of the property owner to verify that the deficiencies have been corrected. If the deficiencies have been corrected or there are no deficiencies, the village engineer will send a letter to the property owner memorializing the approval of the PCBMP storage system pursuant to the bi-annual inspection.
(Ord. 14-11-37)

Section 15-71, entitled "Site Runoff Conveyance, Storage & Field Tiles", is amended by adding the following thereto:

H. Discharges from downspouts, sump pumps, or other concentrated flows or runoff generated from a property (hereinafter the "subject property") shall not be released as a concentrated flow directly towards a neighbor's home or property. These concentrated discharges shall be made to discharge to that portion of the subject property located to the front or to the rear of the principal structure on the subject property. Wherever possible, these discharges shall be made to spread out over the land constituting the subject property, through grading of the subject property, so that the effects of the stormwater runoff are minimized.
(Ord. 06-06-22; amd. Ord. 12-08-27)

10.3: ILLICIT DISCHARGE DETECTION AND ELIMINATION RULES/REGULATIONS/REQUIREMENTS:

A. No person shall place, drain, or otherwise discharge, cause, or allow others under their control to place, drain, or otherwise discharge into the storm drainage system or MS4 any pollutants or waters containing any pollutants, other than normal stormwater unless specifically exempted in subsection C of this section.

B. The following discharges into the MS4 or the storm drainage system shall be prohibited: discharges that are not a direct result of precipitation and/or snowmelt within the drainage area of the MS4; and discharges from an illicit connection.

C. The following discharges are exempt from discharge prohibitions established herein provided the director determines they do not cause an adverse effect on water quality:

(1) Discharges caused by governmental public works and stormwater management units as part of their standard operations in compliance with all applicable regulations.

(2) Water line flushing and street wash water.

(3) Discharges required by law or authorized by permit, including any nonstormwater discharge permitted under an NPDES permit, waiver, or waste discharge order issued to the discharger and administered by the USEPA and/or IEPA.

(4) Landscape irrigation water.

(5) Rising groundwaters.

(6) Groundwater infiltration.

(7) Pumped groundwater.

(8) Discharges from potable water sources.

(9) Foundation drains.

(10) Air conditioning condensate.

(11) Irrigation water (except for wastewater irrigation).

(12) Springs.

(13) Water from crawl space pumps.

(14) Footing drains.

(15) Storm sewer cleaning water.

(16) Water from any outdoor residential, charitable, or automobile dealership premises car wash.

(17) Routine external building washdown which does not use detergents.

(18) Flows from riparian habitats and wetlands.

(19) Dechlorinated pH neutral swimming pool discharges.

(20) Residual street wash water.

(21) Discharges or flows from firefighting activities.

(22) Dechlorinated water reservoir discharges.

(23) Pavement wash waters where spills or leaks of toxic or hazardous materials have not occurred (unless all spilled material has been removed).

(24) Discharges associated with dye testing of water line, sanitary sewers, storm sewers, private drains or septic systems; however, this activity shall not take place until the discharger, or tester, has provided notification to the department at least two (2) full business days prior to the test date, unless an emergency situation does not allow time for such notification.

(25) Other discharges approved by the director as being substantially like any of the discharge types enumerated above.

D. The construction, use, maintenance, or continued existence of illicit connections to the storm drainage system or MS4 is prohibited. Illicit connections made in the past are expressly prohibited, regardless of whether the connection was permissible under law or practices applicable or prevailing at the time of connection.

E. Connections in violation of this section must be disconnected and redirected, if necessary, to an approved on site wastewater management system or the sanitary sewer system upon approval of the director.

F. Any drain or conveyance that has not been documented in plans, maps or equivalent, and which may be connected to the storm sewer system or MS4, shall be located by the owner or occupant of that property upon receipt of written notice of violation from the director requiring that such locating be completed. Such notice shall specify a reasonable time period within which the location of the drain or conveyance is to be determined, that the drain or conveyance be identified as storm sewer, sanitary sewer or other, and that the outfall location or point of connection to the storm sewer system, MS4, sanitary sewer system, or other discharge point be identified. Results of these investigations are to be documented and provided to the director.

G. Any person operating a facility subject to an industrial activity NPDES stormwater discharge permit shall submit a copy of the notice of intent (NOI) to the director at the same time the operator submits the original notice of intent to the IEPA as applicable. A person commits an offense if the person operates a facility that is discharging stormwater associated with industrial activity without having submitted a copy of the notice of intent to do so to the director.

H. Notwithstanding other requirements of law, as soon as any person owning, leasing or exercising control over a property, or responsible for emergency response for a property, has information of any known or suspected release of materials which are resulting or may result in illicit discharges or pollutants discharging into the MS4 or the storm drainage system, said person shall take all necessary steps to ensure the discovery, containment, and cleanup of such spill.

(1) In the event of such spill, said person shall immediately notify local emergency dispatch services and act in accordance with Illinois emergency management agency (IEMA) and IEPA regulations.

(2) Said person shall notify the department of the spill in person or by phone, facsimile, or e-mail no later than the next business day. Notifications in person or by phone shall be confirmed by written notice addressed and mailed to the department within three (3) business days of the phone notice. If the spill emanates from a commercial or industrial establishment, the owner or operator of such establishment shall also retain an on site written record of the spill and the actions taken to prevent its recurrence. Such records shall be retained for at least five (5) years.

I. Failure to provide notification of a release as provided above is a violation of this section. Proper notice, including containment and cleanup shall exempt the notifying parties from applicable fines; notwithstanding that a party causing a spill that contaminates or harms a storm sewer system shall not be relieved of liability for damages resulting from such act.

J. A violation of this section includes when a person: performs any act expressly prohibited by any provision of this section; or disobeys, neglects, or fails to carry out or comply with any provision of this section or of any order or notice issued by the director; or allows any condition or act that violates any provision of this section to continue unabated on property owned, leased, managed, or under the control of such person; or directs, orders, permits, or allows a second person to do any act expressly prohibited by any provision of this section, or to maintain or continue unabated any condition or act that violates any provision of this section on property owned, leased, managed or under the control of the first person.

K. The director may issue a notice of violation ordering a person to take action to achieve compliance with the provisions of this section and/or to cease and desist from any action conducted in violation of this section. Failure to comply with the terms and conditions of a notice of violation and order to comply shall constitute a violation of this section.

(1) The director shall set forth the form and content of any notices issued under this section.

(2) The director may issue a warning of violation ordering a person to take action to achieve compliance with the provisions of this section. If a person fails to comply with the terms and conditions of a warning, the director may, thereafter, issue a notice of violation.

(3) The director may issue a warning of violation and disburse educational materials outlining appropriate measures to minimize the discharge of pollutants.

L. If a person fails to comply with an order issued under this section, the director may direct the appropriate legal counsel to commence legal proceeding authorized by this section, under the law or equity, necessary to enforce any provision of this section and/or to protect public health and safety.

M. When the director finds that any person has violated, or continues to violate, any provision of this section, or any order issued hereunder, or that the person's past violations are likely to recur, and that the person's violation(s) has(have) caused or contributed to an actual or threatened discharge to the MS4, storm drainage system, and an imminent threat of violation is present, the director may issue an emergency order to the violator directing the violator to:

(1) Immediately cease and desist all such violations and comply with all section requirements; and

(2) Take such appropriate preventive action as may be needed to properly address a continuing or threatened violation, including immediately halting operations and/or terminating the discharge.

N. Any person notified of an emergency order under this section shall immediately comply and stop or eliminate its endangering discharge. In the event of a discharger's failure to immediately comply voluntarily with the emergency order, the department may take such steps as deemed necessary to prevent or minimize harm to the MS4, storm drainage system, or waters of the United States, and/or endangerment to persons or to the environment, including immediate termination of a facility's water supply, sewer connection, or other municipal utility services. The department may allow the person to recommence its discharge when it has demonstrated to the satisfaction of the department that the period of endangerment has passed, unless further termination proceedings are initiated against the discharger under this section. A person that is responsible, in whole or in part, for any discharge presenting imminent endangerment shall submit a detailed written statement, describing the causes of the harmful discharge and the measures taken to prevent any future occurrence, to the department within fifteen (15) days of receipt of the emergency order. Issuance of an emergency cease and desist order shall not be a bar against, or a prerequisite for, taking any other action against the violator.

O. Any condition caused or permitted to exist in violation of any provision of this section shall constitute a threat to public health and safety and is declared and deemed a public nuisance.

P. Any person violating any provision of this section shall be fined not less than one hundred dollars ($100.00) nor more than seven hundred fifty dollars ($750.00) for each day, or portion of a day, during which such violation is committed, continued or permitted, with each day, or portion of a day, that said violation is committed, continued or permitted constituting a separate and distinct offense.

Q. In emergency situations involving an immediate threat to public health and safety, the director may direct legal counsel to immediately commence any legal equitable proceeding necessary to restrain, abate and/or remedy said situation. The director may take such action without having to first issue a notice of violation to the person(s) having control of, or acting as agent for, such premises where the nuisance is located, or, waiting for such person(s) to abate or remove such nuisance as previously ordered by the director. Further, the department may, without prior notice, suspend MS4 discharge access to a person when such suspension is necessary to stop an actual or threatened discharge, which presents or may present imminent and substantial danger to the environment, or to the health or welfare of persons, or to the MS4, storm drainage system, or waters of the United States. If the violator fails to comply with a suspension order issued in an emergency, the department may take such steps as deemed necessary to prevent or minimize damage to the MS4, storm drainage system, or waters of the United States, or to minimize danger to public health and safety.

R. The department shall obtain an emergency court order authorizing such termination.

S. In all other cases the director may notify, in writing, the person(s) having control of, or acting as agent for, such premises where the nuisance is located and directing such person(s) to abate or remove such nuisance within such time as is stated on the notice. Upon the failure or refusal of such person(s) to comply with the notice, the director may direct that appropriate proceeding commence to compel the abatement, or removal, of such a nuisance in any manner allowed by law, equity, or this section and/or authorizing the department to act to abate, or remove, such nuisance. The person(s) having control of such premises, in addition to the other remedies provided by this section, shall be liable to the department for any costs incurred by the department to effect such abatement, or removal, including reasonable attorney fees and other costs of enforcement, to be recovered by a court of competent jurisdiction.

T. Where the conditions imposed by any provision of this section are either more restrictive or less restrictive than comparable conditions imposed by any other applicable statute, law, code, regulation, or rule, the provision that is most restrictive or imposes the higher standards or requirements shall apply. The provisions of this section shall be interpreted to be cumulative of, and to impose limitations in addition to, all other laws, codes, and regulations, in existence or which may be passed governing any subject matter of this chapter. To the greatest extent possible, the provisions of this section shall be construed to be consistent with, and not in conflict with, the provisions of such other laws, codes, and regulations, and with each other, to the end that all such provisions may be given their fullest application.

U. The village is a full participant in DuPage County's illicit discharge detection and elimination program, pursuant to an intergovernmental agreement between the village and DuPage County.

V. Any person aggrieved by any decision, ruling, or determination by the director, or by any interpretation or application of any provision of this section may appeal such matter. A written appeal of any decision made by the director shall be made within seven (7) days of the decision contested, excepting an appeal involving the assessment charge or calculation of any fine or penalty in which cases an appeal shall be brought before said amount becomes thirty (30) days past due. Upon receipt of such notice of appeal, the director shall set a date for a hearing before the village board of trustees. Such hearing shall take place no fewer than fourteen (14) days nor more than thirty (30) days from the date that the director receives such notice of appeal unless the director and party requesting the hearing agree to a different schedule. The director shall notify the person making the appeal of the date of such hearing. At the hearing the person making the appeal may appear in person or be represented by counsel, or submit his case in writing. The decision concerning the appeal shall be in writing, shall be communicated to the person making the appeal, and shall state a finding upon which the decision is based. The village board of trustees shall have the authority to reverse, modify, or affirm any decision, ruling, or determination by the director.

W. For purposes of this section, the following words and terms shall be defined as follows:

BUILDING: A structure that is constructed or erected partially or wholly aboveground and is enclosed by walls and a roof. The term "building" includes manufactured homes and includes both the aboveground and the belowground portions of the structure.

CLEAN WATER ACT (CWA): The federal water pollution control act (33 USC section 1251 et seq.), and any subsequent amendments thereto.

COMMITTEE: The public works committee of the village of Clarendon Hills.

DEPARTMENT: The village of Clarendon Hills public works department.

DIRECTOR: The village of Clarendon Hills director of public works.

DRAIN: Piping and appurtenances for conveying a fluid.

FACILITY: Something that is built, installed, or established to serve a particular purpose.

HAZARDOUS MATERIALS: Any material which may cause, or significantly contribute to, a substantial hazard to human health, safety, property, or the environment.

ILLICIT CONNECTIONS: An illicit connection is defined as either of the following: 1) any drain or conveyance, whether on the surface or subsurface that allows an illicit discharge to enter the storm drainage system including, but not limited to, any conveyances that allow any nonstormwater discharge including sewage, process wastewater, and wash water to enter the storm drainage system and any connections to the storm drainage system from indoor drains and sinks, regardless of whether said drain or connection had been previously allowed, permitted, or approved by the village, or 2) any drain or conveyance connected from a commercial or industrial land use to the storm drainage system that has not been documented in plans, maps, or equivalent records and approved by the village.

ILLICIT DISCHARGE: Any direct or indirect nonstormwater discharge to the storm drainage system, except as exempted in subsection C of this section.

INDUSTRIAL ACTIVITY: Activities subject to an industrial NPDES stormwater permit as defined in 40 CFR, section 122.26(b)(14).

LINE: A hollow conduit through which fluids are transported between two (2) or more points.

MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4): A conveyance or system of conveyances (including, but not limited to, sidewalks, roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, and storm sewers) owned or operated by a governmental entity and designed or used for collecting or conveying stormwater, and that is not used for collecting or conveying sewage.

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT: A permit issued by the Illinois environmental protection agency (IEPA) that authorizes the discharge of pollutants to waters of the United States, whether the permit is applicable on an individual, group or general areawide basis.

NONSTORMWATER DISCHARGE: Any discharge to the storm drainage system that is not the direct result of precipitation and/or snowmelt in the tributary drainage basin.

NOTICE OF INTENT (NOI): Illinois environmental protection agency notice of intent to participate in coverage under the general permit to discharge stormwater associated with industrial activity.

PARCEL: Contiguous land under single ownership or control.

PERSON: Any individual, association, partnership, public or private corporation, municipality, political subdivision, government agency or any other legal entity, including heirs, successors, agents, officers and assigns of such entity.

pH NEUTRAL: pH value between 6.5 and 9.0 standard units.

POLLUTANT: Anything that causes or contributes to pollution. Pollutants may include, but are not limited to: paints, varnishes, and solvents; oil and other automotive fluids; nonhazardous liquid and solid wastes and yard wastes; refuse, rubbish, garbage, litter, or other discarded or abandoned objects, and accumulations, so that same may cause or contribute to pollution; floatables; pesticides, herbicides, and fertilizers; hazardous substances and wastes; sewage, wastewater, dredged spoil, solid waste, incinerator residue, sewage garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discharged equipment, rock, sand, cellar dirt, or industrial, municipal and agricultural waste or any other contaminant exhibiting certain characteristics of wastewater (e.g., pH, temperature, TSS, turbidity, color, BOD, COD, toxicity, or odor), fecal coliform and pathogens; dissolved and particulate metals; animal wastes; wastes and residues that result from constructing a building or structure; and noxious or offensive matter of any kind.

PREMISES: Any building, lot, parcel of land, or portion of land whether improved or unimproved including adjacent sidewalks and parking strips.

RUNOFF: The waters derived from precipitation and/or melting snow within a tributary drainage basin that exceeds the infiltration capacity of that basin.

SEWAGE: Polluted stormwater, wastewater, or other refuse liquids usually conveyed by sewers.

SEWER: An artificial conduit to carry off sewage and/or surface water (as from rainfall), including sanitation, stormwater, and/or combined sewers.

SEWERAGE: A system of sewers and appurtenances for the collection, transportation, pumping, and treatment of sewage.

STORM DRAINAGE SYSTEM: A facility by which stormwater is collected and/or conveyed, including, but not limited to, any roads with drainage systems, municipal streets, gutters, curbs, inlets, piped storm drains, pumping facilities, retention and detention basins, natural and humanmade or altered drainage channels, reservoirs, and other drainage structures.

STORMWATER: Any flow, runoff, and drainage from any form of natural precipitation, and resulting from such precipitation.

STRUCTURE: Anything that is erected or constructed. The term "structure" includes, without limitation: buildings, manufactured homes, tanks, dams, sewers, constructed channels, outfalls, parking lots, driveways, roads, sidewalks, and concrete patios.

VILLAGE: The village of Clarendon Hills, DuPage County, Illinois.

WASTEWATER: Water that has been used and is not for reuse unless treated by a wastewater treatment facility.

WATERS OF THE UNITED STATES: As defined in the CWA, "waters of the United States" applies only to surface waters, rivers, lakes, estuaries, coastal waters, and wetlands. Not all surface waters are legally "waters of the United States". Generally, those waters include the following: all interstate waters; intrastate waters used in interstate and/or foreign commerce; tributaries of the above; territorial seas at the cyclical high tide mark; and wetlands adjacent to all the above. (Ord. 09-12-54)

STORM SEWER ATLAS

NORTH
GRAPHIC SCALE
250 0 125 250 500
(IN FEET)
SCALE: 1 inch = 250feet
DATE: MAY, 1999

M.E. Simpson Co., Inc.
Valparaiso, Indiana
800.255.1521
www.mesimpson.com

ROUND GRATE
PIPE INLET
CURB GRATE
MANHOLE

ANN ST. AND SHERIDAN AVE.

MIDAUGH RD. METER STATION

PROSPECT AVE. AND CHICAGO AVE.

BURLINGTON TANK DETAIL

PARK AVE. TANK DETAIL

NORFOLK/COE AND CHICAGO AVE.

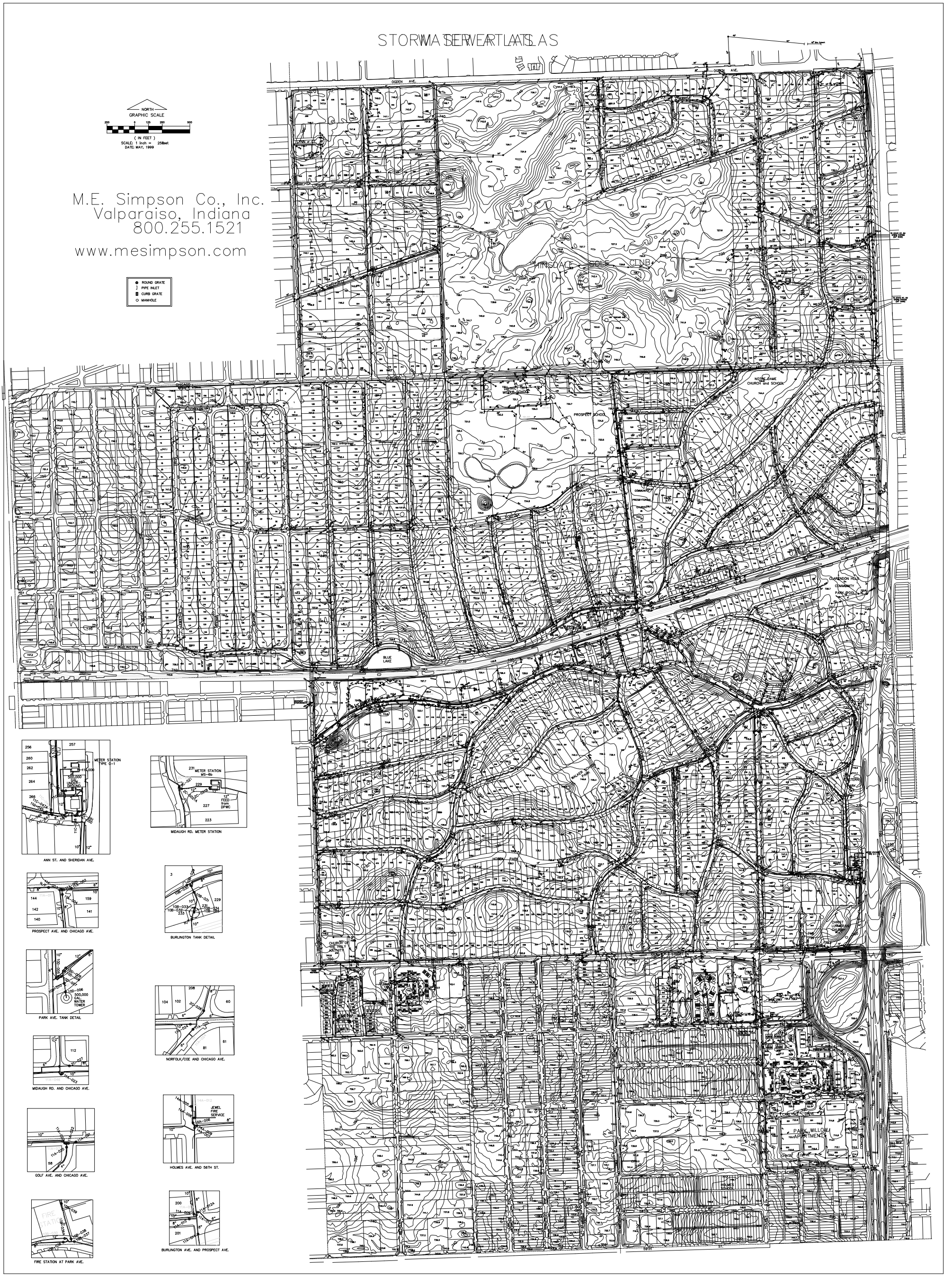
MIDAUGH RD. AND CHICAGO AVE.

HOLMES AVE. AND 56TH ST.

GOLF AVE. AND CHICAGO AVE.

BURLINGTON AVE. AND PROSPECT AVE.

FIRE STATION AT PARK AVE.



APPENDIX 28

Compliance Documentation – Construction Site Runoff Control

ARTICLE VII. SOIL EROSION AND SEDIMENT CONTROL REQUIREMENTS

15-58. Soil Erosion and Sediment Control General Requirements

15-58.A Soil erosion and sediment control features shall be considered as part of any **Development**'s initial site planning process. Soil erosion and sediment control related measures are required to be constructed and maintained for any land disturbance activity. The following factors shall be addressed:

15-58.A.1 The susceptibility of the existing soils to erosion

15-58.A.2 Existing native and mature vegetation

15-58.A.3 Existing natural or established drainage ways

15-58.A.4 The natural contours of the land

15-58.A.5 **Development** phasing

15-58.A.6 Emphasis first on erosion control, then sediment control.

15-58.A.7 Winter shutdown

15-58.B Temporary erosion and sediment control measures shall be functional and consistent with this Article of the Ordinance and the NPDES Stormwater Permit in effect prior to land disturbance activities.

15-58.C Soil disturbance shall be conducted in a manner that minimizes erosion. Areas of the **Development Site** that will not be graded shall be protected from construction traffic or other disturbance until stabilization of the disturbed areas has been completed.

15-58.D Soil stabilization measures shall include the use of temporary or permanent measures.

15-59. Soil Erosion and Sediment Control Plan Design Criteria

15-59.A **Channel**s and adjoining properties shall be protected from erosion and sedimentation. Where concentrated flow leaves a **Development Site**, effective energy dissipation shall be placed onsite at discharge locations.

15-59.B Erosion control blanket shall be required on all interior site runoff storage facilities side slopes between normal water level and high water level.

15-59.C Erosion control blanket to be placed in wetland or **Buffer** shall be 100% biodegradable, unless an alternative material is approved by the **Director** or **Administrator**. This requirement does not include turf reinforcement mats or other structural materials necessary for high erosion or scour areas.

15-59.D Land disturbance activities in streams shall be avoided, where possible. If disturbance activities are unavoidable, the following requirements shall be met:

15-59.D.1 Temporary stream crossings shall be constructed of non-erosive material.

15-59.D.2 The time and area of disturbance of a stream shall be kept to a minimum. The stream, including bed and banks, shall be restabilized within 48 hours after **Channel** disturbance is completed.

15-59.E Soil erosion and sediment control measures shall be placed where there is a potential for erosion and sized appropriately for the

tributary drainage area, and disturbed areas draining less than one acre shall, at a minimum, be protected by a **Filter Barrier** (including filter fences, which at a minimum, meet the applicable sections of the AASHTO Standard Specification 288-00, or equivalent control measures) to control all off-site runoff from disturbed areas. The **Filter Barrier** shall be designed in accordance with the following:

15-59.E.1 The use of straw bales as a **Filter Barrier** or ditch check is prohibited.

15-59.E.2 **Silt Fence**s can be used to intercept sheet flow only. **Silt Fence**s cannot be used as velocity checks in ditches or swales, nor can they be used where they will intercept concentrated flows.

15-59.E.3 Ditch checks shall be constructed using non-erodible materials or prefabricated devices. Straw or hay bales are not acceptable.

15-59.E.4 Reinforced **Silt Fence**s (normal **Silt Fence** reinforced with woven wire fencing) can be used to intercept sheet flow **Runoff** from disturbed areas greater than one acre.

15-59.E.5 All undisturbed wetland, **Flood Plain**, waters and **Buffer** areas shall, at a minimum, have a barrier of protection. The barrier shall be placed at the limits of soil disturbance and consist of :

15-59.E.5.a. A dual row of **Silt Fence**, and a row of orange construction fence; or

15-59.E.5.b. A dual **Silt Fence** barrier, with one of the fences being of high visibility material.

15-59.E.5.c. Alternative practices offering comparable protection to wetland, **Flood Plain**, waters, and **Buffer** may be used to prevent impact where applicable.

15-59.E.5.d. Additional soil erosion and sediment control measures may be required to adequately protect these sites.

15-59.F Disturbed areas with drainage areas of one (1) acre or greater, but fewer than 5 acres shall, at a minimum, be protected by a **Sediment Trap** or equivalent control measure at a point downslope of the disturbed area.

15-59.G Disturbed areas with drainage areas of five (5) acres or greater, shall, at a minimum, be protected by a **Sediment Basin**, in accordance with 15-59.H, with a perforated filtered riser pipe or equivalent control measure at a point downslope of the disturbed area.

15-59.H **Sediment Basin**s shall have both a permanent pool (dead storage) and additional volume (live storage) with each volume equal to the **Runoff** amount of a 2 year, 6 hour event over the onsite hydrologically disturbed tributary drainage area to the **Sediment Basin**. The available sediment volume below normal water level, in addition to the dead storage volume, shall be sized to store the estimated sediment load generated from the site over the duration of the construction period. For construction periods exceeding 1 year, the 1 year sediment load and a sediment removal schedule may be

submitted. If the site runoff storage basin for the proposed **Development** condition of the site is used for **Sediment Basin**, the above volume requirements will be explicitly met. Until the site is finally stabilized, the basin permanent pool of water shall meet the above volume requirements and have a filtered perforated riser protecting the outflow pipe.

15-59.I Pumping sediment laden water into any **Stormwater Facility** that is not designated to be a sediment control measure, **Sediment Trap**, or **Sediment Basin** either directly or indirectly without filtration is prohibited.

15-59.J Water removed from traps, basins and other water holding depressions or excavations must first pass through a sediment control or filtration device. When dewatering devices are used, discharge locations shall be protected from erosion. Discharges shall be routed through an effective sediment control measure (e.g., **Sediment Trap**, **Sediment Basin** or other appropriate measure).

15-59.K All discharges to undisturbed area, stabilized area or watercourse shall be designed at a non-erosive velocity corresponding to the soil and vegetative cover of the undisturbed area.

15-59.L All storm sewers, storm drain inlets and culverts that are, or will be functioning during construction shall be protected by sediment control measures. The sediment and erosion control measures shall be maintained until the site is stabilized.

15-59.M A stabilized construction entrance of aggregate underlain with filter cloth, or graveled road, or access drive, or parking area of sufficient width and length, and/or vehicle wash down facilities, shall be provided to prevent soil from being tracked or deposited onto public or private roadways. Any soil reaching a public or private roadway shall be removed immediately, or as warranted, and transported to a controlled sediment disposal area.

15-59.N All temporary and permanent stormwater conveyance **Channel**s, including ditches, swales, diversions, and the outlets of all **Channel**s and pipes shall be designed and constructed to withstand velocities that have the potential to cause damage or soil erosion.

15-59.O Earthen embankments with constructed side slopes steeper than 3H:1V must be constructed with appropriate stabilization as approved by the **Director** or the **Administrator**.

15-59.P Temporary diversions shall be constructed, as necessary, to direct all **Runoff** through an effective sediment control measure (e.g., **Sediment Trap**, **Sediment Basin** or other appropriate measure).

15-59.Q To the extent possible, soil stockpile locations shall be shown on the soil erosion and sediment control plan.

15-59.R Soil stockpiles shall not be located in a drainageway, **Flood Plain** area or a designated **Buffer**, unless otherwise approved, under specific conditions to be established by the **Director** or **Administrator**.

15-59.S Stockpiles to remain in place more than three days shall be provided with soil erosion and sediment control measures.

15-59.T The **Applicant** shall provide adequate receptacles for the deposition of all construction debris generated during the **Development** process. The **Applicant** shall not cause, or permit, the dumping, depositing, dropping, throwing, blowing, discarding or leaving of construction material debris upon or into any **Development Site**, **Channel**, pond, **Lake**, wetland, **Buffer** or **Waters of DuPage** County. The **Applicant** shall maintain the **Development Site** free of uncontrolled construction debris. Construction site operators shall implement appropriate soil erosion and sediment control, and control waste such as, discarded **Building** materials, concrete truck washout, chemicals, litter, and sanitary waste that may cause adverse impacts to water quality.

15-59.U All temporary erosion and sediment control measures shall be removed within 30 days after final stabilization is achieved. Trapped sediment and other disturbed soils resulting from temporary measures shall be properly disposed of prior to permanent stabilization.

15-59.V Design criteria, standards and specifications for erosion and sediment control shall be taken from one of the following sources:

15-59.V.1 Handbooks: Standards and specifications contained in The Illinois Urban Manual, as amended, DuPage Appendix E **Water Quality Best Management Practices Technical Guidance** Manual and the IDOT Standard Specifications for Road and Bridge Construction.

15-59.V.2 Other design criteria, standards and specifications, provided prior written approval is obtained from the **Administrator** or **Director**.

15-59.W **Applicant** with land disturbing activities greater than 1 acre shall provide a statement acknowledging that the site complies with the IEPA NPDES ILR10 permit, if applicable.

15-60. Inspection. Inspections, remedial work, and record keeping for all soil erosion and sediment control related work shall be performed and documented by the **Applicant** in accordance with the requirements of Illinois Environmental Protection Agency General NPDES Permit No. ILR 10 for sites that fall within that jurisdiction.

15-61. RESERVED

15-62. RESERVED

APPENDIX 29

Compliance Documentation – Post-Construction Runoff Control

ARTICLE VIII. POST CONSTRUCTION BEST MANAGEMENT PRACTICES

15-63. **PCBMP**s are required to treat the stormwater runoff for pollutants of concern and reduce **Runoff** volume for all **Development**s, with the exceptions and exclusions noted below. Upon a documented finding by the **Director** or **Administrator** that providing **PCBMP**s is impractical, then the appropriate **PCBMP** fee-in-lieu shall be paid by the **Applicant** in lieu of providing full or partial **PCBMP**s.

15-63.A **PCBMP**s are waived for the following **Development**s:

15-63.A.1 When comparing the **Impervious Area** of the **Pre-Development Site** to the with-development **Impervious Area** of the same **Development Site**, excluding any areas of the **Development Site** for which **PCBMP**s have already been provided and maintained, and the **Net New Impervious Area** is less than 2,500 square feet in the aggregate since April 23, 2013; or

15-63.A.2 The **Development** is limited to the resurfacing of an existing roadway; or reconstruction of an existing roadway with less than 2,500 square feet of **Net New Impervious Area** per quarter mile being added compared to the pre-development condition; or the replacement of an existing culvert or bridge; or

15-63.A.3 The **Development** is a Regional Stormwater Management Development or a **Flood** Control **Development** which are also considered to be **PCBMP**s; or

15-63.A.4 The **Development** is a stream bank stabilization, natural area restoration, or **Wetlands Mitigation** bank **Development**, or off-site wetland **Mitigation** which in itself is considered a **PCBMP**; or

15-63.A.5 The **Development** is limited to the construction, or re-construction, of a pedestrian walkway/bike path, in which the pedestrian walkway/bike path shall not exceed sixteen (16) feet in width, including shoulders; and is being constructed for general public use; or

15-63.A.6 The **Development** is limited to the modification of an existing stormwater management facility to incorporate **Best Management Practices** which in itself is considered **PCBMP**s; or

15-63.A.7 The **Development** is a Water or Sewer Improvement Development; or

15-63.A.8 The **Development** is limited to construction or **Maintenance** of an underground or overhead utility conduit or line, with supports and appurtenances. This exception does not include **Building**s, substations, pads, parking lots or other associated utility support facilities.

15-63.B The following are prohibited from providing on-site infiltration **PCBMP**s.

15-63.B.1 Fueling and vehicle maintenance areas.

15-63.B.2 Areas within 400 feet of a known **Community** water system well as specified, or within 100 feet of a known private

well, for **Runoff** infiltrated from commercial, industrial and institutional land uses. The **Applicant** shall use their best efforts to identify such zones from available information sources, which include the Illinois State Water Survey, IEPA, USEPA, DuPage County Health Department and the local municipality or water agency.

15-63.B.3 Areas where contaminants of concern, as identified by the USEPA or the IEPA prior to **Development**, are present in the soil through which infiltration would occur. For sites with a No Further Remediation (NFR) letter from the USEPA or IEPA, the **Applicant** shall determine whether or not structural barriers are part of the **Mitigation** strategy and account for such measures in the design.

15-63.B.4 **Development** in soils classified as Hydrologic Soils Group A by the **NRCS**.

15-63.B.5 **Development**s over soils with the seasonally high groundwater table within 2 feet of the surface.

15-64. Post Construction Best Management Practices Design Criteria.

15-64.A **PCBMP**s shall provide volume and pollutant control using one of the following practices:

15-64.A.1 Infiltration of 1.25 inches for all new impervious surfaces; or

15-64.A.2 Native vegetated wetland bottom site runoff storage basin; or

15-64.A.3 **PCBMP**s not constructed pursuant to Sections 15-64.A.1 or 15-64.A.2 shall be constructed in accordance with 15-64.C.

15-64.B Design criteria may be taken from the DuPage Appendix E **Water Quality Best Management Practices Technical Guidance** Manual or approved equivalent.

15-64.C If the practices listed under 15.64.A.1 or 15.64.A.2 are not utilized, then volume control and pollutant control shall be provided separately for all new impervious surfaces in accordance with the following criteria:

15-64.C.1 The required volume control shall be calculated as the product of the **New Impervious Area** and a 1.25" rainfall event. No abstractions are taken on the rainfall depth.

15-64.C.2 The volume calculated shall be subtracted from any volume of site runoff storage that is also required.

15-64.C.3 A control structure or underdrain, may be used provided that the draw down time is between 48 and 96 hours.

15-64.C.4 When a trench or other excavation is used, the expected void space (typically no greater than 36%) within the uniformly graded stone, sand or aggregate portion of the fill material may be included in the volume calculation. Silt sized particles (1/16 mm) or smaller may not be used to complete this calculation. The design shall incorporate measures to protect the void space from long term deposition of fine sediments. If testing is

completed on samples of the proposed fill material which indicates a higher level of porosity, the **Applicant** may submit the analysis completed on the material along with the storage calculations.

15-64.C.5 The bottom/invert of the trench shall be set above the seasonally high water table.

15-64.C.6 **Applicant**s shall identify the pollutants of concern that may be generated by the proposed **Development** from the following list: Total Suspended Soils (TSS): Metals and Oils; and Nutrients consisting of nitrogen and phosphorous. Proposed **PCBMP**s shall only be required to treat those pollutants identified and agreed to by the **Director** or **Administrator**.

15-65. Required **PCBMP**s for a **Development** may be located off-site as part of a regional stormwater device, practice or system, but must be within the same major **Watershed** as the **Development**. The 6 major **Watershed** divisions within the **County** are identified in Section 15-5.B.

15-66. RESERVED

15-67. RESERVED

15-68. RESERVED

15-69. RESERVED

15-70. RESERVED

STORMWATER INFORMATION

Stormwater Program

On July 21, 2014, The Village Board discussed possible ordinance changes to alleviate the cumulative effects of increased impervious surfaces due to residential teardowns. During that meeting the Village Board directed Staff to draft an ordinance amending the Village's stormwater and flood plain ordinance to lower the threshold for requiring on-site storm water storage. The resulting code amendment is designed to prevent further stormwater impacts as a result development.

Amendments

The Village Board adopted Ordinance 04-11-37 (PDF) and 15-09-49 (PDF) amending the County's stormwater Post Construction Best Management Practices (PCBMP) requirements to do the following:

- Reduce the current threshold for requiring PCBMP storage for new impervious area from 2,500 square feet to 300 square feet. This reduced threshold would allow property owners to make minor additions (i.e. patios, driveway expansions, accessory structures, covered front porches, etc.) without requiring the expense of engineering services and stormwater storage. Larger projects (i.e. detached garages, sport courts, room additions and new homes) would be required engineering services to determine the needed PCBMP storage required based on increased impervious surface.
- Establish other means for providing PCBMP storage through the installation of rain gardens, rainwater harvesting systems, underground storage systems, and/or other design approved by the Village Engineer. A pump may be installed if the Village Engineer determines the on-site soil conditions are not suitable for infiltration.
- Establish a biannual (every 2 years) inspection program by the Village Engineer at the expense of the property owner.

These new PCBMP storage standards became effective **May 1, 2015**. Example of how a project can meet these standards is provided below (see Available PCBMP Measures). Please contact the Community Development Department for more information.

Resources

- Available PCBMP Measures - Dry Well (PDF)
- Available PCBMP Measures - Permeable Pavers (PDF)
- Available PCBMP Measures - Rain Barrel (PDF)
- Available PCBMP Measures - Rain Garden (PDF)
- Available PCBMP Measures - Rainwater Harvesting (PDF)

Quick Links

- Homeowners Best Management Practices - DuPage County
- DuPage County Stormwater Management
- DuPage County Stormwater Ordinance Revision Effective April 23, 2013 (PDF)

View All

CONNECT WITH US

ORDINANCE NO. 14-11-37

AN ORDINANCE AMENDING CHAPTER 10, SECTION 10.2 OF THE CLARENDON HILLS VILLAGE CODE IN RELATION TO AMENDING THE DUPAGE COUNTY COUNTYWIDE STORMWATER AND FLOOD PLAIN ORDINANCE

WHEREAS, pursuant to State statute, the DuPage County Board, on the 24th day of April, 2012, adopted certain revisions to the DuPage County Countywide Stormwater and Flood Plain Ordinance, which went into effect on April 25, 2012 (hereinafter the "County Ordinance Amendments"); and

WHEREAS, the County Ordinance Amendments are intended to provide certain revisions to the minimum standards with regard to the regulation of stormwater and flood plains within DuPage County; and

WHEREAS, on August 20, 2012, the Corporate Authorities of the Village of Clarendon Hills adopted Ordinance 12-08-27, amending Chapter 10, Section 10.2 of the Clarendon Hills Village Code in relation to adopting revisions to the DuPage County Countywide Stormwater and Flood Plain Ordinance; and

WHEREAS, it is in the best interest of the Village of Clarendon Hills that Chapter 10, Section 10.2 of the Clarendon Hills Village Code be amended to further revise the provisions of the DuPage County Stormwater and Flood Plain Ordinance, as amended;

NOW, THEREFORE, BE IT ORDAINED by the President and Board of Trustees of the Village of Clarendon Hills, DuPage County, Illinois, as follows:

SECTION 1. The foregoing recitals are made part of this Ordinance, and shall be considered when construing this Ordinance.

SECTION 2. That, effective May 1, 2015, Chapter 10, Section 10.2 of the Clarendon Hills Village Code is hereby amended by adding the following thereto:

Section 15-63, entitled "Post Construction Best Management Practices," is amended as follows thereto:

Section 15-63.A.1 - When comparing the Impervious Area of the Pre-Development Site to the with-development Impervious Area of the same Development, excluding any areas of the Development Site for which PCBMPs have already been provided and maintained, and the cumulative Net New Impervious Area is less than three hundred (300) square feet in the aggregate since May 1, 2015; or

Section 15-64, entitled "Post Construction Best Management Practices Design Criteria," is amended by revising subsection C.6 to read in its entirety as follows:

Section 15-64.C.6 - For Development Sites, excluding any areas of the Development Site for which PCBMPs have already been provided and maintained, if the cumulative Net Impervious Area exceeds 2,500 square feet in the aggregate since May 1, 2015, applicant shall identify the pollutants of concern that may be generated by the proposed Development from the following list: Total Suspended Soils (TSS): Metals and Oils; and Nutrients consisting of nitrogen and phosphorous. Proposed PCBMPs shall only be required to treat those pollutants identified and agreed to by the Director or Administrator.

Section 15-64, entitled "Post Construction Best Management Practices Design Criteria," is amended by adding new subsections C.7 through C.11 thereto, which shall read in their entirety as follows:

Section 15-64-C.7 - Each Development Site shall provide the required PCBMP storage volume in a manner that promotes infiltration. Acceptable PCMBP storage systems include rain gardens, rainwater harvesting systems, and underground storage systems and/or any combination thereof or other design as approved by the Village Engineer. The location of the PCBMP storage system shall be approved by the Village Engineer. The runoff from the Net New Impervious Area of the Development Site shall be directed into the PCBMP storage system.

Section 15-64-C.8 - If the Village Engineer determines the on-site soils are not suitable for infiltration of the PCBMP storage system within the required forty-eight (48) to ninety-six (96) hour draw down time, a pump can be installed. The pump outlet pipe shall discharge to the nearest Village Stormwater System.

Section 15-64-C.9 - The PCBMP storage system shall be designed by a professional engineer licensed by the State of Illinois, and such PCBMP storage system must be shown on a signed and sealed site plan submitted to the Village of Clarendon Hills at the time a building permit application is made.

Section 15-64-C.10 - An initial inspection of the installed and operational PCBMP storage system shall be completed by the Village Engineer at the expense of the property owner. The Village Engineer will send to the property owner a list of deficiencies if appropriate. The property owner shall rectify any noted deficiencies within sixty (60) days. The Village Engineer will make another inspection at the expense of the property owner to verify that the deficiencies have been corrected. Once the Village Engineer approves the PCBMP storage system, a letter from the Village will be sent to the property owner formally memorializing the approval.

Section 15-64-C.11 - After receiving the Village Engineer approval, the PCBMP storage system will be inspected by the Village Engineer on a bi-annual basis (every 2 years) at the expense of the property owner. The Village Engineer will send to the property owner a list of deficiencies if appropriate. The property owner shall rectify any noted deficiencies within sixty (60) days. The Village Engineer will make another inspection at the expense of the property owner to verify that the deficiencies have been corrected. If the deficiencies have been corrected or there are no deficiencies, the Village Engineer will send a letter to the property owner memorializing the approval of the PCBMP storage system pursuant to the bi-annual inspection.

SECTION 5. All Ordinances or parts of Ordinances in conflict or which are inconsistent with this Ordinance shall be repealed to the extent of any such conflict or inconsistency.

SECTION 6. This Ordinance shall be in full force and effect from and after its passage, approval and publication in pamphlet form, as provided by law.

PASSED by the Village President and Board of Trustees of the Village of Clarendon Hills, DuPage County, Illinois, pursuant to a roll call voted, and approved by the Village President, this 3rd day of November, 2014.

ROLL CALL VOTE:
AYES: Trustees Flood, Hall, Knoll, and Pedersen
NAYS: Trustees Reid and Stach
ABSENT: None

Thomas F. Karaba
Village President

Dawn M. Tandle
Village Clerk

Published in Pamphlet Form: November 4, 2014

ORDINANCE NO. 15-09-49

AN ORDINANCE AMENDING CHAPTER 10, SECTION 10.2 OF THE CLARENDON HILLS VILLAGE CODE IN RELATION TO AMENDING THE DUPAGE COUNTY STORMWATER AND FLOOD PLAIN ORDINANCE

WHEREAS, pursuant to State statute, the DuPage County Board, on the 24th day of April, 2012, adopted certain revisions to the DuPage County Stormwater and Flood Plain Ordinance; and

WHEREAS, the County Ordinance Amendments are intended to provide certain revisions to the minimum standards with regard to the regulation of stormwater and flood plains within DuPage County; and

WHEREAS, on August 20, 2012, the Corporate Authorities of the Village of Clarendon Hills adopted Ordinance 12-08-27, amending Chapter 10, Section 10.2 of the Clarendon Hills Village Code in relation to adopting revisions to the DuPage County Countywide Stormwater and Flood Plain Ordinance; and

WHEREAS, on November 3, 2014, the Corporate Authorities of the Village of Clarendon Hills adopted Ordinance 14-11-37, amending Chapter 10, Section 10.2 of the Clarendon Hills Village Code requiring engineer designed Post Construction Best Management Practices ("PCBMP") be applied to development sites having a Net New Impervious Area greater than three hundred (300) square feet in aggregate since May 1, 2015; and

WHEREAS, the Village has found that requiring engineer designed plans can be cost prohibitive for development sites having a Net New Impervious Area less than eight hundred (800) square feet; and

WHEREAS, it is in the best interest of the Village of Clarendon Hills that Chapter 10, Section 10.2 of the Clarendon Hills Village Code be amended to further revise the provisions of the DuPage County Stormwater and Flood Plain Ordinance, as amended;

NOW, THEREFORE, BE IT ORDAINED by the President and Board of Trustees of the Village of Clarendon Hills, DuPage County, Illinois, as follows:

SECTION 1. The foregoing recitals are made part of this Ordinance, and shall be considered when construing this Ordinance.

SECTION 2. That Chapter 10, Section 15-64-C.9 of the Clarendon Hills Village Code is hereby amended as follows:

> "15-64-C.9 - The PCBMP storage system shall be designed by a professional engineer licensed by the state of Illinois, and such PCBMP storage system must be shown on a signed and sealed site plan submitted to the Village of Clarendon Hills at the time a building permit application is made. The Village's Stormwater and Floodplain Ordinance Administrator may waive this requirement for developments where the net new impervious area does not exceed eight hundred (800) square feet."

SECTION 3. All Ordinances or parts of Ordinances in conflict or which are inconsistent with this Ordinance shall be repealed to the extent of any such conflict or inconsistency.

SECTION 4. This Ordinance shall be in full force and effect from and after its passage, approval and publication in pamphlet form, as provided by law.

ADOPTED this 8th day of September, 2015 pursuant to a roll call vote as follows:

AYES: Trustees Flood, Jordan, Jorissen, Knoll, and Stach

NAYS: None

ABSENT: Trustee McGarrah

APPROVED by me this 8th day of September, 2015.

Len Austin, Village President

ATTEST:

Dawn M. Tandle, Village Clerk

VILLAGE OF CLARENDON HILLS CORPORATE SEAL ILLINOIS

Published in pamphlet form: September 9, 2015

AVAILABLE PCBMP MEASURES

- Dry Well
- Permeable Pavers
- Rain Barrel
- Rain Garden
- **Rainwater Harvesting**

Village of Clarendon Hills
Community Development Department
One North Prospect Avenue | Clarendon Hills, IL 60514
T: 630-286-5410 | F: 630-286-5429
www.clarendonhills.us/communitydevelopment.cfm

RAINWATER HARVESTING

POST CONSTRUCTION BEST MANAGEMENT PRACTICES (PCBMP)

On July 21, 2014, The Village Board discussed possible ordinance changes to alleviate the cumulative effects of increased impervious surfaces due to residential teardowns. During that meeting the Village Board directed Staff to draft an ordinance amending the Village's stormwater and flood plain ordinance to lower the threshold for requiring on-site storm water storage. The resulting code amendment is designed to prevent further stormwater impacts as a result development. On November 3, 2014, the Village Board adopted Ordinance 04-11-37 amending the County's stormwater Post Construction Best Management Practices (PCBMP) requirements to do the following:

- Reduce the current threshold for requiring PCBMP storage for new impervious area from 2,500 square feet to 300 square feet. This reduced threshold would allow property owners to make minor additions (i.e. patios, driveway expansions, accessory structures, covered front porches, etc.) without requiring the expense of engineering services and stormwater storage. Larger projects (i.e. detached garages, sport courts, room additions and new homes) would be required engineering services to determine the needed PCBMP storage required based on increased impervious surface.

- Establish other means for providing PCBMP storage through the installation of rain gardens, rainwater harvesting systems, underground storage systems, and/or other design approved by the Village Engineer. A pump may be required if the Village Engineer determines the on-site soil conditions are not suitable for infiltration.

Establish a bi-annual (every 2 years) inspection program by the Village Engineer at the expense of the property owner.

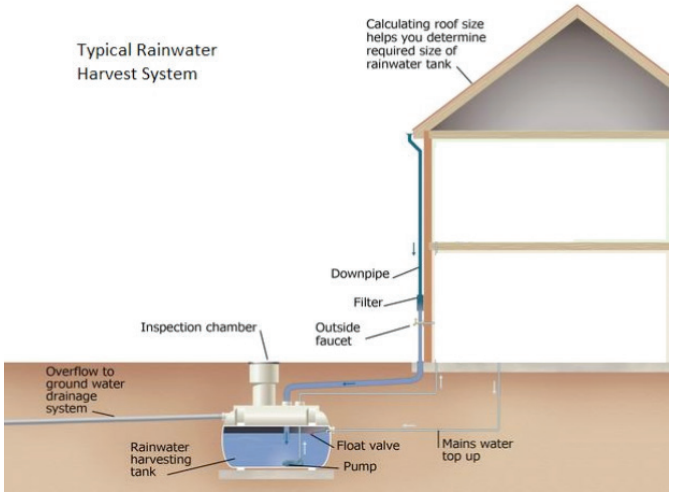
These new PCBMP storage standards will become effective **May 1, 2015.** Please contact the Community Development Department for more information.

NEW IMPERVIOUS AREA	REQUIRED PCBMP STORAGE VOLUME	
(FT2)	(FT3)	(GALLONS)
301	32	235
400	42	312
500	53	390
600	63	468
700	73	546
800	84	624
900	94	702
1,000	105	780
1,100	115	858
1,200	125	936
1,300	136	1014
1,400	146	1092
1,500	157	1170
1,600	167	1248
1,700	178	1326
1,800	188	1404
1,900	198	1482
2,000	209	1560

RAINWATER HARVESTING

A Rainwater Harvesting system would collect stormwater from the new impervious surface area (or equivalent existing impervious area) into a underground storage facility. A small capacity pump then is used to pump the stored stormwater through a garden hose to allow watering of plants and/or lawn. There are commercially available Rainwater Harvesting systems of varying storage capacities that can satisfy the PCBMP storage volume requirement.

Village staff will perform one (1) inspection after installation



Typical Rainwater Harvest System

AVAILABLE PCBMP MEASURES

Dry Well

Permeable Pavers

Rain Barrel

Rain Garden

Rainwater Harvesting

Village of Clarendon Hills
Community Development Department
One North Prospect Avenue | Clarendon Hills, IL 60514
T: 630-286-5410 | F: 630-286-5429
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DRY WELL

POST CONSTRUCTION BEST MANAGEMENT PRACTICES (PCBMP)

On July 21, 2014, The Village Board discussed possible ordinance changes to alleviate the cumulative effects of increased impervious surfaces due to residential teardowns. During that meeting the Village Board directed Staff to draft an ordinance amending the Village's stormwater and flood plain ordinance to lower the threshold for requiring on-site storm water storage. The resulting code amendment is designed to prevent further stormwater impacts as a result development. On November 3, 2014, the Village Board adopted Ordinance 04-11-37 amending the County's stormwater Post Construction Best Management Practices (PCBMP) requirements to do the following:

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- Establish other means for providing PCBMP storage through the installation of rain gardens, rainwater harvesting systems, underground storage systems, and/or other design approved by the Village Engineer. A pump may be required if the Village Engineer determines the on-site soil conditions are not suitable for infiltration.

Establish a bi-annual (every 2 years) inspection program by the Village Engineer at the expense of the property owner.

These new PCBMP storage standards will become effective **May 1, 2015.** Please contact the Community Development Department for more information.

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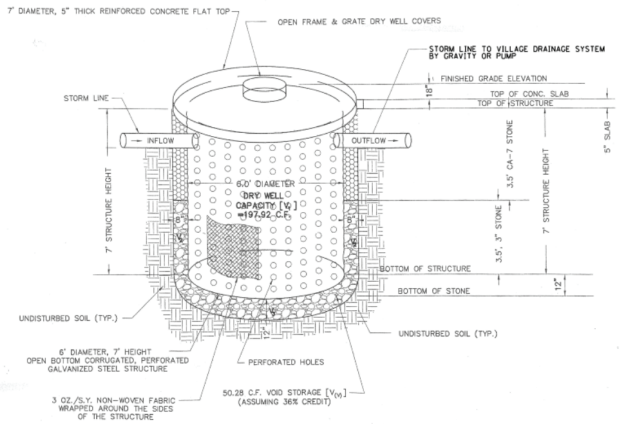
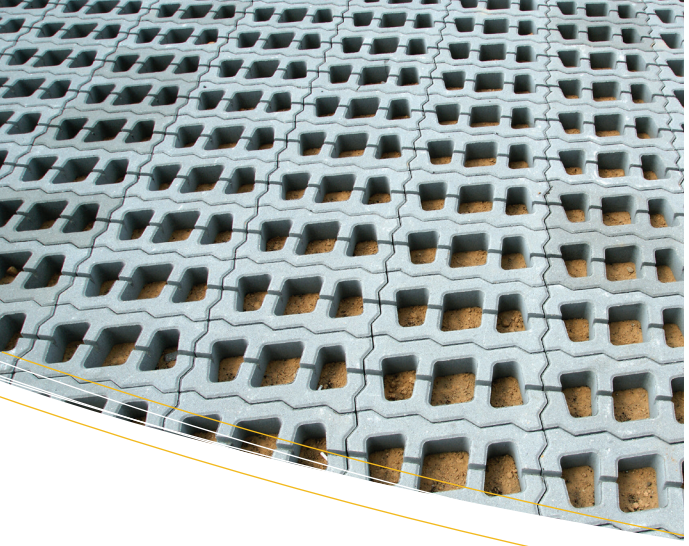
DRY WELL

A Dry Well is perforated structure that is installed in the ground. Stormwater flow from the new impervious surface (or equivalent existing impervious surface) is discharged to the Dry Well using small diameter PVC pipes. The perforations will allow the stored discharge to infiltrate first into a layer of stone surrounding the Dry Well and then into the adjacent soils if the soils are suitable. If the soils are determined to be unsuitable, a small pump will be required to dewater the Dry Well 48 hours to 96 hours after a rainfall event. The Village Engineer will work with the property owner to determine a suitable location for the Dry Well and the discharge point. For example a 6-foot diameter by 5-foot deep Dry Well can provide approximately 1,182 gallons of PCBMP storage volume. A 6-foot diameter by 7-foot deep Dry Well can provide approximately 1,855 gallons of PCBMP storage volume.

Village staff or consultant will perform two (2) inspections during the installation.



Typical Dry Well Installation



AVAILABLE PCBMP MEASURES

- Dry Well
- **Permeable Pavers**
- Rain Barrel
- Rain Garden
- Rainwater Harvesting

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Community Development Department
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PERMEABLE PAVERS

POST CONSTRUCTION BEST MANAGEMENT PRACTICES (PCBMP)

On July 21, 2014, The Village Board discussed possible ordinance changes to alleviate the cumulative effects of increased impervious surfaces due to residential teardowns. During that meeting the Village Board directed Staff to draft an ordinance amending the Village's stormwater and flood plain ordinance to lower the threshold for requiring on-site storm water storage. The resulting code amendment is designed to prevent further stormwater impacts as a result development. On November 3, 2014, the Village Board adopted Ordinance 04-11-37 amending the County's stormwater Post Construction Best Management Practices (PCBMP) requirements to do the following:

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- Establish other means for providing PCBMP storage through the installation of rain gardens, rainwater harvesting systems, underground storage systems, and/or other design approved by the Village Engineer. A pump may be required if the Village Engineer determines the on-site soil conditions are not suitable for infiltration.

Establish a bi-annual (every 2 years) inspection program by the Village Engineer at the expense of the property owner.

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PERMEABLE PAVERS

An area of Permeable Pavers allows rainwater to filter into a stone layer located below the pavers. Stormwater flow from the new impervious area (or equivalent existing impervious surface) is discharged to the Permeable Paver area. The capture stormwater is stored within the voids of the stone layer. The stone layer varies depending on the amount of stormwater storage is required. Within the stone layer, 36% is the assumed void space. Therefore , a 10' X 10' permeable paver area with 18-inches of stone will provide approximately 54 cubic feet (400 gallons) of stormwater storage volume. Permeable Pavers are not considered impervious surface. If the soils are determined to be unsuitable for infiltration, a small diameter perforated underdrain would be required to allow the dewatering of the stored stormwater runoff over a 48 hour to 96 hour duration to the closest Village drainage system. If the Permeable Paver area cannot drain by gravity because of existing topographic issues, a small pump will be needed to dewater the stored stormwater. The Village Engineer will work with the property owner to determine the discharge point.

Village consultant will perform three (3) inspections during construction.

Permeable Paver Example

AVAILABLE PCBMP MEASURES

- Dry Well
- Permeable Pavers
- **Rain Barrel**
- Rain Garden
- Rainwater Harvesting

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RAIN BARREL

POST CONSTRUCTION BEST MANAGEMENT PRACTICES (PCBMP)

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- Establish other means for providing PCBMP storage through the installation of rain gardens, rainwater harvesting systems, underground storage systems, and/or other design approved by the Village Engineer. A pump may be required if the Village Engineer determines the on-site soil conditions are not suitable for infiltration.

Establish a bi-annual (every 2 years) inspection program by the Village Engineer at the expense of the property owner.

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RAIN BARREL

A typical commercial Rain Barrel provides 50-55 gallons of storage. The downspouts from the roof are drained to the rain barrel. The homeowner then dewaters the rain barrel by watering adjacent landscape. A typical house has four (4) downspouts which can discharged to rain barrels. The roof area will use as an equivalent to the new impervious area. The four Rain Barrels can provide 200 to 220 gallons of PCBMP storage volume.

Village staff will perform one (1) inspection after installation.

Typical Rain Barrel

AVAILABLE PCBMP MEASURES

- Dry Well
- Permeable Pavers
- Rain Barrel
- **Rain Garden**
- Rainwater Harvesting

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RAIN GARDEN

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RAIN GARDEN

A Rain Garden is a planted depression that allows rainwater runoff from the new impervious area (or equivalent existing impervious area) to be absorbed. The collected stormwater will be stored in the voids of a stone layer located beneath the plants and soil. Within the stone layer, 36% is assumed as the void space. If the soils are determined to be unsuitable for infiltration, a small diameter perforated underdrain will be required to dewater the stored stormwater runoff over a 48 hour to 96 hour duration to the closest Village drainage system. If the Rain Garden cannot drain by gravity because of existing topographic issues, a small pump will be needed to dewater the stored stormwater.

Village consultant will perform three (3) inspections during construction.

Rain Garden Example

APPENDIX 30

Compliance Documentation
Pollution Prevention/Good Housekeeping

Pollution Prevention & Good Housekeeping for Municipal Operations

The Pollution Prevention/Good Housekeeping minimum control measure requires a small municipal separate storm sewer system (MS4) operator to examine and subsequently alter their own actions to help ensure a reduction in the amount and type of pollution that: (1) collects on streets, parking lots, open spaces, and storage and vehicle maintenance areas and is discharged into local waterways; and (2) results from actions such as environmentally damaging land development and flood management practices or poor maintenance of storm sewer systems. While this measure is meant primarily to improve or protect receiving water quality by altering municipal or facility operations, it also can result in a cost savings for the small MS4 operator, since proper and timely maintenance of storm sewer systems can help avoid repair costs from damage caused by age and neglect.

Deicing: Best Management Practices and Chloride Reduction Efforts

During the winter, ice on roads, parking lots and walkways can become a serious safety hazard. The most common and economical deicer used to address this is sodium chloride, also known as salt. Salt lowers the freezing point of water and makes ice and snow removal easier. However, the excessive use of road salt causes environmental problems and can itself become a hazard. Salt can erode infrastructure and damage water bodies, groundwater and roadside vegetation. Excessive chloride levels can severely impair the ability of plants to absorb water and nutrients and affects natural habitats.

As snow and ice melts, it runs off into storm sewer systems along with any chemical deicing agents that may have been applied. This runoff is not treated before it is discharged directly into local water bodies. Therefore, it is most effective to address the issue at the source: the application of salt. There are road salt alternatives that can be utilized, and measures taken at every level, from homeowner to municipal snow removal operator, to decrease these negative effects.

Please see our Chloride Reduction and Winter Deicing page for more information.

Green Initiatives

DuPage County's Solid Waste Division handles the proper disposal and recycling of materials and waste. Please refer to the Green Initiatives website for recycling events, guides, information on green technology and buildings, presentations from past Environmental Summits and reports. Regulations from Section 25 Pollution Control and Section 30 Solid Waste Management are accessible for viewing in the County Code.

Structural Best Management Practices for Storm Sewer Inlets

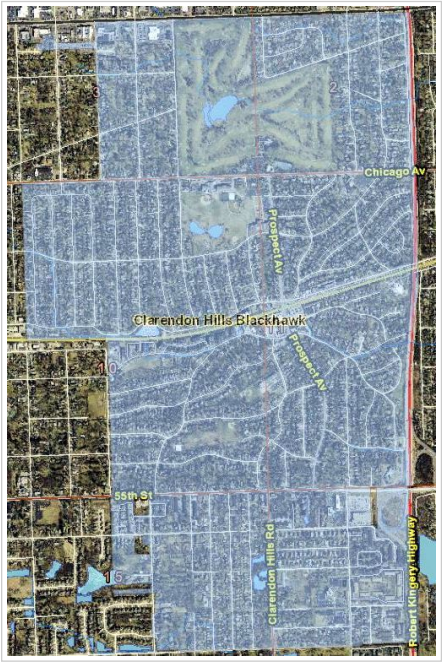
Stormwater separators are structural Best Management Practices that are used to remove and capture sediment, oil, grease, and other pollutants that run off from roadways into the storm sewers and catch basins, thereby preventing such pollutants from being released into DuPage County's waterways. Stormwater separators assist in capturing pollutant loads during spill incidents, as well. The DuPage County Division of Transportation (DuDOT) currently owns and operates nine stormwater separators along Sterns Road in Bartlett and IL-31/ Oak Brook Road in Oak Brook. View a map illustrating these stormwater separator locations (PDF).

Various companies manufacture stormwater separators for purchase. While all stormwater separators are designed to capture pollutants, each manufacturer's separator varies in specifications and maintenance requirements. One separator, Stormceptor, manufactured by Rinker Materials, has been utilized by DuDOT along some County roadways. This Stormceptor simulation highlights general principles of stormwater separator function. The simulation requires the use of Microsoft's Power Point. Although the Stormceptor unit has been highlighted here for educational purposes, many other companies produce separator units that should be considered based on a site's particular hydrology, pollutant loads, etc.

To view our previous DuPage County Pollution Prevention and Good Housekeeping seminar see our Water Quality Archives page.

CLARENDON BLACKHAWK MOSQUITO ABATEMENT DISTRICT

The Clarendon Blackhawk Mosquito Abatement District (the "District") is responsible for area mosquito control efforts; typically conducting larval control programs during summer months when mosquito populations are present. The District does not conduct routine adult mosquito control operations. Adult control is the least effective approach to mosquito control with only localized, temporary benefits. However, adult control is the *only tool* available to use against an adult mosquito population involved in a disease transmission cycle. Hence, the District will *only* implement residential adult control operations as a contingency measure in effort to minimize or break a viral transmission cycle. Primary triggers considered before implementing adult mosquito control efforts are: 1) Number of dead birds found having subsequent confirmation by the Illinois Department of Public Health (IDPH) of West Nile Virus (WNV); 2) Confirmation of viral activity within the mosquito population obtained by the DuPage County Health Department; 3) Time of season effecting a viral transmission cycle; 4) Viral activity reported in adjacent states; 5) Confirmation of equine cases; and 6) Confirmation of human cases.



Mailing Address
Clarendon Blackhawk Mosquito Abatement District
P.O. Box 77
Clarendon Hills, IL 60514

Board of Directors
President: R.E. Holub
1st Vice President: R.N. Quoss
2nd Vice President: W.A. Barouski
Treasurer/Secretary: A. Najera

The Clarendon Blackhawk Mosquito Abatement District is a separate taxing body serving properties in and out of the Village, and is not directed by or controlled by the Village of Clarendon Hills. Please contact the Mosquito Abatement District for further questions.

FAQs

- What Is West Nile Virus?
- What can be done to prevent the spread of the West Nile Virus?

View All

Quick Links

- Center for Disease Control
- DuPage Health Department
- CDC - Questions & Answers
- Illinois Department of Public Health
- West Nile Fever website
- Press Releases

View All

APPENDIX 31

Total Maximum Daily Loads Report
Salt Creek

Final Report

Total Maximum Daily Loads for Salt Creek, Illinois

Submitted to

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

October 2004

Prepared by

CH2MHILL
CH2M HILL Inc.
727 North First Street
Suite 400
St. Louis, MO 63102-2542

In association with

AQUA TERRA Consultants and

Applied Environmental Engineering, LLC

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF
WW-16J

RECEIVED
OCT 0 6 2004
Watershed Management Section
BUREAU OF WATER
RECEIVED
OCT - 4 2004
BUREAU OF WATER
BUREAU CHIEF'S OFF

29 SEP 2004

Marcia Willhite, Chief
Bureau of Water
IEPA
P.O. Box 19276
1021 North Grand Avenue East
Springfield, Illinois 62794-9276

Dear Ms. Willhite:

The United States Environmental Protection Agency (U.S. EPA) has conducted a complete review of the final Total Maximum Daily Loads (TMDL) for chlorides, carbonaceous biochemical oxygen demand (CBOD), volatile suspended solids (VSS) and ammonia-N, including supporting documentation, for 8 segments of the Salt Creek watershed, located in DuPage and Cook Counties, Illinois. Based on this review, U.S. EPA has determined that Illinois's TMDLs for these pollutants for these waterbodies meet the requirements of Section 303(d) of the Clean Water Act (CWA) and U.S. EPA's implementing regulations at 40 C.F.R. Part 130. Therefore, by this letter, U.S. EPA hereby approves 25 TMDLs for the Salt Creek watershed. The statutory and regulatory requirements, and U.S. EPA's review of Illinois' compliance with each requirement, are described in the enclosed decision document.

We wish to acknowledge Illinois' effort in these submitted TMDLs, and look forward to future quality TMDL submissions by the State of Illinois. If you have any questions, please contact Mr. Kevin Pierard, Chief of the Wetlands and Watersheds Branch at 312-886-4448.

Sincerely yours,

Jo Lynn Traub
Director, Water Division

Enclosure

Recycled/Recyclable . Printed with Vegetable Oil Based Inks on 100% Recycled Paper (50% Postconsumer)

Executive Summary

This report presents the development of total maximum daily loads (TMDLs) for Salt Creek in DuPage and Cook Counties, Illinois. Salt Creek is a tributary to the Des Plaines River in urban Chicago, Illinois. The 1998 303(d) List identified Salt Creek as impaired for nutrients, siltation, salinity/TDS/chlorides, suspended solids, low dissolved oxygen, habitat alterations, flow alterations, metals, pathogens, and noxious aquatic plants. The 2000 305(b) Report updated these potential causes of impairment to be nutrients, siltation, salinity/TDS/chlorides, suspended solids, habitat alterations, flow alterations, priority organics, PCBs, copper, excessive algal growth/chlorophyll-a and low dissolved oxygen. The Illinois Environmental Protection Agency ("the Agency") has adopted a policy of developing TMDLs only on potential causes of impairment that have a water quality standard, which in this case, were chlorides and low dissolved oxygen (DO). The copper and phosphorus (in Busse Woods Reservoir) impairments have been recommended for further monitoring.

This document describes and presents the methods and procedures used to develop a set of TMDLs for Salt Creek located in DuPage and Cook Counties, Illinois. The Salt Creek watershed covers about 148.5 square miles of northeastern Illinois. The watershed is located in the Des Plaines hydrologic unit code (HUC 7120004). Almost half (49.1 percent) of the land use in the watershed is residential. Approximately 23 percent of the total watershed area is impervious surfaces. There are 31 point sources in the watershed, the majority of which are either stormwater permits or minor discharges. There are 11 municipal permits in the basin, 10 of which are major facilities that have design flows of 1.0 million gallons per day (MGD) or greater.

The U.S. Environmental Protection Agency's (USEPA's) Hydrologic Simulation Program Fortran (HSPF) watershed model, Better Assessment Science Integrating Point and Nonpoint Sources (BASINS), and in-stream water quality model QUAL2E were used to characterize the watershed and evaluate TMDL allocations. Spatial data (land use and cover, hydrographic and topographic data, and best management practice (BMP) information), monitoring data (water quality, flow, and weather information), and pollutant source data were used to develop input parameters for the watershed models.

The watershed models were calibrated using information from three U.S. Geological Survey (USGS) gauges at Rolling Meadows, Elmhurst, and Western Springs, which were located inside the watershed.

TMDLs are sums of the individual waste load allocations (WLAs) for point sources, load allocations (LAs) for both nonpoint sources and natural background, and a margin of safety (MOS). This definition is denoted by the following equation:

$$TMDL = \Sigma WLAs + \Sigma LAs + MOS$$

Each TMDL for the Salt Creek watershed was developed to achieve full compliance with Illinois general-use (GU) water quality standards or criteria that are correlated to the pollutant of concern. For example, a chloride TMDL for conductivity or total dissolved solids was developed for those waters listed.

The chloride–total dissolved solids–conductivity TMDL will require an 8 percent reduction in overall chloride application to Salt Creek and a 41 percent reduction in Addison Creek. Addison Creek is a fully urbanized tributary to Salt Creek; Table E-1, below, summarizes the chloride TMDL.

The dissolved oxygen TMDL will require a 56percent reduction in 5-day CBOD and a 38percent reduction of ammonia nitrogen without dam removal (scenario 5). With one dam removed at river mile 11.6 (scenario 6), a reduction of 34% BOD and 38% NH3 is needed to achieve the DO standard. Table E-2, below shows a summary of the DO TMDL.

TABLE E-1
Chloride TMDLs developed for Salt Creek Watershed

	WLA[a]	MS4 WLA[b]	MOS	TMDL
Chloride (lb/yr) - Salt Creek	5.11E+07	2.31E+07	Implicit	7.42E+07
Chloride (lb/yr) - Addison Creek	6.35E+06	3.45E+06	Implicit	9.80E+06

[a]*WLA based on permitted design flow and concentration of 300 mg/L*
[b]*Represents an 8% Reduction in NPS Load in Salt Creek and 41% Reduction in NPS Load in Addison Creek*

TABLE E-2
TMDL Allocations for CBOD and Ammonia and VSS for Salt Creek

Pollutant	Load Allocation (lbs/day)	Wasteload Allocation (lbs/day)	TMDL (lbs/day)	Permitted Load (lbs/day)[a]	Percent Reduction Needed from Permitted Load	Observed Load (lbs/day)[b]	Percent Reduction Needed from Observed Load
Allocation Scenario 5							
5-day Carbon. Biochemical Oxygen Demand [b]	NA	2,729	2,729	6,251	56	1,561	0
Ammonia Nitrogen [b]	NA	507	507	813	38	162	0
Allocation Scenario 6							
5-day Carbon. Biochemical Oxygen Demand [b]	NA	4,121	4,121	6,251	34	1,561	0
Ammonia Nitrogen [b]	NA	507	507	813	38	162	0
Applies to both Scenario 5 and Scenario 6							
Volatile Suspended Solids [c]	2,152,943	-	2,152,943	-	-	NA	NA

[a] Loads calculated using design flows of individual point sources.
[b] Current permitted loads based on average monthly permit limits and design flow; current observed loads based on effluent data from 1995 USGS calibration dataset of 10 point sources listed in Table 5-4 and design flow; St. Charles CSO load assumed equal to 0.
[c] Unit for VSS is pounds per year

Segment GLA04 in Addison creek was listed for copper violations. There are only three data points at station GLA-05, and two of these data points show violations of the acute copper standard. Bensenville South MWWTP was likely the source of the copper. IEPA should collect additional information to verify whether copper is a problem in the creek since there are limited data that are now 8 years old. IEPA should then work with Bensenville to reduce its copper loads if warranted.

Segment RGZX, Busse Lake was listed for phosphorus contamination. Data collected since 1994 have shown a steady decline in the phosphorus concentration. The impairments are no longer present, and delisting is recommended.

There were no Confined Animal Feeding Operations (CAFOs) identified in this watershed. CAFOs were not identified as contributors of the pollutants for which this TMDL was developed, and were not addressed in this TMDL.

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Acronyms and Abbreviations

AGWRC	Basic groundwater recession
AS	acute standard
BASINS	Better Assessment Science Integrating Point and Nonpoint Sources database
BMP	best management practices
BOD	biochemical oxygen demand
CBOD	carbonaceous biochemical oxygen demand
cfs	cubic feet per second
CS	chronic standard
CSO	combined sewer overflow
CWA	Clean Water Act
DCDS	DEC Stormwater Management Division
DEC	DuPage County Department of Environmental Concerns
DEEPFR	Fraction of groundwater inflow to deep recharge
DEM	digital elevation models
DMR	discharge monitoring report
DO	dissolved oxygen
DP	dissolved phosphorus
DRG	digital raster graphic
EIA	effective impervious area
FRSS	facility-related stream surveys
GIS	geographic information system
GU	general use
HSPEXP	an expert system for hydrologic calibration
HSPF	Hydrologic Simulation Program Fortran
HUC	Hydrologic Unit Code
IDNR	Illinois Department of Natural Resources
IEPA	Illinois Environmental Protection Agency
IRC	Interflow recession parameter
LA	load allocation
LZETP	Lower zone evapotranspiration parameter
LZSN	Lower zone nominal soils moisture
µmhos	micro mhos unit of measuring conductivity in water (µmhos/cm)
mg/L	milligrams per liter
MOS	margin of safety
MWRDGC	Metropolitan Water Reclamation District of Greater Chicago
NCDC	National Climatic Data Center
NIPC	Northeastern Illinois Planning Commission
NOAA	National Oceanographic and Atmospheric Administration
NVSS	nonvolatile suspended solids
PCS	permit compliance system
PET	potential evapotranspiration
PETMAX	Air temp below which ET is reduced

PETMIN	Air temp below which ET is set to zero
PRISM	parameter-elevation regressions on independent slopes model
QUAL2E	a stream water quality model
R-squared	coefficient of determination
RF3	reach file version 3
SOD	sediment oxygen demand
SSO	sanitary sewer overflow
STP	Sewage treatment plant
TCU	Transportation land use
TDS	total dissolved solids
TMDL	total maximum daily loads
TP	total phosphorus
TSNOW	a model parameter
TSS	total suspended solid
UCI	user control input
USEPA	U.S. Environmental Protection Agency
USGS	U.S. Geological Survey
UZSN	Upper zone nominal soils moisture
VSS	volatile suspended solid
WDM	watershed data management
WLA	waste load allocation
WQS	water quality standard
WRP	water reclamation plant
WWTP	wastewater treatment plant

SECTION 1

Introduction

1.1 Background

Section 303(d) of the Federal Clean Water Act (CWA) and the U.S. Environmental Protection Agency's (USEPA's) Water Quality Planning and Management Regulations (40 CFR Part 130) require states to identify water bodies that do not meet water quality standards (WQSs) applicable to their designated-use classifications and to develop total maximum daily loads (TMDLs) for these water bodies. The TMDL process establishes the allowable pollutant loads or other quantifiable parameters for a water body based on the relationship between pollutant sources and instream conditions. By following the TMDL process, states can establish water quality–based controls to reduce pollution from point and nonpoint sources and restore and maintain the water quality (USEPA, 1991).

Located in DuPage and Cook Counties, Illinois, Salt Creek and its tributaries were placed on the Illinois 303(d) list of impaired waters for several pollutants, including copper, conductivity, chloride, total phosphorus (TP), and dissolved oxygen (DO). TMDLs for all pollutants causing applicable WQS violations were established for each identified water body.

This document presents the TMDLs and describes the methods and procedures used to develop the TMDLs for impaired segments in the Salt Creek watershed.

1.2 Organization of the Report

This report is organized to provide a structured description of TMDL endpoints, watershed characterization and source assessment, the assessment of water quality and TMDL approach, a summary of modeling approach and assumptions, and a summary of all recommended allocation scenarios. It builds upon a series of technical memoranda that have been submitted throughout the Salt Creek TMDL development process. Comments on the technical memoranda have been incorporated into this report.

SECTION 2

Target Identification/Determination of TMDL Endpoints

The 1998 303(d) List identified Salt Creek as impaired for nutrients, siltation, salinity/TDS/chlorides, suspended solids, low dissolved oxygen, habitat alterations, flow alterations, metals, pathogens, and noxious aquatic plants. The 2000 305(b) Report updated these potential causes of impairment to be nutrients, siltation, salinity/TDS/chlorides, suspended solids, habitat alterations, flow alterations, priority organics, PCBs, copper, excessive algal growth/chlorophyll-a and low dissolved oxygen.

In developing the 2002 Illinois Section 303(d) List, the Illinois EPA revised its prioritization method that accounted for severity of pollution and the uses to be made of such waters. Prioritization was done on a watershed basis. For a detailed explanation see Appendix H or refer to the Illinois 2002 Section 303(d) list, available at http://www.epa.state.il.us/water/watershed/reports/303d-report/index.html. Under this new prioritization process, Illinois EPA established a policy to develop TMDLS for those parameters which had numeric WQS. These are identified in Table 2-1 and Figure 2-1. Therefore, this study focused on copper, chloride, phosphorus (in Busse Woods Reservoir) and dissolved oxygen.

The IEPA is aware of the other parameters previously listed and those parameters will be given attention through methods other than a TMDL and hence no further discussion of those will be provided in this document. Pending development of appropriate water quality standards as may be proposed by the Agency and adopted by the Pollution Control Board, Illinois EPA will continue to work toward improving water quality throughout the state by promoting and administering existing programs and working to innovate and create new methods of treating potential causes of impairment.

According to Illinois waterbody use classifications, the East Branch is designated for general use (GU). Based on this classification, we proceeded to developed TMDLs for chloride and DO.

The first part of this section outlines the different segments and the pollutants of concern for Salt Creek. The second part outlines the TMDL endpoints selected for each pollutant listed for Salt Creek under the Illinois 303(d) list.

2.1 Impaired Salt Creek Segments

Several segments of Salt Creek and its tributaries do not meet Illinois WQSs. Table 2-1 presents a complete list of all segments and causes of impairments associated with numeric WQS. Figure 2-1 shows the location of the impaired segments in Salt Creek.

TABLE 2-1
Segments of Salt Creek That This TMDL Report Addresses and Identified Potential Causes of Impairment

Segment Name	Segment Number	Copper	TDS/ Conductivity	Chloride	Phosphorus	DO
Salt Creek	GL 03		X			X
Salt Creek	GL 09		X			
Salt Creek	GL 10		X			
Salt Creek	GL 19					X
Addison Creek	GLA02		X	X		X
Addison Creek	GLA04	X				X
Spring Brook	GLB 01					X
Meacham Creek	GLBA					X
Busse Wood Reservoir	RGZX				X	

TDS, total dissolved solids.

2.2 Applicable Water Quality Standards and Total Maximum Daily Load Endpoints

The applicable WQS was the chosen endpoint for the TMDL. Table 2-2 shows a list of pollutants, WQS, and potential endpoints addressed in this report.

TABLE 2-2
Pollutants, Water Quality Standards, and TMDL Endpoints

Parameter	Water Quality Standard*	Total Maximum Daily Load Endpoints
Copper	Hardness-dependent acute and chronic standards	Use chronic standard, since more stringent than acute standard and will ensure compliance with both acute and chronic standards; dependent on water hardness
Phosphorus	Lakes—0.05 mg/L	Water quality standard
	Streams that are tributaries to lake—0.05 mg/L**	
Chloride	500 mg/L	Water quality standard
Conductivity	TDS—1,000 mg/L, equivalent to 1,667 µmho/cm of conductivity	General-use standard for chloride of 500 mg/L
Dissolved oxygen	Not less than 5 mg/L at any time or not less than 6 mg/L for 16 hours out of 24 consecutive hours	Not less than 5 mg/L at any time or not less than 6 mg/L for 16 hours out of 24 consecutive hours

* Refer to 35 IL. Adm. Code Part 302.

** This standard applies to Spring Brook immediately upstream of Lake Kadijah

mg/L, milligrams per liter.
TDS, total dissolved solids.

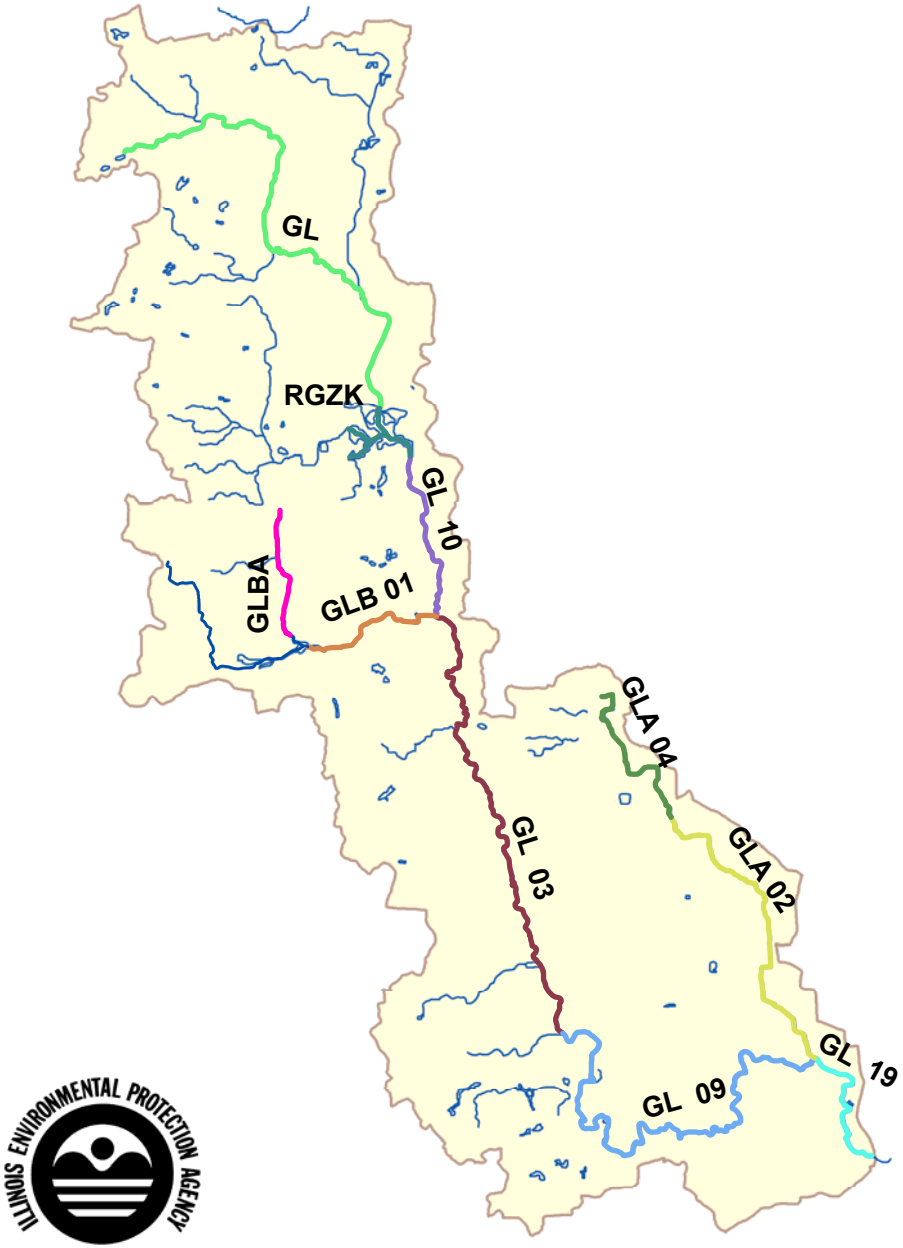


Figure 2-1
Impaired Segments in Salt Creek Watershed

Legend

- Streams
- GL
- GL 03
- GL 09
- GL 10
- GL 19
- GLA 02
- GLA 04
- GLB 01
- RGZK
- GLBA
- Salt Creek Watershed

0 0.5 1 2 3 4 5 Miles

N
W E
S

SECTION 3

Watershed Characterization and Source Assessment

This section describes the data acquired and the watershed characterization conducted to develop the Salt Creek TMDLs. The available historical data for each 303(d)-listed pollutant are presented and discussed and followed by an assessment of available data for watershed modeling.

3.1 Watershed Description and Background Information

The Salt Creek watershed encompasses about 148.5 square miles of northeastern Illinois. The DuPage County Department of Environmental Concerns (DEC) Stormwater Management Division (DCDS) developed subwatershed boundaries for its stormwater management program. The boundaries take into account areas in DuPage County that are drained by storm sewer systems, with sometimes nontopographically based drainage characteristics. The subwatershed areas range from 0.2 to 2,109 acres and average 119 acres. Because of the watershed's complex nature, existing subwatershed delineations that include storm sewer areas were used wherever possible in the TMDL modeling process. Figure 3-1 shows the subwatersheds in the Salt Creek watershed.

The Illinois Environmental Protection Agency (IEPA) also provided 14-digit Hydrologic Unit Code (HUC) watershed boundaries for the entire Salt Creek watershed. For areas in DuPage County, these boundaries were checked against the DCDS data. For areas outside DuPage County, the 14-digit HUC boundaries were verified using U. S. Geological Survey (USGS) 1:24,0000-scale digital elevation models (DEMs) to match the Reach File version 3 (RF3) stream segments. RF3 is the most detailed stream network data layer available from the Better Assessment Science Integrating Point and Nonpoint Sources (BASINS) data set. The HUC watershed boundaries were not detailed enough to use for Salt Creek subwatershed data in this report, but they were investigated and compared with the other data sources.

Busse Wood Reservoir (segment number RGZX) is listed for total phosphorus impairment. The drainage area for Busse Wood Reservoir was determined using the DEM data.

Topographic data were obtained in a digital format from the USGS and the DCDS. USGS topographical mapping was downloaded from the Illinois Geographic Information Council Website (http://wwww.state.il.us/ilgic/default.cfm) as a digital raster graphic (DRG) file. The topographic data were used to confirm drainage patterns established by the state 14-digit HUC and DCDS subwatershed delineation. No significant differences were found between the DRGs and DEMs. Therefore, only the DEMs from the USGS were used in the final data selection.

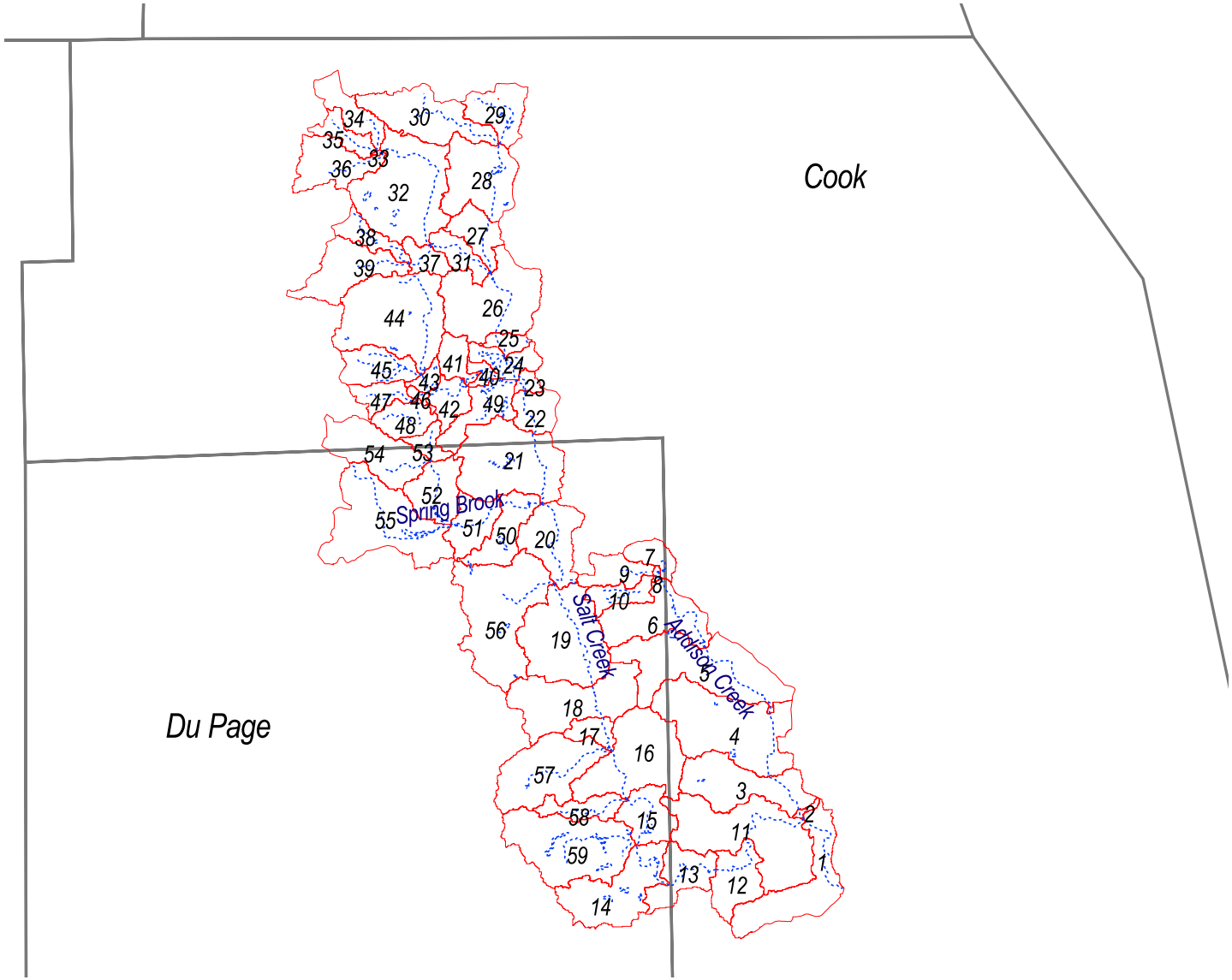


Figure 3-1

Subwatersheds in Salt Creek

Streams

Subwatersheds

County Boundaries

N

W E

S

2 0 2 4 Miles

Illinois Environmental Protection Agency

CH2MHILL

3.2 Land Use

Land-use data were obtained from the DCDS, the Northeastern Illinois Planning Commission (NIPC), and BASINS. No data were received from Cook County.

The DCDS land-use data were defined for a higher resolution than NIPC data, but were not available for areas outside DuPage County. The NIPC data covered the entire study area with adequate detail for characterizing nonpoint sources of pollution and for modeling. BASINS land-use data were out of date and did not provide the necessary detail for modeling. A data set showing forested areas was obtained from the Illinois Department of Natural Resources (IDNR). In the NIPC data, forested areas were classified under open space. To identify what portions of the open space were forested areas, the IDNR forest coverage was overlaid with the NIPC data to produce the final land-use coverage for use in modeling. In addition, the category called "vacant excluding wetlands" in the geographic information system (GIS) layer was combined with the open space category for modeling purposes.

Figure 3-2 shows the Salt Creek watershed land use. The watershed consists primarily of developed areas. According to the land-use data obtained from NIPC, only 1.16 percent of the Salt Creek watershed is agricultural. Approximately 49.09 percent of the Salt Creek watershed is residential. Table 3-1 shows a complete list of land-use categories. Therefore, nonpoint source pollution from agricultural activities would be low for most listed pollutants when compared with the amount of pollution from other land uses. Nonpoint source loads from residential areas may contribute significantly to some pollutant loads.

Land-use data were used to characterize nonpoint pollution sources in the watershed and to complete the load allocation (LA) portion of the TMDL. The Salt Creek watershed was listed for several pollutants that are generated or transported by stormwater runoff. These include copper, total dissolved solids (TDS)/conductivity, chloride, TP, and DO. During modeling, these pollutants were linked to contributing types of land use (see Section 6).

TABLE 3-1
NIPC and IDNR Land-Use Distribution in Salt Creek*

Land Use	ID	Area			
		Impervious	Pervious	Total (acres)	Total (miles)
Cemeteries and vacant land	1		7445.47	7445.47	11.63
Commercial	2	7926.16	1398.73	9324.89	14.67
Forest	3		3784.51	3784.51	5.91
Industrial	4	5525.74	975.13	6500.87	10.16
Institutional	5	1021.12	2382.68	3403.8	5.32
Open Space	6		9978.53	9978.53	15.59
Residential	7	4669.78	42027.95	46697.73	72.97
TCU excluding Interstates**	8	999.76	666.52	1666.28	2.60
Expressways	9	1304.42	869.63	2174.05	3.40

TABLE 3-1
NIPC and IDNR Land-Use Distribution in Salt Creek*

Land Use	ID	Area			
		Impervious	Pervious	Total (acres)	Total (miles)
Wetlands	10		1327.87	1327.87	2.07
Agricultural	11		1159.31	1159.31	1.81

* All data from NIPC except areas classified as “Forest” and “Open space” which were determined from IDNR land-use data.

** All transportation land uses excluding interstates and expressways

3.3 Hydrographic Data

To model a stream network in a watershed, the selected models (Hydrologic Simulation Program Fortran [HSPF] and QUAL2E) required the stream network to be broken into reaches representing the stream characteristics. Flows and pollutants were routed through these reaches using trapezoidal channel geometry. Stream reach data were available from DCDS and BASINS data sets.

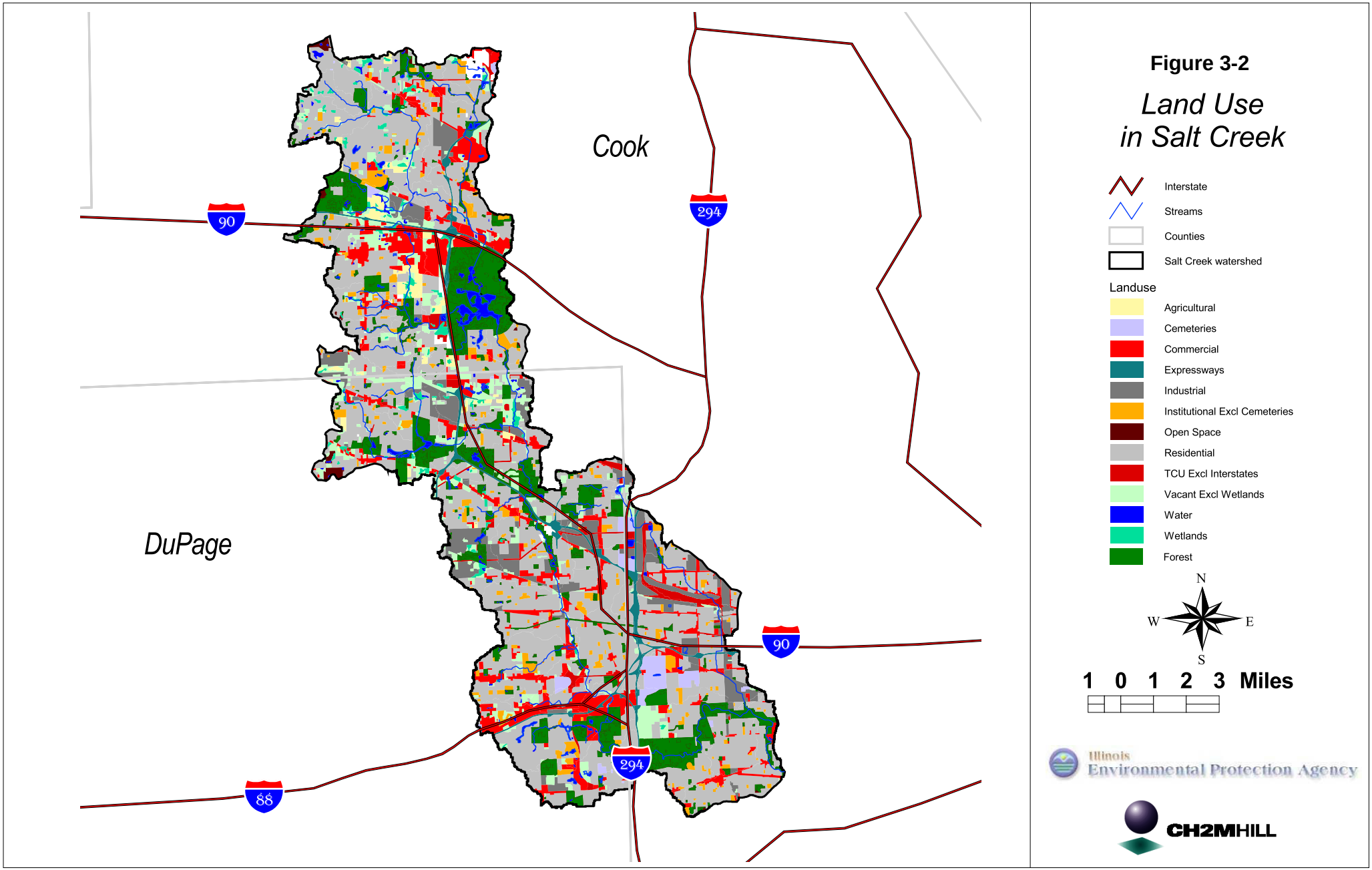
The DCDS provided hydrographic data that were compared with RF3 data in USEPA’s BASINS 2.1. Both data sets had identical basic reach information. The DCDS data included smaller and isolated water bodies, but the stream network connectivity was poor. The RF3 data included all the connected streams in the watersheds and additional attribute information that were required to set up the model. Therefore, the RF3 data were used to develop the TMDLs. Appendix A includes a detailed summary of the reaches used for modeling.

3.4 Meteorological Data

Weather data were needed to calibrate hydrologic and water quality models and were used by the models to generate runoff volumes. The modeled runoff volumes were routed to determine streamflow values that were compared with data from several streamflow gauges in the Salt Creek watershed (see Section 3.6). Model input parameters were adjusted using this comparison of observed and modeled values,.

NIPC provided National Climatic Data Center (NCDC) and other weather data in Watershed Data Management (WDM) file format. Table 3-2 shows the data included in the WDM files. NIPC obtained precipitation data primarily from the NCDC and from a gauge at Argonne National Laboratory. Daily precipitation data were disaggregated using nearby hourly recording gauges. Figure 3-3 shows the location of each station from which precipitation data were collected for Salt Creek.

In addition to providing precipitation data, NIPC provided potential evapotranspiration (PET), cloud cover, solar radiation, air temperature, dew point, temperature, and wind movement data in WDM format. Most of these data came from the NCDC.


Cook
DuPage
90
294
90
294
88
Figure 3-2
Land Use
in Salt Creek
Interstate
Streams
Counties
Salt Creek watershed
Landuse
Agricultural
Cemeteries
Commercial
Expressways
Industrial
Institutional Excl Cemeteries
Open Space
Residential
TCU Excl Interstates
Vacant Excl Wetlands
Water
Wetlands
Forest
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W
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Illinois
Environmental Protection Agency
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Elmhurst was the only weather station with precipitation data located in the Salt Creek watershed (Figure 3-3). This USGS flow gauge station also records 5-min precipitation data. Continuous simulation of hydrology requires a long-term precipitation time series at small intervals (e.g., hourly) as input. Additionally, no data gaps are allowed in the time series. Data from the Elmhurst station is preferred because of its location. However, it contained values only from 1996 to 2000, and occasionally data are missing. Therefore, in order to obtain the best precipitation data for modeling a 15-year time series of precipitation data, Elmhurst precipitation data (December 4, 1996, through December 31, 1999) and O'Hare precipitation data (January 1, 1985, through December 3, 1996) was used. For any missing data from the Elmhurst precipitation gauge between December 4, 1996, and December 31, 1999, was filled with O'Hare data. Dates of missing data are listed in Table 3-2. There are no missing data at O'Hare. This time series was called the O'Hare precipitation data and was applied to subwatersheds 4 through 10 and 19 through 56. A time series was also created from precipitation data from Wheaton for the period 1991 through 1999. The Wheaton precipitation data were applied to watersheds 1 through 3, 11 through 18, and 57 through 59. Figure 3-4 shows a map of the precipitation gauges used for each subbasin.

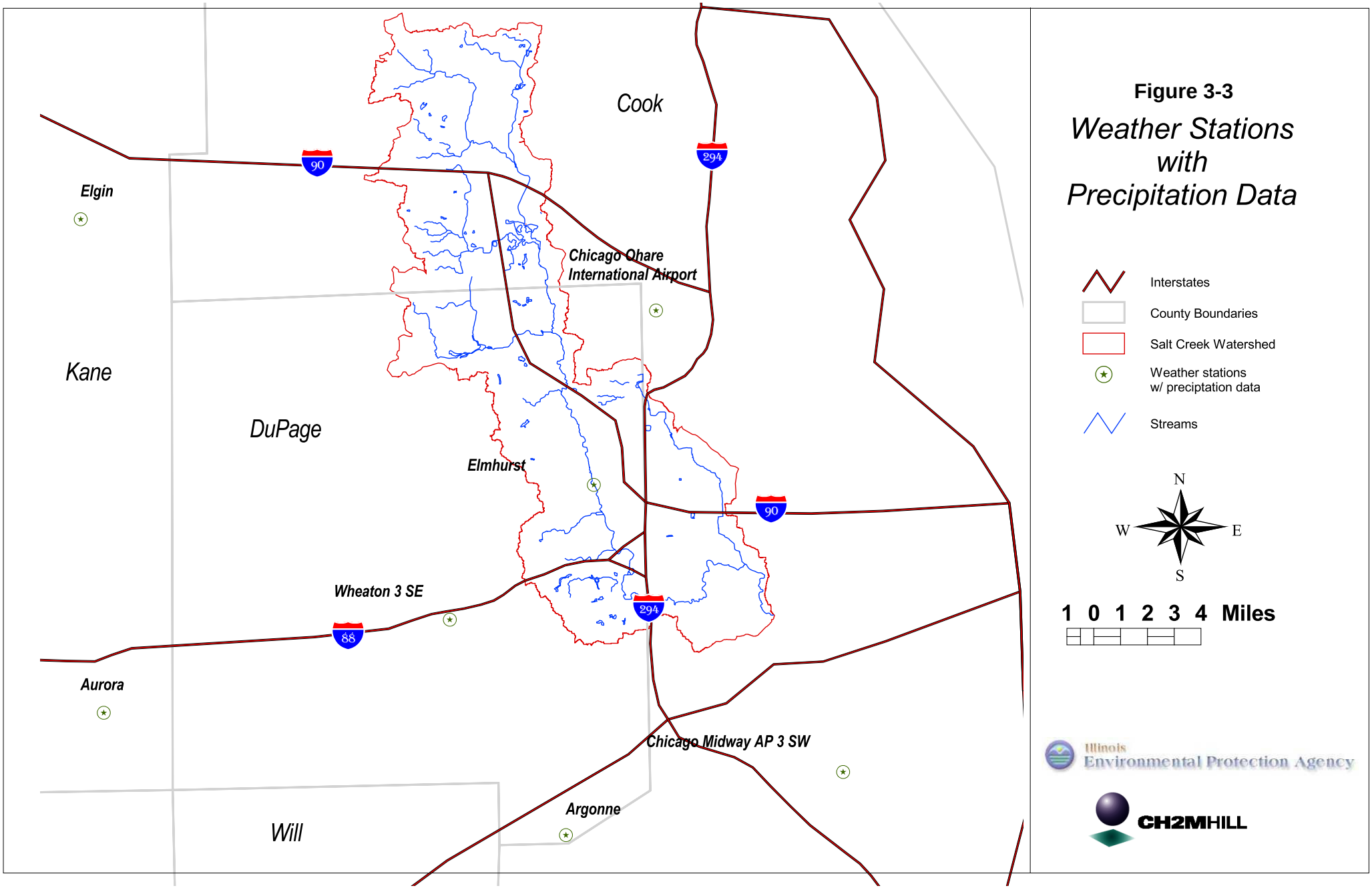
TABLE 3-2
Weather Data Provided in NIPC WDM Files

Start Date	End Date	Station ID	Data Type	Data Source	Daily or Recording
01/01/1948	07/31/1996	Chicago O'Hare WSE ARP R	Hourly precipitation (0.01 in.)	NCDC	Recording (hourly)
01/01/1948	09/30/1999	Chicago Midway AP 3 SW	Hourly precipitation (0.01 in.)	NCDC	Recording (hourly)
06/30/1948	09/30/1988	McHenry WG Stratton L&D	Hourly precipitation (0.01 in.)	NCDC	Recording (hourly)
09/30/1948	07/31/1996	Aurora	Daily data distributed to hourly (0.01 in.)	NCDC	Daily (converted to hourly using Argonne data)
01/01/1948	12/31/1999	Wheaton 3 SE	Daily data distributed to hourly (0.01 in.)	NCDC	Daily (converted to hourly using Argonne data)
09/30/1948	07/31/1996	Elgin	Daily data distributed to hourly (0.01 in.)	NCDC	Daily (converted to hourly using O'Hare data)
12/04/1996	12/31/2000	Elmhurst	5-min precipitation data	USGS	Hourly (aggregated to hourly from 5 min)
01/01/1948	07/31/1996	Argonne	Adjusted Argonne precipitation (0.01 in.)	NCDC	Recording (hourly)

For detailed description of data, refer to *Application Guide for the Hydrologic Modeling in DuPage County Using Hydrologic Simulation Program—Fortran (HSPF): Model Organization and Use, Data Collection and Processing, Calibration* (May 1996). Tom Price, Northeastern Illinois Planning Commission.

Dates for which Elmhurst precipitation data were missing and O'Hare precipitation data used instead:

1996	1997	1998	1999
12/03, 12/11	03/20–03/23; 04/02, 04/03; 06/22–06/30; 07/01–07/31; 08/01–08/10; 10/09–10/13, 10/24	None	09/28, 09/29


Cook
Kane
DuPage
Will
Elgin
Chicago Ohare
International Airport
Elmhurst
Wheaton 3 SE
Aurora
Chicago Midway AP 3 SW
Argonne
90
294
88
Figure 3-3
Weather Stations
with
Precipitation Data
Interstates
County Boundaries
Salt Creek Watershed
Weather stations
w/ preciptation data
Streams
N
W
E
S
1 0 1 2 3 4 Miles
Illinois
Environmental Protection Agency
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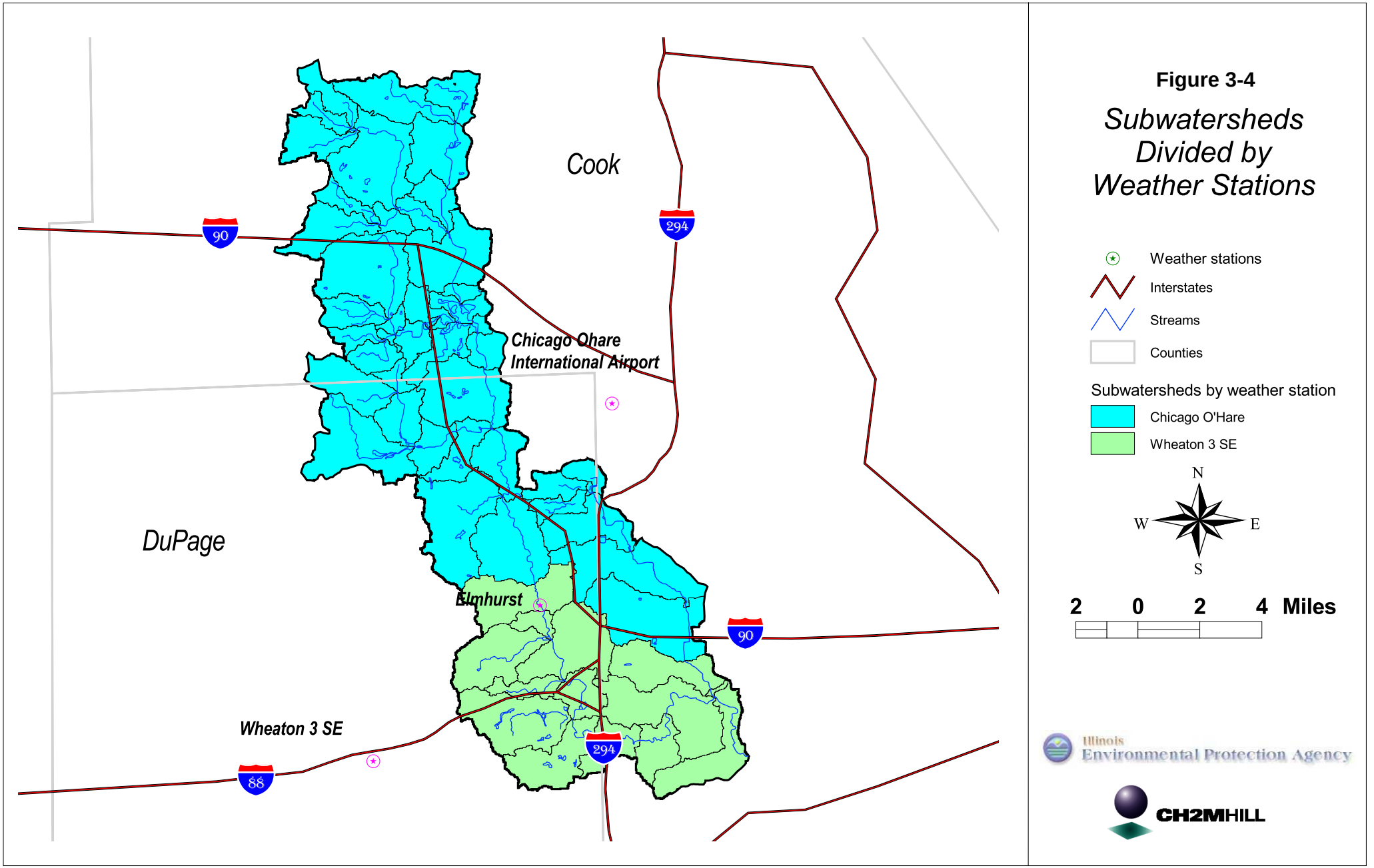
Cook
DuPage
Chicago Ohare
International Airport
Elmhurst
Wheaton 3 SE
90
294
88
Figure 3-4
Subwatersheds
Divided by
Weather Stations
Weather stations
Interstates
Streams
Counties
Subwatersheds by weather station
Chicago O'Hare
Wheaton 3 SE
N
W
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S
2 0 2 4 Miles
Illinois
Environmental Protection Agency
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The spatial variability of rainfall throughout the study area was verified using annual rainfall data found at Oregon State University's software system web site (http://www.ocs.orst.edu/prism/). The parameter-elevation regressions on independent slopes model (PRISM) on the web site uses point data and a DEM to generate gridded estimates of climate parameters, including precipitation. The annual precipitation for Illinois was downloaded from this site. Review of the data shown in Figure 3-5 indicated that there were no significant spatial variations in rainfall patterns across the study area that would require special consideration. Over the 30-year period used in developing the PRISM data (1961-1990), the average annual precipitation values at O'Hare (35.8 in.) and Wheaton (36.5 in.) correspond to the average annual values from PRISM.

Hourly data from O'Hare were used for meteorological data such as solar radiation, wind speed, cloud cover, temperature, and dew point temperatures for the entire Salt Creek watershed. O'Hare was chosen because it had the most long-term hourly data.

Pan-evaporation data were obtained from the Midwestern Regional Climate Data Center (National Oceanographic and Atmospheric Administration [NOAA]) for the Urbana weather station in Champaign County. To adjust this to Salt Creek watershed conditions, the NOAA pan-evaporation charts were used to calculate a ratio of annual pan-evaporation from Urbana to Salt Creek. The data from Urbana were multiplied by this ratio to obtain a pan-evaporation time series for the Salt Creek watershed. The pan-evaporation was assumed to be equivalent to PET. To obtain the actual evapotranspiration from the PET, the NOAA pan-coefficient was applied (National Weather Service, 1982c). Evapotranspiration data packaged with the USEPA's BASINS software were significantly higher than the values reported by NOAA.

3.5 Streamflow Data

Streamflow data are needed to calibrate hydrologic and water quality models. As mentioned earlier, the weather data first are used to generate the runoff volumes from the watershed. Modeled runoff volumes are routed to determine streamflow values that are compared with data from several streamflow gauges located in the Salt Creek watershed. The USGS gauge station cover provided in BASINS 2.1 was used to determine the location of gauges. Figure 3-6 shows the location of all USGS gauge stations in Salt Creek.

From all the USGS flow gauges in Salt Creek, only three contained long-term data needed for model calibration: Rolling Meadows in the upper portion of the watershed, Elmhurst in the middle section, and Western Springs as the most-downstream gauge. Hence, these three stations were used for model calibration. Figure 3-7 shows the location of the three gauges in the Salt Creek watershed.

3.6 Point Sources

Point source discharge data are needed to complete the waste load allocation (WLA) portion of the TMDL. Most of the necessary data were available from the IEPA and BASINS. The USGS also completed a WLA for the Salt Creek watershed (USGS, 1996).

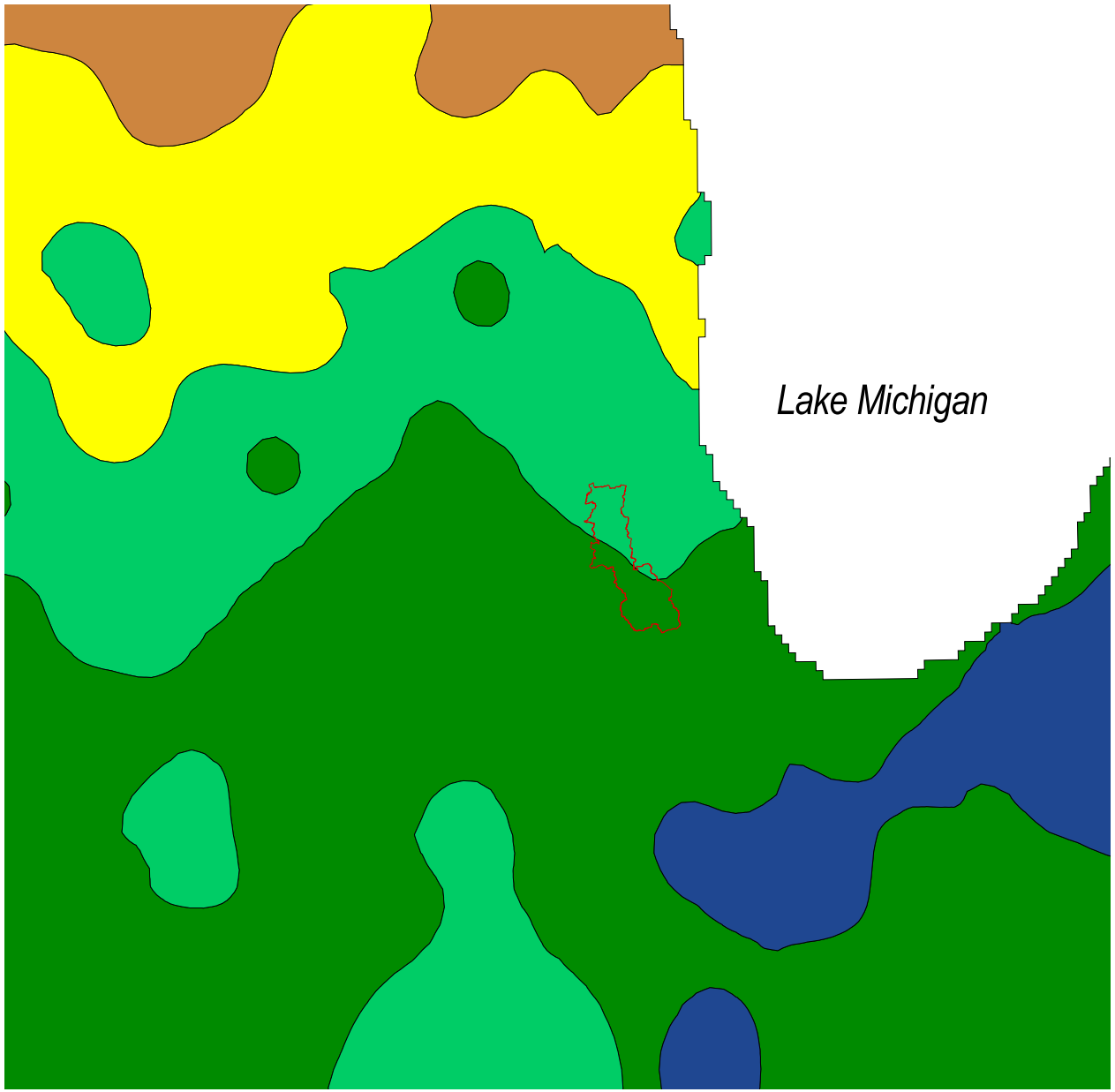

Figure 3-5

Annual Precipitation

Salt Creek Watershed

Annual Precipitation, Inches

- 31
- 31 - 33
- 33 - 35
- 35 - 37
- 37 - 39

N

W E

S

10 0 10 20 Miles

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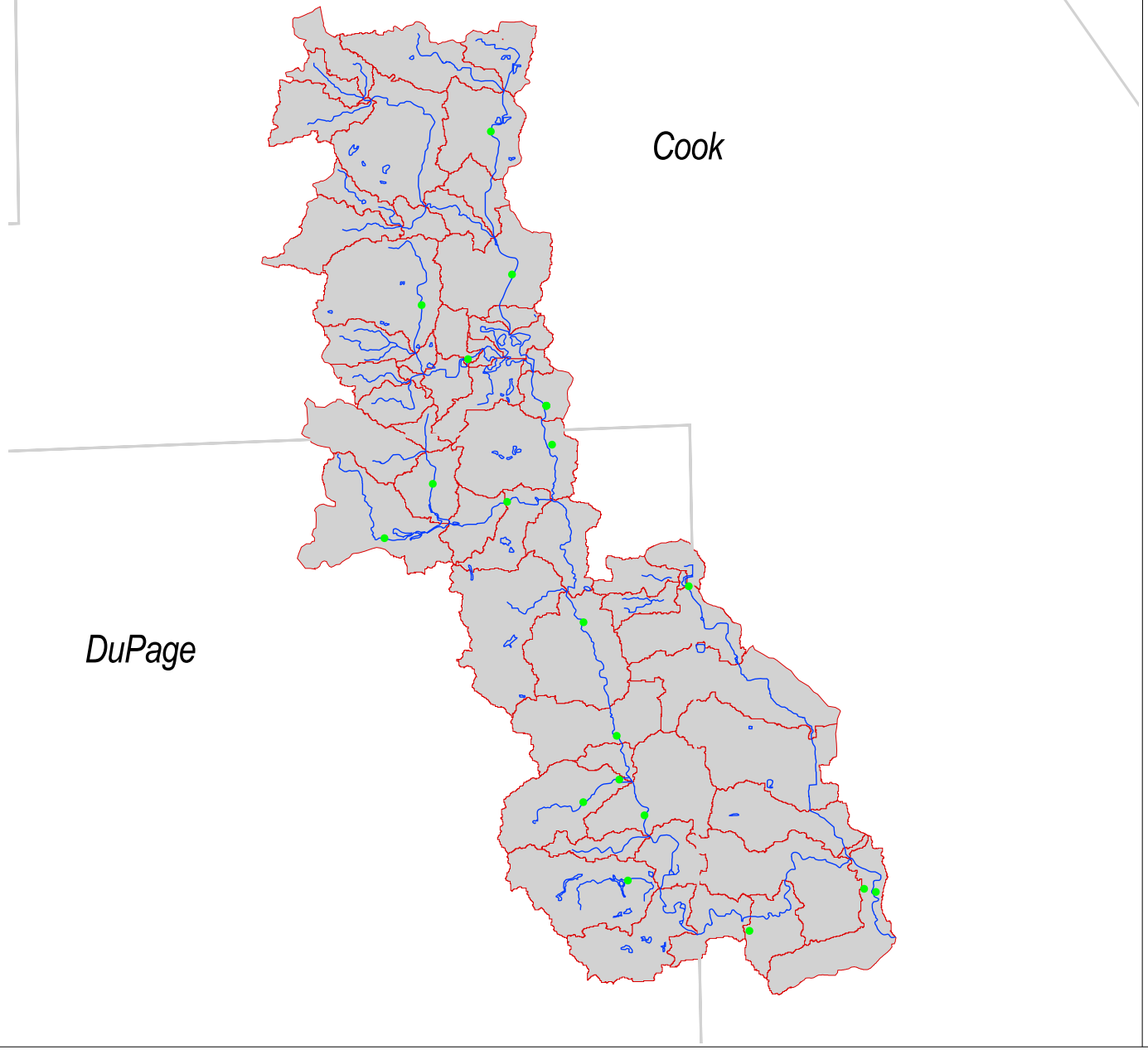

Figure 3-6

Location of USGS Gauges in Salt Creek Watershed

Streams

Salt Creek subwatersheds

USGS flow gages

County Boundaries

N

W E

S

2 0 2 4 Miles

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Figure 3-7

Location of USGS Gauges Used for Hydrologic Calibration

Streams

Salt Creek subwatersheds

USGS flow gages

County Boundaries

N

W E

S

2 0 2 4 Miles

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The IEPA provided two data sets, one from the discharge monitoring report (DMR) system and an NPDES data set for NPDES permitted point sources. In addition, the BASINS 2.1 permit compliance system (PCS) layer was used to locate point sources in the Salt Creek watershed. Based on these three data sets, two of the point sources were relocated on the GIS data set. The Vulcan Materials Company and the Blackhawk Molding Company were located outside the watershed in the DMR data layer but inside subwatershed 59 and 19, respectively, in the other two data layers. Hence, these two point sources were moved to reflect their location in the NPDES and BASINS 2.1 data sets. Figure 3-8 shows the point source locations in Salt Creek. Table 3-3 shows a list of the point sources that were considered in the modeling. Reported effluent flow data in DMR was used in selecting point sources for modeling. Generally, if the DMR data did not include average flows for a discharger, the point source was not included in modeling. Assuming that the Villa Park Wet Weather STP discharges only during wet weather events, it was not included in the models for two reasons: 1. The continuous watershed model simulates wet weather flow from rainfall-runoff processes. Therefore, including the Villa Park Wet Weather STP in the model will account for the same flow twice—once from point source and again from nonpoint source. 2. The dissolved oxygen model was setup for dry weather condition requiring no input from the Villa Park Wet Weather STP.

3.7 Sewered and Unsewered Areas

Several of the reaches listed for impairment in Salt Creek were listed for not meeting DO WQS. Leaking combined sewers, sanitary sewers, and septic tanks can contribute to biochemical oxygen demand (BOD) load to the water bodies.

According to the IEPA Regional Office in Chicago, there are eight combined sewer overflows (CSOs) in Bellwood that discharge into Addison Creek, located between the Eisenhower Expressway and Adams Street (Berwyn and River Forest Quads). There are 19 CSOs that discharge into Salt Creek: two in Addison, five in Villa Park, two in Western Springs, three in La Grange Park, and seven in Brookfield. In addition there are 12 sanitary sewer overflows (SSOs) in Elmhurst and one in Villa Park. Based on this description an approximate map of the CSO outfall locations has been prepared and shown in Figure 3-9.

3.8 Nonpoint Sources

3.8.1 Wildlife and Pets

Wildlife and pets are another potential source of pollutant loads to the watershed. Several agencies, including the IEPA, the DuPage County Forest Preserve District, the Cook County Forest Preserve District, and the IDNR were contacted to request wildlife data. The DuPage County and Cook County animal control departments were also contacted to request homeowner pet count information. The data from the various agencies could not directly be used to estimate or characterize the wildlife and pet populations in Salt Creek.

3.8.2 Best Management Practices

Existing best management practices (BMP) data were requested from the DCDS and NIPC. Although no detailed information for these facilities was available from either agency,

review of the DuPage County Countywide Stormwater and Floodplain Ordinance (September 1994) revealed that the ordinance promotes the application of BMPs to new development through riparian buffer zones, erosion control plans, detention basins, etc.

TABLE 3-3
Point-Source Dischargers in Salt Creek Watershed
Illinois TMDL Development

Name	NPDES	County	Subwsid [a]	Modeled [b]
A.G. Communications Systems	IL0070416	Cook	5	No
Accurate Cast Products	IL0064866	DuPage	19	No
Addison North STP	IL0033812	DuPage	56	Yes
Addison South-A.J. LaRocca STP	IL0027367	DuPage	19	Yes
Arlington International Racecourse	IL0063487	Cook	28	No
Badger Pipe Line Company	ILG910121	Cook	58	No
Bensenville South STP	IL0021849	DuPage	7	Yes
Blackhawk Molding Company	IL0065021	DuPage	19	No
Brookfield CSOS	IL0044890	Cook	1	No
Congress DEV Hillside Landfill	IL0035831	Cook	4	No
DuPage County-Nordic Park STP	IL0028398	DuPage	51	Yes
Elmhurst WWTP	IL0028746	DuPage	17	Yes
Garden Market Shopping Center	IL0069531	Cook	1	No
Itasca STP	IL0026280	DuPage	50	Yes
LaGrange Park CSOS	IL0033588	Cook	12	No
Material Serv Corp-Yard 19	ILG840029	Cook	1	No
Material Service Corp-Fed Qury	IL0001945	Cook	1	No
MWRDGC Egan WRP	IL0036340	Cook	42	Yes
Prairie Material Sales Inc.	IL0066427	Cook	28	No
Roselle–Devlin STP	IL0030813	DuPage	55	Yes
Salt Creek Sanitary District	IL0030953	DuPage	17	Yes
Stonewall Utility Co WWTP	ILG550015	DuPage	16	No
Union Pacific Railroad-Melrose	IL0002127	Cook	5	No
Vanee Foods Company-Berkley	IL0069124	Cook	4	No
Villa Park Wet Weather STP	IL0033618	DuPage	17	No
Vulcan Materials Company	IL0037737	DuPage	59	No
Wall's MHP-Elmhurst	IL0050695	DuPage	16	Yes
Wood Dale North STP	IL0020061	DuPage	20	Yes
Wood Dale South STP	IL0034274	DuPage	20	Yes
Woodlawn Engineering Co. Inc.	ILG250022	DuPage	19	No
Xerox Corp-Elk Grove Village	IL0070807	DuPage	21	No

[a] Indicates which subwatershed in Salt Creek the point source is located.

[b] "Yes" indicates that the point source is being considered in the watershed modeling for TMDL development.

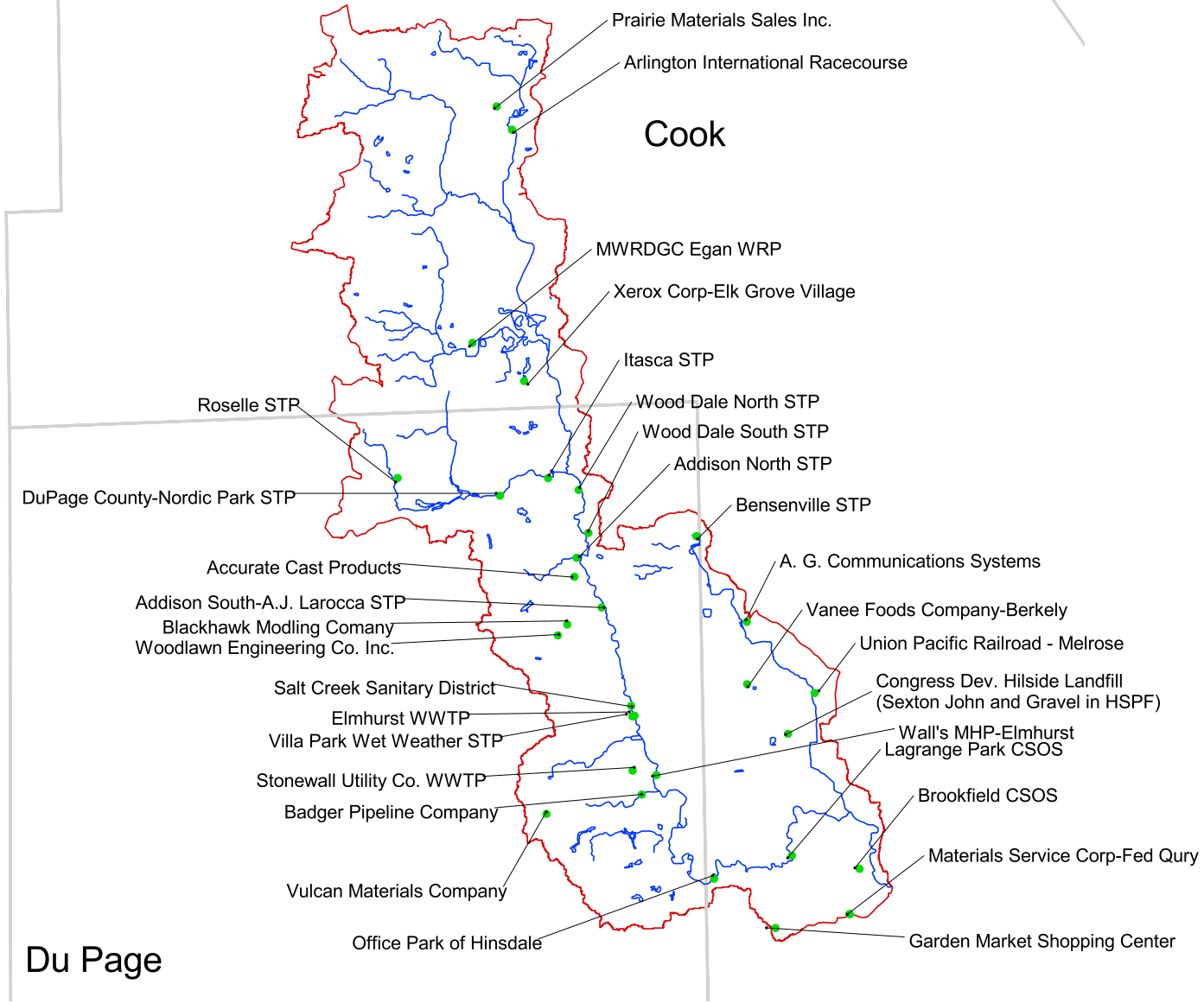

Figure 3-8

Point Source Dischargers in Salt Creek

Streams

Salt Creek subwatersheds

Point Souces

N

W E

S

2 0 2 Miles

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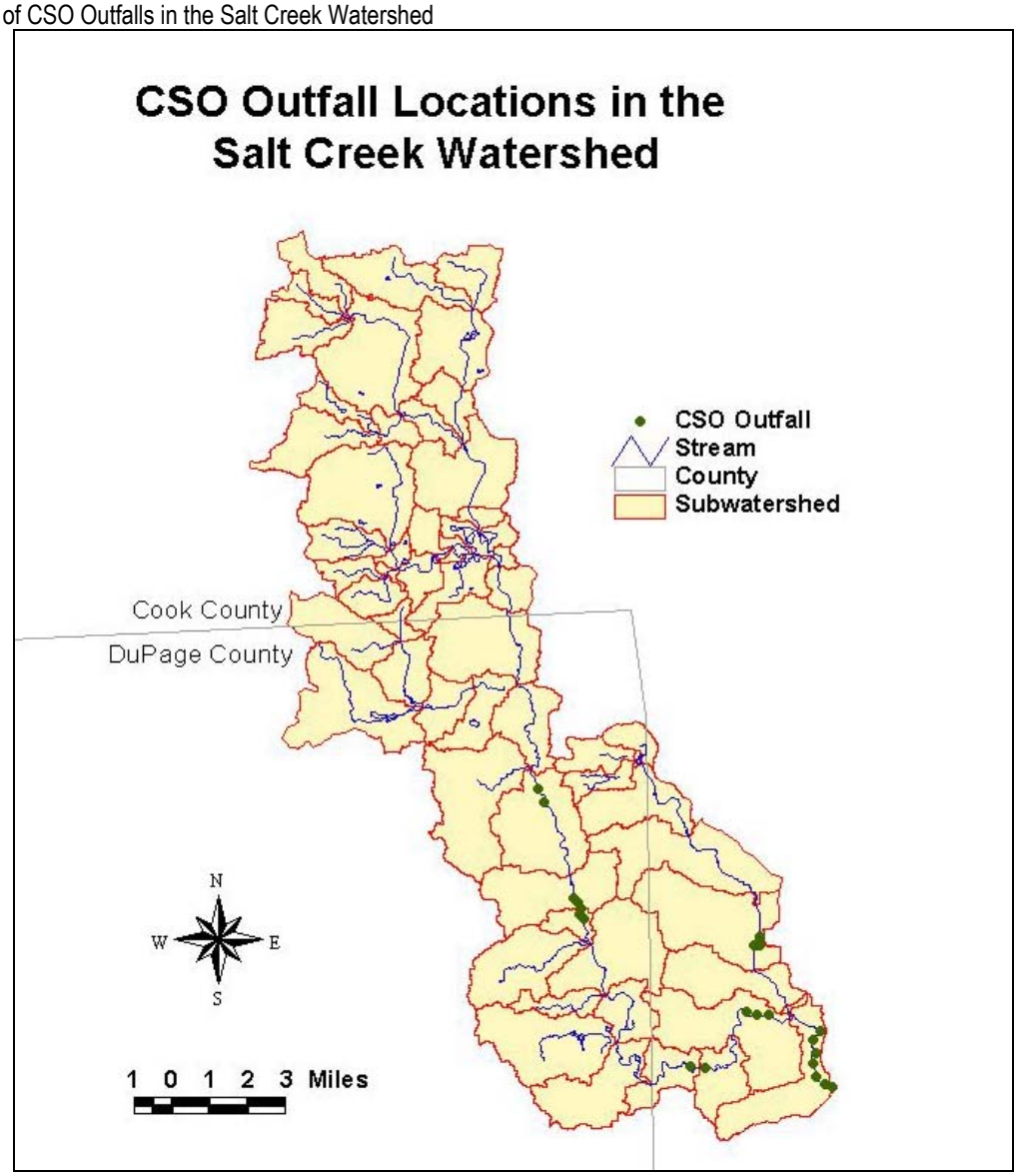
FIGURE 3-9
Location of CSO Outfalls in the Salt Creek Watershed



3.9 Water Quality Data

Water quality data were obtained from two sources. Water quality data was available from STORET (http://www.epa.gov/storet), a national database maintained and operated by USEPA, through December 1998. The IEPA provided instream water quality data for 1995 intensive sampling events and monitoring data from 1999. The USGS real time water quality station at Western Springs collects temperature, specific conductance, dissolved oxygen, pH, turbidity (NTUs), and chlorophyll data in 30-min intervals. The data from all sources were carefully reviewed to verify the justification for listing on the 1998 303(d) list, to select appropriate modeling approaches, and identify water quality stations to be used for model calibration. Figure 3-10 shows the location of all water quality stations in the Salt Creek watershed.

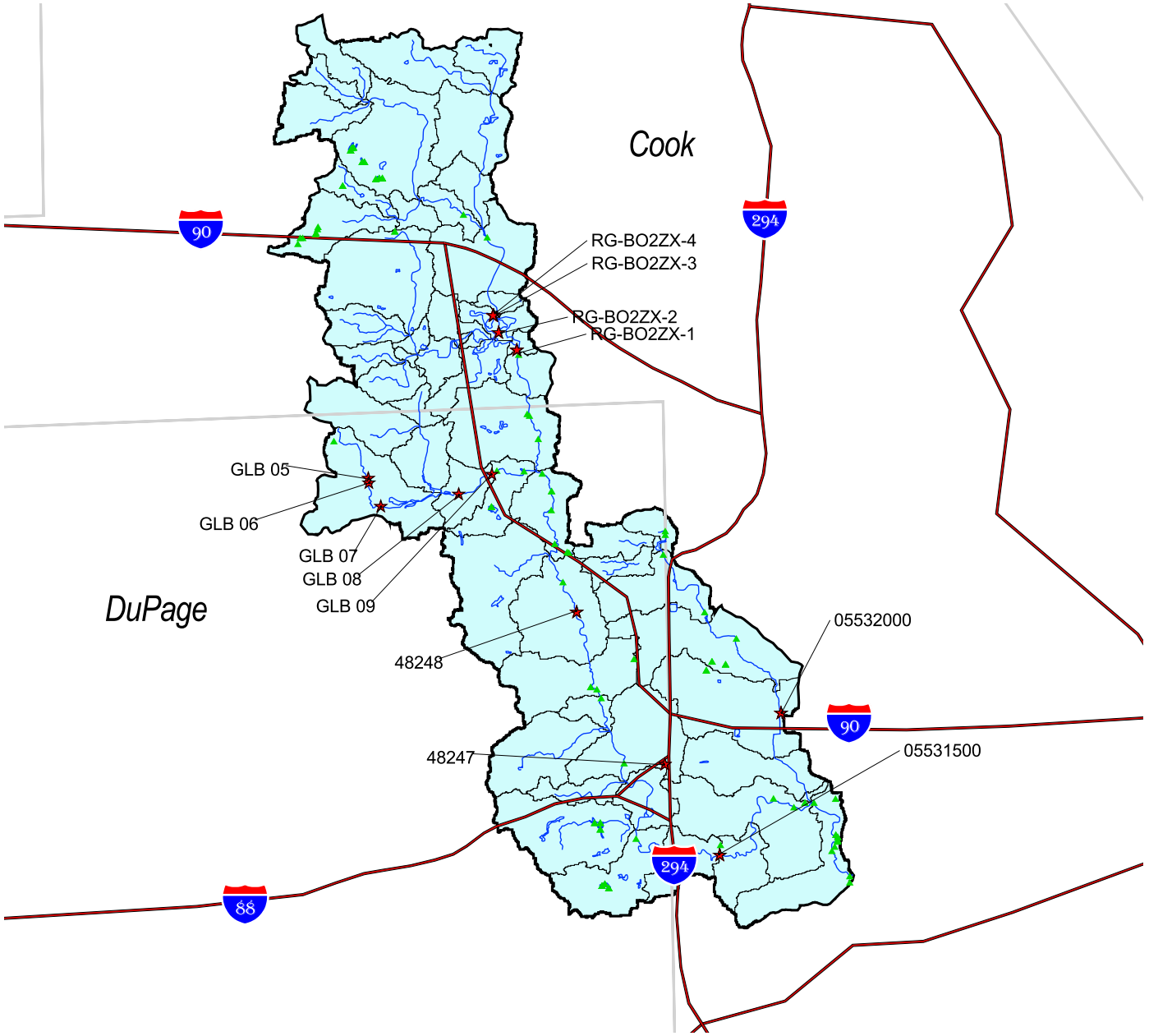


Figure 3-10

Location of Water Quality Stations in Salt Creek

Water Quality Stations

- Data not used for TMDL
- Data used for TMDL
- Streams
- Salt Creek Watershed
- Subwatersheds
- County Boundaries

N
W E
S

2 0 2 Miles

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SECTION 4

Assessment of Water Quality Data and TMDL Approach

This section summarizes each pollutant on the Salt Creek watershed list of impairments, and assesses the length of record and frequency of observations. The availability of data regarding frequency and amount of data varied for the different pollutants, which affected the selected modeling approaches. For each pollutant, a cause for listing has been provided, then an assessment of the potential sources, followed by a selected TMDL approach based on the findings of the first two sections for each pollutant. Details of the TMDL modeling are provided in Section 5.

4.1 Period of Assessment for Water Quality Data

Water quality impairments in a water body may be caused by pollutants from point and nonpoint sources. Generally dry weather periods are critical when direct discharge (e.g., point sources) is the primary source of the impairment. However, impairments during wet weather events may be caused by nonpoint sources or both point and nonpoint sources. Therefore, an analysis of long-term water quality is essential for a better understanding of the sources that cause the violations of WQS and to help select a correct approach for developing a TMDL. IEPA uses monitoring data from the most recent 5 years to prepare the 303(d) list of impairments. Therefore, water quality data collected between 1995 and 1999 was used to develop the TMDLs for Salt Creek and its tributaries.

4.2 Copper

4.2.1 Historic Data/Causes for Listing

The numeric acute standards (AS) and CS for copper are hardness dependent and presented below.

Acute numeric standard for total copper (µg/L) = exp[- 1.464 + 0.9422 ln(H)]

Chronic numeric standard for total copper (µg/L) = exp[- 1.464 + 0.8545 ln(H)]

where, ln(H) = natural logarithm of hardness (STORET 00900; mg/L as $CaCO_3$,).

The GU WQS (Section 302.208) also states that:

a) The AS for the chemical constituents shall not be exceeded at any time except as provided in subsection (d).

b) The CS for the chemical constituents shall not be exceeded by **the arithmetic average of at least four consecutive samples collected over any period of at least 4 days**, except as provided in subsection (d). The samples used to demonstrate compliance or lack of

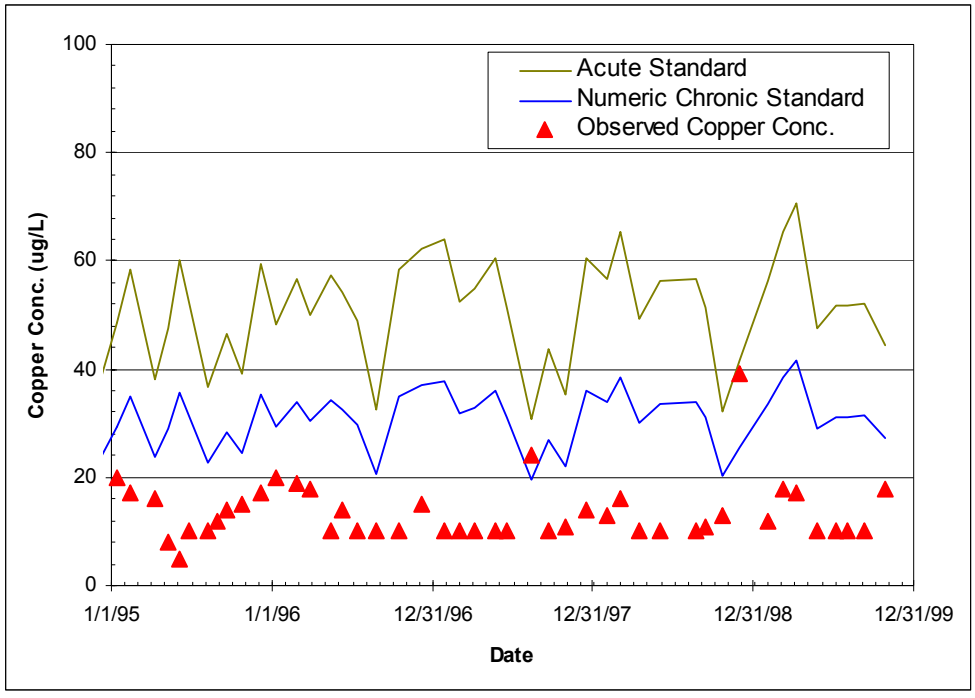
compliance with a CS must be collected in a manner that assures an average representative of the sampling period.

The term "numeric chronic standard" refers to a value computed using the CS formula and an instantaneous hardness. The term "chronic standard" refers to the average of at least four consecutive samples collected over any period of at least 4 days.

One segment of Addison Creek (GLA 04) was listed as impaired on the basis of two exceedances at George Street (station GLA-05) collected in 1995. Only three data points were available. It is likely that Bensenville South MWWTP was the source of this copper. IEPA should collect further information to verify whether copper is a problem since there are few data points, and the data are now 8 years old. In the meantime, this section of Addison Creek should remain on the consolidated list.

To ensure that the high copper values were not causing a problem downstream, an analysis of data collected during the 1995-1999 period at station 05532000 was performed. The numeric AS and CS were calculated using the observed hardness data and plotted in Figure 4-1 along with observed total copper concentrations. All data are included in Appendix A.

FIGURE 4-1
Observed Total Copper Concentrations at Addison Creek (station 05532000) and Corresponding Acute Standard and Numeric Chronic Standard by Sample Date



Total copper concentration exceeded the numeric CS on August 15, 1997 and November 30, 1998. To assess if the WQS was violated, three samples immediately prior to and three samples immediately after each date were used to calculate the arithmetic average of four consecutive samples. Each calculated average concentration spans over at least four days. Observed total copper concentrations and hardness, computed numeric AS and CS, 4-day

averages of observed copper concentrations, and 4-day averages of the numeric CS are listed in Table 4-1.

TABLE 4-1
Observed Copper Concentrations, Hardness, and Acute and Chronic Copper Standards in Addison Creek by Sample Date

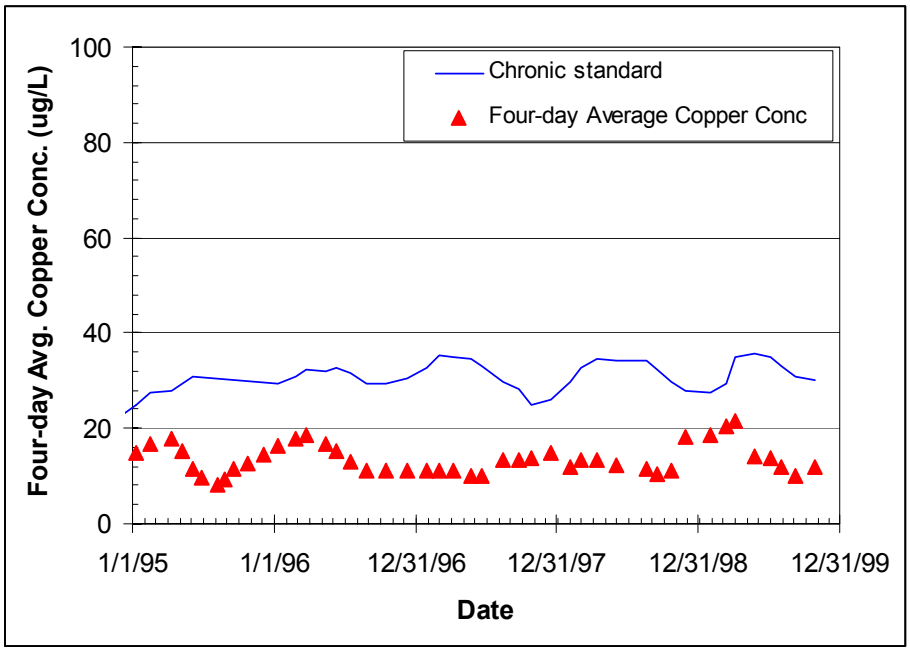
Date	Time	Observed Copper Conc. (µg/L)	Hardness (mg/L as $CaCO_3$)	Acute Standard (µg/L)	Numeric Chronic Standard (µg/L)	4-day Average of Observed Copper Conc. (µg/L)	4-day Average of the Numeric Chronic Standard (µg/L)
4/7/97	1130	10.0	332	54.90	32.97		
5/23/97	1145	10.0	368	60.50	36.00		
6/19/97	1100	10.0*	309	51.31	31.00		
8/15/97	**1100**	**24.0**	**179**	**30.68**	**19.45**	**13.50**	**29.85**
9/22/97	1000	10.0 *	261	43.77	26.84	13.50	28.32
10/28/97	1200	11.0	207	35.18	22.02	13.75	24.83
12/15/97	1225	14.0	368	60.50	36.00	14.75	26.07
2/2/98	1210	13.0	344	56.77	33.98	12.00	29.71
8/21/98	1030	10.0*	344	56.77	33.98		
9/14/98	1150	11.0	310	51.47	31.09		
10/23/98	1120	13.0	188	32.13	20.28		
11/30/98	**1200**	**39.0**	**248**	**41.71**	**25.69**	**18.25**	**27.76**
2/1/99	1130	12.0	340	56.15	33.64	18.75	27.68
3/11/99	1245	18.0	399	65.29	38.57	20.50	29.55
4/6/99	1215	17.0	434	70.67	41.45	21.50	34.84
5/26/99	1000	10.0 *	286	47.71	29.02	14.25	35.67

* Actual copper concentration is less than the detection limit of 10.00 µg/L

An analysis of observed water quality data showed that

- Observed total copper concentration never violated the acute copper standard
- Observed total copper concentration exceeded the numeric CS on two occasions, but did not violate the chronic WQS for total copper as shown in Figure 4-2. The 4-day average of observed total copper concentrations and the 4-day average of calculated numeric CS were calculated and compared to determine if the chronic WQS was violated.
- Generally, total copper does not pose a threat to the designated use of Addison Creek. Forty-four percent of observed total concentrations were below the detection limit and 95 percent of the observed concentrations (all samples but two on August 15, 1997, and November 30, 1998) were below 70 percent of the numeric CS.

FIGURE 4-2
Four-Day Average of Observed Total Copper Concentrations at Addison Creek (Station 05532000) and Corresponding Chronic Standard by Sample Date



On the basis of this analysis, the lower portion of Addison Creek is not impacted by copper and should not be included on the 303(d) list.

4.3 Total Dissolved Solids/Conductivity

Segments GL 03, GL 09, and GL 10 of Salt Creek and segment GLA 02 of Addison Creek are listed for TDS/conductivity impairments. Long-term TDS and conductivity data are available at two ambient water quality stations (05531500 at the lower end of Salt Creek, 05532000 at the lower end of Addison Creek). Station 05531500 is located on Salt Creek and station 05532000 is located on Addison Creek.

According to the Illinois GU WQS, TDS concentrations (STORET parameter code 70300) shall not exceed 1,000 mg/L. Conductivity is directly proportional to the TDS concentration. Although there is no GU WQS for conductivity, a conductivity value of 1,667 µmhos/cm corresponds to 1,000 mg/L of TDS (305(b) guideline). Therefore, an exceedance of 1,667 µmhos/cm of conductivity is considered indicative of potential exceedance of the 1,000 mg/L of the TDS standard. Since conductivity samples were collected more frequently than the TDS samples only conductivity data were analyzed to investigate TDS/conductivity impairments.

Plots (Figures 4-3 and 4-4) of water quality data collected at the Salt Creek station (05531500) and the Addison Creek station (05532000) clearly show that conductivity occasionally exceeded 1,667 µmhos/cm criteria during winter months. These plots included data collected between 1995 and 1999.

FIGURE 4-3
Plot of Salt Creek (station 05531500) Conductivity Data by Date

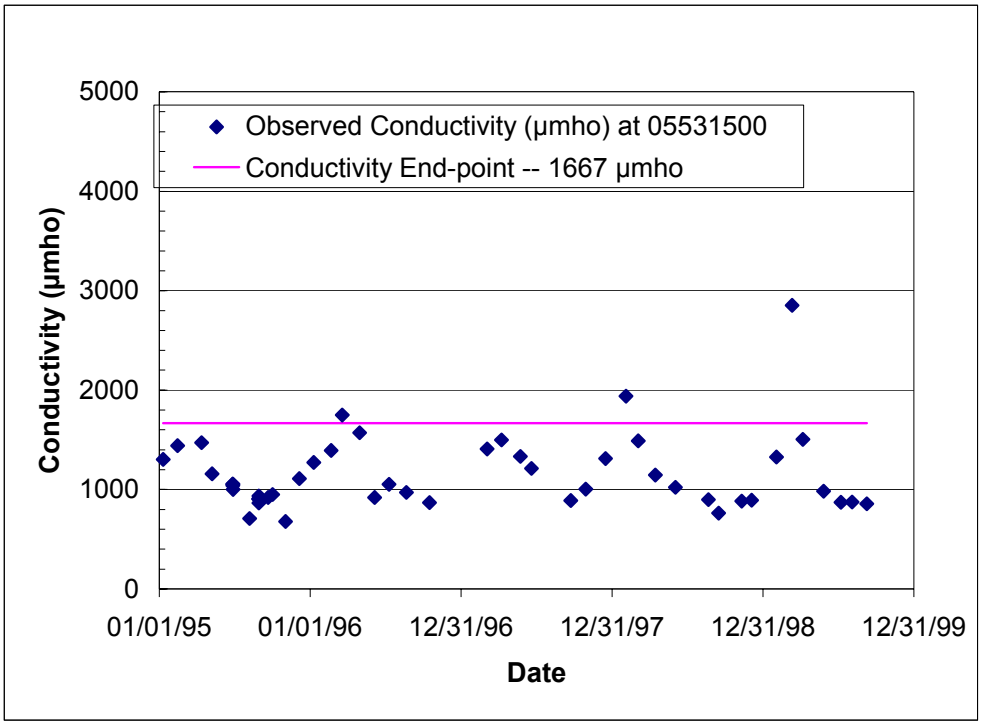


FIGURE 4-4
Plot of Addison Creek (station 05532000) Conductivity Data by Date

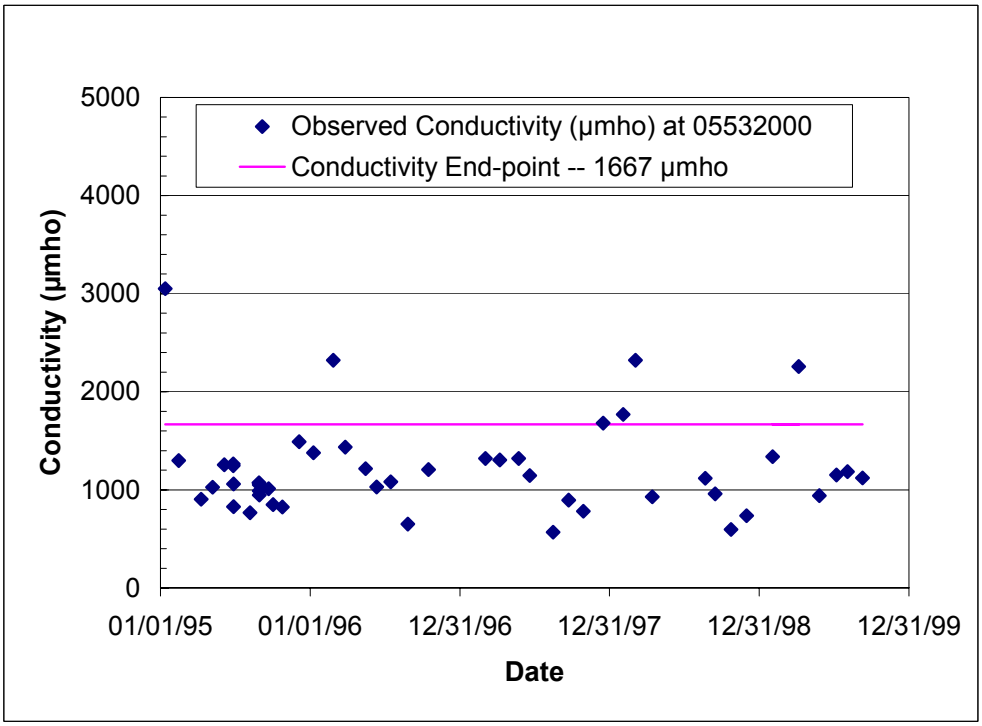
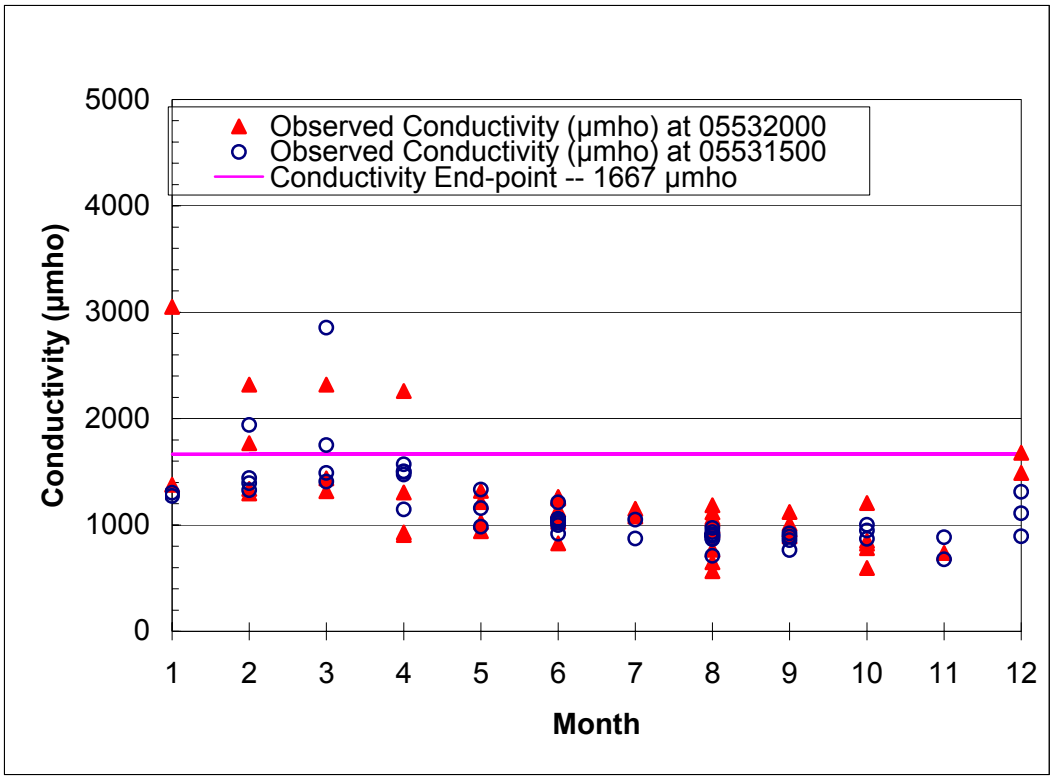


FIGURE 4-5
Observed Conductivity at Salt Creek and Addison Creek by Month 1995-1999



Generally, many dissolved anions and cations constitute TDS/conductivity in surface water. Most anions and cations are naturally occurring substances. Dissolution of minerals as water flows in contact with soil and precipitation containing atmospheric constituents contribute to naturally occurring TDS/conductivity. Anthropogenic sources such as road salt application, fertilizer application, and point sources increase the concentration of TDS/conductivity.

An investigation of seasonal pattern and correlation between chloride and conductivity showed that high TDS/conductivity is caused by road salt application in the winter months and directly proportional to chloride concentration. Chloride is the major component of TDS in winter months, which is the time of year subject to conductivity impairment. Snowmelt runoff includes chloride from roadway de-icing activities. Conductivity is generally higher during December through April than May through November (Figure 4-5). Conductivity is closely correlated to observed chloride concentration in Salt Creek (Figure 4-6) and Addison Creek (Figure 4-7). To verify that chloride is a major component of TDS/conductivity, a regression analysis of two constituents was performed. Chloride (417 mg/L) and conductivity (964 µmho) data collected on August 15, 1997, at the Salt Creek station (05531500) were excluded from analysis, because the chloride value was too high for the measured conductivity. Because of the relationship between chloride and conductivity it seemed unlikely that the recorded chloride value was correct. The conductivity value was with in range of the previous and next recorded value while the chloride observation was very high. This data point was disregarded from the sample set as an statistical outlier.

Initial regression analyses showed that conductivity values of 616 µmho and 564 µmho were contributed by background anions and cations (i.e., intercept of the regression equation, which is the level predicted if there were no chlorides instream) in Salt Creek and Addison Creek, respectively. For consistency, it was assumed that the background conductivity was the same in both creeks, and the value was set to 600 µmho to derive the final regression equations.

The relationship between conductivity and chloride in Salt Creek is given by:

Conductivity (µmho) = 600 + 2.76 × Chloride (mg/L)
$r^2 = 0.86$

Similarly, the relationship between conductivity and chloride in Addison Creek is given by

Conductivity (µmho) = 600 + 3.00 × Chloride (mg/L)
$r^2 = 0.91$

Figures 4-6 and 4-7 show these relationships graphically. A strong correlation between chloride and conductivity (i.e., high R^2 values) indicates that the variation in conductivity levels can be explained by chloride concentrations. Also, chloride and conductivity are high during winter months and concurrent with snowmelt runoff, confirming that salt from roadway de-icing activities is the major component of TDS. The quantity of sodium in road salt is as significant as chloride and contributes equally to the TDS concentrations/conductivity. Additionally, depending on the composition of road salt, there are other dissolved solids present in water.

FIGURE 4-6
Relationship between Conductivity and Chloride in Salt Creek

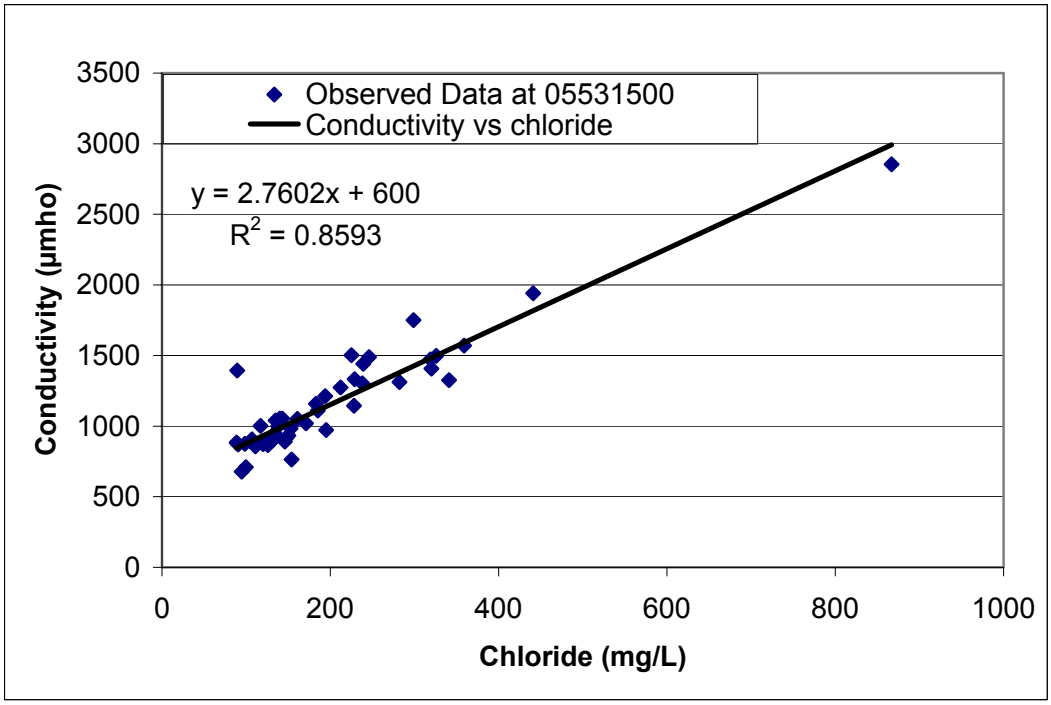
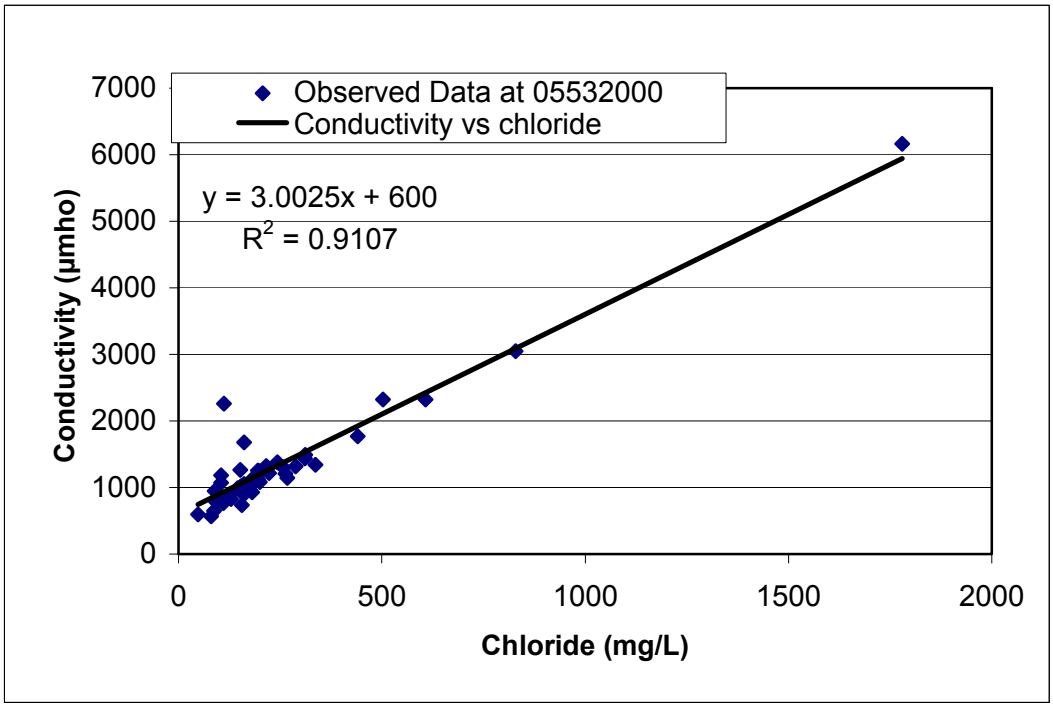


FIGURE 4-7
Relationship between Conductivity and Chloride in Addison Creek



Based on the analysis presented in this section, the TDS/conductivity considerations should be addressed through the evaluation and potential development of chloride TMDLs.

4.4 Chloride

4.4.1 Historic Data and Causes for Listing

Segment GLA 02 of Addison Creek is listed for chloride impairment. Long-term total chloride data are available at the ambient water quality stations at Addison Creek (station 05532000) and Salt Creek (station 05531500).

According to the Illinois GU WQS, concentration of chloride (STORET parameter code 00940) shall not exceed 500 mg/L.

Although Salt Creek segments are not listed for chloride impairment, a chloride TMDL may be necessary to meet the TDS/conductivity standard. Segments GL 03, GL 09, and GL 10 of Salt Creek and segment GLA 02 of Addison Creek are listed for TDS/conductivity impairments and discussed in the previous section. Chloride constitutes a significant part of TDS/conductivity and provides a means to control exceedances of the TDS/conductivity standard that would result in use impairment.

Water quality data collected between 1995 and 1999 show that there was one exceedance (Figure 4-8) of the chloride standard at the Salt Creek station (05531500) and four exceedances (Figure 4-9) at the Addison Creek station (05532000). These data, as listed in Table 4-2, show that all exceedances occurred during winter months. Figure 4-10 shows chloride concentrations by month. At the Salt Creek station (05531500), one sample, which recorded 417 mg/L of chloride concentration in August 15, 1997, appeared to be a data error. Conductivity on August 15, 1997, was significantly lower than the value that would

correspond to 417 mg/L of chloride concentration. This confirmed that the sample had a data error. The maximum observed chloride concentration between May through November was 268 mg/L on 6/19/1997 at the Addison Creek station (05532000). Chloride concentrations at the Salt Creek station (05531500) were generally less than those at the Addison Creek station for the whole sampling period. Probabilities of exceedance of the chloride standard are 4 and 8.5 percent in Salt Creek and Addison Creek respectively.

FIGURE 4-8
Salt Creek (station 05531500) Chloride Concentrations by Sample Date and Water Quality Standard

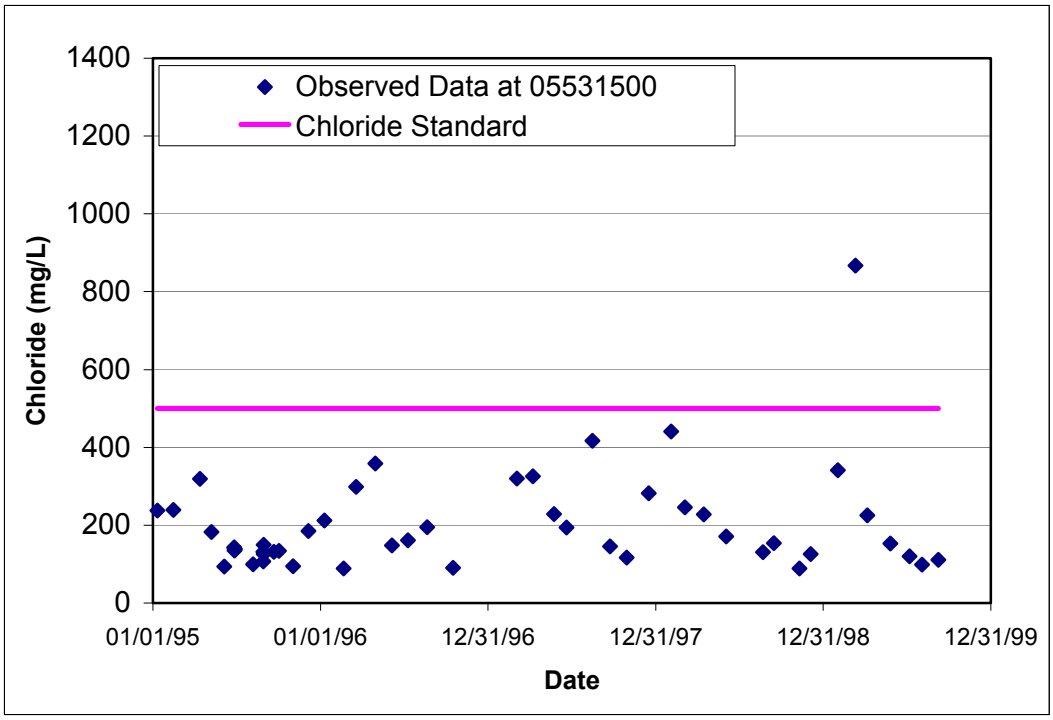


TABLE 4-2
Exceedances of the Chloride Standard in Salt Creek and Addison Creek

Date	Chloride (mg/L)	Station
3/11/99	867	Salt Creek
3/11/99	1780	Addison Creek
1/12/95	829	Addison Creek
2/26/96	608	Addison Creek
3/4/98	503	Addison Creek

FIGURE 4-9
Addison Creek (station 05532000) Chloride Concentrations by Sample Date and Water Quality Standard

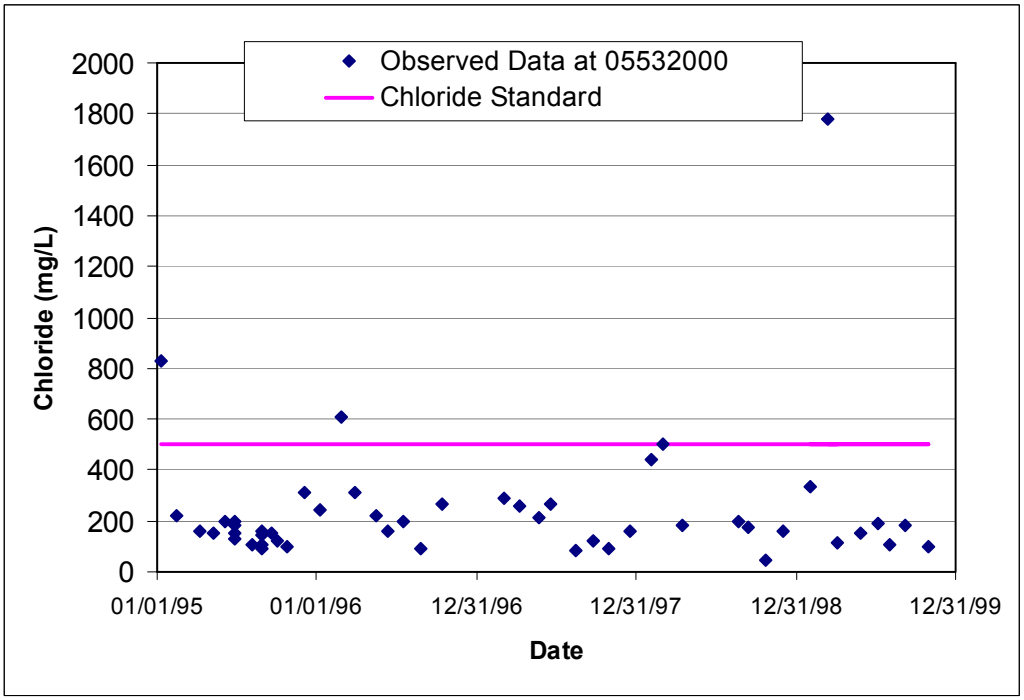
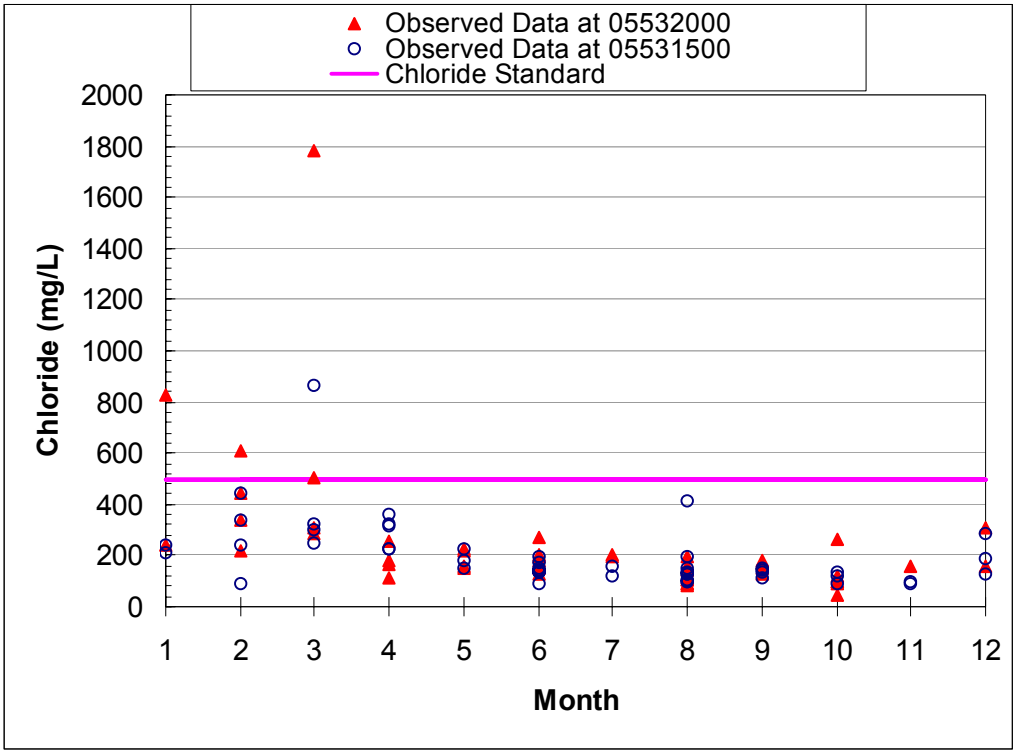


FIGURE 4-10
Chloride Concentrations in Salt Creek and Addison Creek by Sample Month, 1995 to 1999, and the Water Quality Standard



4.4.2 TMDL Approach

Chloride was modeled for the Salt Creek and the Addison Creek segments using HSPF. Road salt application information was incorporated in the model for calibration. Model calibration and validation was performed using chloride data collected at stations 05531500 and 05532000.

4.5 Total Phosphorus

4.5.1 Historic Data/Causes for Listing

Salt Creek segment RGZX (Busse Woods Lake) is listed for TP (STORET number 00665) impairment. Long-term TP and dissolved phosphorus data are available at the ambient water quality stations at Addison Creek (station 05532000) and Salt Creek (station 05531500). There are four water quality monitoring stations (RG-B02ZX-1, RG-B02ZX-2, RG-B02ZX-3, and RG-B02ZX-4) in the lake that recorded total and dissolved phosphorus (DP) data in 1991, 1994, 1997, and 2000. Monthly samples were collected, sometimes at different depths, between April and October.

Illinois WQS (Section 302.205) state that phosphorus (STORET number 00665) as P shall not exceed 0.05 mg/L in any reservoir or lake with a surface area of 8.1 hectares (20 acres) or more, or in any stream at the point where it enters any such reservoir or lake.

TP data collected from April to October 2000 at various locations of the lake are plotted in Figure 4-11. Twenty-nine percent of TP samples exceeded the WQS in 1997, whereas in 2000 this had dropped to only 16 percent, which is only 3 out of the 19 samples taken in 2000. Table 4-3 below shows annual summaries for 4 years , 1991, 1994, 1997, and 2000. From the mid 1990s to 2000, TP concentrations in Busse Lake decreased from 93 percent violations in 1994 to 29 percent in 1997 and to less than 16 percent in 2000. An analysis of flow data indicates that average flow between these years was relatively constant; it ranged from a low of 156 Cubic feet per second (cfs) to a high of 170 cfs for 1991, 1994, 1997, and 2000. This indicates that appropriate measures may have already been taken to address the water quality problems in the lake. The average reduction in TP concentrations since 1994 has been 56 percent. Monitoring should continue in the watershed to ensure that this downward trend is not short term.

A comparison of the data from the last decade reveals that TP concentration has declined significantly. The average reduction in TP concentration from 1994 to 2000 was 56 percent. To determine whether this downward trend was related to flow, the average flow conditions in 1991, 1994, 1997, and 2000 were reviewed. The average flows in each year were relatively equivalent, with a range of 156 to 170 cfs. The flows for each individual sampling date were then reviewed. In general, flow between the years sampling dates were relatively constant. However, there was one sampling date in 1991 when the flows were approximately double the next highest flow. When data from this date were removed from the analysis, the phosphorus values in Table 4-3 drop for 1991. The maximum is 0.091 mg/L, the mean is 0.055 mg/L, and the percent of samples that exceed the standard is 55. Since phosphorus loading is contingent on longer time frames, and the years have fairly consistent flows, it appears that phosphorus is declining. Monitoring should continue to ensure this is a long-term trend. DP concentration did not vary significantly among the

stations. The average DP concentration was 0.014 mg/L and had increased slightly in 2000 measurements compared to 1994 and 1997 measurements. .

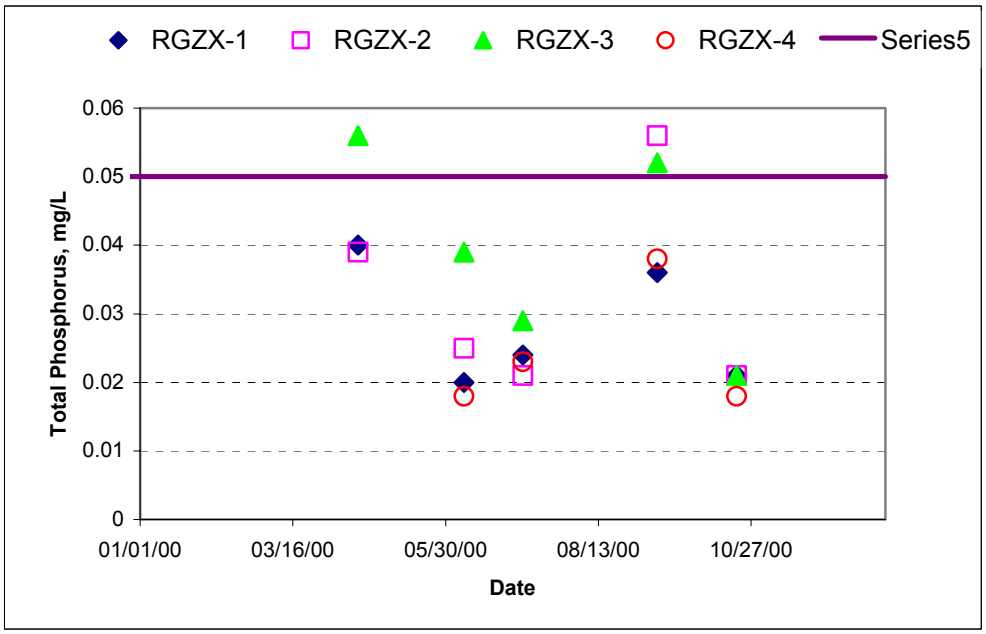
A summary of phosphorus data is presented in Table 4-3. One sample, collected on June 8, 1997, from station RG-B02ZX-4, was excluded from the analysis because of an apparent data error. DP concentration (0.055 mg/L) was recorded as higher than the TP concentration (0.028 mg/L).

There is no point source discharger located upstream of the Busse Woods Lake in the Salt Creek watershed. Therefore, nonpoint sources contribute 100 percent of the TP load. Potential nonpoint sources of phosphorus include urban runoff containing fertilizers and waterfowl and pet waste; broken or leaky sewers; and failed septic systems. There is no CSO upstream of the lake.

TABLE 4-3
Summary of Phosphorus Data from Busse Woods Lake

Year	No. Samples	Maximum Total Phosphorus (mg/L)	Average Total Phosphorus (mg/L)	Average Dissolved Phosphorus (mg/L)	Percent of Samples Exceeding Water Quality Standard
1991	25	0.097	0.061	0.013	64%
1994	15	0.110	0.071	0.012	93%
1997	21	0.082	0.048	0.013	29%
2000	37	0.056	0.031	0.017	15.7%

FIGURE 4-11
Total Phosphorus Concentrations in Busse Woods Lake by Sample Date and the Water Quality Standard



4.6 Dissolved Oxygen

4.6.1 Historic Data/Causes for Listing

Salt Creek segments (GL 03, GLB 01, GLBA, and GL 19) and Addison Creek segments (GLA02 and GLA04) are listed for DO impairment. Long-term in-stream DO data are available at the Addison Creek monitoring site (station 05532000) and the Salt Creek monitoring site (station 05531500). These data are collected during daytime hours nine times per year. Also, intensive sampling data for summer 1995 are available from USGS (Melching and Chang, 1996). These data were collected at 28 sites within the Salt Creek Basin including Salt Creek, Spring Brook, and Addison Creek. The data were collected monthly in April, June, August, and October, and intensive diurnal data were collected in June and August.

Illinois WQS states that the DO (STORET number 00300) shall not be less than 6.0 mg/L during at least 16 hours of any 24-hour period, nor less than 5.0 mg/L at any time. Two STORET parameters (00300 and 00299) represent DO (mg/L). Parameter 00299 specifically designates measurements of DO by probe in the field. Available data show that the number of DO measurements by probe (parameter 00299) is significantly larger than the number of DO measurements in the laboratory (parameter 00300). All IEPA data are currently collected by probe, and data collected at the long-term ambient stations have been collected by probe since 1981. All DO data, both parameters 00299 and 00300, were included in the analysis and the TMDL development.

DO data collected at various locations in Salt Creek and Addison Creek can be divided into two groups for a clear understanding of the problem. The first group includes samples collected at regular intervals from the Addison Creek monitoring site (station 05532000, GLA-02) and the Salt Creek monitoring site (station 05531500, GL-09). These data generally include nine samples per year at each monitoring site. The second group includes data from two extensive diel data collection efforts on June 27 and 28, 1995 and August 29 and 30, 1995. DO and other water quality data were collected at 6-hour intervals from many sites along Salt and Addison Creeks, including point source effluents. These data provide information on the extent of diurnal variation of DO along the creeks.

Except for one sample at the Salt Creek station, long-term regular interval samples collected between 1991 through 1998 (not including the diel samples collected in 1995) do not show any excursion below the 5 mg/L standard. Long-term DO from the Salt Creek and Addison Creek sites are presented in Figures 4-12 and 4-13, respectively. The DO data on December 5, 1995, at the Salt Creek station (Figure 4-12) was potentially recorded erroneously as 3.5 mg/L. Data collected between 1991 through 1998 show that DO consistently exceeded 10 mg/L from December through February. Continuous monitoring data (30-min interval) at the Salt Creek monitoring site at Western Springs (station 05531500), as shown in Figure 4-15, showed DO was always above the WQS (6 mg/L) between November 01, 2001 and March 31, 2002. There were two incidences of instrument malfunctioning (perhaps frozen probe) in November - January. Correspondence with IEPA (Eicken, 2003) indicates that the data at this continuos monitoring point may be suspect because the area sometimes is a backwater area filled with debris. DO observations under these conditions should be low. Observed DO at the Addison Creek site on December 9, 1995, was recorded as 13.75 mg/L. Except for two summer samples at the Addison Creek site and one sample at the Salt Creek site, DO concentrations were consistently above 6 mg/L at both Salt Creek and Addison Creek stations. DO concentrations

generally decreased during summer months. Diel data show some excursions below the 5 mg/L DO standard at both Salt Creek and Addison Creek stations in summer 1995. Diel data collected on June 27 and 28, 1995, from the Salt Creek sites are presented in Figure 4-14. The summer low-flow condition was the critical condition for DO and, therefore, was used for TMDL development.

FIGURE 4-12
Monthly DO Data at the Salt Creek Site (station 05531500) by Sample Date and the Water Quality Standards for DO
Data collected during daytime hours.

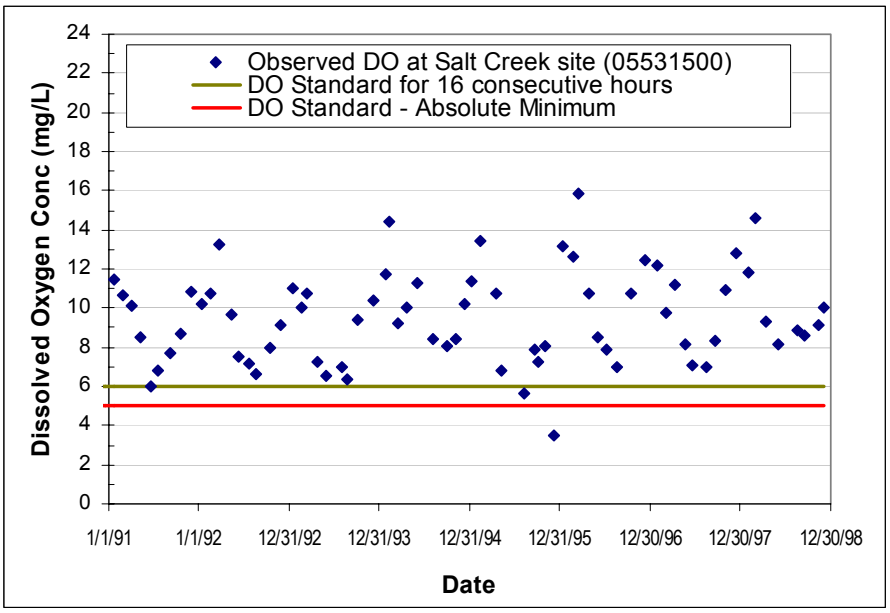


FIGURE 4-13
Monthly DO Data at the Addison Creek Site (station 05532000) by Sample Date and the Water Quality Standards for DO
Data collected during daytime hours.

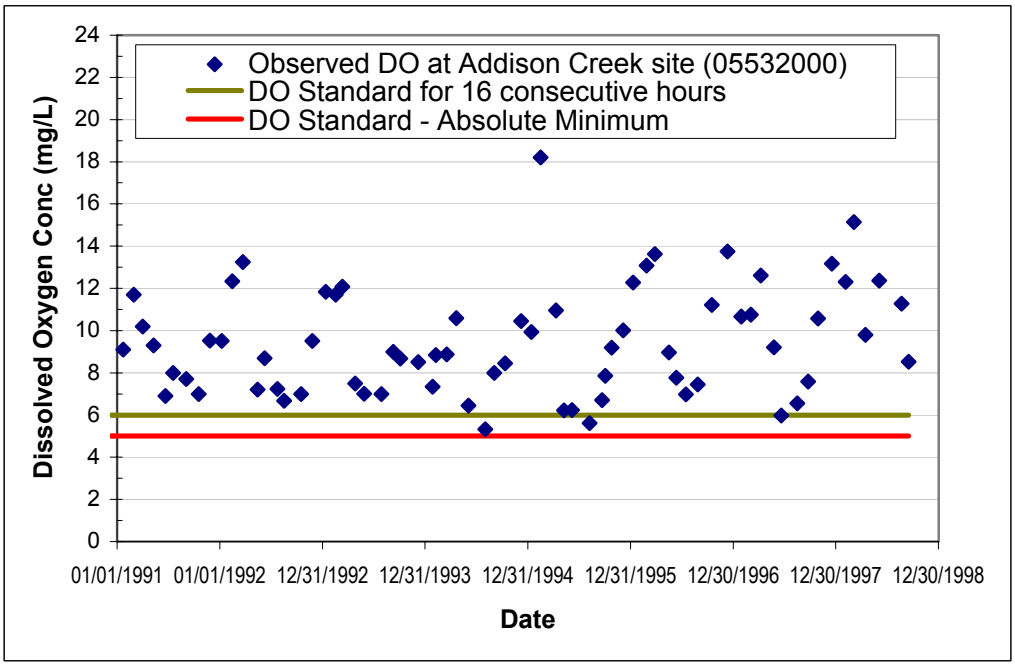


FIGURE 4-14
Diel DO Data Collected at 16 Salt Creek Sites on June 27 and 28, 1995, and the Water Quality Standards for DO

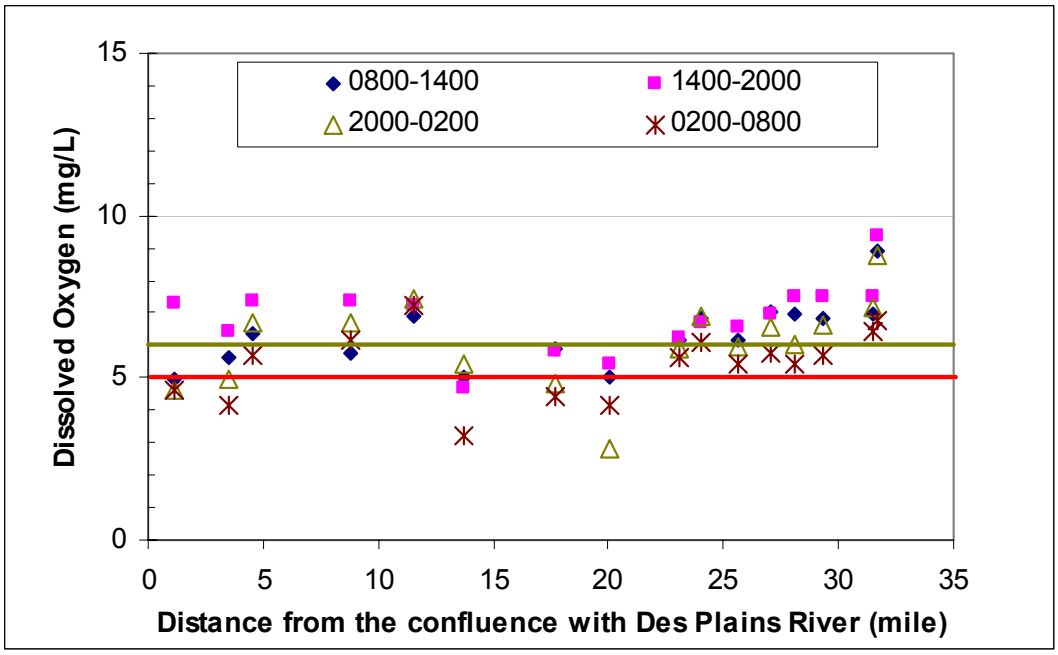
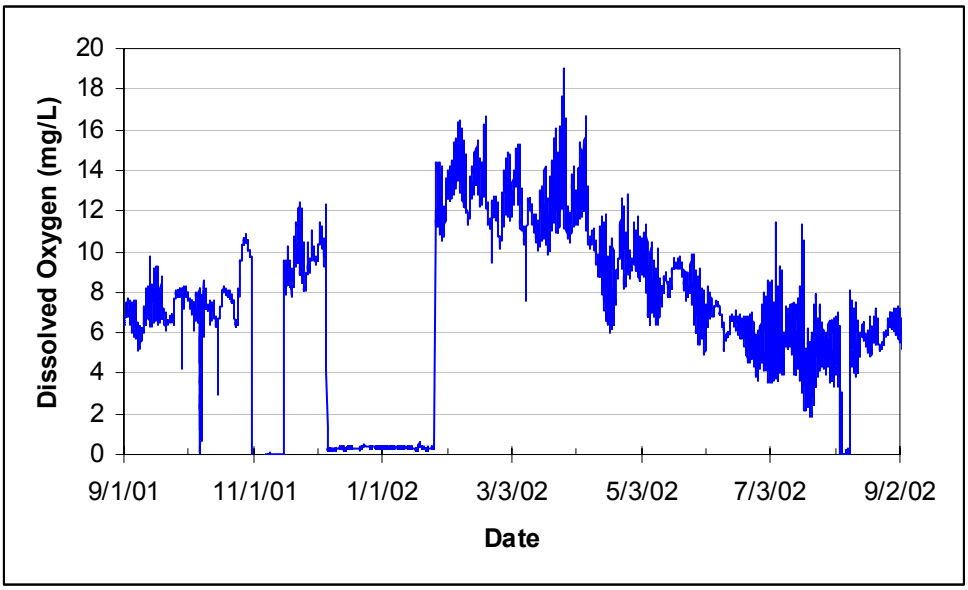


FIGURE 4-15
Continuous Monitoring Data at the Salt Creek Monitoring Site, Western Springs (station 05531500)



CSO, leaky combined and sanitary sewers, municipal point sources, and eutrophication that occurs because of excessive nutrients are potential causes of DO problems in streams. Eutrophication leads to high concentrations of algae, which in turn depletes nighttime oxygen levels via respiration. CSO and leaky combined and sanitary sewers are potential sources of BOD that deplete DO in surface water. CSOs occur during wet weather conditions, and leaky and broken combined and sanitary sewer systems may contribute to low DO concentrations by discharging oxygen-depleting materials and low-DO water.

Rainfall data from the O'Hare Airport suggest that the June 27, 1995, excursion occurred after 0.8 in. of rainfall. Monitoring data show that the St. Charles Road CSO was flowing on June 27, 1995, after the storm event and the CSO discharge contained significantly high BOD concentrations (444 mg/L of carbonaceous biochemical oxygen demand [CBOD]). The St. Charles Road CSO problem was fixed following the event. Other potential sources of oxygen-demanding materials include urban stormwater runoff and wastewater treatment plant (WWTP) effluent. Stormwater runoff includes pet and other animal wastes with high nutrient concentrations. WWTP effluents can deplete DO through BOD and ammonia loads. According to the DMR data, WWTPs in the Salt Creek watershed discharge BOD and ammonia concentrations well below their permit limits. Potential sources contributing to the DO excursions are listed in Table 4-4. The relative importance of the various sources are addressed in more detail in subsequent sections.

The analysis of DO in Salt Creek and potential sources provided key information necessary in identifying the modeling needs and selecting an appropriate model. DO TMDL evaluations for Salt Creek will be developed using the QUAL2E model. Although several sources of wet weather DO impairment are mentioned in the 1998 303(d) list, the DO problem has been characterized as having an association with low- to medium-flow conditions in the summer months. The QUAL2E model can adequately simulate DO and other water quality constituents (BOD, nutrient, chlorophyll *a*) contributing to DO problems

under a given flow condition. After calibrating the model using diel sampling data, the model will be used to develop the DO TMDL using 7-day, 10-year (7Q10) low flow conditions.

TABLE 4-4
Sources of Low Dissolved Oxygen (from the State 1998 303(d) List)

Water Body Segment	Source
GL 03	CSOs[a] – Addison South (27367), Villa Park (33618), SSOs[b] – Elmhurst (28746).
GLA 01	CSOs – Bellwood (44946).
GLA 02	CSOs – Bellwood (44946).
GLA 03	Municipal point sources[c] – Bensenville South (21849), upstream impoundments[d] – George Street Reservoir, Mt. Emblem Cemetery Pond, Veterans Park Pond.
GLB 01	Municipal point sources – Roselle-Devlin (30813), DCDPW Nordic Park (28398), Upstream impoundments – Lake Kadijah, Itasca Golf Course pond.
GLBA	Source unknown.
RGZX	Urban runoff/ storm sewers[e], contaminated sediments, waterfowl.

[a] Combined sanitary and storm sewer overflow is based upon facility-related stream surveys (FRSS), agency effluent, discharge monitoring report, or other data.

[b] Sanitary sewer overflow is based upon FRSS, agency effluent, DMR, or other data.

[c] Municipal point source discharge is based upon FRSS, agency effluent, DMR, or other data.

[d] Upstream impoundments are based upon actual observation or other data.

[e] Urban and storm sewer runoff is based upon actual observation or other data.

4.7 Summary

Table 4-5 summarizes all the pollutants addressed in the TMDL for Salt Creek. Also listed are any WQS/ TMDL endpoints, other supporting data, and potential sources.

TABLE 4-5
Summary of Available Data, Water Quality Standards, and Potential Sources

Parameter	Water Quality Standard/ TMDL Endpoints	Data Supports Impairment	Potential Sources	Resolutions/ Comments
Copper	Hardness dependent acute and chronic standards	Yes for upper segment	Bensenville South MWWTP	Collect further information and if still needed work with Bensenville to reduce copper levels

TABLE 4-5
Summary of Available Data, Water Quality Standards, and Potential Sources

Parameter	Water Quality Standard/ TMDL Endpoints	Data Supports Impairment	Potential Sources	Resolutions/ Comments
Conductivity	TDS – 1,000 mg/L equivalent to 1,667 µmho/cm	Directly related to TDS and chloride standards.	Urban runoff/storm sewers, upstream impoundment	Will be addressed by the chloride TMDL; follow-up monitoring will indicate whether another phase of TMDL is needed.
Chloride	500 mg/L	Exceedances warrant further evaluation and potential TMDL development	Road deicing applications	
Phosphorus	Lakes and streams entering lakes – 0.05 mg/L	Yes	Urban runoff/storm sewers, contaminated sediments, waterfowl	Nonpoint sources only, data indicate load reductions occurring, continue trend monitoring
Dissolved Oxygen	Shall not be less than 6 mg/L during at least 16 consecutive hours out of any 24 period, nor less than 5 mg/L at any time	Yes	Urban runoff/storm sewers, contaminated sediments, waterfowl, CSO, SSO, municipal point sources, upstream impoundment	

SECTION 5

Modeling Approach and Assumptions

This section describes the detailed approach and assumptions used to characterize the pollutant sources for modeling and to develop the model input for TMDL analysis in the Salt Creek watershed. The first section outlines the procedure used to select the necessary models and tools to perform the TMDL analysis required. A section on the hydrologic calibration follows and the water quality calibrations for the pollutants of concern are presented.

5.1 Selection of Models and Tools

Two models were considered for use: HSPF and QUAL2E. HSPF is a continuous watershed model with stream modeling capabilities, while QUAL2E is a steady-state stream water quality model.

HSPF can model a wide variety of water quality constituents, sediment, and nutrients from various sources, including land uses. HSPF is also a continuous simulation model that can handle long-term simulations, which are needed for nonpoint source load allocations during TMDL development.

QUAL2E allows more detailed segmentation of reaches than HSPF and is a stream-only model (does not model watershed processes). QUAL2E applies a finite-difference solution to the advective-dispersive mass transport and reaction equations and simulates up to 15 water quality constituents in a channel network. QUAL2E is a constant-flow model with a dynamic weather/algae component. The maximum length of simulation for QUAL2E is less than 900 hours, hence it can run a continuos simulation for only 900 hr. Hence, it is best suited to run specific flow conditions, such as low-flow cases for a short steady-state period.

One model was selected for each type of impairment after analyzing the data and presented in the previous chapter.

5.2 Modeling Chloride Using HSPF

5.2.1 Hydrologic Calibration for HSPF General Background Information

Three long-term USGS streamflow gauges, Rolling Meadows, Elmhurst, and Western Springs, were selected for model calibration as a result of the streamflow discussion detailed in Section 3.5. The upstream-most gauge is at Rolling Meadows, with a drainage area of 30.5 square miles according to the USGS. The middle gauge is at Elmhurst, with a drainage area of 91.5 square miles, and the downstream-most gauge is at Western Springs, with a drainage area of 115 square miles.

The delineated subbasins within Salt Creek as described in Section 3.1 were used to calculate contributing areas for each flow gauge. Using this delineation, contributing area at the upstream gauge was about 11 percent lower than that reported by the USGS. Area at the bottom gauge was only 1 percent lower than that reported by the USGS. This discrepancy

may be due to the extremely flat surface conditions and limitations of GIS technology used in the delineation process. Because of these limitations, some area that actually contributes to the top gauge may have been attributed below this gauge. To resolve this discrepancy, some area upstream of the upper gauge was moved below this gauge. Specifically, 2 square miles were taken from reach 44 and added to reach 39, and 1 square mile was taken from reach 26 and assigned to reach 27. This area was taken proportionally by land use from these two subbasins. This solution resulted in new area at the top gauge less than 1 percent lower than that reported by the USGS. This difference is within a range deemed acceptable for modeling.

Between the Rolling Meadows gauge and the Elmhurst gauge is the 590-acre Busse Woods Lake, which is used for flood control according to Price (1994).

The following sections detail the way various data were processed for use in hydrologic calibration of HSPF. Appendix B contains details on the calibration outputs and plots of simulated and observed flow.

5.2.2 Land-Use Data

From the discussion of available land-use data in Section 3.2, the classifications from Table 3-1 were used to determine the percentage of each land-use category in the drainage areas for the three flow gauges. The land-use breakdown for each flow gauge is shown in Table 5-1.

TABLE 5-1
Land-Use Summary for Each Flow Gauge

	Area Above Rolling Meadows (%)	Area Above Elmhurst (%)	Area Above Western Springs (%)	Effective impervious Area (%)
Cemeteries and vacant	5.9	8.6	8.1	0
Commercial	7.8	9.5	10.7	85
Forest	4.2	3.5	3.7	0
Industrial	3.9	6.2	5.1	85
Institutional	4.8	3.7	3.8	30
Open Space	7	12.4	12	0
Residential	58.6	48.6	50	10
Transp, Comm, Utils, Excluding Interstates	0.8	1.1	1.2	60
Expressways	1.7	2	2.1	60
Wetlands	2.9	2.3	1.8	0
Agricultural	2.2	2	1.6	0

The effective impervious area (EIA) percentages reflect only the estimated runoff from impervious areas that are directly connected to stormwater conveyance systems (e.g., stream channels, storm sewers) with no opportunity for infiltration. EIA values differ from total impervious area values

because runoff from some impervious areas, including many rooftops, may flow onto pervious areas. These values were extracted from *Application Guide for Hydrologic Modeling in DuPage County Using Hydrologic Simulation Program - FORTRAN (HSPF)* (Price, 1996).

5.2.3 Meteorological Data

From the meteorological data discussion in Section 3.4, the O'Hare and Wheaton time series were created to use for model simulations. The time series were divided into two sets, one to be used for model calibration and one to be used for model validation. These two time series were assigned to the subbasins based on proximity. For hydrologic calibration, the data sets were divided into two sets for each time series, one set to be used for model calibration and one set to be used for model validation. Since the USGS gauge on Salt Creek at Elmhurst began recording streamflow data in 1989, it followed that the calibration period must be within the span of 1989 to 1999. The 5-year period between 1991 and 1995 was chosen as the calibration period since this span included a mix of wet and dry years. The last 4-year period, 1996 to 1999, was chosen as the validation period.

During the 5 years used for calibration, the Wheaton precipitation station recorded an average of 3.1 in. more rainfall than did the O'Hare station, a difference of about 9 percent. Much of the Salt Creek watershed was assigned rainfall from the O'Hare station, yet neither the O'Hare station nor the Wheaton station is within the watershed. To account for the distances between the watershed and the gauges, and assuming that the actual precipitation falling on the watershed is somewhere between that represented by the two gauges, the O'Hare input precipitation time series was increased by a 5-percent multiplier. In other words, the precipitation on model portions of the watershed assigned to the O'Hare gauge receive 5 percent more rainfall than that recorded at the O'Hare gauge, thus accounting for some of the variability of storm events across the watershed.

5.2.4 Point Sources Data

Point source discharges from WWTPs make up a significant portion of the flow in the Salt Creek below the Rolling Meadows gauge during low-flow periods. This point is illustrated by examining the long-term flow gauge at Western Springs. During the first 10 years on record, 1945 to 1954, the 10-percent lowest flows average about 3.2 cfs. But during the 10-year period from 1990 to 1999, the 10-percent lowest flows average about 48.5 cfs. This increase can be attributed to point sources that began discharging into the river during this period. Major contributors included the Egan and Elmhurst WWTPs.

According to the point source data provided in Section 3.6, 20 point source discharges in this watershed were considered in the TMDL modeling. The combined average monthly point source discharge above the USGS gauge at Western Springs is about 77 cfs.

Hydrologic Calibration of HSPF Model for DuPage County (Price, 1994) provides an explanation for the large difference between the point-source discharge data and the observed low flows at the USGS gauges. The discrepancy is related to stormwater infiltrating in the sanitary sewer system, where runoff enters the sanitary sewer system through manholes and through joints in the sewer pipe.

This study on Salt Creek assumes that the average discharge during the driest period (e.g., 7Q10 low flow) included discharge from point sources only and did not include any nonpoint source runoff. This study concludes that 42.3 cfs is the average point-source discharge into Salt Creek at

Western Springs. Thus, for the HSPF model it was assumed that the total point source contribution at the Western Springs gauge is 42.3 cfs.

The 42.3 cfs value was weighted among the point sources by average flow and input as a constant value at each point source over the calibration period. Using this method, water balances within 5 percent of observed flows are obtained at the three USGS gauges on the Salt Creek.

5.2.5 Hydrologic Calibration

The initial parameter values for this calibration were obtained from *Hydrologic Calibration of HSPF Model for DuPage County* (Price, 1994). The land uses referenced in this report include agricultural, forest, grassland, and impervious areas. Since these land uses do not correspond directly with the land uses modeled in this study, some assumptions and estimates were made in determining the initial parameter set. Price's agricultural parameters were used in this study for the agricultural land use, and the forest parameters were used for the forest areas in this study. Price's grassland parameters were used for every other category, with the exception of wetlands. Since Price did not parameterize wetlands, the initial wetland parameters were adjusted from Price's grassland values based on experience with wetlands in other watersheds.

Some of these initial parameters were changed to reflect the land-use variations across the watershed, where the initial parameter set used the same value for all land uses. An example of this type of change can be observed from the lower zone nominal soils moisture (LZSN) values. Where the Price report uses the same value for LZSN for all land uses, LZSN was changed to be higher for forest than for urban land uses. Similar changes were made for basic groundwater recession (AGWRC), fraction of groundwater inflow to deep recharge (DEEPFR), and Interflow recession parameters (IRC).

F-Tables contain rating curve (stage-discharge relationship) information for stream and lake segments in the model. One F-Table was developed for each stream segment in a subwatershed. F-Tables were developed using rating curves prepared by USGS at the gauge locations, available cross sectional information, and drainage areas. Rating-curve data at the USGS gauge locations were obtained from the USGS web page. Stream cross sectional information was estimated at different locations during an April 2000 field reconnaissance. Drainage areas were calculated based on GIS data.

A spreadsheet was used to calculate different F-Table components combining all this information. The spreadsheet also checked input values resulting in unacceptable F-Table components (e.g., negative outflow) and compared F-Table components for reaches with similar drainage areas. Thus, any discrepancy in the F-Tables was eliminated. The surface area of Busse Woods Lake was determined based on the lake shoreline in the USEPA's RF3 coverage.

Snow was calibrated using the measured daily snow pack depth observations at O'Hare Airport. For snow calibration, TSNOW (a model parameter) was increased slightly so that all major snow events observed at O'Hare were simulated as snow. The snow simulations show a fair agreement with the snow depth observations (Figure B1 in Appendix B). The calibration shows some day-to-day differences between simulated and observed values, but this is a common occurrence in snow simulations. These differences can be attributed to the distance between the watershed and the O'Hare meteorological station, and it is common to have significant variations in observed snow measurements within a watershed (AQUA TERRA Consultants and HydroQual, Inc., 2000).

The hydrologic calibration process was greatly facilitated with HSPEXP, an expert system for hydrologic calibration, specifically designed for use with HSPF, developed under contract for the USGS (Lumb, McCammon, and Kittle, 1994). This package gives calibration advice, such as which model parameters to adjust or input to check, based on predetermined rules, and allows the user to interactively modify the HSPF user control input (UCI) files, make model runs, examine statistics, and generate a variety of plots. HSPEXP still has some limitations, such as how much to change a parameter and relative differences among land uses, which required professional modeling experience and judgment.

The statistics computed by HSPEXP include error in total runoff volume, error in the 50-percent lowest flows, error in the 10-percent highest flows, error in the storm peaks, seasonal volume error, and summer storm volume error. The storm events are chosen by the user, and up to 36 storms can be used in figuring the storm error term.

During the hydrologic calibration process, a few parameters were changed from the initial set based upon experience and advice from HSPEXP. These changes include lowered upper zone nominal soils moisture (UZSN), lowered PETMIN (air temperature below which evapotranspiration is set to zero) and PETMAX (air temperature below which evapotranspiration is reduced), lowered interception storage, and adjusted lower zone evapotranspiration parameter (LZETP).

The total runoff volume errors at the three calibration locations are less than 5 percent, which indicates very good agreement. Table 5-2 compares the observed and simulated annual flows, with correlation coefficients.

TABLE 5-2
Hydrologic Calibration Summary

Station Name	Mean Observed Annual Flow (in.)	Mean Simulated Annual Flow (in.)	R^2 Daily	R^2 Monthly
Rolling Meadows	16.3	15.6	0.78	0.85
Elmhurst	21.8	20.9	0.8	0.9
Western Springs	21.4	21.2	0.87	0.93

Most of the calibration statistics computed by HSPEXP indicate a very good calibration. The exception is related to extreme low-flow events at the Rolling Meadow gauge. This statistic is influenced greatly by events where the stream flows are almost 0, where the differences between simulated and observed flows are less than 1 cfs (see Tables B1, B2, and B3 in Appendix B).

The flow duration curves show extremely good agreement (see Figures B2, B3, and B4 in Appendix B). Scatter plots of observed versus simulated flow at the two calibration locations show correlation coefficients of 0.78 to 0.87 for the daily data and 0.85 to 0.93 for the monthly flows (see Figures B5 and B6 in Appendix B).

5.2.6 Salt Creek Hydrologic Validation Summary

To validate the results of the hydrology calibration, HSPF was run for Salt Creek from January 1996 through September 1999. Table 5-3 includes statistical summaries of the calibration and validation results.

TABLE 5-3
Summary of Hydrologic Calibration and Validation - Annual Flow and Correlation Coefficients

	Rolling Meadows	Elmhurst	Western Springs
Calibration Period (1991-1995)			
Mean Observed Annual Flow (in.)	16.3	21.8	21.4
Mean Simulated Annual Flow (in.)	15.6	20.9	21.2
Difference (percent)	-4.3	-4.1	-0.9
R-Squared Daily	0.61	0.64	0.76
R-Squared Monthly	0.72	0.81	0.86
Validation Period (1996-Sept. 1999)			
Mean Observed Annual Flow (in.)	16.3	23.5	23.9
Mean Simulated Annual Flow (in.)	17.1	22.4	22.7
Difference (percent)	4.9	-4.7	-5
R-Squared Daily	0.42	0.56	0.59
R-Squared Monthly	0.45	0.51	0.55

For a hydrology calibration, the percent difference between simulated and observed flows often is used as a measure of the calibration's accuracy. A difference of less than 10 percent is considered a very good calibration, difference of 10 to 15 percent is considered good, and a difference between 15 and 25 percent is considered fair (Donigian, 2000).

Table 5-3 shows differences between simulated and observed flows of less than 5 percent for the calibration, indicating a very good calibration. For the validation period, the differences are in the range of 5 percent, also indicating a very good calibration.

R-squared, or the coefficient of determination, sometimes is used as a statistical measure of the quality of a calibration. When analyzing daily values, an R-squared value of 0.8 to 0.9 is considered very good, 0.7 to 0.8 is considered good, and 0.6 to 0.7 is considered fair. When analyzing monthly values, an R-squared value of 0.85 or higher is considered very good, 0.75 to 0.85 is considered good, and 0.65 to 0.75 is considered fair (A. Donigian, personal communication, 2001).

For the hydrology calibration, the daily R-squared values indicate a range from fair to good, while the monthly values indicate a range from fair to very good. For the validation, the daily R-squared values indicate a range from poor to fair, while the monthly values indicate a range from poor to fair. The poor values tend to be more toward the upper portions of the watershed, which are more influenced by the heavy point-source discharges during low-flow periods.

The validation period included several extreme events, including a rainfall event of more than 9 in. in July 1996. Such extreme events may affect the quality of the validation results. The validation period consists of a shorter time span than the calibration period, which can bias the validation statistics by magnifying the effect of extreme events. Further parameter changes could result in improved results for the validation period.

Since point sources are responsible for a large portion of flow during low-flow periods, the quality of the point-source data is likely leading to error in the calibration and validation. Since the point-source discharge data were provided as monthly values, daily point source discharge variation is not reflected in the simulation, and the effect of this monthly data would be felt the strongest during low-flow periods.

5.2.7 Water Quality Calibration for Chloride

From the water quality data discussion in Section 3.9, stations 05531500 and 0553200 were selected as good sources of long-term water quality data (Figure 3-10). Figure 5-1 shows the water quality calibration of chloride for station 05531500 and Figure 5-2 shows the water quality calibration for chloride at station 05532000.

The primary source of chloride is the road salt applications during winter months. HSPF was selected as the model for simulating snow accumulation, snow melt, and chloride concentrations in runoff. The hydrologic calibration phase included the calibration of the model for snow. The chloride simulation option was added to the hydrologically calibrated model using the general quality modules. The general quality modules simulate surface runoff of chloride using build-up (or accumulation) and washoff functions. A thorough analysis was performed to determine the chloride build-up rates on pervious and impervious land segments in different watersheds.

A GIS coverage of road data was obtained from Environmental Systems Research Institute, Inc. (http://www.esri.com/data/online/tiger/index.html). The data, whose origin was the U.S. Bureau of the Census TIGER/Line® 1995 Data, provided a detailed road network in all the subwatersheds. Miles of roads in each subwatershed were calculated and used as a basis for estimating the amount road salt applied to each subwatershed. The average number of snowfalls and ice storm, and the monthly distribution were estimated using historic precipitation and air temperature data. On an average, 14 snowfall events occurred in the area (consecutive days of snowfall was treated as one event). Distribution of snowfall events by month is provided in Table 5-4. It was assumed that 5.6 tons of salt were applied to every mile (3.5 tons/kilometer) of road-lane. This rate is consistent with road salt application rates found in literature for other major cities (Novotny et al., 1999) in the region. Daily accumulation rates were calculated based on the acres of pervious and impervious expressways; transportation land use (TCU) excluding interstates, residential, commercial, industrial and institutional land uses in each subwatershed; and the average number of snowfall events per month. The average concentration of chloride in groundwater wells in the Salt Creek watershed was 51.27 mg/L. Six groundwater quality samples were collected between 1993 and 1998 that included chloride measurements. The average groundwater concentration was incorporated in the model to account for the background concentration.

TABLE 5-4
Distribution of Snowfall Events per Month

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
No. of events	3.87	3.27	2.07	0.53	0.07	0.00	0.00	0.00	0.00	0.07	1.33	2.87

FIGURE 5-1
Water Quality Calibration of Chloride at the Salt Creek Site (station 05531500)

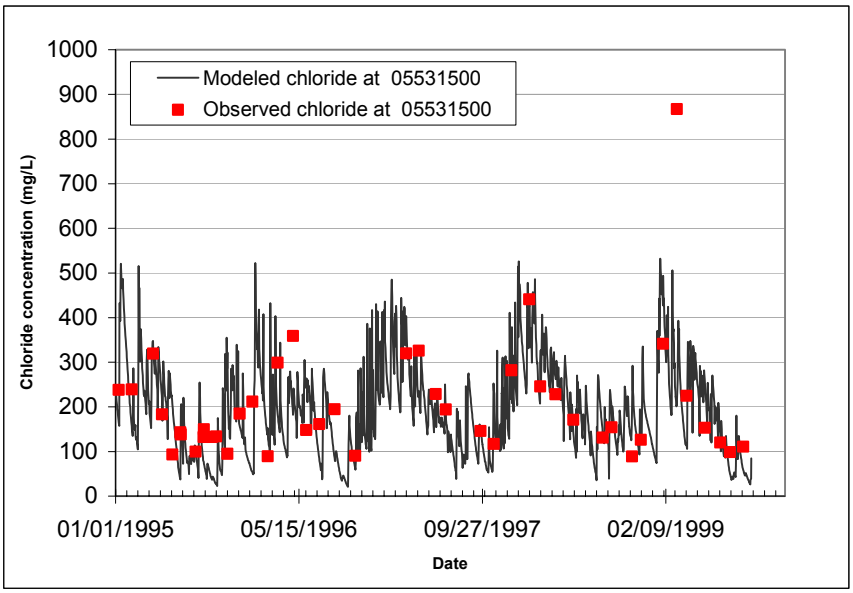
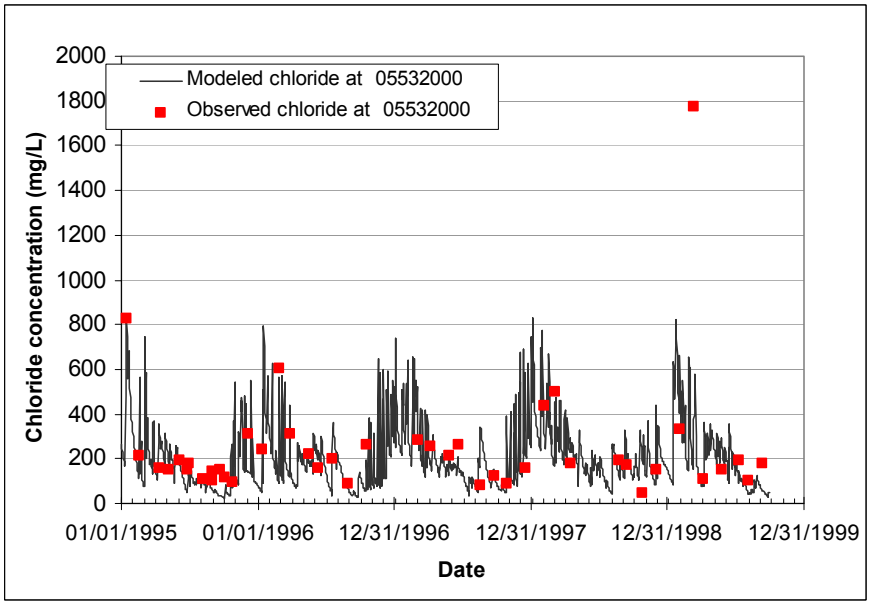


FIGURE 5-2
Water Quality Calibration of Chloride at the Addison Creek Site (station 05532000)



Model calibration results are shown in Figures 5-1 and 5-2 at the Salt Creek (05531500) and Addison Creek (05532000) water quality stations. The model successfully simulated chloride concentrations over a long period (1995 to 1999) and captured the variability of chloride concentrations in different seasons of the year. The model is considered adequately calibrated for developing TMDL allocation for chloride.

5.3 Modeling Dissolved Oxygen Using QUAL2E

This section analyzes the water quality problems associated with low flow conditions in order to develop the DO TMDL for the Salt Creek watershed. The QUAL2E model (Melching and Chang, 1996) was used to simulate DO, BOD, nutrients, and algae under steady-state and dynamic conditions.

The Salt Creek QUAL2E model developed by the USGS (1996) was used as the initial model and was further enhanced to include diurnal simulation option for the DO TMDL development. Salt Creek, as represented in the model, began immediately downstream of the Busse Woods Lake. A detailed description of the model setup was provided in *Simulation of Water Quality for Salt Creek in Northeastern Illinois* by USGS (1996). A list of all the point sources in the Salt Creek watershed is provided in Section 3.6 of this document. However, ten point source dischargers were incorporated in the QUAL2E model due to the quantity and type of effluent that may impact stream DO. The Villa Park Wet Weather Sewage Treatment Plant (STP) and the Roselle STP were not considered in the model. The Villa Park Wet Weather STP was excluded from the model assuming that it discharges only under wet weather condition. The QUAL2E model was setup for modeling DO under dry weather condition. Roselle STP is the most upstream point source discharger on Spring Brook. Lake Kadijah, situated between river miles 2.8 and 3.2 (upstream from the confluence of Spring Brook and Salt Creek) on Spring Brook, has a large storage capacity relative to low flows on Spring Brook (Melching and Chang, 1996). Because of the long residence time of the point source discharge in the lake, pollutant concentrations at the outlet of the lake may not be strongly related to the effluent concentrations from Roselle STP. Therefore, the outlet of Lake Kadijah at river mile 2.7 (Rohwling Road) defined the upstream boundary of Spring Brook. Locations of these point sources are shown in Figure 5-3 and their distances above the confluence with the Des Plaines River are listed in Table 5-5. The MWRDGC Egan Water Reclamation Plant (WRP) is the largest discharger in the watershed, constituting about 50 percent of the total point source discharge to the main stem of the Salt Creek. Also, according to the IEPA Regional Office in Des Plaines, there are eight CSOs in Bellwood that discharge into Addison Creek located between the Eisenhower Expressway and Adams Street (Berwyn and River Forest Quads). There are 19 CSOs that discharge into Salt Creek located in Addison (2), Villa Park (5), Western Springs (2), La Grange Park (3), and Brookfield (7). There are 13 SSOs located in Villa Park (1) and Elmhurst (12). Based on this description, an approximate map of the CSO outfall locations was prepared (Figure 5-4). During Model Calibration, using June 27, 1995 data, Melching and Chang (1996) assumed that the St. Charles Road CSO was flowing. The discharge from the CSO was assumed to contain BOD concentration of 444 mg/L. Therefore, the St. Charles Road CSO was explicitly considered as a point source in the model. Since then, the St. Charles Road CSO problem was fixed and no flow during dry weather conditions occurs.

The model also included three dams. Dams affect the DO concentration upstream of the dam due to the presence of the pool and the DO concentration downstream of the dam through reaeration at the outlet.

Extensive field data were collected on June 27 and 28 and August 28 and 29, 1995, that supported the modeling effort. The data included temperature, pH, conductivity and instream concentrations of DO, $CBOD_5$, ammonia, nitrate and nitrite, organic nitrogen, organic phosphorus, and DP. Additionally, flow and pollutant concentrations in point source effluents were determined to develop the model input. During each sampling day, four sets of data were collected from each site. These data sets represented evenly distributed time intervals (8:00 a.m. to 2:00 p.m., 2:00 p.m. to 8:00 p.m., 8:00 p.m. to 2:00 a.m., and 2:00 a.m. to 8:00 a.m.) over a 24-hour period. During each of these 4-hour periods, two sets of temperature, dissolved oxygen, and pH measurements were collected. Two sets of chlorophyll *a* samples were collected between 8:00 a.m. and 8:00 p.m. on June 27, 1995.

FIGURE 5-3
Location of Point Source Discharges in the Salt Creek Watershed

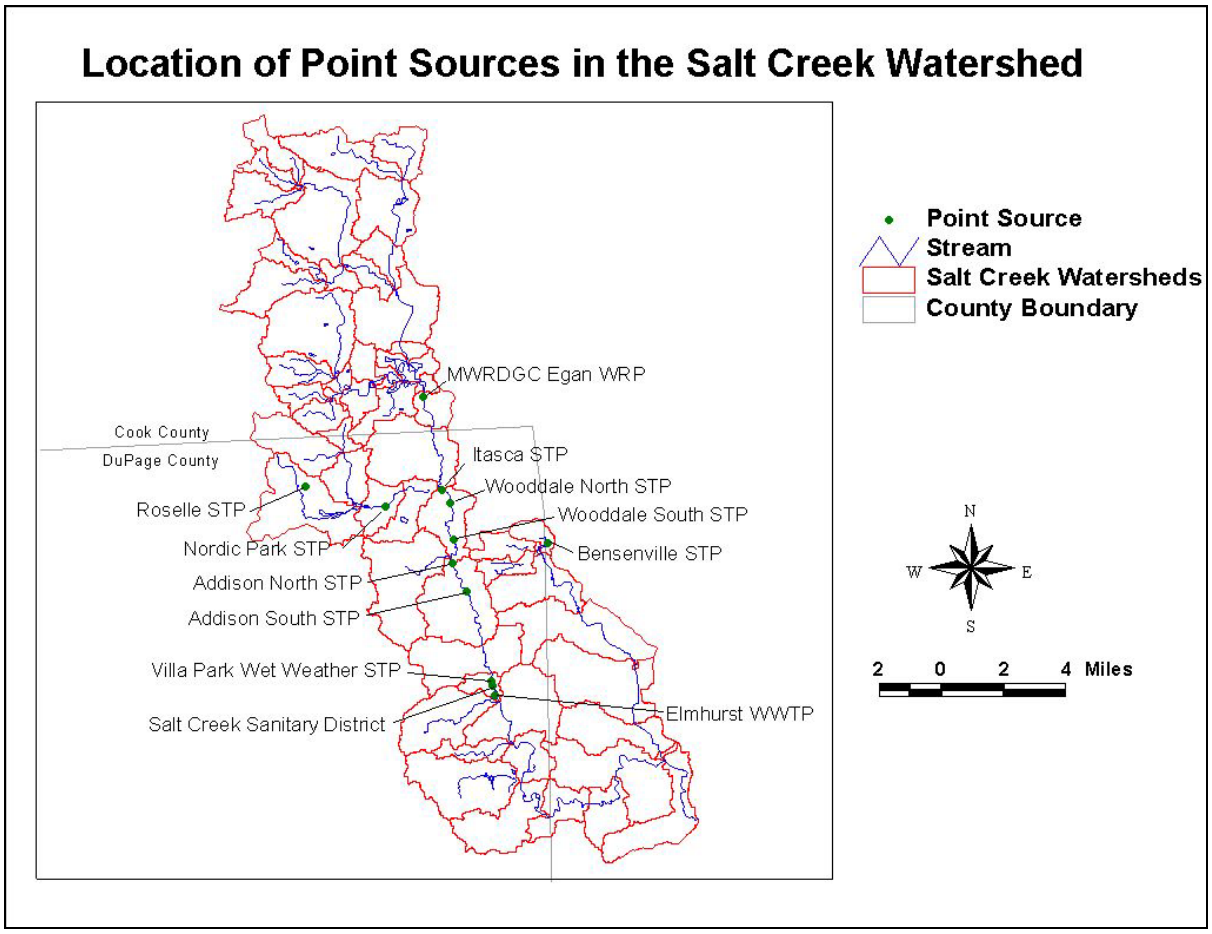


TABLE 5-5
Location of STP Outfalls, CSO Outfalls, and Dams in the Salt Creek Watershed

Name	Feature	Mile Point[a]
MWRD Egan STP	Point Source, Salt Creek	31.7
Itasca STP Salt Creek	Point Source, Spring Brook	0.1
Wood Dale North STP	Point Source, Salt Creek	27.7
Wood Dale South STP	Point Source, Salt Creek	26
Addison North STP	Point Source, Salt Creek	25
Addison South STP	Point Source, Salt Creek	23.3
Salt Creek SD STP	Point Source, Salt Creek	20
Elmhurst STP	Point Source, Salt Creek	19.7
DC Nordic Park STP	Point Source, Spring Brook	2.5
Bensenville South STP	Point Source, Addison Creek	10.3
Addison CSO	CSO, Salt Creek	23.5
St. Charles Road CSO	CSO, Salt Creek	19.9
Western Springs CSO	CSO, Salt Creek	8.8
Lagrange Park CSO	CSO, Salt Creek	4.6
Brookfield CSO	CSO, Salt Creek	2
Bellwood CSO	CSO, Addison Creek	--
Dam	Dam, Salt Creek	25.2
Dam	Dam, Salt Creek	13.5
Dam	Dam, Salt Creek	11.6

Mile points are measured from the confluence of Salt Creek and Des Plaines River except for Itasca STP, DC Nordic Park STP and Bensenville South STP. Mile points for Itasca STP and DC Nordic Park STP are measured from the confluence of Spring Brook with Salt Creek. Mile point for Bensenville South STP is measured from the confluence of Addison Creek with Salt Creek.

FIGURE 5-4
Location of CSO Outfalls in the Salt Creek Watershed

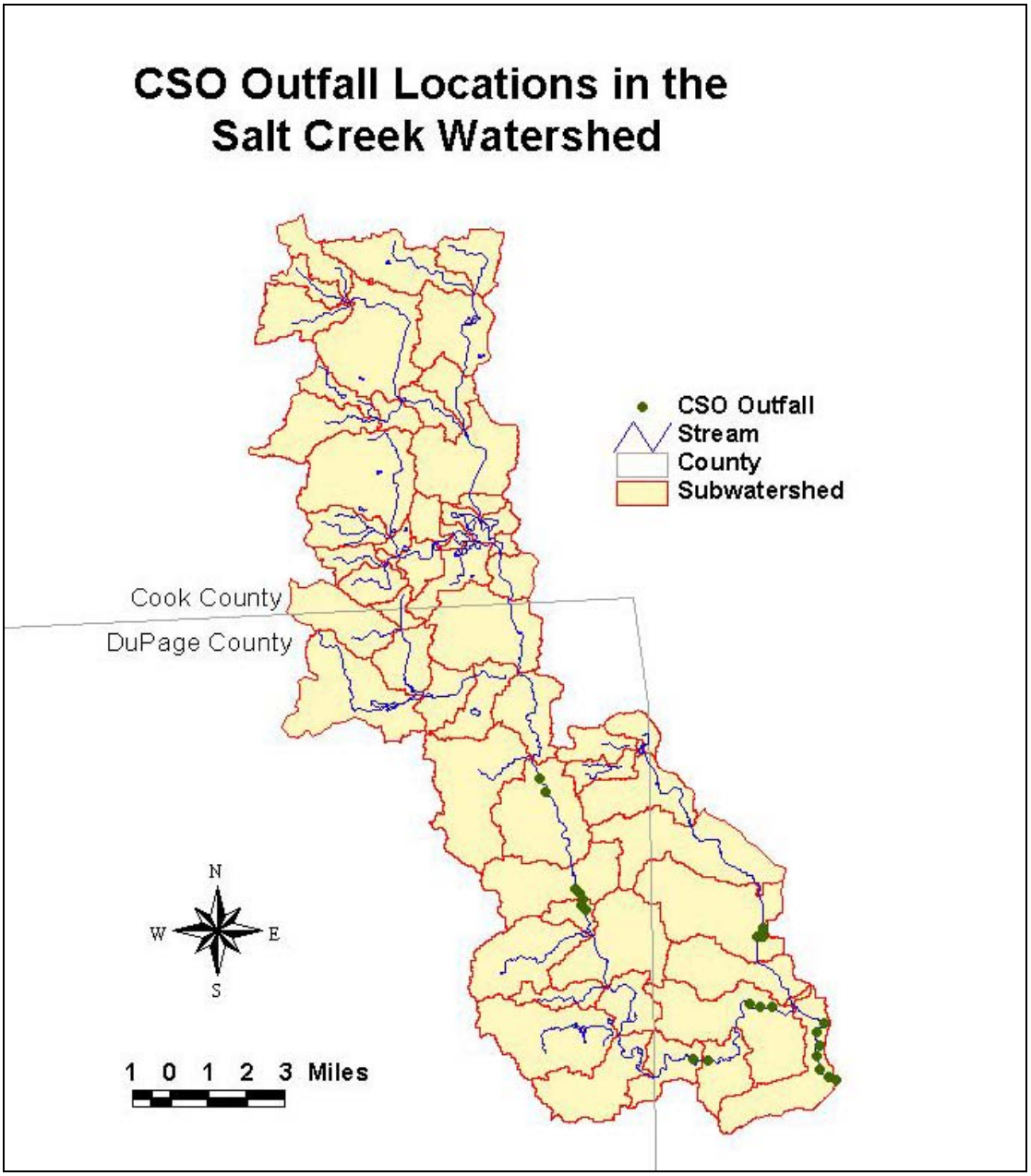


FIGURE 5-5
Observed and Modeled Dissolved Oxygen Concentrations at Different Locations in Salt Creek (June 27 and 28, 1995)

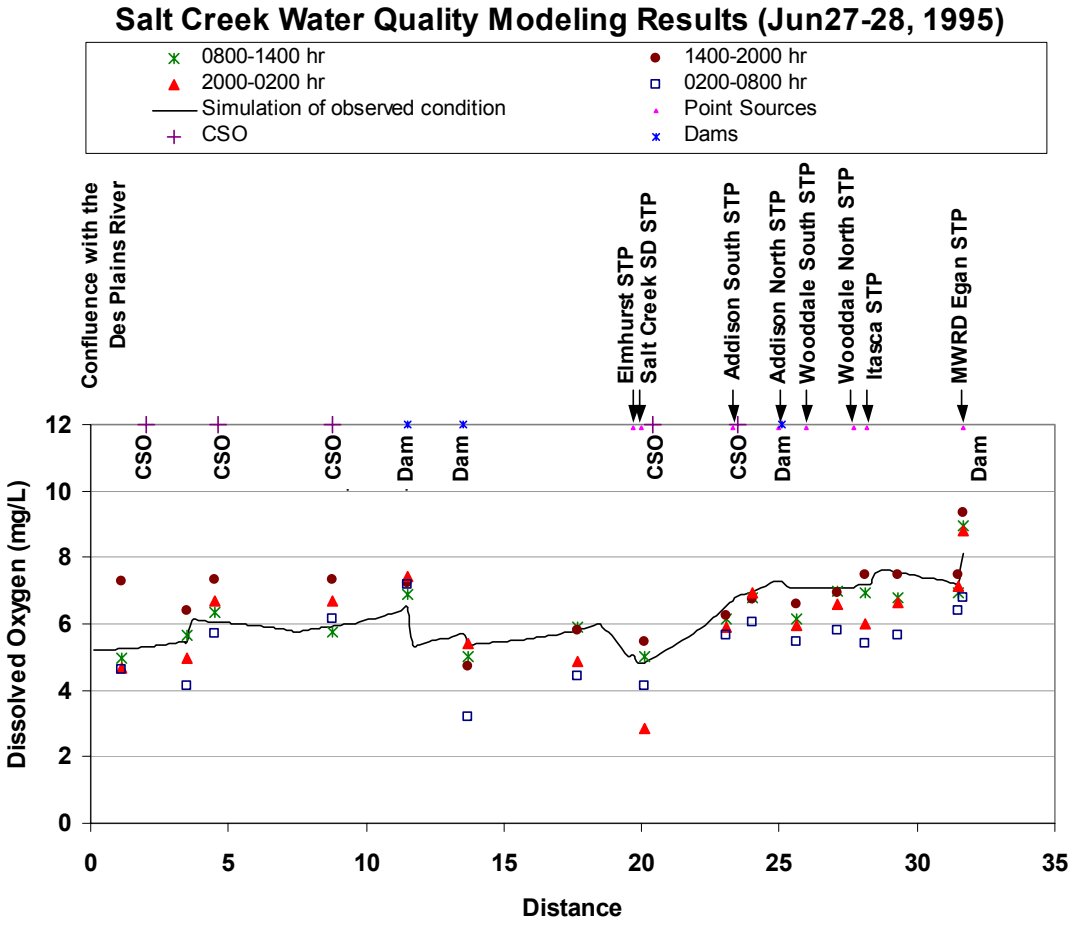


Figure 5-5 shows the observed DO concentrations at each sampling time interval as points and the simulated DO concentration as a solid line. The simulated DO concentrations were based on the steady-state modeling originally done by the USGS (1996). The horizontal axis in the plot shows the distance upstream from the confluence of Salt Creek with the Des Plaines River. A set of points at a given distance represents the observed concentrations at different times of the day. Location of the point sources, dams, and CSOs are shown along the top horizontal axis.

The DO concentrations (Figure 5-5) violated the WQS (5 mg/L minimum) at 1.1 to 4.5 miles and 11.5 to 23.1 miles. The DO concentrations between 11.5 to 23.1 miles were less than 6 mg/L in all samples, indicating a potential violation of the 16-hour average DO standard of 6 mg/L. Low DO concentrations (the minimum observed DO concentration of 2.84 mg/L at 20.1 miles) in nighttime samples are attributable to high BOD and low DO concentrations in point source and/or St. Charles Road CSOs discharges which was assumed to be flowing on June 27-28, 1995. However, it should be noted that since then the St. Charles Road CSO problem was fixed and no flow during dry weather conditions has occurred. The discharge from the CSO contained high BOD concentrations (e.g., 444 mg/L of CBOD).

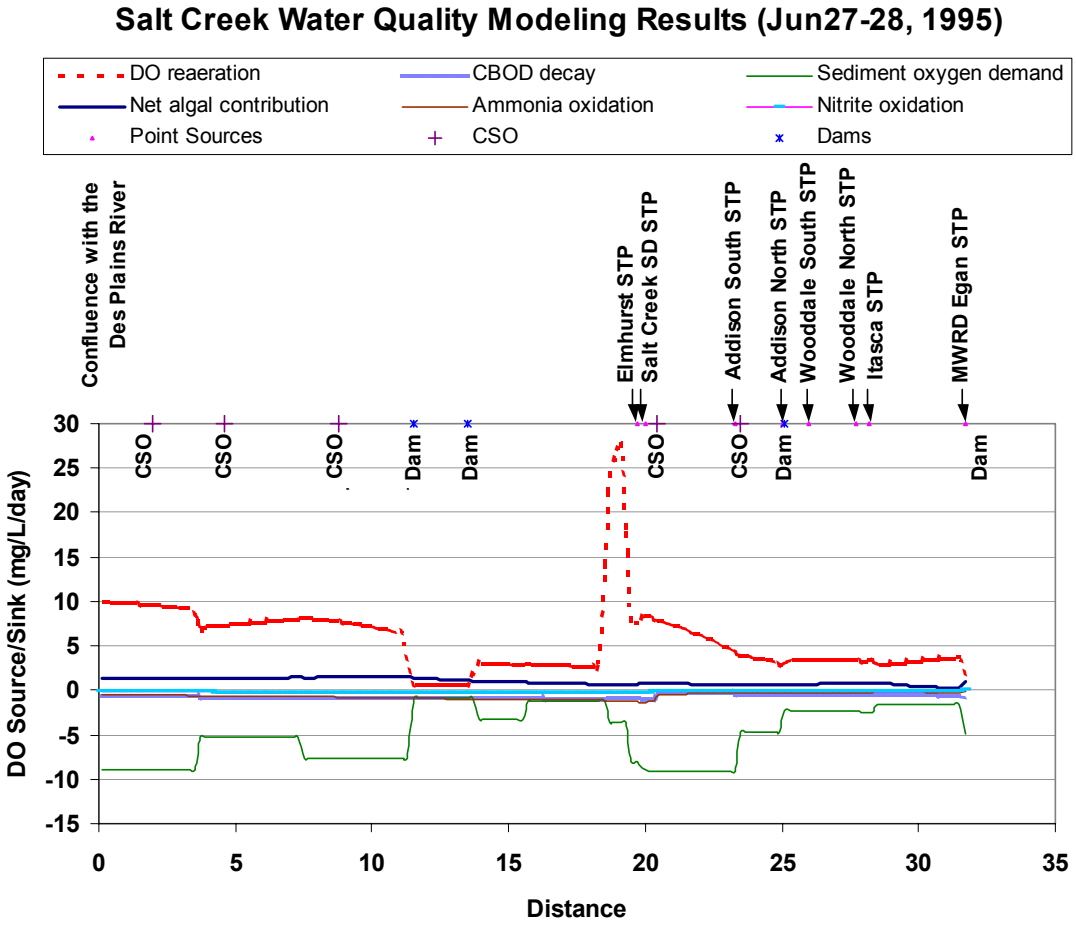
Various components of the DO mass balance (i.e., CBOD decay, exertion of sediment oxygen demand (SOD), nitrification, net algal contribution due to respiration and photosynthesis, and reaeration) were analyzed using the model results. Relative contributions and magnitudes of DO mass balance components were plotted in Figure 5-6 to determine the primary causes of DO sag at different locations and find the best remediation measures. The most important source of DO was the reaeration, and the most important sink was the SOD. The minimum reaeration rate (0.45 to 0.69 mg/L-day) was modeled at locations just upstream of the Fullersburg Dam (river miles 11.5 and 13.5) due to slow moving water. Also reaeration was relatively low (2.52 to 2.91 mg/L-day) between river miles 15. 6 and 18.6 due to an extremely flat bed slope (0.004 percent).The maximum reaeration rate (24.51 to 27.57 mg/L-day) was modeled between river miles 18.6 and 19.2 due to a relatively steep bed slope (0.15 percent).

SOD is caused by oxidation of organic material deposited in the streambed. Butts and Evans (1978) define SOD as "the usage of dissolved oxygen in the overlying water by benthic organisms. These benthic organisms include bacteria, brown algae, protozoa, fungi, periphyton, filamentous algae, and macroinvertebrates. Inorganic chemical oxidation reactions can exist in stream bottoms, but the extent and magnitude of their occurrence are minor compared to biological demands." Discharge of high BOD and solids from point and nonpoint sources, such as pets and water fowl, leaking septic tanks and CSO overflows, may result in high SOD. In Salt Creek and Addison Creek, high SOD values were found near the CSO discharges in all locations and SOD varied substantially from one location to another. High SOD was found through model calibration between river miles 19.5 and 23.3, immediately downstream of Addison North and South STPs, the Addison CSO outfall, and the St. Charles Road CSO outfall. The St. Charles Road CSO was found to discharge high concentrations of CBOD (e.g., 444 mg/L) under dry weather conditions. The flow rate from the St. Charles Road CSO was 0.51 cfs (Melching and Chang, 1996). High SOD values in the reaches between river miles 3.7 to 11.1 also may be attributed to CSO sources including the Western Spring and Lagrange Park CSOs. The Brookfield CSO and the Addison Creek discharge might have caused high SOD between river miles 0 to 3.7. There is no point source discharge outfall at this location.

Under dry weather flow and low flow conditions (smaller than design storm for the CSO) a CSO should not discharge untreated wastewater as the waste water treatment plant should have capacity for treatment of all flow in the CSO. CSO discharges are likely to have more impact under dry weather conditions or small storms than the large storms. Stream flows during a small storm and dry weather conditions do not have ample carrying capacity to transport particulate matter too far from the discharge location. Settled particulate matter with high BOD content increases SOD in the reach. Because of the untreated nature of the waste, the BOD concentrations in CSO discharges is higher than the concentrations found in the treated point source effluents. Therefore, particulate matter settling near the CSO outfall causes SOD to be even higher than that caused by the particulate matter settling near the point source discharge outlet. Once the discharge of BOD and settleable solids from the CSOs is reduced, SOD will gradually return to natural background levels through oxidation and burial of existing sediment. According to Bowie et al. (1985), average background SOD levels for mineral soil and sandy bottom are 0.07 g O_2/m^2-day and 0.5 g-O_2/m^2-day (0.0065 to 0.0465 g-O_2/ft^2-day), respectively.

Overall, the DO problem in Salt Creek and Addison Creek is attributed to SOD build-up near the CSO outfalls. As shown in Figure 5-6, SOD near the CSO outfalls are larger than the reaches receiving point source discharges.

FIGURE 5-6
Components of the DO Mass Balance Based on the Model Results for June 27 and 28, 1995



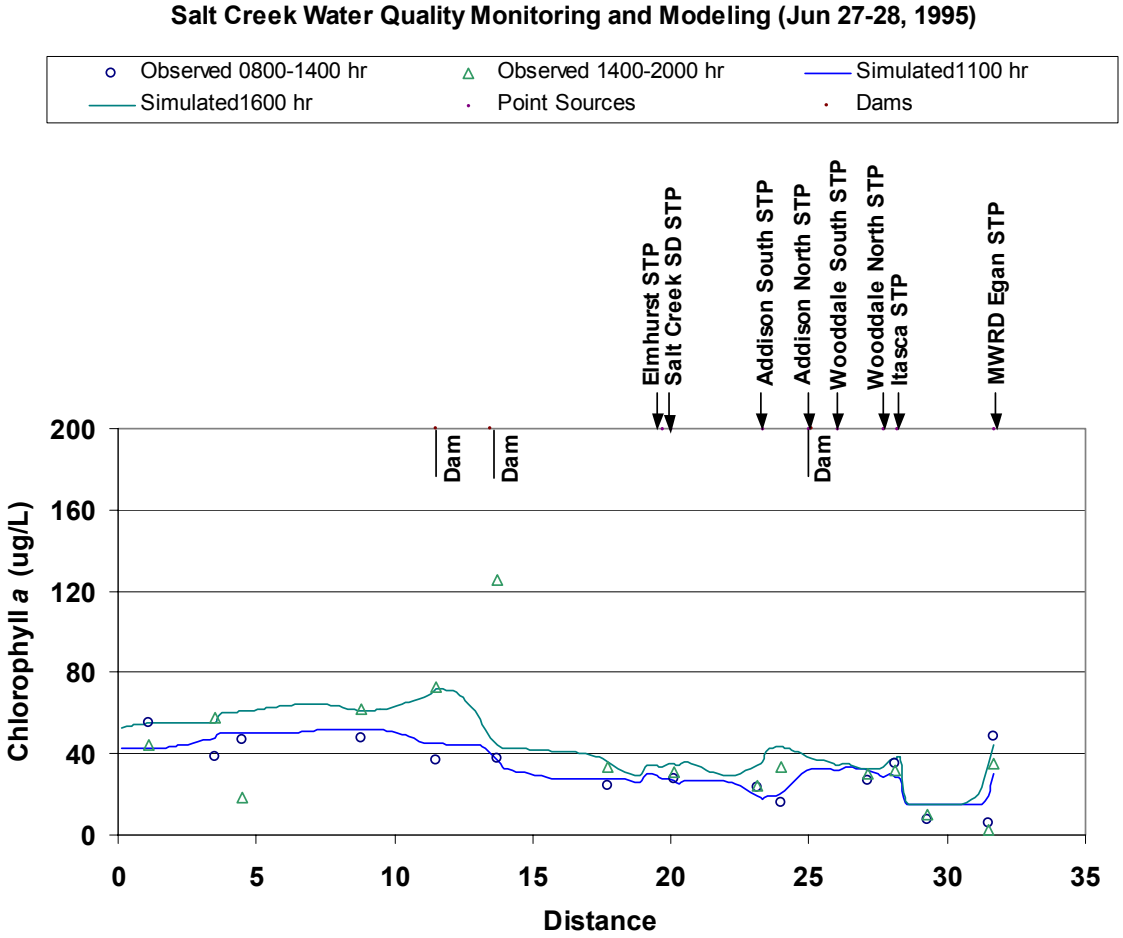
5.3.1 Diurnal Variation of Dissolved Oxygen Due to Algal Respiration and Photosynthesis

The QUAL2E model can also simulate diurnal variations of nutrients, chlorophyll *a,* and DO using a dynamic algae simulation option. However, QUAL2E does not allow time-varying input of flow and pollutant loads. The model assumes flow and input concentrations remain unchanged while the instream concentrations of water quality constituents change due to the impact of time-varying meteorological conditions (e.g., solar radiation, temperature, etc.) on kinetic processes. The original steady-state model developed by USGS was modified to include the diurnal simulation. Although there was an increase in streamflow during the 24-hour sampling period on June 27 and 28, 1995, the diurnal simulation results were plotted and compared with observed data to determine the potential ranges of the DO and the chlorophyll *a* concentrations. The comparison between the observed and the simulated

concentrations should be carefully assessed because the steady-state assumption was not perfectly valid due to the increase in stream flow.

The diel sampling data from June 27, 1995, included two sets of chlorophyll *a* measurements—one during the 8:00 a.m. to 2:00 p.m. sampling and another during the 2:00 p.m. to 8:00 p.m. sampling. These data are plotted in Figure 5-7. The original steady-state USGS model was enhanced to include diurnal simulation of algae, nutrients, and DO. The observed data are shown as points, and the modeled chlorophyll *a* concentrations are shown as lines. Modeled chlorophyll *a* concentrations at 11:00 a.m. governed the initial conditions in the stream. The initial condition in the model was defined based on the observed data collected during the first sampling interval. The modeled chlorophyll *a* concentrations at 4:00 p.m. increased due to algal growth under the ambient conditions on June 27, 1995. The chlorophyll *a* concentration in Salt Creek is generally less than 40 µg/L at locations upstream of 17.7 miles and increases substantially between river miles 11.6 and 17.7. Slow moving water just upstream of the two dams at 11.6 and 13.5 miles might have caused this increase of chlorophyll *a* concentrations.

FIGURE 5-7
Observed and Simulated Chlorophyll *a* Concentrations in Salt Creek

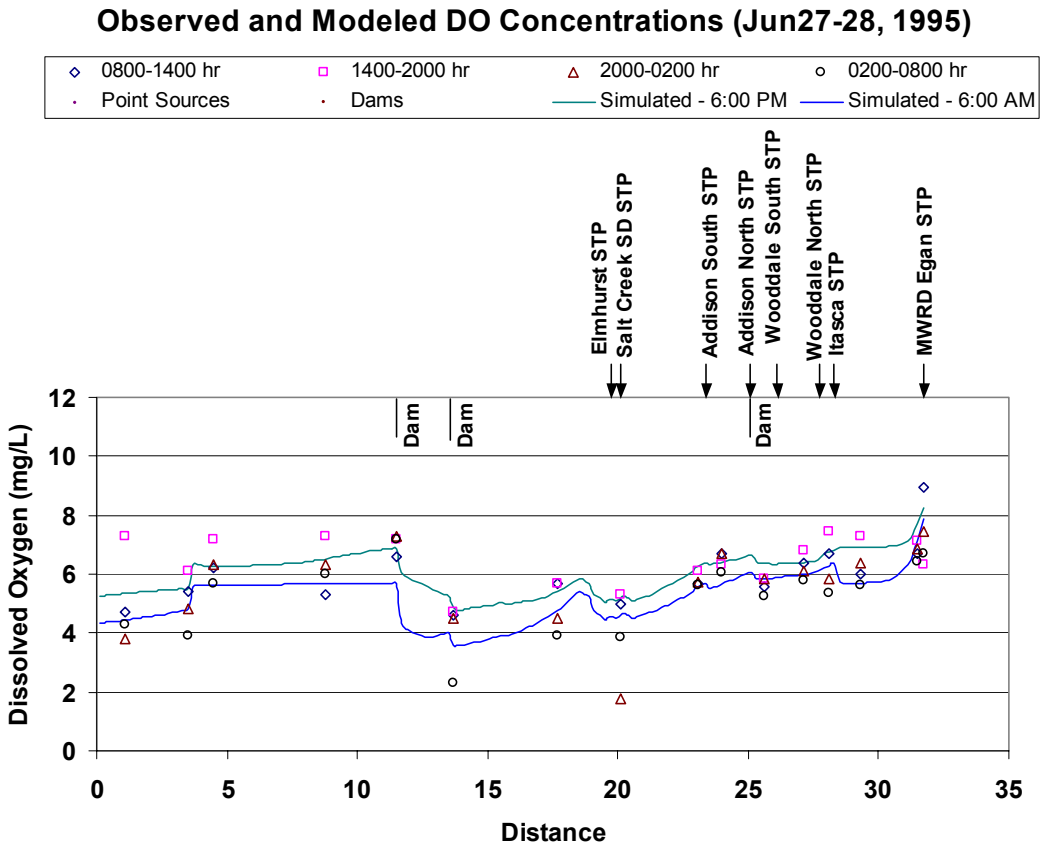


A healthy stream requires algae to provide food for the aquatic life. However, algal growth that severely depletes night-time DO concentrations can be problematic for aquatic life. Algae produces oxygen in the photosynthesis process in the presence of light and contributes to the DO pool. Algae also uptakes DO during respiration. During the day light hours, the algal production of DO exceeds the consumption and the net contribution gradually increases the instream DO concentration. The instream DO concentration reaches the maximum in the afternoon. At night, the DO uptake for respiration reduces DO concentration in water reaching the minimum in the early morning. The State of Illinois has no water quality criteria for chlorophyll *a*. However, for lakes, the state has developed a trophic status ranking to indicate how productive an impoundment is. They have defined these values as oligotrophic (<2.5 µg/L), mesotrophic (2.5-7.5 µg/L), eutrophic (7.5-55 µg/L), and hypereutrophic (≥ 55 µg/L) (IEPA, 1996).

In absence of any ambient WQS for chlorophyll *a* (the surrogate measure for algae), the impact of algae on DO was evaluated to determine if there was any need for nutrient control in order to reduce algae concentrations. Figure 5-8 shows the observed and the modeled DO concentrations at different locations and throughout the day. Modeled diurnal DO concentrations matched the general pattern of observed data. However, the extent of simulated DO variation is smaller than the range of observed data between 0.0 to 20.1 miles. This difference might have been caused by the limitation of the steady flow assumption in the stream. Observed data suggested that there was an increase in flow. For example, the average daily flow in Salt Creek at station 05531500 was 50 cfs on June 26, 62 cfs on June 27, 79 cfs on June 28, and 90 cfs on June 29. The flows in Addison Creek at station 05532000 were 2.7 cfs on June 26, 14 cfs on June 27, 15 cfs on June 28, and 7.8 cfs on June 29. Potential BOD load from urban runoff and CSOs might have contributed to the low DO concentration. Also, the model is not capable of simulating macrophytes and attached algae. Therefore from the available data and model, it cannot be concluded that algae are a cause of the observed low DO concentrations. In order for an accurate analysis of the role of the algae (and underlying nutrient concentrations) in DO balance in this system, the obvious cause of DO depletion, CSOs and SOD, would have to be removed.

Consequently, any DO variation due to the presence of macrophytes and attached algae is not reflected in the model results. Therefore, the model, even after good calibration for chlorophyll *a*, is not capable of simulating the full extent of the diurnal variation of DO.

FIGURE 5-8
The Observed and the Modeled Diurnal Variation of Dissolved Oxygen



SECTION 6

TMDL Allocation

6.1 Approach and Methodology

TMDLs are the sum of the individual waste load allocations (WLAs) for point sources, load allocations (Las) for both nonpoint sources and natural background, and a margin of safety (MOS). This definition is denoted by the following equation:

$$TMDL = \Sigma WLAs + \Sigma LAs + MOS$$

Development of a TMDL is an iterative process that involves modeling and generation of allocation scenarios that meet water quality targets. The Salt Creek TMDLs were developed using the calibrated models presented in Section 5. Each scenario was carefully evaluated and the TMDLs are presented in the following sections. Seasonal variability of pollutant concentrations and flow were considered explicitly in the model through continuous simulation and time varying input variables or through determination of critical condition, as discussed in Section 5. For the chloride TMDL, pollutant concentrations and flow were considered explicitly in the continuous HSPF model while for the DO TMDL seasonal variability was addressed by determining the critical season based on data analyses and applying the QUAL2E model to that season. Separate TMDLs were developed using approaches appropriate for the listed pollutants. The following sections present the TMDLs for each cause of impairment.

Section 303(d) of the CWA requires TMDLs to include "a margin of safety which takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality." There are two methods for incorporating the MOS (USEPA, 1991):

- Implicitly incorporate the MOS using conservative model assumptions to develop allocations
- Explicitly specify a portion of the total TMDL as the MOS; use the remainder for allocations

An implicit MOS was used in the development of the TMDLs presented in this report and discussed further in the following sections. Sections 6.3, 6.4, and 6.5 explain the development of TMDL allocations for chloride (and conductivity/TDS), and dissolved oxygen, respectively.

6.2 Future Growth

Future growth may have an impact on TMDL allocation scenarios in two ways:

- Modified point source loads
- Modified nonpoint source loads

A change in point source loads may occur due to an increase (or decrease when there is a declining population) in population densities in existing clusters or development of new clusters. The summer low flow condition was found to be the critical condition for the DO impairment. Therefore, point source contribution has the most significant impact on in-

stream DO concentration and a change of population served by the point sources will affect the point source discharge. An analysis of projected population data shows that the population of DuPage County and Cook County will increase by 26 percent and 10 percent, respectively, from 1990 to 2020. Since the Salt Creek watershed is located in both DuPage and Cook Counties, an average population growth (i.e., 18 percent) was used to determine the increase in point source effluent. A model run with increased point source discharge actually shows slightly improved instream DO concentrations. Increase of instream DO due to flow augmentation offsets the DO reduction by increased pollutant loads and increases the minimum DO from 6.09 mg/L to 6.30 mg/L for the allocation run.

Future growth will also affect nonpoint source pollution by changing land-use coverage in the watersheds. For example, agricultural areas converted to residential land will have an impact on water quality in the impaired segments. The chloride and conductivity TMDL allocations require consideration of land-use changes, especially conversion to roads. Increased chloride load due to future growth in the watersheds was estimated assuming that all agricultural areas in the existing GIS coverage of land use would be converted to residential areas. Using GIS data of current road density it was estimated that up to 12 miles of new roads might be constructed in the process of land-use change. The new land-use data was incorporated in developing the TMDL allocation for chloride.

6.3 Conductivity/Total Dissolved Solids and Chloride

The chloride TMDL addresses issues involving the conductivity/TDS and the chloride exceedances in the Salt Creek watershed. A strong correlation was found between conductivity and chloride (Section 4.3). Road salt application for deicing contributes chloride loads to surface waters. All the chloride standard exceedances occurred during winter months. The HSPF model was used to simulate the chloride load from the watershed and to develop TMDL allocation scenarios. The model setup and calibration procedures are described in Section 5.2.7. The calibrated model was used to estimate the annual chloride load under existing conditions.

6.3.1 Critical Condition

Section 303(d) of the CWA and the USEPA's regulations at 40 CFR 130.7 require the consideration of seasonal variation of conditions affecting the constituent of concern and the inclusion of a MOS in the development of a TMDL. For the Salt Creek chloride TMDL, long-term monitoring data and continuous modeling results were used to determine seasonal variation of chloride concentration. The TMDL was developed based on the critical conditions in the winter months and the general-use chloride standard of 500 mg/L. Runoff and interflow generated from precipitation and snowmelt are the primary modes of transport of chloride from land surface to water bodies. A reasonable approach for TMDL allocation calculations requires selecting a year with average streamflow (not a dry or wet year) for modeling. Annual streamflow data between 1991 and 1998 were compared to determine an average flow year to avoid using an extreme wet or dry year. Stream flows in 1996 and 1997 were representative of average flow conditions. A 3-year period between January 1, 1996, and December 31, 1998, which included average flow conditions, was selected for TMDL scenario development.

6.3.2 Margin of Safety

An implicit MOS was incorporated in data analysis, modeling, and calculation of the TMDL allocations. Continuous modeling of hydrology and water quality provided in-stream chloride concentrations that allowed direct comparison of model results with observed data and seasonal variation of chloride concentrations. Direct comparison of model results with observed data show the ability of the model to simulate seasonal variability and the extent of violation of the chloride standard under different scenarios. Hydrologic modeling included continuous snow simulation providing runoff from snowmelt. The snow simulation capability was critical in determining the chloride load generated from road salt application for deicing. Three years of chloride data and three years of model output in the development of the TMDL provided a conservative approach for TMDL load calculations by ensuring a lower possibility of violation of the WQS. For example, if the 1997 data were used for TMDL allocation, Figure 6-1 and 6-2 suggest that a smaller reduction in TMDL allocation would be required to meet the WQS. Use of 5 years of data for model calibration and 3 years of data for TMDL allocation development required a larger reduction in chloride applications. Additionally, a background chloride concentration was incorporated in the model by specifying shallow groundwater concentrations based on observed data from groundwater wells in the surrounding areas. These conservative assumptions and approaches used in developing the TMDL constituted the implicit MOS.

FIGURE 6-1
Modeled Chloride Concentrations at the Salt Creek Station GL 09 for the TMDL Allocation Scenario

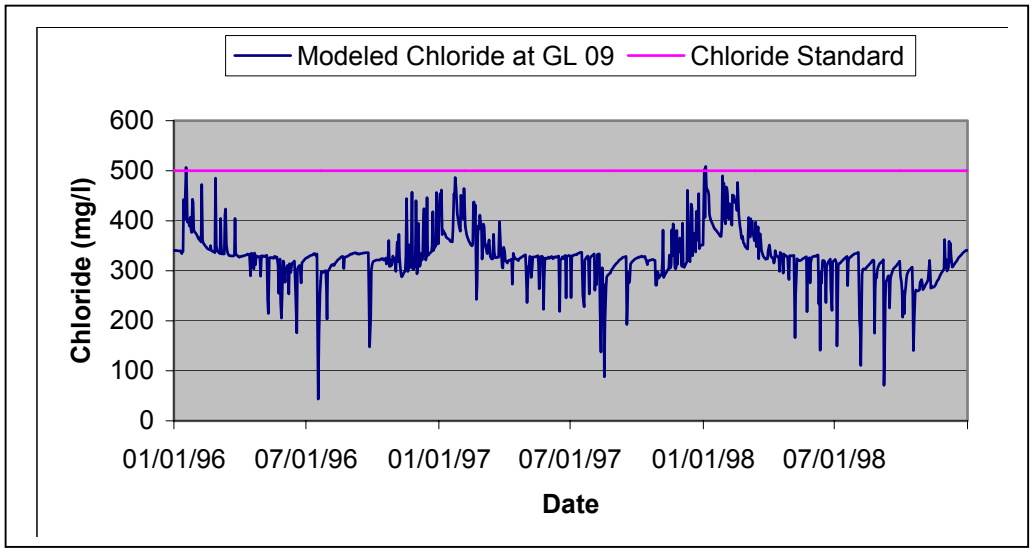
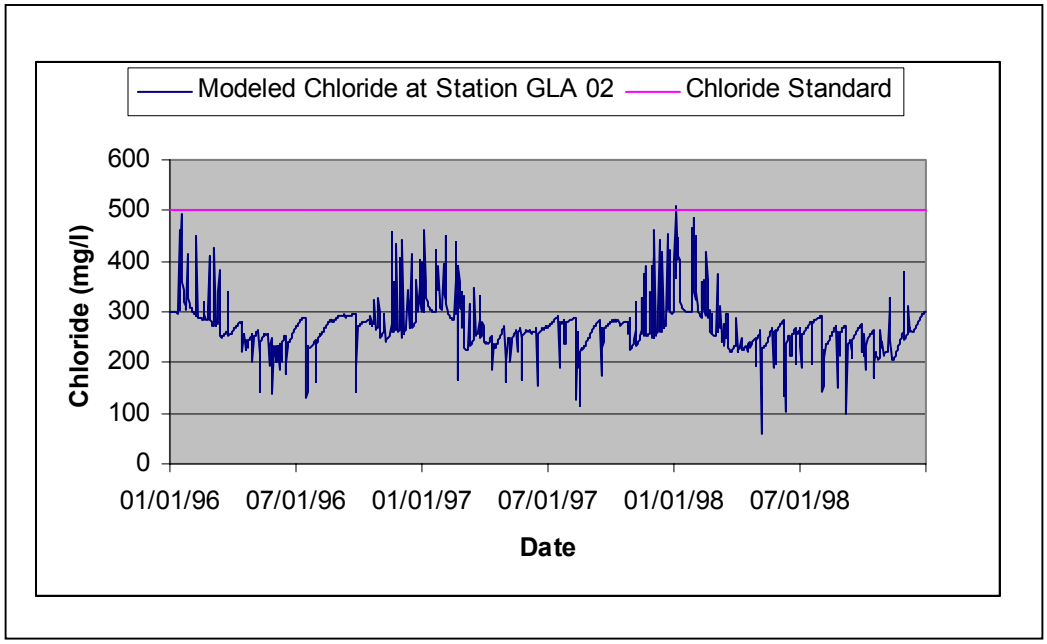


FIGURE 6-2
Modeled Chloride Concentrations at the Addison Creek Station GLA 02 for the TMDL Allocation Scenario



6.3.3 Chloride Exceedances

The WQS is expressed as a concentration of chloride (500 mg/L). The HSPF model was set up to output total load and daily average concentration of chloride. The model was run iteratively to determine percentage reductions in nonpoint source chloride contribution that would result in reasonable point source allocations. An 8 percent reduction in nonpoint source chloride was chosen in Salt Creek and a 41 percent reduction was chosen in Addison Creek. The number of exceedances over the 3-year critical condition period used for TMDL development (1996-1998) was determined. Table 6-1 summarizes this information for various point source discharge concentrations.

TABLE 6-1
Chloride Exceedance Summary by Point Source Discharge Concentration 1996-1998 for 8 Percent Nonpoint Source Reduction in Salt Creek and 41 Percent Reduction in Addison Creek; Point Sources Input at Permitted Design Flow

	100 mg/L	300 mg/L	400 mg/L	500 mg/L
No. Predicted Model Exceedances at 05531500 (Salt Creek Segment 13)	2	3	16	283
No. Predicted Model Exceedances at 05532000 (Addison Creek Segment 4)	0	1	11	26
Percent Exceedances at 05531500 (Salt Creek Segment 13)	0.18%	0.27%	1.46%	25.82%
Percent Exceedances at 05532000 (Addison Creek Segment 4)	0	0.09%	1.00%	2.37%

The Table 6-1 illustrates that even at point source concentrations of 100 mg/L, there are some exceedances of the chloride standard in Salt Creek. Per IEPA, there is point source data available for 11 MWWTPs from 1995. The effluent data ranged from 107 mg/L to 468 mg/L (Eicken, 2003). Thus, an effluent concentration of 100 mg/L may be unreasonable, and additional model runs were performed. There is only one additional exceedance at a point source concentration of 300 mg/L. Based on the analysis summarized in Table 6-1, a WLA based on effluent concentrations of 300 mg/L were applied to the TMDL. Further information is provided in the Point Source Load section (6.3.4.2) below.

6.3.4 Chloride Allocations

The TMDL process requires that the allowable load be allocated among point and nonpoint sources. A review of the available data and modeling results indicates that the chloride exceedances of 500 mg/L or more occur during the deicing season. The primary contributor to the exceedances is application of road salt for snow and ice control purposes.

As stated above, the model was run iteratively to determine an allocation scenario that meets the chloride standard at nearly all times. Figures 6-1 and 6-2 respectively show the allocation results for station 05531500 in Salt Creek and 05532000 in Addison Creek. The chloride standard is included in the plots to easily compare the modeled chloride concentrations with the standard. Since salt application for deicing is the major source of chloride leading to standard exceedance, the chloride TMDL indicates the need for salt application chloride reduction.

6.3.4.1 Nonpoint Source Load

The chloride TMDL describes load allocations (LAs; i.e., NPS allocations) as being applicable to stormwater sources of chloride, such as road salting activities. However, due to regulatory approaches, stormwater in municipal separate storm sewer systems (MS4s) is regulated as a point source instead of a non-point source. Consequently, the MS4 chloride load will be handled as a WLA and not as a LA. Additional discussion on MS4s and LA versus WLA is contained in Section 7 *Implementation Plan*.

Because Phase II of the NPDES stormwater program will apply to most or all of the municipalities in the watershed (see Appendix G for the list of stormwater permittees), as well as to the roads owned and operated by the state and the Toll way Authority, it is anticipated that stormwater-related allocations will actually be implemented as point source controls, as described in recent USEPA guidance and as governed by the Illinois Environmental Protection Agency (IEPA) General Permit for Stormwater Discharges. Consequently, chloride from road deicing materials is not included as a nonpoint source load allocation (LA). Instead, the load from road salt is listed as a waste load allocation (WLA) for MS4s and there is no nonpoint source load for this TMDL.

6.3.4.2 MS4 Load

The chloride WLA from deicing materials was determined by taking the average road salt application in tons applied per lane-mile as input in the calibration model (5.6 tons/lane mile-yr). TIGER data obtained from NIPC were used to estimate the miles of road in the Salt Creek and Addison Creek watershed; the number of lanes on each road was estimated by road type, and lane miles were then calculated. As outlined in Section 6.2, it was

assumed that 12 additional miles of roadway were added. The current chloride application was estimated based on the lane miles and current salt application rates. An 8 percent reduction in Salt Creek results in an application of 23,100,000 pounds of chloride per year (equivalent to 38,200,000 pounds of salt). A 41 percent reduction in Addison Creek results in an application of 3,450,000 pounds of chloride per year (equivalent to 5,700,000 pounds of salt).

The MS4 WLA was based on the salt applied for deicing purposes since that is the most direct measurement of nonpoint source chloride in the watersheds. It should be noted that the road salt application rate targets were based on reducing the current application rate of 5.6 tons/lane-mile-year. This application rate was based on literature and the calibration of the water quality model. Monitoring should be completed to ensure that this application rate is an accurate baseline assumption. A combination of measuring chloride applied and instream chloride concentrations should provide a strong gauge for determining whether water quality standards are being met and whether the TMDL is being implemented.

6.3.4.3 Point Source Load

The NPDES facilities that have permitted design flow capacities were included in the model at their permitted design flows. The other point sources included in the HSPF model were included at the calibration flows with an allowance for 18 percent growth. While wet weather flows may not necessarily increase with growth in the watershed, the flows included in the model calibration were scaled back somewhat as described in Section 5.2.4. Table 6-2 summarizes the NPDES facilities and flow rates assumed for the TMDL.

TABLE 6-2
Point Source Flow Rates Used in TMDL WLA

NPDES Number	Point Source	Flow (cfs)
IL0021849	Bensenville South	7.27
IL0036340	MWRDGC - Egan	46.41
IL0028398	DuPage Co - Nordic Park	0.77
IL0026280	Itasca STP	4.02
IL0020061	Wood Dale North	3.05
IL0034274	Wood Dale South	1.75
IL0027367	Addison South - AJ LaRocca STP	4.95
IL0028746	Elmhurst WWTP	12.38
IL0033812	Addison North STP	8.2
	Other point sources	8.71

Including the point sources at the permitted design flow results in a reasonable WLA for the point sources as it allows for growth above current flows. Basing the WLA on a concentration of 300 mg/L protects the water quality standard for chloride.

6.3.4.4 TMDL

Based on the load calculations defined above, a TMDL was calculated for chloride for Addison Creek and Salt Creek. In order to account for all point and nonpoint sources, the TMDL was calculated at the mouth of each creek. Table 6-3 summarizes the TMDL.

The WLA value in Table 6-3 represents a lumped WLA for all point sources discharges (major and minor) and a separate WLA is calculated for MS4 permittees. The WLA could be broken down into WLAs specific to each point source based on relative effluent flow. At this time, however, IEPA intends to implement the WLA as a lumped value. As long as point sources collectively meet the lumped WLA, they will be considered in compliance with the TMDL. This will allow greater flexibility which is appropriate given that there is limited point source chloride data and that the concentration used to calculate the WLA is considerably lower than the standard.

The TMDL allocations require an 8 percent reduction in nonpoint source chloride loading in Salt Creek and a 41 percent reduction in Addison Creek.

TABLE 6-3
Chloride TMDL for the Mouths of Salt Creek and Addison Creek

	WLA[a]	MS4 WLA[b]	MOS	TMDL
Chloride (lb/yr) - Salt Creek	5.11E+07	2.31E+07	Implicit	7.42E+07
Chloride (lb/yr) - Addison Creek	6.35E+06	3.45E+06	Implicit	9.8E+06

[a]WLA based on permitted design flow and concentration of 300 mg/L
[b]Represents an 8% Reduction in NPS Load in Salt Creek and 41% Reduction in NPS Load in Addison Creek

6.4 Dissolved Oxygen

This section presents the TMDL allocations for pollutants causing the DO excursions in Salt Creek and its tributaries (Addison Creek and Spring Brook). The USEPA's QUAL2E model was used to determine the pollutant loads from point and nonpoint sources that ensured meeting the WQS. Analysis of DO data in Section 4.5 showed that the DO standards were not met under low flow conditions in the hot summer months. The QUAL2E model was setup and calibrated using field data collected in summer 1995. Model setup and calibration results were presented in Section 5.3. Finally, the streamflow in the calibrated model was replaced with the 7Q10 low flow (the minimum of 7-day/10-year running averages) to develop the TMDL allocations. Summer low flow represented the critical condition for DO. The model was run iteratively for various scenarios until the water quality target was met. Each scenario consisted of a combination of pollutant loads from point and nonpoint sources.

According to IEPA (Yurdin, Personal communication, 2001), a comparison of the chlorophyll *a* concentration (a measure of algae concentration) in Salt Creek with that of unimpaired Illinois streams did not show any obvious eutrophication problem. A high concentration of algae in a stream increases the diurnal fluctuation of DO in water due to algal photosynthesis and respiration. In the absence of significant algae, the steady-state QUAL2E model was appropriate for developing the DO TMDL.

6.4.1 Margin of Safety

MOS was incorporated implicitly in this DO TMDL development based on the following conservative assumptions:

- The pollutant loads from all point sources were discharging at their maximum allowable limits (monthly average limit) based on their NPDES permits which were established to protect the general water quality standards.
- The 7Q10 flow occurs under extended drought condition that is lower than normal summer flows. In addition, NPDES facilities typically discharge their maximum flows during higher flow periods. Therefore, the allocations based on 7Q10 stream flow and NPDES facility design flow are stringent and would provide an implicit MOS under normal summer flow conditions.
- Summer water temperatures (ranging from 74.4 °F to 77.6 °F), based on June 27, 1995 monitoring data, were used in the model.
- The Illinois WQS requires that the DO (STORET number 300) shall not be less than 6 mg/L during at least 16 hours of any 24-hour period, nor less than 5 mg/L at any time. For this TMDL development, an extensive DO data set was available, which led to a comprehensive analysis and reduced the uncertainty in the TMDL analysis. Additionally, a DO concentration of 6 mg/L, more stringent than the 5 mg/L criteria, was used as the water quality target for the TMDL allocation development using the steady-state model.

6.4.2 Load Allocation and Waste Load Allocation

Various pollutant reduction scenarios were analyzed to understand the importance of SOD and the point source loads and to determine the pollutant load reduction necessary to achieve an average DO concentration in excess of 6 mg/L. This TMDL endpoint was selected based on the Illinois WQS.

The DO concentrations for seven scenarios (existing condition, four trial scenarios and two allocation scenarios meeting WQS) were modeled and are presented in Table 6-4. Except for the existing scenario, all other scenarios considered 7Q10 flow and no discharge from the St. Charles Road CSO. Two extreme conditions were simulated in Scenarios 1 and 2 to evaluate the effect of existing SOD and point source discharge on DO, respectively. Scenario 1, as presented in Table 6-4, included the 7Q10 flow, monthly average permit limits for point source effluent concentrations, and no flow from the St. Charles Road CSO. However, the SOD values in all stream segments were set to 0. This scenario shows that even if all the SOD is eliminated, the WQS is not met under existing point source effluent limits. Scenario 2 was similar to Scenario 1 except that existing SOD values were used in all stream segments, and the pollutant concentrations in the point source effluents were set to 0. This scenario demonstrates that the WQS of 6 mg/L will not be met even in absence of the point sources. Scenario 3 shows that the WQS was met when the observed point source effluent concentrations were used instead of the monthly average permit limits and the SOD values are set to 0.

TABLE 6-4
Description of Various Modeling Scenarios

Allocation Scenario	Stream Flow	Point Source Effluent Concentrations	Status of the St. Charles Rd. CSO	SOD	Comment
Existing	Observed flow	Observed concentrations	Flowing	Existing condition	Existing condition violated the WQS for DO.
1	7Q10	Monthly average permit limit	No flow	0.0	DO was less than 6 mg/L between 11.5 to 12.9 miles.
2	7Q10	DO = 6.0 mg/L All pollutants = 0.0 mg/L	No flow	Existing condition	DO was less than 6 mg/L between 0 to 3.5 miles and 16.3 to 23.1 miles. Modeled DO also reaches below 5.0 mg/L in these segments.
3	7Q10	Observed concentrations	No flow	0.0	The water quality target (6 mg/L) was met at all locations.
4	7Q10	Monthly average permit limit for all point sources.	No flow	Adjusted the SOD of CSO affected reaches to match the SOD of non-CSO reaches.	The dam at river mile 13.5 was removed. DO was less than 6 mg/L between river miles 11.6 and 13.2.
5	7Q10	CBOD = 5 mg/L except for Bensenville which = 10 mg/L Ammonia N = 1 mg/L	No flow	Adjusted the SOD of CSO affected reaches to match the SOD of non-CSO reaches.	Achieved water quality target (6 mg/L) at all locations.
6	7Q10	CBOD = 8 mg/L except Bensenville = 10 mg/L Ammonia N = 1 mg/L	No flow	Adjusted the SOD of CSO affected reaches to match the SOD of non-CSO reaches.	The dam at river mile 11.6 was removed. Achieved water quality target (6 mg/L) at all locations

Scenario 4 and Scenario 6 investigated the effects of removing the dams at river miles 13.5 and 11.6, respectively. Removal of dam data in the model input does not show any improvement of DO by itself. Rather DO immediately downstream of the dam reduces as the reaeration at the outlet no longer exists. DO concentration generally increases upstream of the dam due to the changes in hydraulic parameter (i.e. coefficients and exponents defining velocity and depth) values. Scenario 4 considered point sources discharged at their current monthly average permit limits, SOD was reduced at CSO affected reaches to match the non-CSO reaches, and the dam at river mile 13.5 was removed. Because of the presence of a second dam at 11.6 miles, the hydraulic parameter at reach 9 (immediately upstream of

the dam) may not change significantly. Scenario 4, therefore, used existing hydraulic parameter values. Modeled DO concentration did meet the water quality target between river miles 11.6 and 13.2. Figure 6-3 shows the modeled DO concentrations for these four scenarios.

For the allocation scenario 5, SOD values in CSO impacted reaches were adjusted to match those of non-CSO reaches. The assumption was that all CSO outfalls stopped flowing under dry weather conditions and small storms. Next, the pollutant concentrations in the point source effluent were adjusted until the WQS was met. It was assumed that all the point sources discharging to Salt Creek would have the same monthly average permit limit. A different set of values was used for the Bensenville STP, the only point source discharging to Addison Creek, in order to meet the WQS. Figure 6-4 shows that the model DO concentrations for TMDL allocation scenario meet the water quality target.

The allocation scenario 5 assumes that the effluent CBOD and the ammonia nitrogen concentrations for all point sources, except the Bensenville STP, were 5.0 mg/L and 1.0 mg/L, respectively (based on monthly average). The CBOD and the ammonia nitrogen concentrations for the Bensenville STP were 10 mg/L and 1.0 mg/L, respectively. The TMDL allocations of CBOD and ammonia nitrogen are provided in Table 6-5. The loads are expressed as pounds per day for the design flow condition. Modeled effluent CBOD and ammonia nitrogen concentrations from the TMDL allocation runs were multiplied by the design flows of individual point sources to calculate the WLA. The organic nitrogen, nitrate, organic phosphorus, and dissolved phosphorus concentrations remained unchanged. Modeled DO, CBOD, and ammonia nitrogen values for all reaches are listed in Appendix F. It should be noted that point sources could increase their permitted design flows and if they meet effluent concentrations of 5 mg/L CBOD5 and 1 mg/L ammonia, the instream DO standard will be protected. Thus, IEPA could consider implementing this TMDL as a concentration-based TMDL for WWTPs that require an increase in permitted design flow.

Allocation scenario 6 used permitted design flow for point source discharge, and the most downstream dam at river mile 11.6 was removed. It was assumed that hydraulic conditions in reach 10 (i.e. just upstream of the removed dam) would change and become similar to the reach downstream of the dam. Therefore, in addition to removing the dam from the model input, hydraulic parameters in reach 10 were set to those of reach 11. The current average monthly permit limits were then modified to achieve the water quality target (6 mg/L DO) at all model locations. In order to maintain the water quality standard, CBOD/NH3 limits of 8/1 are needed for all discharges except Bensenville, which requires limits of 10/1 to protect Addison Creek. This is a change from the first draft TMDL (August 2003) that recommended a reduction of 5 mg/L for CBOD5, based on current flow, from the WWTPs. This revised report uses permitted design flow in determining Allocation 6. Therefore, removal of the dam at river mile 11.6 is an acceptable allocation scenario as long as the WLA is based on a reduction in the point source effluent limits for CBOD and NH3. Modeled DO concentrations for the allocation scenarios are plotted in Figure 6-4, and a summary of the point source WLAs are presented in Table 6-5.

FIGURE 6-3
Modeled Dissolved Oxygen Concentrations for Scenarios 1, 2, 3, and 4

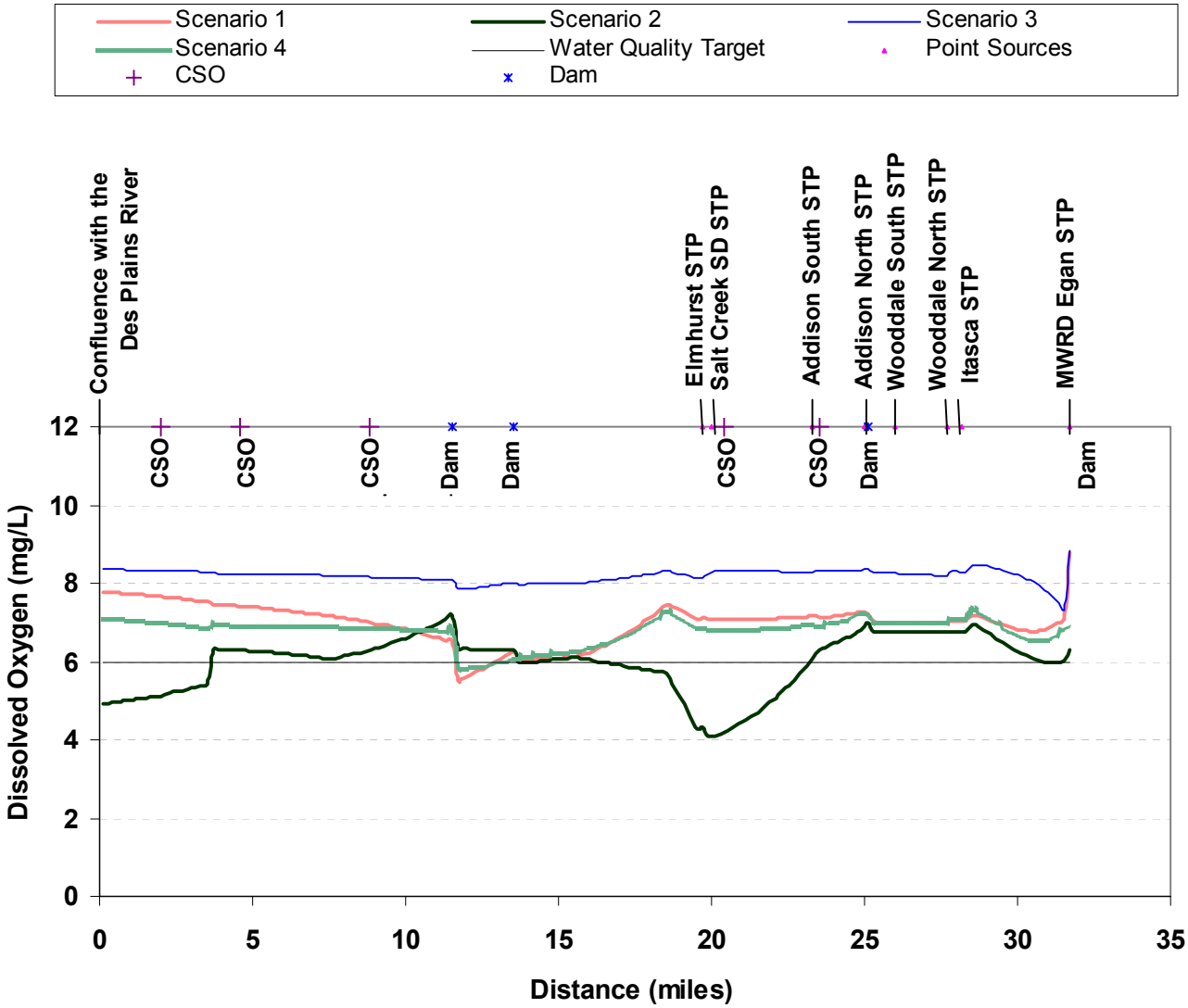


FIGURE 6-4
Modeled Dissolved Oxygen Concentrations for the TMDL Allocation Scenario

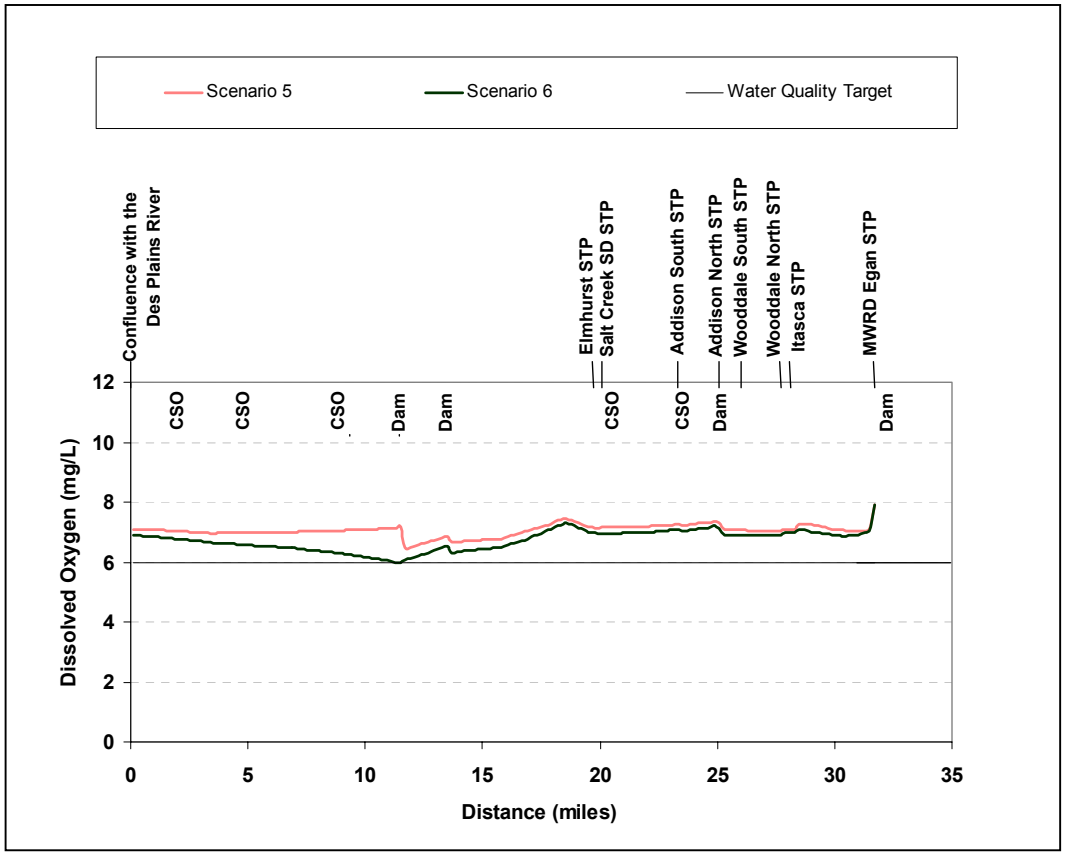


TABLE 6-5
Point Source Allocations for CBOD and Ammonia

		Allocation Scenario 5				Allocation Scenario 6			
Point Source	**Permit Design Flow (MGD)**	**CBOD (mg/L)**	**NH3 (mg/L)**	**CBOD (lb/d)**	**NH3 (lb/d)**	**CBOD (mg/L)**	**NH3 (mg/L)**	**CBOD (lb/d)**	**NH3 (lb/d)**
Bensonville	4.7	10	1	392	39	10	1	392	39
MWRDGC – Egan	30	5	1	1251	250	8	1	2002	250
DuPage Co – Nordic Park	0.5	5	1	21	4	8	1	33	4
Itasca	2.6	5	1	108	22	8	1	173	22
Wood Dale North	2	5	1	83	17	8	1	133	17
Wood Dale South	1.1	5	1	46	9	8	1	73	9
Addison South	3.2	5	1	133	27	8	1	214	27
Addison North	5.3	5	1	223	44	8	1	351	44
Salt Creek SD	3.3*	5	1	138	26	8	1	218	28
Elmhurst	8	5	1	334	67	8	1	534	67
Total				2729	507			4121	507

*(Melching and Chang, 1996)

Flow in Salt Creek under 7Q10 low flow conditions consists primarily of point source discharge (Singh and Ramamurthy, 1993). Nonpoint source flow, including leaky CSOs, should be minimal under critical summer low flow conditions. Nonpoint source contributions of CBOD and ammonia following a storm event do not require any control, because DO standards are not violated during high flows. Therefore, the nonpoint source contributions or load allocations (LAs) of CBOD and ammonia are not applicable for this TMDL. Any particulate CBOD that may contribute to SOD was addressed through VSS allocations as discussed below.

In addition to the reduction of CBOD and ammonia nitrogen loads from point sources, reduction of SOD was essential in meeting the water quality target. According to the model, SOD ranged from 0.05 g/square feet per day to 0.4 g/square feet per day and needed to be reduced by 52 percent. SOD is a measure of the rate of DO consumption by aerobic decomposition of settled organic matter. Settleable organic matter in surface water is determined by VSS or volatile nonfilterable residue (STORET parameter code 00535). Therefore, it was assumed that a 52 percent reduction of VSS load was necessary for a corresponding reduction of SOD.

An analysis of monitoring data showed that average VSS concentration at the Salt Creek monitoring site (05531500) was 10.4 mg/L and there was no correlation ($r^2 = 0.035$) between flow and the VSS concentration (Figure 6-5). The monthly maximum, minimum, and average of 10 years of VSS data are plotted in Figure 6-6, which shows that a seasonal

pattern exists. During summer and fall months, falling leaves contribute to organic detritus transported by runoff, resulting in increased VSS concentrations. The existing annual VSS load was estimated by adding the product of the monthly average VSS concentrations and flows. Assuming that a 52 percent reduction of VSS load was necessary, the TMDL was calculated as 48 percent of the existing nonpoint source load. The QUAL2E model and the observed data showed the SOD concentration was lower near the point source outfalls, which indicated that the VSS concentration in point source effluents was very small. Generally, untreated waste from CSOs and runoff from various land uses contain significantly higher VSS concentrations. Considering these issues, it appears reasonable to target VSS transport and deposition from nonpoint sources. Also, because actual treatment levels for CBOD and ammonia are high, there should be little organic matter in the point source effluent. Therefore, the TMDL allocation for VSS was based on 100 percent nonpoint source contribution or load allocation. Table 6-6 summarizes the CBOD, ammonia, and VSS TMDL for Salt Creek; the VSS TMDL is presented as pounds per year.

FIGURE 6-5
The Relationship Between Volatile Suspended Solid and Flow Using the Salt Creek (station 05531500) Monitoring Data

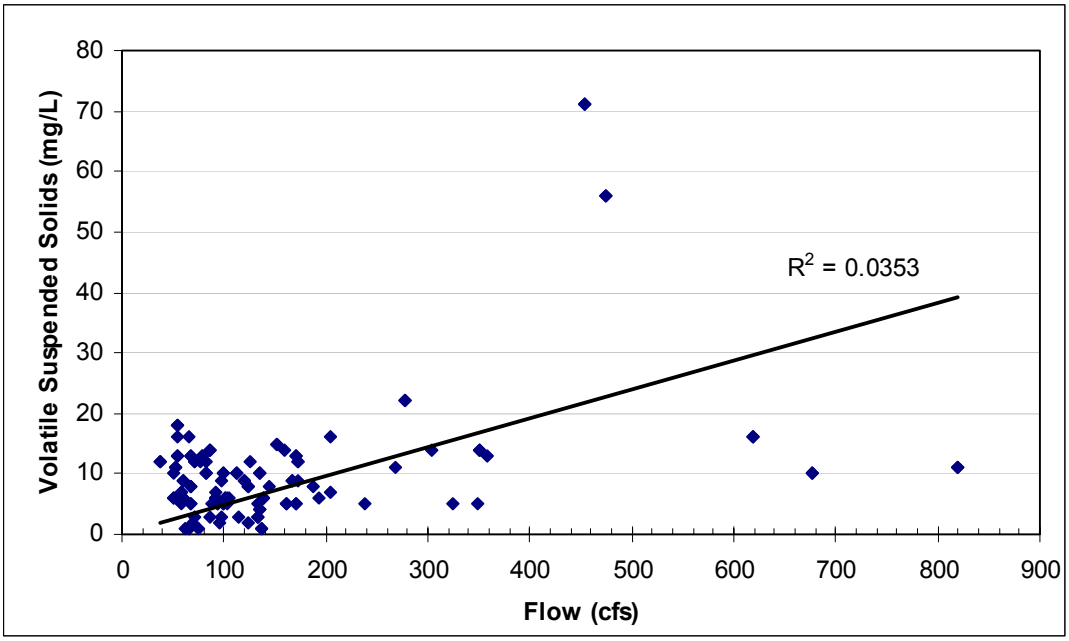


FIGURE 6-6
The Monthly Maximum, Minimum and Average VSS Concentrations Using the 1990-1998 Monitoring Data from the Salt Creek Site (05531500)

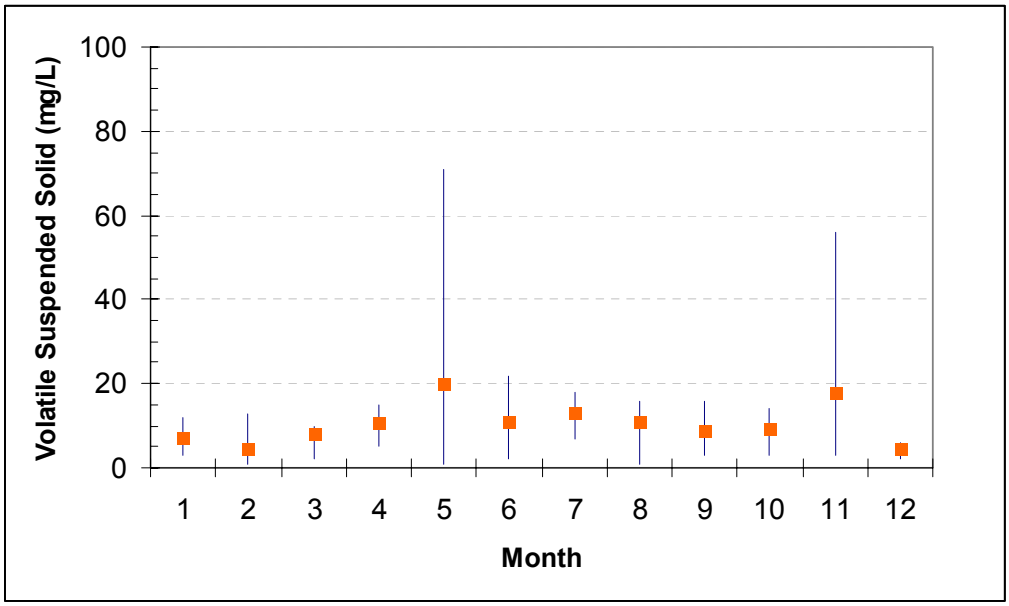


TABLE 6-6
TMDL Allocations for CBOD and Ammonia and VSS for Salt Creek

Pollutant	Load Allocation (lbs/day)	Wasteload Allocation (lbs/day)	TMDL (lbs/day)	Permitted Load (lbs/day)[a]	Percent Reduction Needed from Permitted Load	Observed Load (lbs/day)[b]	Percent Reduction Needed from Observed Load
Allocation Scenario 5							
5-day Carbon. Biochemical Oxygen Demand [b]	NA	2,729	2,729	6,251	56	1,561	0
Ammonia Nitrogen [b]	NA	507	507	813	38	162	0
Allocation Scenario 6							
5-day Carbon. Biochemical Oxygen Demand [b]	NA	4,121	4,121	6,251	34	1,561	0
Ammonia Nitrogen [b]	NA	507	507	813	38	162	0
Applies to both Scenario 5 and Scenario 6							
Volatile Suspended Solids [c]	2,152,943	-	2,152,943	-	-	NA	NA

[a] Loads calculated using design flows of individual point sources.
[b] Current permitted loads based on average monthly permit limits and design flow; current observed loads based on effluent data from 1995 USGS calibration dataset of 10 point sources listed in Table 5-4 and design flow; St. Charles CSO load assumed equal to 0.
[c] Unit for VSS is pounds per year

6.4.3 Implementation Considerations

Table 6-7 indicates that point source discharges would not be required to reduce CBOD and ammonia loads to meet the wasteload allocations for these pollutants based on observed effluent loads, but would have to reduce below permitted loads. This is because the observed effluent loads from point sources based on 1995 USGS sampling of these discharges for their model calibration dataset are well below current permitted monthly limitations. The implementation impacts these dischargers; therefore, it will depend on what their actual loads are today and in the foreseeable future. This information should be derived and evaluated as part of the implementation process, and adjustments made as appropriate.

It should also be noted that for allocation scenario 5, the permitted flow of a given WWTP can increase, and the instream DO standard will still be maintained as long as the NPDES facility meets 5 mg/L BOD and 1 mg/L NH3. Thus, once a given NPDES facility reaches its permitted design flow and requests an expansion, concentration-based limits can be applied to the facility which will result in a higher WLA (in terms of pounds), but will still maintain the instream DO standard.

In addition, this TMDL did not evaluate different allocation scenarios that may be worth considering. For example, an allocation scenario other than equal percent reduction for all facilities may be appropriate and would be consistent with this TMDL as long as the overall target is met and DO standards are protected in Salt Creek. Dam removal may also be a viable element of implementation of the DO TMDL, perhaps via a water quality trading process.

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APPENDIX 32

DuPage River/Salt Creek Watershed
TMDL Stage 1 Report

Prepared for:
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

DuPage River/Salt Creek Watershed TMDL Stage 1 Report

AECOM, Inc.
October 2009
Document No.: 10042-003-501

AECOM

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Executive Summary

As required by Section 303(d) of the Clean Water Act (CWA), the Illinois Environmental Protection Agency (Illinois EPA) is required to identify and list all state waters that fail to meet water quality standards. This list is referred to as the 303(d) list and is revisited every two years to either remove those waters that have attained their designated uses, or to include additional waters not previously deemed impaired. Waterbodies included on the 303(d) list require Total Maximum Daily Load (TMDL) development.

A TMDL is an estimation of the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards. It assesses contributing point and nonpoint sources to identify pollution reductions necessary for designated use attainment. A TMDL identifies the source of impairment and provides reduction estimates to meet water quality standards. Pollutant reductions are then allocated to contributing sources, thus triggering the need for pollution control and increased management responsibilities amongst sources in the watershed.

For the DuPage River/Salt Creek watershed 17 impaired waterbodies were identified for TMDL development. The DuPage River/Salt Creek Watershed (Figure 2-1) is located in northeastern Illinois and originates from two branches in the northern most part of the watershed. The West Branch DuPage River is approximately 35 miles long and the East Branch DuPage River is approximately 25 miles long. Both branches flow south until they meet around Bolingbrook, creating the main branch of the DuPage River. The DuPage River flows approximately 30 additional miles before the confluence with the Des Plaines River near the town of Channahon, IL. Two tributaries and a lake will be included in the TMDL. Spring Brook is a tributary of the West Branch DuPage River and flows southwest for approximately 5.5 miles before the confluence with the West Branch of the DuPage River. Addison Creek is a tributary of Salt Creek and flows southeast for approximately 10.5 miles before the confluence with Salt Creek. Churchill Lagoon was formed by damming the East Branch DuPage River.

The only waterbody classification applicable to the DuPage River/Salt Creek watershed is the General Use classification which includes designated uses such as aquatic life, aesthetic quality, fish consumption and primary contact recreation uses. The identified impairments include total phosphorus, fecal coliform, pH, dissolved oxygen, silver, manganese, and chloride. The water quality standard criteria identified for these impairments provide an explicit assessment as to whether or not these waterbodies are in compliance.

Available data used for assessing these waterbodies originated from numerous water quality stations within the DuPage River/Salt Creek watershed. Data were obtained from both legacy and modernized USEPA Storage and Retrieval (STORET) databases, Metropolitan Water Reclamation District of Greater Chicago (MWRDGC) data, Sierra Club, Wheaton Sanitary District, DuPage River Salt Creek Workgroup and Illinois EPA database data. Data relevant to impairments were compiled for each impaired waterbody and summary statistics were calculated to further characterize each pollutant.

Various models were recommended for TMDL development, the level of which was primarily based on the complexity of the system and the availability of data. Simple spreadsheet models were recommended for DO TMDLs and the ENSR Lake Response Model (ENSR LRM) was recommended to analyze total phosphorus impairment. Load duration curves were recommended for fecal coliform and metals analyses and could also be used to estimate BOD loading for the DO TMDL. If the system requires a more complex DO model for creek simulation, then QUAL2K could be used. QUAL2K was recommended for the pH TMDL, but is capable of simulating in-stream DO concentrations.

1.0 Introduction

This Stage 1 Total Maximum Daily Load (TMDL) report is presented as partial fulfillment by the Illinois Environmental Protection Agency (Illinois EPA) and the United States Environmental Protection Agency (US EPA) in the development of TMDLs, as part of that state's Clean Water Act (CWA) Section 303(d) compliance. The purpose of the project is to develop TMDLs for seventeen designated waterbodies in the DuPage River and Salt Creek watershed in northeastern Illinois.

Section 303(d) of the CWA and U.S. EPA's Water Quality Planning Regulations (40 CFR Part 130) require states to develop TMDLs for impaired waterbodies that are not meeting designated uses or water quality standards. A TMDL is a calculation of the maximum amount of pollutants that a waterbody can receive and still meet the water quality standards necessary to protect the designated beneficial use (or uses) for that waterbody. The TMDL process establishes the allowable loadings of pollutants for a waterbody based on the relationship between pollutant sources and water quality conditions, so that states and local communities can establish water quality based controls to reduce pollutants from both point and nonpoint sources and restore and maintain the quality of their water resources.

Water is an essential resource for the inhabitants of the Earth and protecting this resource is the goal for many across the globe. United States policies and regulations, such as the CWA, were created and are implemented to help maintain the quality of our water resources in the United States. The U.S. EPA, via the CWA, charged each state with developing water quality standards (WQS). These WQS are laws or regulations that states authorize to protect and/or enhance water quality, to ensure that a waterbody's designated use (or uses) is (are) not compromised by poor water quality and to protect public health and welfare. In general, WQS consist of three elements:

- The designated beneficial use (e.g., recreation, protection of aquatic life, aesthetic quality, and public and food processing water supply) of a waterbody or segment of a waterbody,
- The water quality criteria necessary to support the designated beneficial use of a waterbody or segment of a waterbody, and
- An anti-degradation policy, so that water quality improvements are conserved, maintained and protected.

The Illinois Pollution Control Board (IPCB) established its WQS and includes it in Title 35: Environmental Protection, Subtitle C: Water Pollution, Chapter 1: Pollution Control Board, Part 302: Water Quality Standards. Every two years the Illinois EPA submits the Illinois Integrated Water Quality Report and Section 303(d) List. This report documents surface and groundwater conditions throughout the state. The 303(d) List portion of this report identifies impaired waterbodies, grouped by watershed, and identifies suspected sources of impairment. These waters are prioritized for TMDL development into high, medium, and low categories based on designated use and pollution severity and are then targeted for TMDL development. Non-pollutant causes of impairment, such as habitat degradation and aquatic algae, are not addressed under the TMDL, but are address by programs such under the 319 program and other nonpoint source grant programs. Some non-pollutants may be addressed by reducing pollutants for which a TMDL is developed. For example, some implementation activities to reduce phosphorus can also reduce excessive algae and improve aquatic habitat.

A TMDL is a calculation of the maximum load a waterbody can be receive without exceeding water quality standards or result in non attainment of a designated use. A watershed's TMDL report consists of data analysis to quantitatively assess water quality, documentation of waterbodies or segments of waterbodies that are impaired, and identification of potential contributing sources to impairment. Based on these data, the amount and type of load reduction that is needed to bring water quality into compliance is calculated. The TMDL report provides the scientific basis for states and local communities to establish water quality-based

controls to reduce pollutant loads from both point (i.e., wasteload allocations) and non-point sources (i.e., load allocations).

Illinois EPA uses a three-stage approach to develop TMDLs for a watershed:

- **Stage 1** – Watershed characterization, historical dataset evaluation, data analysis, methodology selection, data gap identification;
- **Stage 2** – Data collection to fill in data gaps, if necessary; and
- **Stage 3** – Model calibration, TMDL scenarios, and implementation plans.

The purpose of Stage 1 is to characterize the watershed background; verify impairments in the listed waterbody by comparing observed data with water quality standards or appropriate targets; evaluate spatial and temporal water quality variation; provide a preliminary assessment of sources contributing to impairments; and describe potential TMDL development approaches. If available water quality data collected for the watershed are deemed sufficient by Illinois EPA, Stage 2 may be omitted and Stage 3 will be completed. If sufficient water quality data or supporting information are lacking for an impaired waterbody, then Stage 2 is required and field samplings will be conducted in order to obtain necessary data to complete Stage 3. Stage 3 includes model development, allocations and reductions needed for waterbody improvement and implementation actions for local stakeholders.

This report documents Stage 1 in the Illinois EPA approach for TMDL development. The report is organized into six main sections. Section 1.0 discusses the definition of TMDLs and targeted impaired waterbodies in the DuPage River and Salt Creek watershed, for which TMDLs will be developed. Section 2.0 describes the characteristics of the watershed, and Section 3.0 briefly discusses the process of public participation and involvement. Section 4.0 describes the applicable water quality standards and water quality assessment. Section 5.0 presents the assessment and analysis of available water quality data. Section 6.0 discusses the methodology selection for the TMDL development, the data gaps, and provides recommendations for additional data collection, if necessary.

1.1 Definition of a Total Maximum Daily Load (TMDL)

According to the 40 CFR Part 130.2, the TMDL (the maximum load a waterbody can be receive without exceeding water quality standards or result in non attainment of a designated use) for a waterbody is equal to the sum of the individual loads from point sources (i.e., wasteload allocations or WLAs), and load allocations (LAs) from nonpoint sources (including natural background conditions). Section 303(d) of the CWA also states that the TMDL must be established at a level necessary to implement the applicable water quality standards with seasonal variations and a margin of safety (MOS) which takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality. In equation form, a TMDL may be expressed as follows:

$$\mathbf{TMDL = WLA + LA + MOS}$$

where:

WLA = Waste Load Allocation (i.e., loadings from point sources);
LA = Load Allocation (i.e., loadings from nonpoint sources including natural background); and
MOS = Margin of Safety.

TMDLs can be expressed in terms of either mass per time, toxicity or other appropriate measures [40 CFR, Part 130.2 (i)]. US EPA recommends that all TMDLs and associated LA and WLAs be expressed in terms of daily increments but may include alternative non-daily expression of pollutant loads to facilitate implementation of the applicable water quality standard. TMDLs also shall take into account the seasonal variability of pollutant loading and hydrology to ensure water quality standards are met in all seasons and during all hydrologic

conditions. Though not required by CWA, Illinois EPA requires that an implementation plan be developed for each watershed, which may be used as a guideline for local stakeholders to restore water quality. This implementation plan will include recommendations for implementing best management practices (BMPs), cost estimates, institutional needs to implement BMPs and controls throughout the watershed, and time frame for completion of implementation activities.

The MOS accounts for the lack of knowledge or uncertainty concerning the true relationship between loading and attainment of water quality standards. This uncertainty is often a product of data gaps, either temporally or spatially, in the measurement of water quality. The MOS should be proportional to the anticipated level of uncertainty; the higher the uncertainty, the greater the MOS. The MOS is generally based on a qualitative assessment of the relative amount of uncertainty as a matter of best professional judgment (BPJ). The MOS can be either explicit or implicit. If an explicit MOS is used, a portion of the total allowable loading is allocated to the MOS. If the MOS is implicit, a specific value is not assigned to the MOS, but is already factored in during the TMDL development process. Use of an implicit MOS is appropriate when assumptions used to develop the TMDL are believed to be so conservative that they sufficiently account for the MOS.

1.2 Targeted Waterbodies for TMDL Development

In May 2008, Illinois EPA prepared a draft Illinois Integrated Water Quality Report and Section 303(d) List-2008 (commonly referred to as the 303(d) List) to fulfill the requirement of Section 305(b), 303(d) and 314 of the CWA (Illinois EPA, 2008). Under US EPA's review and approval, the report presents a detailed water quality assessment process and results for streams and lakes in the State of Illinois. The water quality assessments are based on biological, physicochemical, physical habitat, and toxicity data. Each waterbody has one or more of designated uses which may include aquatic life, aesthetic quality, indigenous aquatic life (for specific Chicago-area waterbodies), primary contact (swimming), secondary contact (recreation), public and food processing water supply, and fish consumption. The degree of support (attainment) of a designated use in a waterbody (or segment) is assessed as Fully Supporting (good), Not Supporting (fair), or Not Supporting (poor). Waters in which at least one applicable use is not fully supported is designated as "impaired." Potential causes and sources of impairment are also identified for these waters. The 303(d) List is prioritized on a watershed basis based on the requirements of 40 CFR Part 130.7(b)(4). Watershed boundaries are based on United States Geological Survey (USGS) ten-digit hydrologic units, to provide the state with the ability to address watershed issues at a manageable level and document improvements to a watershed's health (Illinois EPA, 2008). TMDL development is also conducted on a watershed basis so that the impaired waters upstream of an individual segment may be addressed at the same time.

Sixteen river segments and one lake segment are identified as impaired and selected for TMDL development in the DuPage River/Salt Creek Watershed (Illinois EPA, 2008). Table 1-1 summarizes these waterbodies, designated uses, and impairments identified by the Illinois EPA 2008 Integrated Report (303(d) List and Stream Assessment Report). The designated uses for these waterbodies include aesthetic quality, primary contact recreation (swimming), aquatic life, and fish consumption. The identified impairments include total phosphorus, fecal coliform, pH, dissolved oxygen, silver, manganese, and chloride. Fecal coliform is the predominant impairment within the watershed. The WQS provide numerical criteria to measure compliance for each of these water quality variables. DO is considered a non-pollutant by Illinois EPA. For dissolved oxygen impairments, the dissolved oxygen parameter itself will not be calculated as a TMDL, but will be addressed through a different, contributory parameter with a numerical WQS. This contributory parameter will be identified in the Stage 3 TMDL Report. For example, if a 50-acre lake suffers from low DO due to excessive algal densities which is related to elevated phosphorus concentrations, the Illinois EPA will develop a phosphorus TMDL for this waterbody. A TMDL will not be developed for waterbodies listed as impaired based on non-numerical WQSs (e.g., excessive algae) or statistical guidelines (e.g., total suspended solids). For other causes such as total suspended solids, the TMDL implementation plan can potentially address the impairment by reducing other TMDL parameters that are associated with this impairment. For example, a TMDL done for phosphorus in lakes will recommend BMPs in the implementation plan that when put in place

could reduce siltation/sedimentation and total suspended solid impairments. Reduction of phosphorus in lakes could also reduce the impairment of excessive aquatic algae and plants.

Table 1-1: Illinois 2008 Integrated Report (303(d) and Waterbody Assessment) Information for DuPage River and Salt Creek Watershed

Waterbody ID	Waterbody Name	Water Size (Miles/ Acres)	Designated Use	Impairment
IL_GB-01	DuPage River	8	Aquatic Life	*Aquatic Plants (Macrophytes), Other Flow Regime Alteration, Phosphorus, Sedimentation/Siltation,* **Silver (1)**
			Fish Consumption	*Mercury, PCBs*
IL_GB-11	DuPage River	9.81	Aquatic Life	*Aquatic Plants (Macrophytes),* **Chloride (1)**, *DDT, Hexachlorobenzene, Other Flow Regime Alteration, PCBs, Phosphorus, Sedimentation/ Siltation, Total Suspended Solids*
			Fish Consumption	*Mercury, PCBs*
			Primary Contact Recreation	**Fecal Coliform (1)**
IL_GB-16	DuPage River	10.39	Aquatic Life	*Aquatic Plants (Macrophytes),* **Dissolved Oxygen (1)**, *Other Flow Regime Alteration, Phosphorus*
			Fish Consumption	*Mercury, PCBs*
			Primary Contact Recreation	**Fecal Coliform (1)**
IL_GBK-05	West Branch DuPage River	10.35	Aquatic Life	*Alteration in Stream-side Littoral Vegetation,* Chloride (2), *DDT,* **Dissolved Oxygen (1)**, *Other Flow Regime Alteration, Phosphorus, Sedimentation/ Siltation, Total Suspended Solids*
			Primary Contact Recreation	**Fecal Coliform (1)**
IL_GBK-09	West Branch DuPage River	4.49	Aquatic Life	Chloride (2), **Dissolved Oxygen (1)**, Iron*, **pH (1)**, *Phosphorus, Sedimentation/ Siltation*, **Silver (1)**, Zinc*
			Primary Contact Recreation	**Fecal Coliform (1)**

Waterbody ID	Waterbody Name	Water Size (Miles/ Acres)	Designated Use	Impairment
IL_GBK-14	West Branch DuPage River	10.71	Aquatic Life	Chloride (2), **Dissolved Oxygen (1), Manganese (1)**, *Phosphorus, Total Suspended Solids*
			Primary Contact Recreation	**Fecal Coliform (1)**
IL_GBKA	Spring Brook	1.87	Aquatic Life	*Alteration in Stream-side Littoral Vegetation*, Chloride (2), **Dissolved Oxygen (1),** *Phosphorus*
			Primary Contact Recreation	**Fecal Coliform (1)**
IL_GBKA-01	Spring Brook	3.55	Aquatic Life	Copper*, *Phosphorus*
			Primary Contact Recreation	**Fecal Coliform (1)**
IL_GBL-08	East Branch DuPage River	5.53	Aquatic Life	*Alteration in Stream-side Littoral Vegetation, Aquatic Algae (Macrophytes), DDT,* Dissolved Oxygen (2)**,** H*exachlorobenzene, Mercury, Other Flow Regime Alteration,* **pH (1**), *Phosphorus, Sedimentation/ Siltation, Total Suspended Solids*
			Fish Consumption	*Polychlorinated biphenyls*
IL_GBL-10	East Branch DuPage River	4.63	Aquatic Life	*Alteration in Stream-side Littoral Vegetation, Aquatic Algae (Macrophytes),* Chloride (2), DDT, Dissolved Oxygen (2), *Hexachlorobenzene, Mercury,* **pH (1)**, *Phosphorus, Sedimentation/ Siltation, Total Suspended Solids*
			Fish Consumption	*PCBs*
			Primary Contact Recreation	**Fecal Coliform (1)**
IL_GL	Salt Creek	11.26	Aquatic Life	*Aquatic Algae),* Chloride (2), Dissolved Oxygen (2), *Other Flow Regime Alteration, Phosphorus (Total)*
			Fish Consumption	*Mercury, PCBs*
			Primary Contact Recreation	**Fecal Coliform (1)**

Waterbody ID	Waterbody Name	Water Size (Miles/ Acres)	Designated Use	Impairment
IL_GL-09	Salt Creek	11.78	Aquatic Life	Aldrin, Chloride (2), DDT, Dissolved Oxygen (2), *Other Flow Regime Alteration*, **pH (1),** *Phosphorus (Total), Sedimentation/Siltation, Total Suspended Solid*
			Fish Consumption	Mercury, PCBs
			Primary Contact Recreation	**Fecal Coliform (1)**
IL_GL-10	Salt Creek	3.64	Aquatic Life	*Alteration in Stream-side Littoral Vegetation, Aquatic Algae, Aquatic Plants (Macrophytes),* Chloride (2), *Other Flow Regime Alteration*, **pH (1)**, *Phosphorus (Total)*
			Fish Consumption	Mercury, PCBs
			Primary Contact Recreation	**Fecal Coliform (1)**
IL_GL-19	Salt Creek	3.1	Aquatic Life	*Alteration in Stream-side Littoral Vegetation*, Chloride (2), Dissolved Oxygen (2), *Other Flow Regime Alteration*, **pH (1)**, *Phosphorus, Sedimentation/Siltation, Total Suspended Solids*
			Fish Consumption	*Mercury, PCBs*
			Primary Contact Recreation	**Fecal Coliform (1)**
IL_GLA-02	Addison Creek	6.61	Aquatic Life	*Aldrin, Alteration in Stream-side Littoral Vegetation,* Chloride (2), *Chromium (Total), DDT, Hexachlorobenzene, Nickel, Other Flow Regime Alteration, Phosphorus*
			Primary Contact Recreation	**Fecal Coliform (1)**
IL_RGG	Churchill Lagoon	21	Aesthetic Quality	**Phosphorus (Total) (1)(3)**, *Total Suspended Solids, Aquatic Algae*
			Aquatic Life	*Aldrin, Aquatic Algae,* **Phosphorus (Total) (1)(3)**, *Silver, Total Suspended Solids*

(1) These parameters have numeric standards and will have TMDL allocations.
(2) These parameters are or will be addressed by implementation activities within the watershed based on previous TMDL studies.
(3) At the time of this report, dam removal is being discussed for this lagoon and the numeric standard may not be applicable to this waterbody. More information will be available in the Stage 3 TMDL Report.
*The source causing impairment is believed to originate solely from point sources. The point source will be required to meet the water quality standard at the point of discharge. The Illinois EPA, based on the information available, believes that the compliance with the WQS will be achieved after all point source dischargers have installed the appropriate controls. A TMDL will not be prepared for this pollutant at this time, but will assess the waterbody again after the appropriate point source controls have been operational.

Table 1-2: Waterbodies targeted for TMDL development in the DuPage River and Salt Creek Watershed and potential sources of impairment

Waterbody ID	Waterbody Name	Impairment	Potential Source(s)
IL_GB-01	DuPage River	Silver	Urban Runoff/Storm Sewers
IL_GB-11	DuPage River	Chloride	Municipal Point Source Discharges, Urban Runoff/Storm Sewers
		Fecal Coliform	Source Unknown
IL_GB-16	DuPage River	Dissolved Oxygen	Impacts from Hydrostructure Flow Regulation/modification, Urban Runoff/ Storm Sewers
		Fecal Coliform	Municipal Point Source Discharges, Urban Runoff/Storm Sewers, Site Clearance (Land Development or Redevelopment), Source Unknown
IL_GBK-05	West Branch DuPage River	Dissolved Oxygen	Impacts from Hydrostructure Flow Regulation/modification, Municipal Point Source Discharges, Urban Runoff/ Storm Sewers
		Fecal Coliform	Source Unknown
IL_GBK-09	West Branch DuPage River	pH	Source Unknown
		Dissolved Oxygen	Municipal Point Source Discharges, Urban Runoff/Storm Sewers
		Silver	Urban Runoff/Storm Sewers
		Fecal Coliform	Urban Runoff/Storm Sewers
IL_GBK-14	West Branch DuPage River	Manganese	Urban Runoff/Storm Sewers
		Dissolved Oxygen	Source Unknown
		Fecal Coliform	Urban Runoff/Storm Sewers
IL_GBKA	Spring Brook	Dissolved Oxygen	Channelization, Urban Runoff/ Storm Sewers
		Fecal Coliform	Source Unknown
IL_GBKA-01	Spring Brook	Fecal Coliform	Source Unknown
IL_GBL-08	East Branch DuPage River	pH	Upstream Impoundments (e.g., PI-566 NRCS Structures)
IL_GBL-10	East Branch DuPage River	pH	Source Unknown
		Fecal Coliform	Source Unknown, Urban Runoff/Storm Sewers
IL_GL	Salt Creek	Fecal Coliform	Urban Runoff/Storm Sewers
IL_GL-09	Salt Creek	pH	Source Unknown
		Fecal Coliform	Combined Sewer Overflows, Urban Runoff/Storm Sewers

Waterbody ID	Waterbody Name	Impairment	Potential Source(s)
IL_GL-10	Salt Creek	pH	Source Unknown
		Fecal Coliform	Urban Runoff/Storm Sewers
IL_GL-19	Salt Creek	pH	Urban Runoff/Storm Sewers
		Fecal Coliform	CSOs, Urban Runoff/Storm Sewers
IL_GLA-02	Addison Creek	Fecal Coliform	Combined Sewer Overflows, Urban Runoff/Storm Sewers
IL_RGG	Churchill Lagoon	Phosphorus (Total)(1)	Municipal Point Source Discharges, Runoff from Forest/Grassland/Parkland, Urban Runoff/Storm Sewers

(1) At the time of this report, dam removal is being discussed for this lagoon and the numeric standard may not be applicable to this waterbody. More information will be available in the Stage 3 TMDL Report

1.3 Previous TMDL Development in Watersheds

Previous TMDL Reports have been developed in these watersheds. See Tables 1.3 to 1.5 for information on the parameters that the TMDLs addressed.

The development of the West Branch DuPage River, East Branch DuPage River and Salt Creek TMDLs began in 2000. The West Branch DuPage River was approved by USEPA in May 2004 and the other two were approved in September of 2004. As a result of these TMDL processes many stakeholders in the watershed organized the DuPage River Salt Creek Workgroup (DRSCW) that consists of community groups, municipalities, and environmental organizations. This group was formed to better determine the stressors in the aquatic system through a long term quality monitoring program and develop and implement viable implementation projects to accurately address the stressors. For more information on this group, please visit their website at http://www.drscw.org/about_us.htm. More information on watershed groups can be found in Section 3.0. The implementation plan, which is done in Stage 3 of TMDL development, will include information on projects completed or ongoing in the watershed.

Table 1-3: Previous East Branch DuPage River Watershed TMDL Parameters

Waterbody ID	Waterbody Name	Pollutant(s)
IL_GBL-05 IL_GBL-10	East Branch DuPage River	Chloride, DO, TDS
IL_GBL-08	East Branch DuPage River	DO
IL_GBLB-01	St. Joseph Creek	DO

Table 1-4: Salt Creek Watershed TMDL

Waterbody ID	Waterbody Name	Pollutant(s)
IL_GL	Salt Creek	Chloride, DO, TDS
IL_GL-03	Salt Creek	DO, TDS, TSS
IL_GL-09	Salt Creek	Chloride, DO, TDS, TSS
IL_GL-10	Salt Creek	Chloride, TDS
IL_GL-19	Salt Creek	Chloride, DO, Sedimentation/siltation, TDS, TSS
IL_GLA-02	Addison Creek	Chloride, DO, TDS
IL_GLA-04	Addison Creek	DO, TSS
IL_GLB-01	Spring Brook	DO, TSS
IL_GLBA	Meacham Creek	DO

Table 1-5: Previous West Branch DuPage River Watershed TMDL Parameters

Waterbody ID	Waterbody Name	Pollutant(s)
IL_GBK-05 IL_GBK-07 IL_GBK-09	West Branch DuPage River	Chloride, TDS
IL_GBK-12	West Branch DuPage River	Chloride
IL_GBKA	Spring Brook	TDS

2.0 Watershed Characterization

As part of the Stage I report, relevant geologic and hydrologic characteristics and general information are obtained for the watershed of interest. This section describes the general characteristics of the DuPage River/Salt Creek watershed including location (Section 2.1), topography (Section 2.2), land use (Section 2.3), soil information (Section 2.4), population (Section 2.5), climate and precipitation (Section 2.6) and hydrology (Section 2.7).

2.1 Watershed Location

A watershed is a geographic area that shares a hydrologic connection - all the water within that area drains to a common waterway. Water movement can be influenced by topography, soil composition and water recharge (i.e. precipitation, snow melt, groundwater) ("What is a Watershed", 2007). Watersheds are important because pollution at the water's source may impact water quality in all down-gradient areas including its convergence with a common waterway. Understanding the watershed is an essential step in the TMDL process – an essential tool in maintaining water quality standards within Illinois.

The DuPage River/Salt Creek Watershed (Figure 2-1) is located in northeastern Illinois and is approximately 520 mi^2 (332,600 acres). The watershed includes the DuPage River (USGS HUC 0712000408) and Salt Creek (USGS HUC 0712000404) which are within Cook, Kendal, Will, Gundy, and DuPage counties. The DuPage River originates from two branches in the northern most part of the watershed. The West Branch DuPage River and East Branch DuPage River are approximately 35 miles and 25 miles long, respectively. Both branches flow south until they meet around Bolingbrook, creating the main branch of the DuPage River. The DuPage River approximately runs an additional 30 miles before the confluence with the Des Plaines River near the town of Channahon, IL. Spring Brook, another tributary to the DuPage River, flows southwest for approximately 5.5 miles before the confluence with the West Branch DuPage River.

Salt Creek and Addison Creek are 40 miles and 6.5 miles long, respectively, prior to their confluence approximately 3 miles upstream of the Des Plaines River. The Des Plaines River flows southwest, and after its confluence with the DuPage River, joins the Illinois River, a major tributary of the Mississippi River. Figure 2-2 displays the waterbodies targeted for TMDL development.

Figure 2-1: DuPage River/Salt Creek Watershed Overview

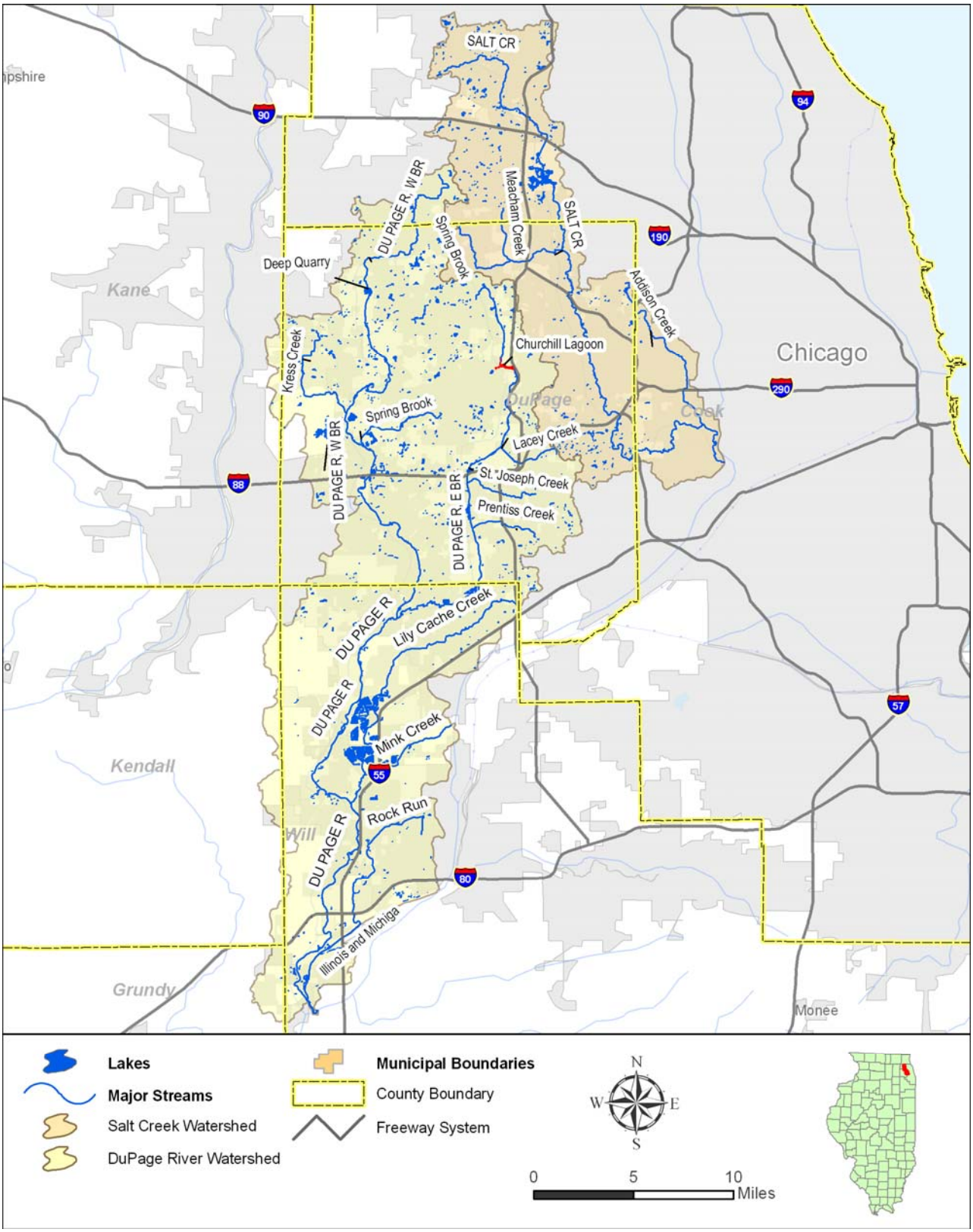
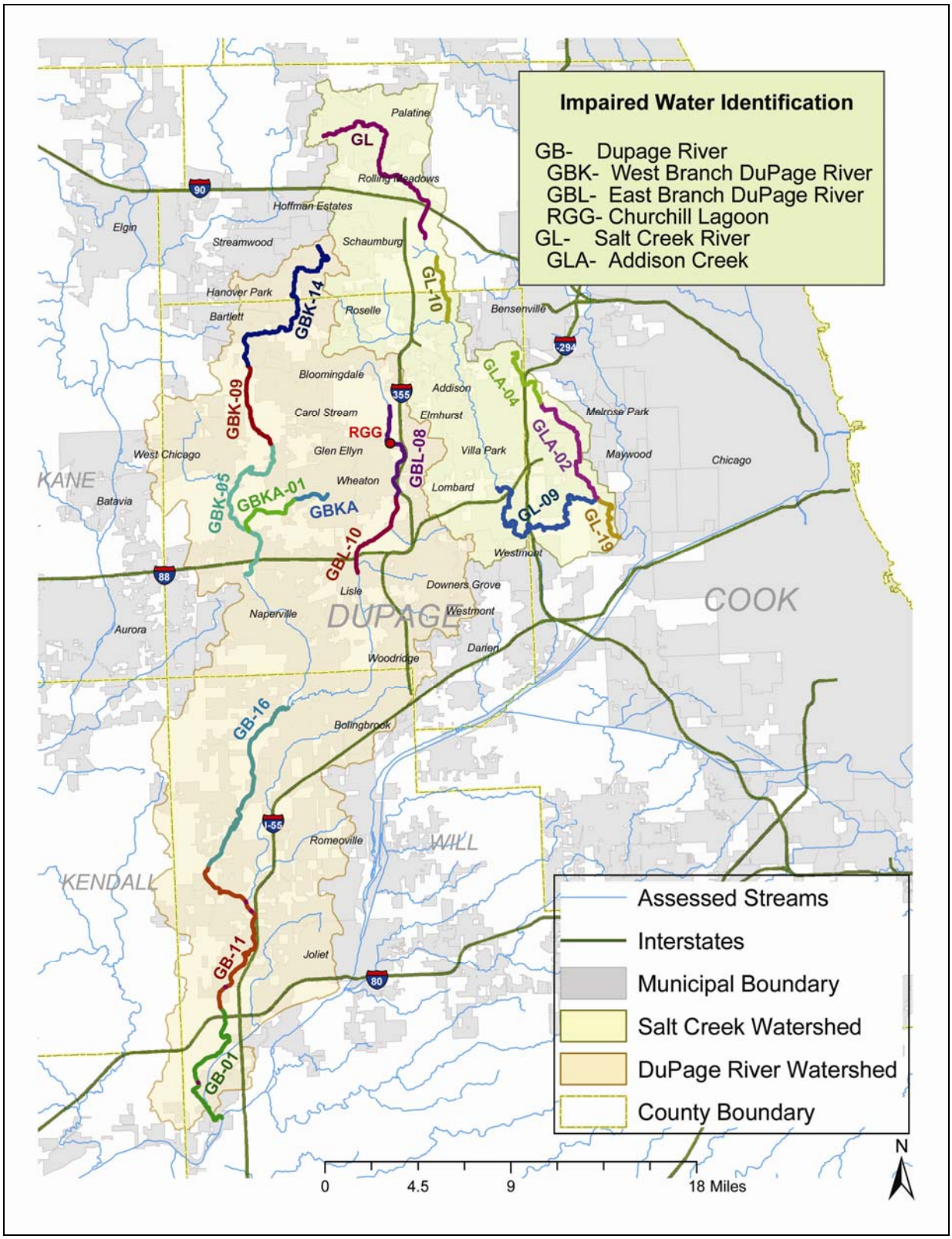


Figure 2-2: DuPage River/Salt Creek Watershed Waterbodies for TMDL Development

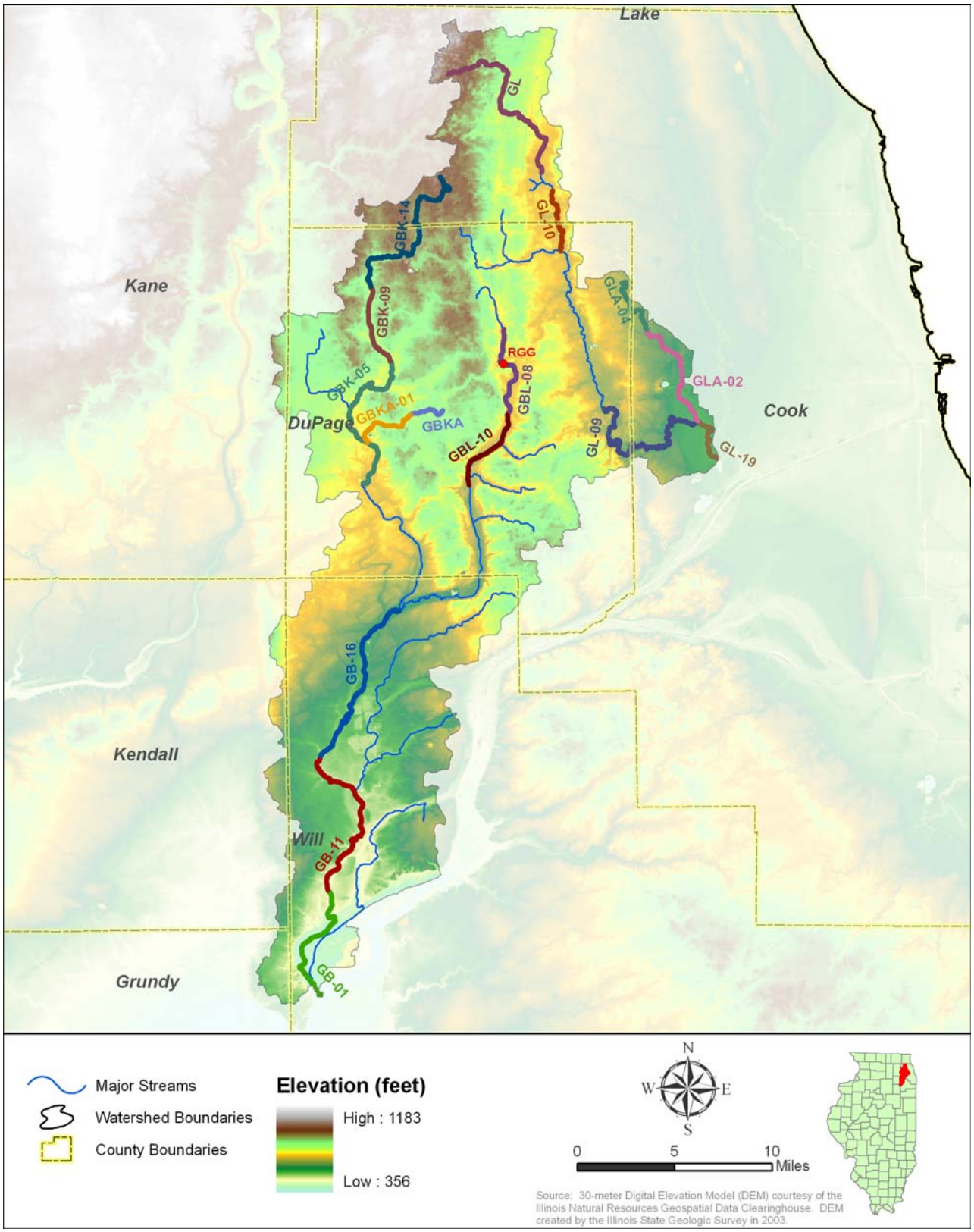


2.2 Topography

Topography influences soil types, precipitation, and subsequently, watershed hydrology and pollutant loading. For the DuPage/Salt Creek watershed, a USGS 30-meter resolution digital elevation model (DEM) was obtained from the Illinois Natural Resources Geospatial Data Clearinghouse to characterize the topography. The DEM was then cropped to the extents of the Salt Creek and DuPage River watersheds combined, as provided by the Illinois EPA, and analyzed. Figure 2-3 displays elevations throughout the DuPage River/Salt Creek watershed. In general, the watershed starts at a higher elevation in the north and west and grades down to a lower elevation in the south or east toward the Des Plaines River, resulting in overall surface water flow from northwest to southeast. There is an increased elevation ridge that separates the Salt Creek and DuPage River watersheds. The percent change in elevation across the DuPage River/Salt Creek Watershed is approximately 93% and ranges from 974 feet to 505 feet.

The elevation at the Salt Creek headwaters is 895 feet and flow approximately 43 miles before it enters the Des Plaines River (elevation of 607 feet), resulting in a stream gradient of 6.72 feet per mile (0.0013 slope). The elevation at the DuPage River headwaters is 974 feet and flow into the Des Plaines River 63 miles downstream (elevation of 505 feet). The resulting stream gradient is 7.44 feet per mile (0.0014 slopes).

Figure 2-3: DuPage River/Salt Creek Watershed Digital Elevation Model (DEM)



2.3 Land Use

Land use is as dynamic as the water moving throughout a watershed. It is constantly changing and has a large impact on the quality of a watershed. Land use data for the watershed were extracted from the Illinois Gap Analysis Project (IL-GAP) Land Cover data layer. IL-GAP was started at the Illinois Natural History Survey (INHS) in 1996, and the land cover layer was the first component of the project. The IL-GAP Land Cover data layer is a product of the Illinois Interagency Landscape Classification Project (IILCP), an initiative to produce statewide land cover information on a recurring basis cooperatively managed by the United States Department of Agriculture National Agricultural Statistics Service (NASS), the Illinois Department of Agriculture (IDA), and the Illinois Department of Natural Resources (IDNR). The land cover data were generated using 30-meter grid resolution satellite imagery taken during 1999 and 2000. The IL-GAP Land Cover data layer contains 23 land cover categories, including detailed classification in the vegetated areas of Illinois.

Tables 2-1 and 2-2 summarize the land use for the DuPage River and Salt Creek watersheds, respectively. Figure 2-4 shows land use and land cover in the DuPage River/Salt Creek Watershed and indicates that urban lands are dominant in both sub-watersheds, accounting for 65.0% of the total area in the DuPage River watershed and 84.8% in the Salt Creek watershed. In the DuPage River watershed, urban open space is the predominant land use (26.7% of the total land cover), while medium density urban built-up is the predominant land use in the Salt Creek watershed (37.0% of total land cover). Agricultural land accounts for 21.2% of land cover in the DuPage watershed, but only 0.3% in the Salt Creek watershed. Of the agricultural land in the DuPage watershed, soybeans and corn contribute the most to the agricultural land cover (9.1% and 8.1%, respectively). The other land uses are very similar between the two watersheds. In the DuPage River watershed, forested land accounts for 9.5% of the area, while wetlands (1.9%), surface water (1.8%) and barren and exposed land (0.6%) account for the remaining land uses. In the Salt Creek watershed, forested land makes up 11.9% of the area, and surface water (2.0%), wetland (1.0%) and barren and exposed land (0.03%) are the other existing land uses.

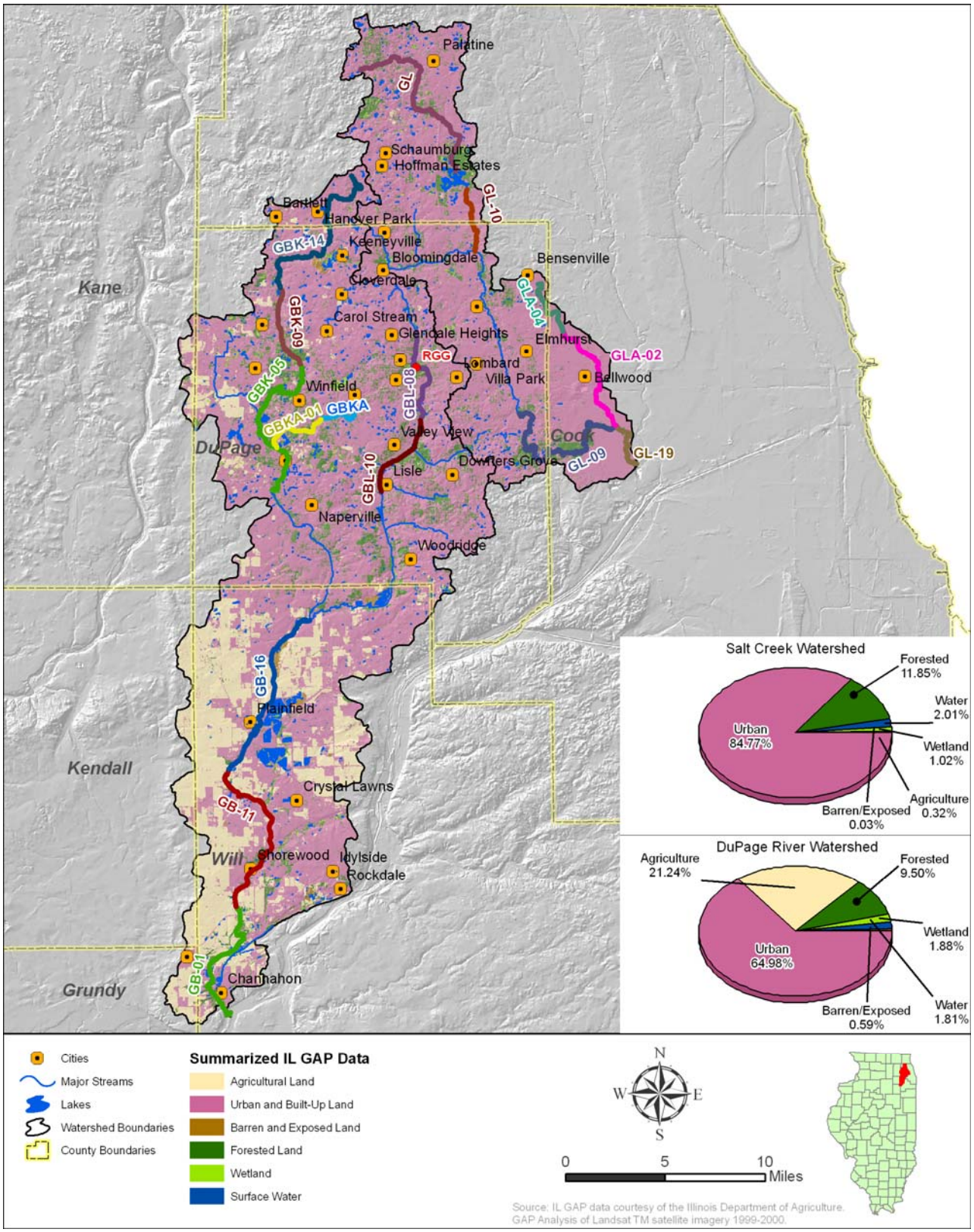
Table 2-1: Summary of IL GAP Data for the DuPage River Watershed

IL Gap Classification	Acreage	Percent	Summarized Acreage	Summarized Percentage
Urban and Built-up Land: Urban Open Space	64115.6	26.7%	156250.6	65.0%
Urban and Built-up Land: Low/Medium Density:	55019.6	22.9%		
Urban and Built-up Land: High Density	18784.5	7.8%		
Urban and Built-up Land: Low/Medium Density: Low (TM Scene 2331)	18330.9	7.6%		
Agricultural Land: Soybeans	21776.2	9.1%	51080.1	21.2%
Agricultural Land: Corn	19549.8	8.1%		
Agricultural Land: Rural Grassland	8110.7	3.4%		
Agricultural Land: Other Agriculture	1077.7	0.5%		
Agricultural Land: Other Small Grains and Hay	443.2	0.2%		
Agricultural Land: Winter Wheat	122.3	0.1%		
Forested Land: Upland: Mesic	12275.8	5.1%	22802.8	9.5%
Forested Land: Partial Canopy/Savanna Upland	6053.1	2.5%		
Forested Land: Upland: Dry-Mesic	4461.7	1.9%		
Forested Land: Upland: Dry	12.2	0.01%		
Wetland: Shallow Marsh/Wet Meadow	2175.2	0.9%	4524.6	1.9%
Wetland: Floodplain Forest: Wet	1101.3	0.5%		
Wetland: Floodplain Forest: Wet-Mesic	638.3	0.3%		
Wetland: Deep Marsh	483.5	0.2%		
Wetland: Shallow Water	124.10	0.1%		
Wetland: Seasonally/Temporarily Flooded	2.2	0.0%		
Other: Surface Water	4344.9	1.8%	4344.9	1.8%
Other: Barren and Exposed Land	1416.0	0.6%	1416.0	0.6%

Table 2-2: Summary of IL GAP Data for the Salt Creek Watershed

IL Gap Classification	Acreage	Percent	Summarized Acreage	Summarized Percentage
Urban and Built-up Land: Low/Medium Density: Medium (TM Scene 2331)	35101.9	37.0%	80406.6	84.8%
Urban and Built-up Land: Urban Open Space	20698.3	21.8%		
Urban and Built-up Land: High Density	15439.8	16.3%		
Urban and Built-up Land: Low/Medium Density: Low (TM Scene 2331)	9166.7	9.7%		
Forested Land: Upland: Mesic	5673.3	6.0%	11239.4	11.9%
Forested Land: Partial Canopy/Savanna Upland	3684.0	3.9%		
Forested Land: Upland: Dry-Mesic	1882.1	2.0%		
Other: Surface Water	1903.9	2.0%	1903.9	2.0%
Wetland: Shallow Marsh/Wet Meadow	677.2	0.7%	970.1	1.0%
Wetland: Deep Marsh	176.8	0.2%		
Wetland: Floodplain Forest: Wet-Mesic	74.5	0.1%		
Wetland: Floodplain Forest: Wet	41.6	0.04%		
Agricultural Land: Corn	162.8	0.2%	302.7	0.3%
Agricultural Land: Soybeans	138.6	0.2%		
Agricultural Land: Other Small Grains and Hay	1.3	0.0%		
Other: Barren and Exposed Land	26.9	0.03%	26.9	0.03%

Figure 2-4: DuPage River/Salt Creek Watershed Land Use Map



2.4 Soils

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

The SSURGO data were analyzed based on drainage class (Figure 2-6), hydrologic group (Figure 2-5) and K-factor (Figure 2-7), a coefficient of the Universal Soil Loss Equation (USLE). The drainage class, as stated in the SSURGO database is, "The natural drainage condition of the soil [which] refers to the frequency and duration of wet periods" (Soil Survey Staff, "Table Column Descriptions"). Poorly drained soils can be found in areas where there is frequent flooding such as land adjacent to lakes and streams. However, some excessively drained areas can be found interspersed around the lakes. Excessively drained areas may in part be caused by anthropogenic sources, such as construction of residential and paved areas near the lakes. It may also be a part of the natural geology, with localized areas prone to excessive drainage. The majority of the eastern border of the watershed is moderately well drained.

Soils that remain saturated or inundated for a sufficient length of time become hydric through a series of chemical, physical and biological processes. Once a soil takes on hydric characteristics, it retains those characteristics even after the soil is drained. Therefore hydric soils are the best indicator of what is or once was a wetland (SMC 2007). Wetlands help control flooding by retaining water when it rains and then releasing it slowly back into lakes and streams. The longer a soil is inundated the more likely it is that it will become hydric.

The hydrologic soil group classification identifies soil groups with similar infiltration and runoff characteristics during periods of prolonged wetting. Typically, clay soils that are poorly drained have lower infiltration rates, while well-drained sandy soils have the greatest infiltration rates. USDA has defined four hydrologic groups (A, B, C, or D) for soils. Type A soil has high infiltration while D soil has very low infiltration rate. Table 2-3 summarizes the group characteristics and Figure 2-5 shows the distribution of hydrologic soil groups. Generally, areas to the east contain a moderate to slow infiltration rate (hydrologic group C), while areas near the lakes on the western side of the watershed contain both slow (hydrologic group D) to moderately high infiltration rates (hydrologic group B).

Table 2-3: Relative Characteristics of Hydrologic Soil Groups

HSG Runoff	Run off Potential	Infiltration Rate	Transmission Rate
A	Low	High	High
B	Moderate	Moderate	Moderate
C	High	Low	Low
D	High	Very Low	Very Low

A commonly used soil attribute of interest is the K-factor, a coefficient used in the USLE. The K-factor is a dimensionless measure of a soil's natural susceptibility to erosion. Factor values may range from 0 for water surfaces to 1.00 (although in practice, maximum K-factor values do not generally exceed 0.67). Large K-factor values reflect greater potential for soil erodibility.

The compilation of K-factors from the SSURGO data was done in several steps. Soils are classified in the SSURGO database by map unit symbol. Each map unit symbol is made up of components and each component as part of that map unit is further broken down into horizons (or layers). The K-factor was determined by selecting the dominant components in the most surficial horizon per each map unit. The distribution of K-factor values in the DuPage River and Salt Creek watershed is shown in Figure 2-7. K-factors range from 0.15 to 0.43 in this watershed. Areas with the highest K-factor are dispersed throughout the watershed with the greatest concentration within DuPage County.

Figure 2-5: DuPage River/Salt Creek Watershed SSURGO Hydrologic Soil Group

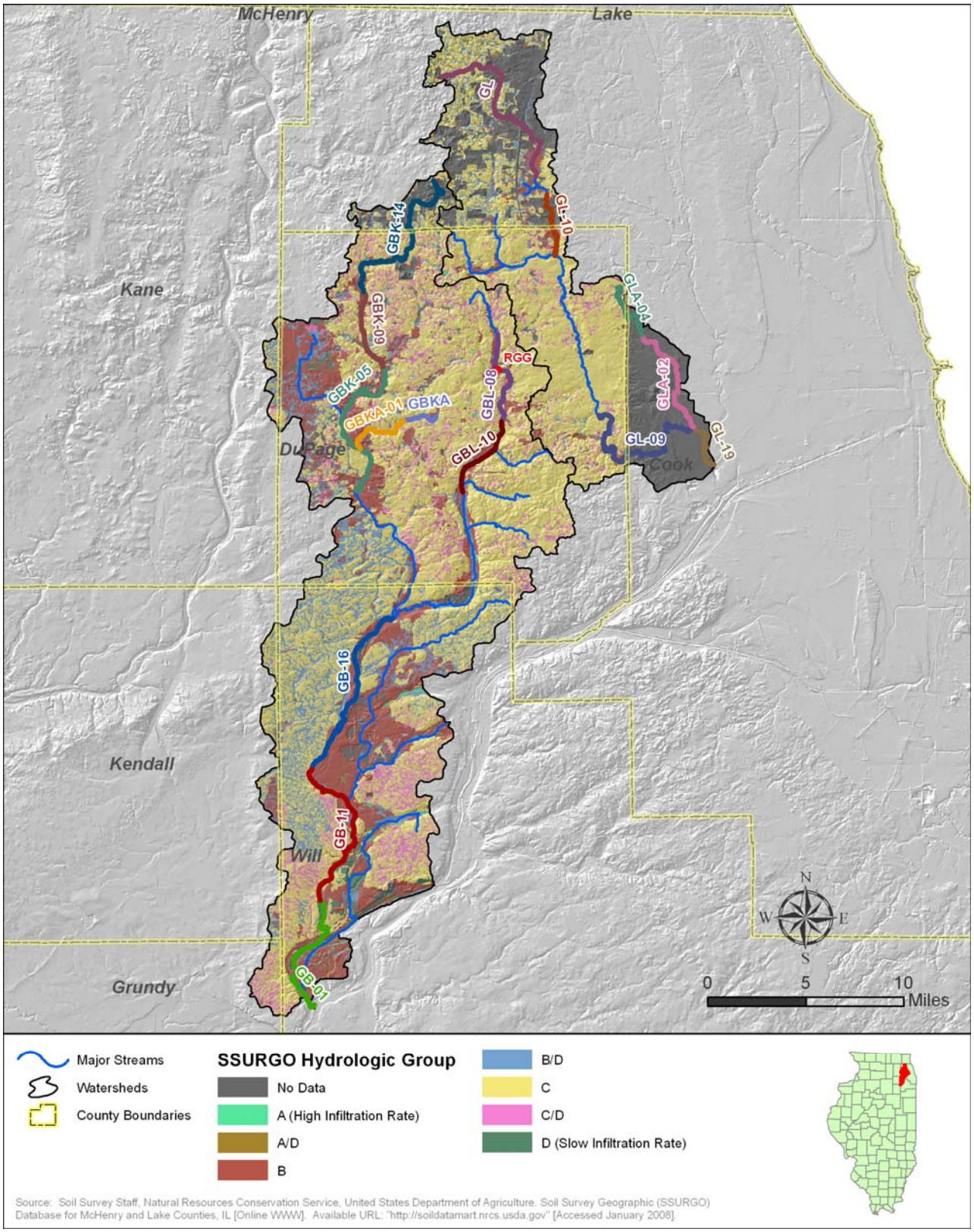


Figure 2-6: DuPage River/Salt Creek Watershed SSURGO Drainage Class

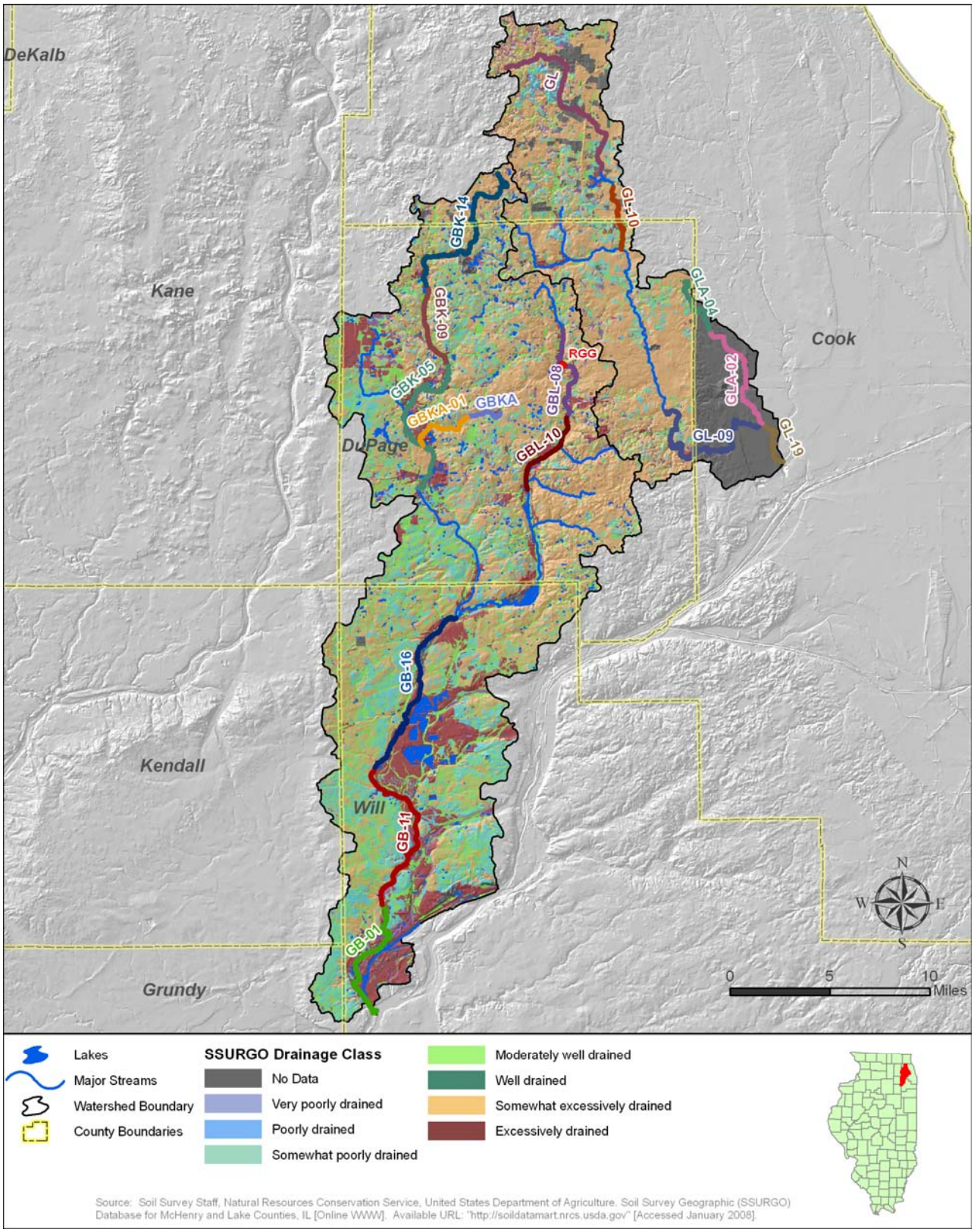
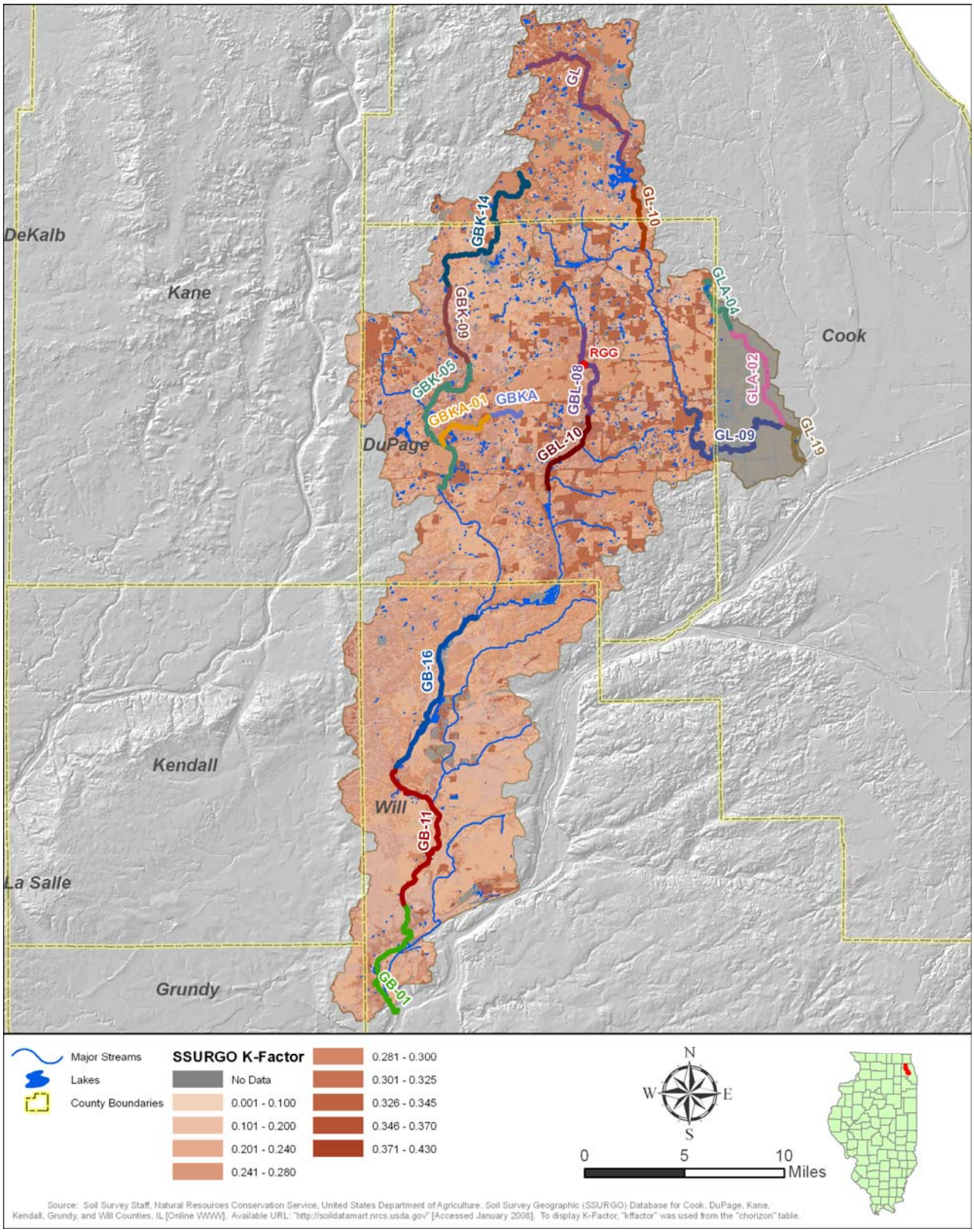


Figure 2-7: DuPage River/Salt Creek Watershed SSURGO K-Factor



2.5 Population

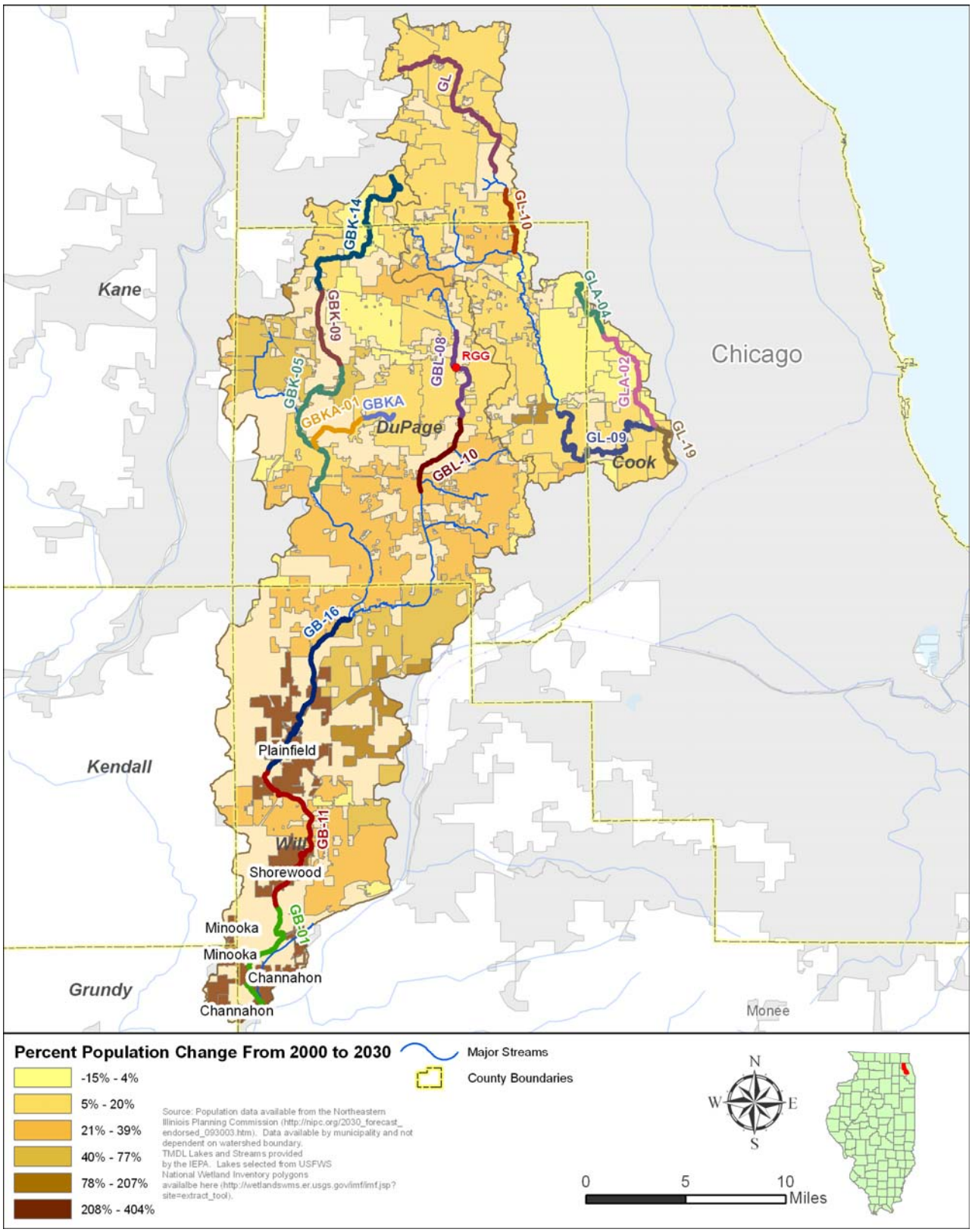
Circumstances in the DuPage River/ Salt Creek watershed today are not only the product of the geologic and natural processes that have occurred in the watershed, but also a reflection of human impacts and population growth. Development has changed the watershed's natural drainage system as channelization and dredging have replaced slow moving shallow streams and wetlands. This alteration has affected the way water runs off of the landscape both in increased volume and velocity, resulting in the potential increase in pollutant transport.

Census 2000 data in format of TIGER/Line Shape file were downloaded to analyze the population in the DuPage River/Salt Creek watershed. Census data were also available for groups of census blocks, but the original census block data was used since it is a finer resolution and, therefore, more accurate.

In 2000, approximately 4.8 million, people resided in the DuPage River/Salt Creek watershed, roughly 9,250 persons per square mile. The Salt Creek watershed accounts for nearly 80% of the population, but only 40% of the area. Census blocks with the greatest populations occur in the central and southern areas of the DuPage River watershed in Aurora, Naperville, and Joliet.

The Illinois Department of Commerce and Economic Opportunity provide population projections by municipality on their website ("Population Projections", 2005). Figure 2-8 depicts the projected percent population change in the watershed from 2000 to 2030. In general, the southern portion of the watershed is expected to have the most growth (~400%). The town of Plainfield, with a population of 13,038 persons in 2000, is projected to grow to 65,743 persons in 2030, an increase of approximately 404%. Also in the southern area of DuPage River watershed, Chinnahon, Minooka, and Shorewood are also expected grow in population by 400%, 287%, and 207%, respectively. Based on these data, development will grow dramatically in the southern portion of the watershed, but in general, the entire watershed will continue to increase in population over the years.

Figure 2-8: DuPage River/Salt Creek Watershed Population Projection



2.6 Climate

Northeast Illinois has a continental climate with highly variable weather. The temperatures of continental climates are not buffered by the influence of a large waterbody (like an ocean, inland sea or Great Lake). Areas with continental climates often experience wide temperature fluctuations throughout the year. Temperature and precipitation data were obtained from the Illinois State Climatologist Office website. The nearest monitoring station to the DuPage River/Salt Creek Watershed is the City of Wheaton, which is located in the central area of the watershed. For the DuPage River/Salt Creek watershed, the highest temperatures in the summer can range from high 80s to over 100 degrees Fahrenheit and the lowest winter temperatures might range between sub-zero and the teens. Precipitation in the form of rainfall is greatest in the growing season (April through September) (Figure 2-9).

Climate data were analyzed for the City of Wheaton between the years of 1950 and 2008, although data were not available for all years. The mean high summer temperature was 84.2° F and the mean low temperature in winter was 17.9° F. Mean annual high temperatures were approximately 61° F, while mean annual low temperatures were approximately 40° F (Table 2-4). Mean monthly precipitation data in Wheaton are displayed in Figure 2-9. Wheaton receives most of its precipitation in the spring and summer months, with maximum precipitation occurring in June (4.1 inches). The least amount of average rainfall precipitation occurs in February (1.6 inches). Annual total precipitation average was approximately 35.2 inches.

Impacts of the climate on the watershed can result from the warm summer temperatures and occasional long dry spells. These conditions lead to shallow water depth, warm water temperatures and low dissolved oxygen which makes the river inhospitable to less tolerant fish and invertebrate species. Additionally, heavy flooding can occur during the spring months, resulting in pollutant transport (SMC 2007; USFWS 1998).

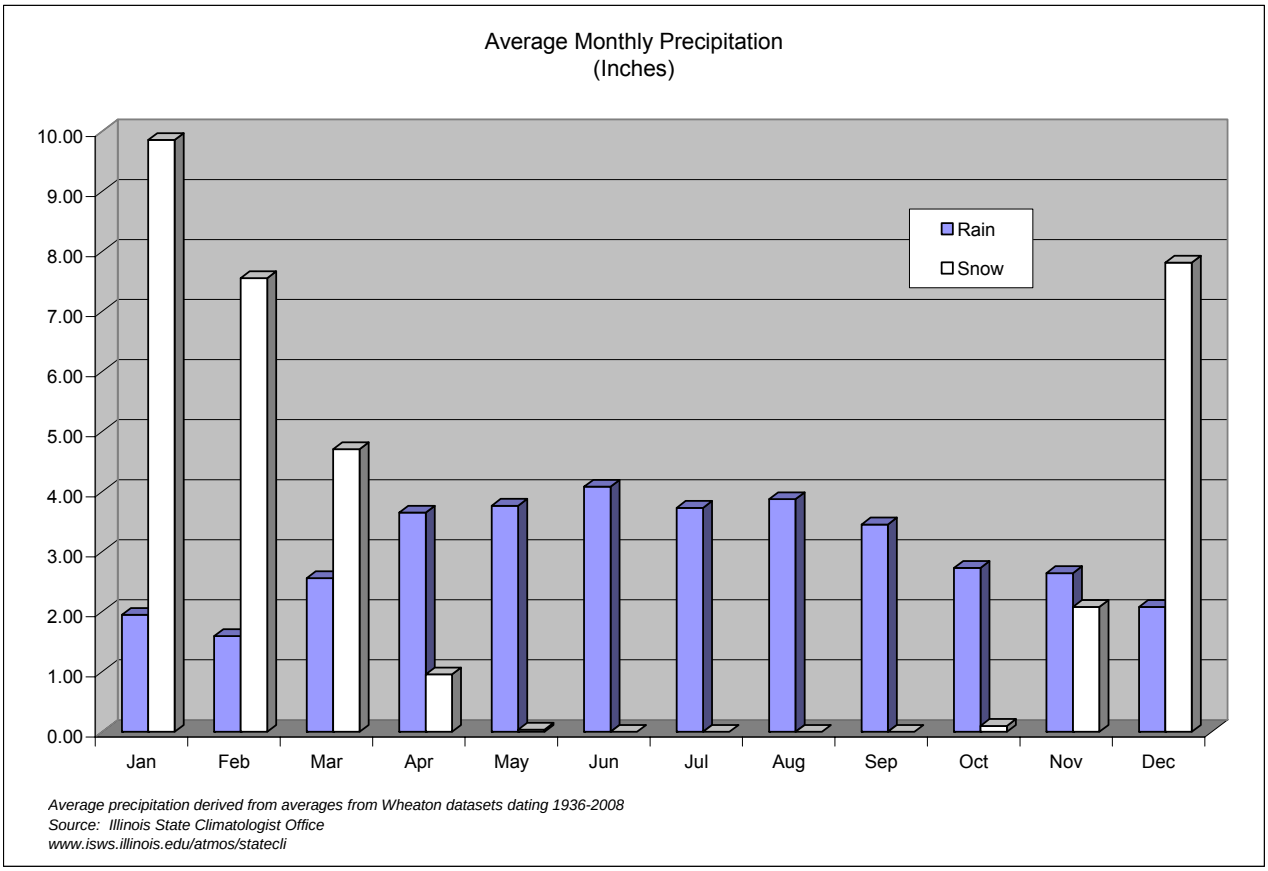
Table 2-4: Temperature Characterization, Wheaton, IL (1950-2008)

	Average High (°F)	Average Low (°F)	Average Number of Days with High > 90 (°F)	Average Number of Days with Low < 32 (°F)	Mean (°F)
January	31.36	14.63	0.00	28.50	23.02
February	36.35	18.37	0.00	25.13	27.38
March	47.61	27.31	0.00	22.28	37.49
April	62.05	38.05	0.12	8.69	50.09
May	73.41	47.59	1.12	1.35	60.52
June	82.76	57.47	6.52	0.02	70.14
July	85.83	62.26	8.51	0.02	74.07
August	84.00	60.94	5.86	0.00	72.49
September	77.50	52.96	2.08	0.20	65.26
October	65.45	42.22	0.04	5.48	53.86
November	49.19	31.29	0.00	17.07	40.26
December	36.04	20.02	0.00	26.25	28.00
Annual	61.27	39.69	23.98	129.03	50.51
Spring	61.04	37.64	1.20	31.53	49.37
Summer	84.24	60.28	20.68	0.03	72.29
Fall	64.10	42.18	2.16	22.16	53.16
Winter	34.59	17.88	0.00	77.51	26.29

Annual/seasonal values may differ from the sum of the monthly values due to rounding.

Source: www.sws.uiuc.edu/atmos/statecli

Figure 2-9: Mean Monthly Precipitation in Wheaton, IL



Average precipitation derived from averages from Wheaton datasets dating 1936-2008
Source: Illinois State Climatologist Office
www.isws.illinois.edu/atmos/statecli

2.7 Hydrology

Understanding how water moves and flows is an important component of understanding a watershed. All of the parameters listed in the previous sections (i.e. topography, soils, and precipitation) impact hydrology. Hydrological data are available from the USGS website (www.usgs.gov, 2008). The USGS maintains stream gages throughout the U.S. and it monitors conditions such as gage height and stream flow, and at some locations, precipitation.

Four gage stations within the DuPage River/Salt Creek Watershed were chosen for stream flow data: East Branch of DuPage River at Downers Grove, IL (05540160), West Branch of DuPage River at Naperville, IL (05540130), DuPage River at Shorewood, IL (05540500), and Salt Creek at Western Springs, IL (05531500). The Salt Creek gage is located just upstream from the Addison Creek confluence near the confluence with the Des Plaines River. The East Branch is located upstream of the confluence with the West Branch. The West Branch of the DuPage River gage station is located immediately upstream of the confluence with the East Branch. Finally, the DuPage River at Shorewood is located immediately upstream of the confluence of the DuPage River mainstem and the Des Plains River. Figure 2-10 shows the location of these four USGS gages, and others, throughout the watershed.

Figure 2-11 depicts the stream flow measured at Salt Creek for the period of 1945 to 2007. The drainage area upstream of this gage was 115 square miles. The highest average monthly stream flows at Salt Creek were measured in April (233.0 cubic feet per second (cfs)), while the lowest monthly stream flows were measured in September (93.9 cfs). Overall the highest stream flow for this gage occurs during the late winter and spring months, while low flows occur during the fall. The annual stream flow for the Salt Creek gage was measured at about 136.8 cfs.

The East Branch DuPage gage drains an area of 26.6 square miles, and data at this gage exist from 1989 to 2007. Over this period the average stream flow of the East Branch was 49.5 cfs (Figure 2-12). Similar to the Salt Creek gage, stream flows were highest in the late winter and spring months with lower flows in the fall. Maximum average monthly flows occurred in April (69.0 cfs) while lowest average monthly flows occurred in September (35.2 cfs).

Figure 2-13 displays the stream flow measured at the West Branch DuPage River for the period ranging from 1988 to 2007. The drainage area upstream of this gage was 123 square miles and the highest average monthly stream flows at the West Brach were measured in April (230.6 cfs). Minimum average monthly stream flows of 102.0 cfs were measured in September. The annual stream flow for the West Branch gage was approximately 152.9 cfs.

Data from the main stem of the DuPage River gage exist from 1940 to 2007. This gage drains an area of 324 square miles and over the duration of its existence the average stream flow of the DuPage was 307.3 cfs (Figure 2-14). Peak stream flows occur in the late winter and spring months, with lower flows in the fall. Maximum monthly flow occurred in April (517.7 cfs) while lowest monthly flows were measured in September (189.9 cfs).

Churchill lagoon sometimes referred to as Churchill Woods Forest Preserve Lake was constructed in the 1930s by the Civilian Conservation Corps (CCC). It was created by damming the East Branch of the DuPage River. The surface area is 21 acres with a maximum depth of 8 feet and 3.67 miles of shoreline length. The 137 acre Churchill Woods Forest Preserve which contains the lagoon provides fishing, boating, and picnic and hiking facilities.

Figure 2-10: DuPage River/Salt Creek Watershed USGS Gaging Stations and Water Quality Stations

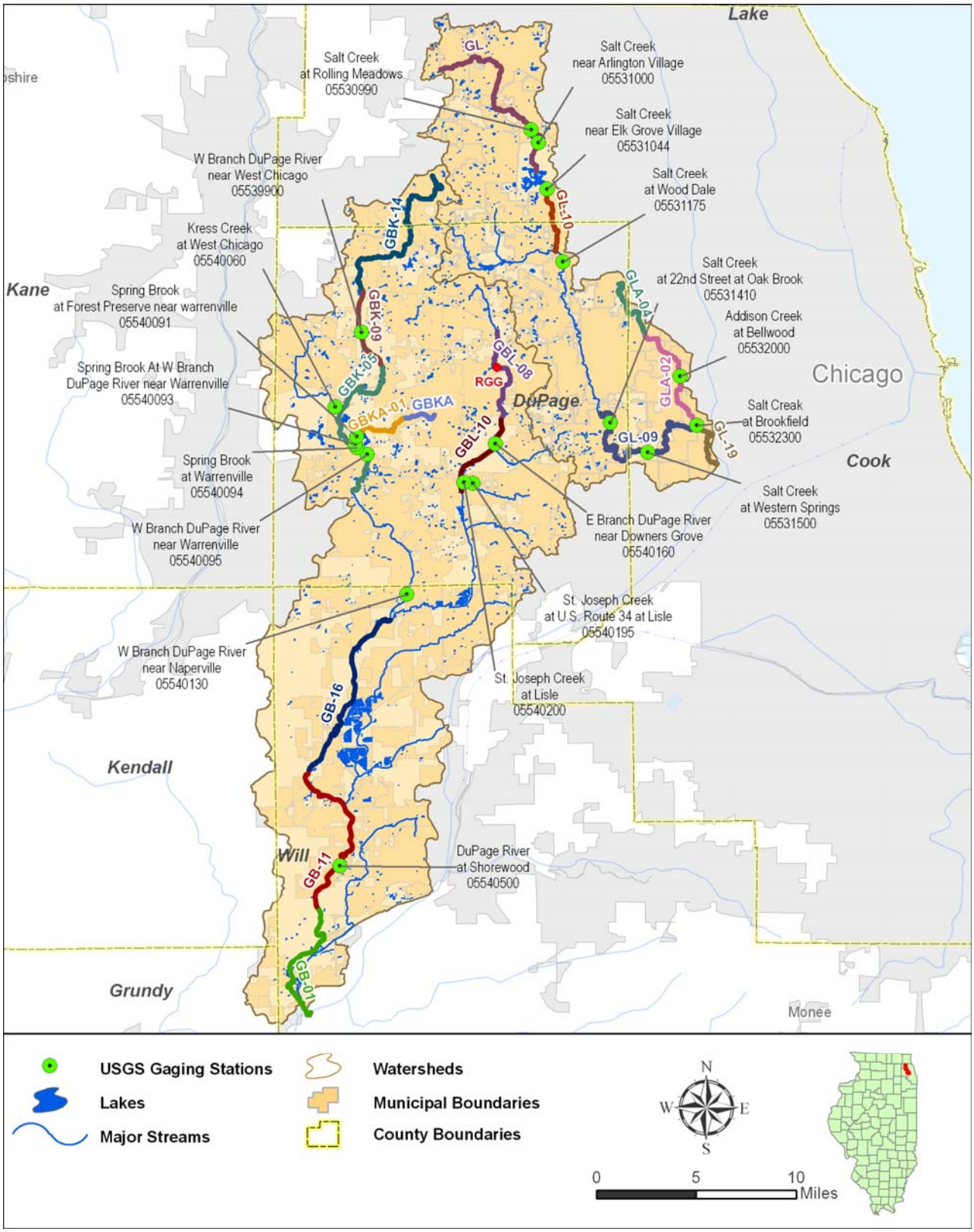


Figure 2-11: Mean Monthly Flow in Salt Creek at Western Springs, IL USGS Station 1945-2007

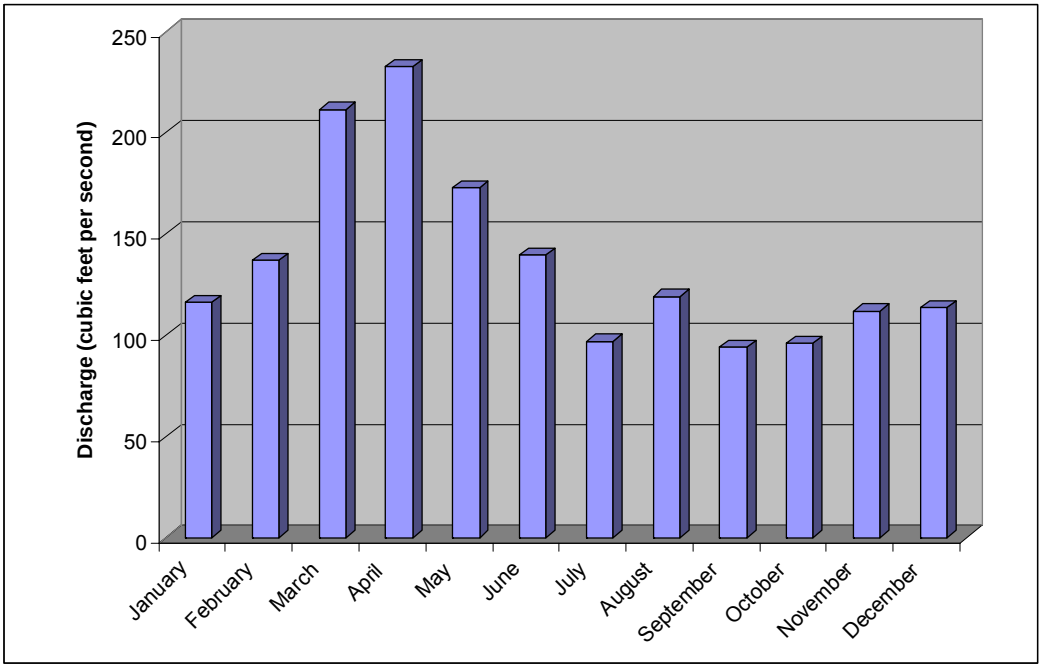


Figure 2-12: Mean Monthly Flow in East Branch of DuPage River at Downers Grove, IL USGS Station 1989-2007

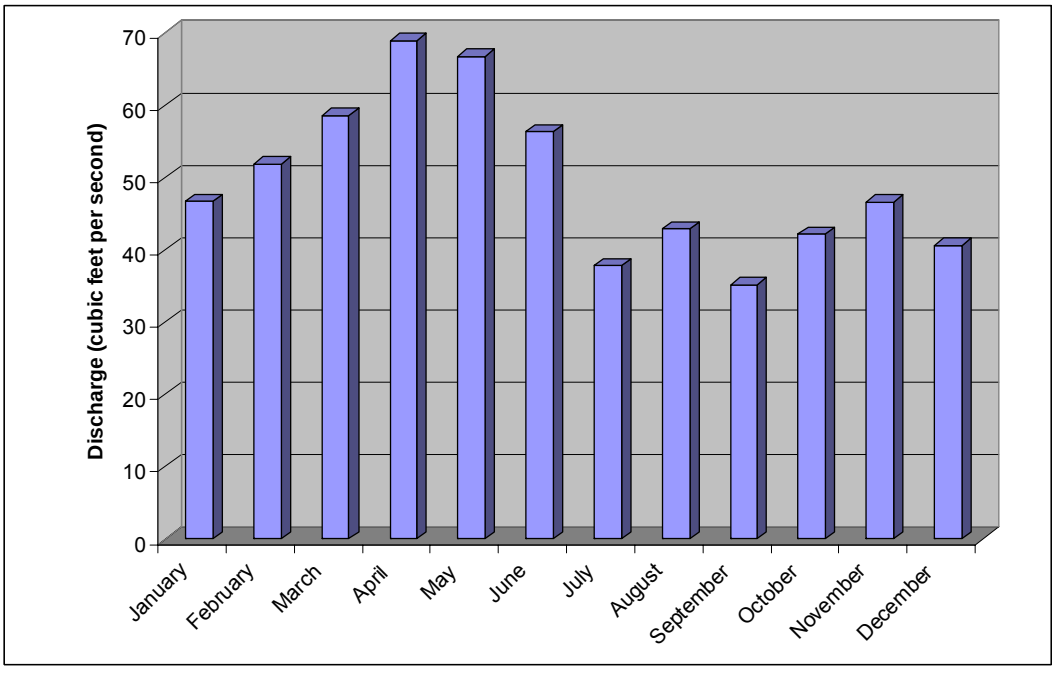


Figure 2-13: Mean Monthly Flow for West Branch of DuPage River at Naperville, IL USGS Station 1988-2007

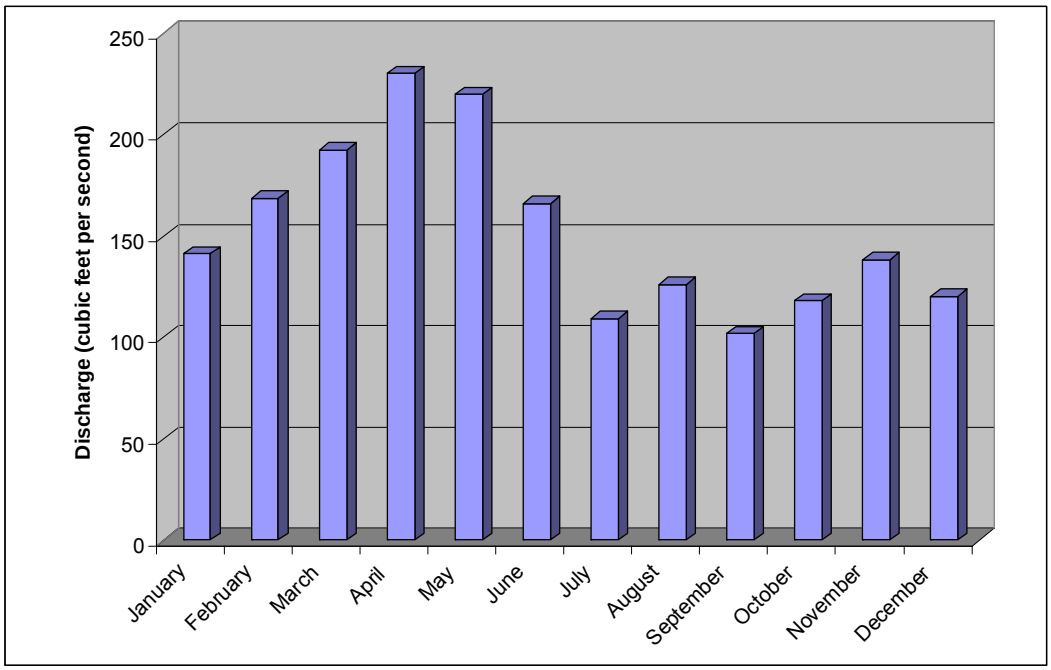
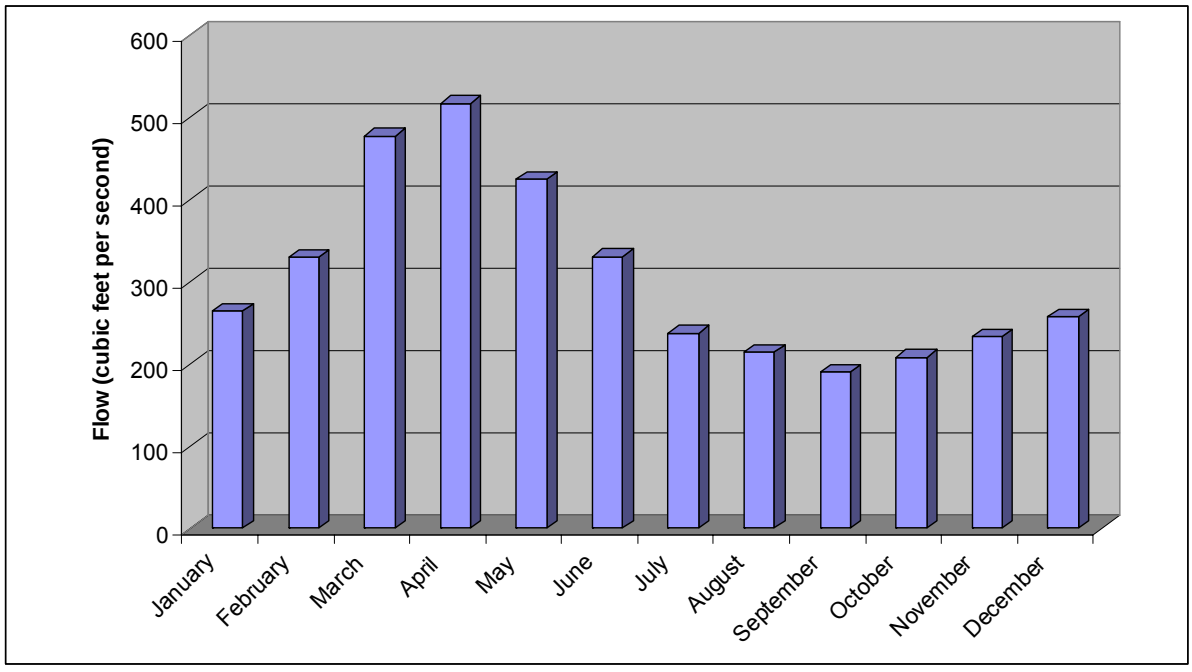


Figure 2-14: Mean Monthly Flow for DuPage River at Shorewood, IL USGS Station 1940-2007



3.0 Public Participation and Involvement

The Illinois EPA is committed to keeping the watershed stakeholders and general public informed and involved throughout the TMDL process. Success for any TMDL implementation plan relies on a knowledgeable public to assist in follow-through required for attainment of water uses within their watershed. It is important to engage the local citizens as early in the process as possible by providing opportunities to learn and process information. This ensures that concerns and issues are identified at an early stage, so that they can be addressed and facilitate maximum cooperation in the implementation of the recommended courses of actions identified in the TMDL process. All stakeholders should have access to enough information to allay concerns, gain confidence in the TMDL process and understand the purpose and the regulatory authority or other responsible party that will implement recommendations.

Illinois EPA, along with AECOM, will hold up to two public meetings within the DuPage River/Salt Creek watershed throughout the course of TMDL development. This section will be regularly updated after public meetings have occurred. The Illinois EPA regularly meets with the DuPage River Salt Creek Workgroup to keep them informed on the TMDL progress.

General information regarding the process of TMDL development in Illinois can be found at http://www.epa.state.il.us/water/tmdl. This link also contains paths to notices of public meetings and other TMDL-related watershed information for the entire state of Illinois.

Background information regarding watersheds, watershed management, best management practices and the Clean Water Act (CWA) can be found on the EPA's water website at http://www.epa.gov/watertrain/.

For other reports and studies concerning the DuPage River and Salt Creek watershed, please visit the watershed workgroup website (http://www.drscw.org/). The website contains reports, data and additional links to other sources specifically related to this watershed.

4.0 Applicable Water Quality Standards and TMDL Targets

Water pollution control programs are designed to protect the beneficial uses of the water resources within the state. Each state has the responsibility to set water quality standards that protect these beneficial uses, also called "designated uses." Illinois waters are designated for various uses including aquatic life, primary contact (e.g., swimming, water skiing), secondary contact (e.g., boating, fishing), industrial use, drinking water, food-processing water supply and aesthetic quality. Illinois' WQS provide the basis for assessing whether the beneficial uses of the state's waters are being attained.

4.1 Illinois Pollution Control Program

The Illinois Pollution Control Board (IPCB) is responsible for setting WQS to protect designated uses. The federal Clean Water Act requires the states to review and update WQS every three years. Illinois EPA, in conjunction with USEPA, identifies and prioritizes those standards to be developed or revised during this three-year period. The IPCB has established four primary sets (or categories) of narrative and numeric water quality standards for surface waters: general use; public and food processing; secondary contact and indigenous aquatic life; and Lake Michigan basin standards. Each set of standards is intended to help protect various designated uses established for each category.

Illinois EPA is also responsible for developing scientifically based water quality criteria and proposing them to the IPCB for adoption into state rules and regulations. These responsibilities were subsequently assumed by the Illinois Department of Energy and Natural Resources who, in July 1995, became part of the Illinois Department of Natural Resources. The Illinois WQS are established in the Illinois Administrative Rules Title 35, Environmental Protection; Subtitle C, Water Pollution; Chapter I, Pollution Control Board; Part 302, Water Quality Standards.

Water resource management activities involving interstate waters are also coordinated with various interstate committees and commissions. The Illinois EPA participates in water-resource management activities of the Association of State and Interstate Water Pollution Control Administrators, International Joint Commission of the Great Lakes Water Quality Board, Ohio River Valley Water Sanitation Commission, Upper Mississippi River Conservation Committee, Upper Mississippi River Basin Association, Council of Great Lakes Governors, and other interstate committees and commissions.

4.2 Designated Uses

The waters of Illinois are classified by designated uses assessed in 2008 (Table 4-1). Designated uses applicable to the DuPage River/Salt Creek watershed include: aesthetic quality, aquatic life, and primary contact. The corresponding water quality standard classification for these designated uses is the General Use Standard.

Table 4-1: Illinois Designated Uses and Applicable Water Quality Standards

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

The General Use classification is defined by IPCB as: The General Use standards will protect the state's water for aquatic life, wildlife, agricultural use, secondary contact use and most industrial uses and ensure the aesthetic quality of the state's aquatic environment. Primary contact uses are protected for all General Use waters whose physical configuration permits such use.

4.3 Applicable Illinois Water Quality Standards

For aquatic life use assessments, Illinois EPA relies on biological indicators to provide direct reliable measures of aquatic community health and facilitates detection of cumulative impacts on aquatic life from multiple stressors. The primary biological measures used are the fish Index of Biotic Integrity, the macroinvertebrate Index of Biotic Integrity and the Macroinvertebrate Biotic Index. By relying more on biological indicators than on less reliable surrogates (e.g., water chemistry), the assessments of aquatic life

use achieve their primary purpose: to determine the degree to which a water body provides for the protection and propagation of fish, shellfish, and wildlife (i.e., the Clean Water Act's interim aquatic life goal). In these terms, an Illinois EPA assessment conclusion of Full Support for aquatic life use indicates conditions that meet the Clean Water Act's interim aquatic life goal. In a minority of streams, where biological data is not available, aquatic life use assessments are based primarily on physiochemical water data. The streams in this watershed were assessed at less than Full Support and water chemistry was analyzed for violations. Tables 4-2 and 4-3 summarize the potential impairments and standards that apply to streams and lakes within the DuPage River/Salt Creek Watershed.

Table 4-2: Summary of Water Quality Standards for Potential Impairments of Stream Segments in the DuPage River/Salt Creek Watershed

Parameter	Units	General Use Water Quality Standard
Chloride	mg/L	500
Dissolved Oxygen	mg/L	**For most waters[1]:** March-July > 5.0 min. & > 6.0- 7-day mean[1] Aug-Feb > 3.5 min, > 4.0- 7-day mean[1], & > 5.5- 30-day mean[1]. **For waters with enhanced protection[1]:** March-July > 5.0 min & > 6.25- 7-day mean[1] Aug-Feb > 4.0 min, > 4.5- 7-day mean[1], & > 6.0- 30-day mean[1].
Fecal Coliform	count/100 mL	May – October 200[2], 400[3]
Manganese - Total	mg/L	1.0
pH	s.u.	Within the range of 6.5 – 9.0 except for natural causes
Phosphorus – Total[4]	mg/L	0.05
Silver – Total	µg/L	5.0

1. Applies to the dissolved oxygen concentration in the main body of all streams, in the water above the thermocline of thermally stratified lakes and reservoirs, and in the entire water column of unstratified lakes and reservoirs. Additional dissolved oxygen criteria are found in 35 Ill Adm. Code 302.206, including the list of waters with enhanced dissolved oxygen protection and methods for assessing attainment of dissolved oxygen minimum and mean values.
2. Geometric mean based on a minimum of 5 samples taken over not more than a 30 day period.
3. Standard shall not be exceeded by more than 10% of the samples collected during any 30 day period.
4. Standard applies in particular inland lakes and reservoirs (greater than 20 acres) and in any stream at the point where it enters any such lake or reservoir.

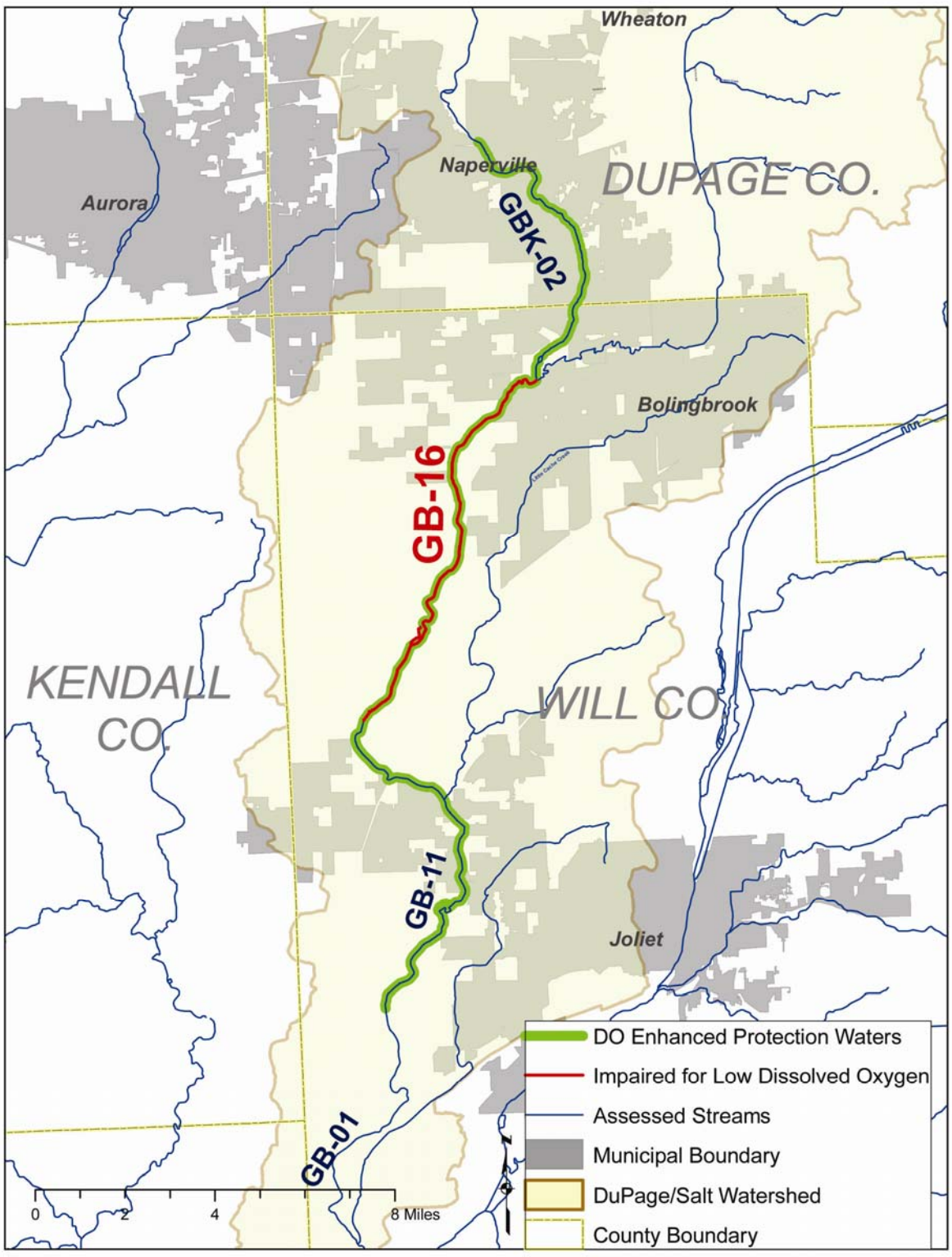
Due to limited state resources, fecal coliform bacteria is not normally sampled at a frequency necessary to apply the General Use standard, i.e., at least five times per month during May through October, and very little data available from others are collected at the required frequency. Therefore, assessment guidelines are based on application of the standard when sufficient data is available to determine standard exceedances; but, in most cases, attainment of the *primary contact* use is based on a broader methodology intended to assess the likelihood that the General Use standard is being attained. To assess the *primary contact* use, Illinois EPA uses all fecal coliform bacteria from water samples collected in May through October, over the most recent five-year period (i.e., 2002 through 2006). Based on these water samples, geometric means and individual measurements of fecal coliform bacteria are compared to the concentration thresholds in Table C-16. To apply the guidelines, the geometric mean of fecal coliform bacteria concentration is calculated from the entire set of May through October water samples, across the five years. No more than 10% of all the samples may exceed 400/100 ml for a water body to be considered Fully Supporting.

As for the application of the dissolved oxygen standard, DuPage River segments GB-11 and GB-16 are waters with enhanced protection according to 35 Ill Adm. Code 302.206, Figure 4-1. Waters with enhanced protection have a more stringent standard than all other waters of the State. These waters were chosen based on the potential biota and the dissolved oxygen needed for said biota to thrive. All other waters in the DuPage River and Salt Creek watersheds are not considered enhanced protection waters and the standard for "most waters" applies. DuPage River GB-16 is impaired for dissolved oxygen on the 2008 303(d) List according to the enhanced protection dissolved oxygen standard.

Table C-16. Guidelines for Assessing *Primary Contact* Use in Illinois Streams and Inland Lakes.

Degree of Use Support	Guidelines
Fully Supporting (Good)	No exceedances of the fecal coliform bacteria standard in the last five years and the geometric mean of all fecal coliform bacteria observations ≤200/100 ml, and ≤10% of all observations exceed 400/100 ml.
Not Supporting (Fair)	One exceedance of the fecal coliform bacteria standard in the last five years (when sufficient data is available to assess the standard) or The geometric mean of all fecal coliform bacteria observations in the last five years ≤200/100 ml, and >10% of all observations in the last five years exceed 400/100 ml or The geometric mean of all fecal coliform bacteria observations in the last five years >200/100 ml, and ≤25% of all observations in the last five years exceed 400/100 ml.
Not Supporting (Poor)	More than one exceedance of the fecal coliform bacteria standard in the last five years (when sufficient data is available to assess the standard) or The geometric mean of all fecal coliform bacteria observations in the last five years >200/100 ml, and >25% of all observations in the last five years exceed 400/100 ml

Figure 4-1: Segments with Enhanced Protection in the DuPage River/Salt Creek Watershed



4.4 TMDL Targets

In order for a waterbody to be listed as Fully Supporting, it must meet all of its applicable designated uses. Because WQS are designed to protect those designated uses, a pollutant's numeric WQS is therefore used as the target or endpoint for establishing a TMDL. Table 4-3 summarizes the endpoints that will be used in the TMDL development for the DuPage River/Salt Creek watershed.

Table 4-3: TMDL Targets for Impaired Waterbodies in the DuPage River/Salt Creek Watershed

Segment ID	Waterbody Name	Impairment	TMDL Target	Units
IL_GL	Salt Creek	Fecal Coliform	<400	cfu/100 ml
IL_GL-09	Salt Creek	pH	6.5-9.0	s.u.
		Fecal Coliform	<400	cfu/100 ml
IL_GL-10	Salt Creek	pH	6.5-9.0	s.u.
		Fecal Coliform	<400	cfu/100 ml
IL_GL-19	Salt Creek	pH	6.5-9.0	s.u.
		Fecal Coliform	<400	cfu/100 ml
IL_GLA-02	Addison Creek	Fecal Coliform	<400	cfu/100 ml
IL_GB-01	DuPage River	Silver (total)	<5.0	µg/L
IL_GB-11	DuPage River	Chloride	<500	mg/L
		Fecal Coliform	<400	cfu/100 ml
IL_GB-16	DuPage River	Dissolved Oxygen[1]	*	mg/L
		Fecal Coliform	<400	cfu/100 ml
IL_GBK-05	W. Br. DuPage River	Dissolved Oxygen	*	mg/L
		Fecal Coliform	<400	cfu/100 ml
IL_GBK-09	W. Br. DuPage River	pH	6.5-9.0	s.u.
		Dissolved Oxygen	*	mg/L
		Silver (total)	<5.0	µg/L
		Fecal Coliform	<400	cfu/100 ml
IL_GBK-14	W. Br. DuPage River	Manganese (total)	<1.0	mg/L
		Dissolved Oxygen	*	mg/L
		Fecal Coliform	<400	cfu/100 ml
IL_GBKA	Spring Brook	Dissolved Oxygen	*	mg/L
		Fecal Coliform	<400	cfu/100 ml
IL_GBKA-01	Spring Brook	Fecal Coliform	<400	cfu/100 ml
IL_GBL-08	E. Br. DuPage River	pH	6.5-9.0	s.u.
IL_GBL-10	E. Br. DuPage River	pH	6.5-9.0	s.u.
		Fecal Coliform	<400	cfu/100 ml

Segment ID	Waterbody Name	Impairment	TMDL Target	Units
IL_RGG	Churchill Lagoon	Total Phosphorus	<0.05	mg/L

1. Segment GB-16 is considered a water with enhanced protection for dissolved oxygen and the enhanced protection dissolved oxygen standard applies
* Refer to Table 4-2 for the dissolved oxygen standard

5.0 Water Quality Assessment

This section discusses the pollutants of concern for the DuPage River/Salt Creek watershed. The available water quality data were analyzed, assessed, and compared with WQS to verify the impairments of the 16 stream segments and Churchill Lagoon. The water quality conditions in the watershed were evaluated by sampling location and time. Available point and non-point source data were also assessed and discussed in more detail throughout the remainder of the section.

5.1 Water Quality Data

The DuPage River/Salt Creek Watershed has 17 impaired waters within its drainage area. Figure 5-1 shows the water quality data stations within the watershed that contain data relevant to the impaired segments. The following sections address both stream and lake impairments.

Data analysis was focused on all available data collected since the year 2000. The information presented in this section is a combination of both legacy and modernized USEPA Storage and Retrieval (STORET) database and data from the Illinois EPA database, Sierra Club, Wheaton Sanitary District, Metropolitan Water Reclamation District of Greater Chicago, and DuPage River Salt Creek Workgroup. Table 5-1 contains the monitoring entities for each water segment.

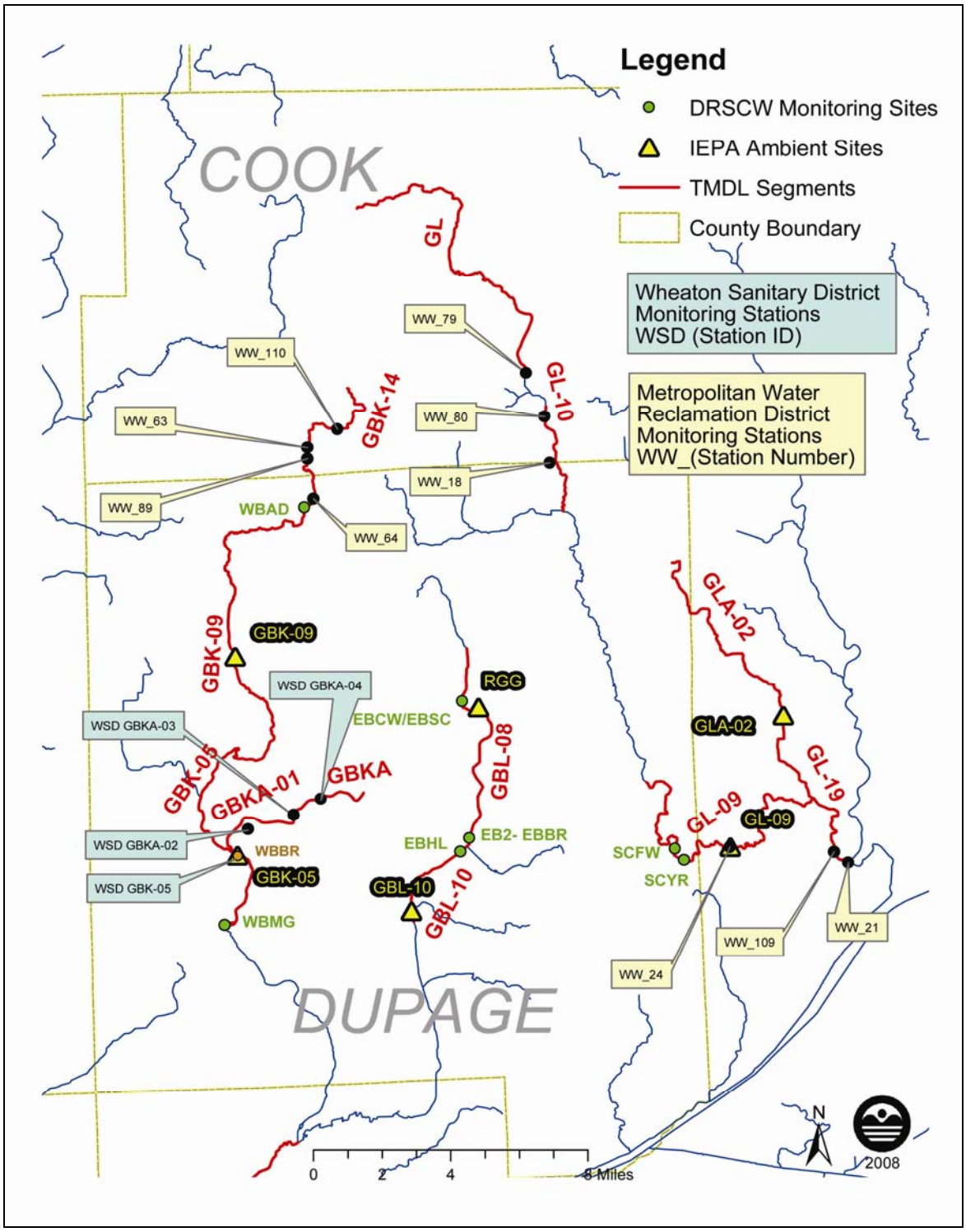
Data relevant to impairments were compiled for each impaired waterbody and summarized. The following parameters were grouped by impairment and discussed in relation to the relevant Illinois numeric WQS. For all assessments, compliance was determined at the surface of a stream or at the one-foot depth from the lake surface.

Table 5-1: Monitoring Station Information

Segment	Parameter	Entity
GB-01	Silver	Illinois EPA
GB-11	Chloride	Illinois EPA
	Fecal	Illinois EPA
GB-16	DO	Illinois EPA
	Fecal	Illinois EPA
GBK-05	DO	DRSCW, Illinois EPA, Sierra Club
	DO	WSD
	Fecal	Illinois EPA, WSD
GBK-09	DO	DRSCW, Illinois EPA, MWRDGC
	Fecal	Illinois EPA, MWRDGC
	Hardness	Illinois EPA
	pH	DRSCW, Illinois EPA, MWRDGC
	Silver	Illinois EPA
GBK-14	DO	MWRDGC
	Fecal	MWRDGC

Segment	Parameter	Entity
GBK-14	Mn, Total and Soluble	MWRDGC
GBKA	DO	WSD
	Fecal	WSD
GBKA-01	Copper	WSD
	Fecal	WSD
GBL-08	pH	DRSCW, Sierra Club
GBL-10	Fecal	Illinois EPA
	pH	DRSCW, Illinois EPA, Sierra Club
GL	Fecal	MWRDGC
GL-09	Fecal	Illinois EPA, MWRDGC
	pH	DRSCW, Illinois EPA, MWRDGC
GL-10	Fecal	MWRDGC
	pH	MWRDGC
GL-19	Fecal	MWRDGC
	pH	MWRDGC
GLA-02	Fecal	Illinois EPA
RGG	Phosphorus	Illinois EPA

Figure 5-1: Monitoring Stations Used for Assessing Impairments



5.1.1 Fecal Coliform

Figures 5-2 through 5-4 contain the available fecal coliform data. Data is available from the years indicated in the time series graphs, but for statistical purposes more recent data was used shown in Table 5-2, ranging from 1999 to 2007. The WQS for fecal coliform is a 200 cfu/100ml geometric mean based on a minimum of five samples taken over any 30 day period or a 400 cfu/100ml maximum not to be exceeded in more than 10% of samples taken during any 30 day period. Due to the unlikelihood of having five fecal coliform samples per month upon which to judge compliance, a single exceedance of 400 cfu/100 ml is often interpreted as an instantaneous maximum for assessment purposes.

Table 5-2: Fecal Coliform Data Summary

Segment	Stations	Data Years	No. of Samples	Violations >200	Violations >400	Min	Max	Average	Median
GB-11	IEPA GB-11	1999-2005	53	26	20	10	10900	1016	140
GB-16	IEPA GB-16	2001-2005	34	22	19	10	14000	1880	520
GBK-05	IEPA GBK-05 WSD GBK-05	1999-2006	89	77	59	1	56000	3305	670
GBK-09	IEPA GBK-09 WW_64, 89	1999-2007	197	179	155	20	60000	3965	2000
GBK-14	WW_63, 110	2001-2007	31	31	28	320	550000	22589	2100
GBKA	WSD GBKA-04	2005-2006	23	22	19	63	9200	1953	1200
GBKA-01	WSD GBKA-01, 02, 03	2005-2006	48	29	23	17	10114	1214	385
GBL-10	IEPA GBL-10	1999-2005	51	49	45	144	25600	4734	2000
GL	WW_79	2001-2007	57	20	15	0	330000	7090	80
GL-09	IEPA GL-09 WW_24	2001-2007	137	104	88	20	86000	2732	680
GL-10	WW_18, 80	2001-2007	150	110	96	20	100000	2595	710
GL-19	WW_21, 109	2001-2007	71	67	60	0	110000	5589	100
GLA-02	IEPA GLA-02	1999-2005	48	47	43	90	27800	4718	1972

Figure 5-2. Fecal Coliform Time Series for GB-16, GB-11 and GBL-10

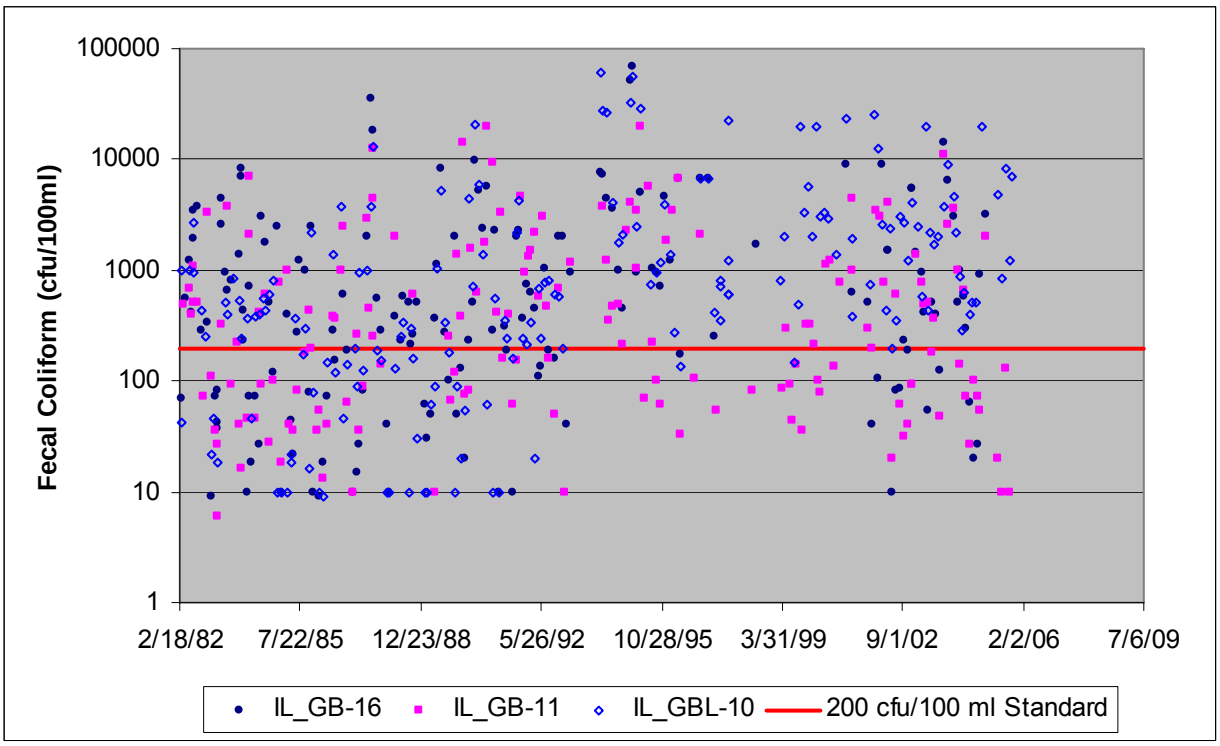


Figure 5-3. Fecal Coliform Time Series for GBK-05, GBK-09, GBK-14, GBKA and GBKA-01

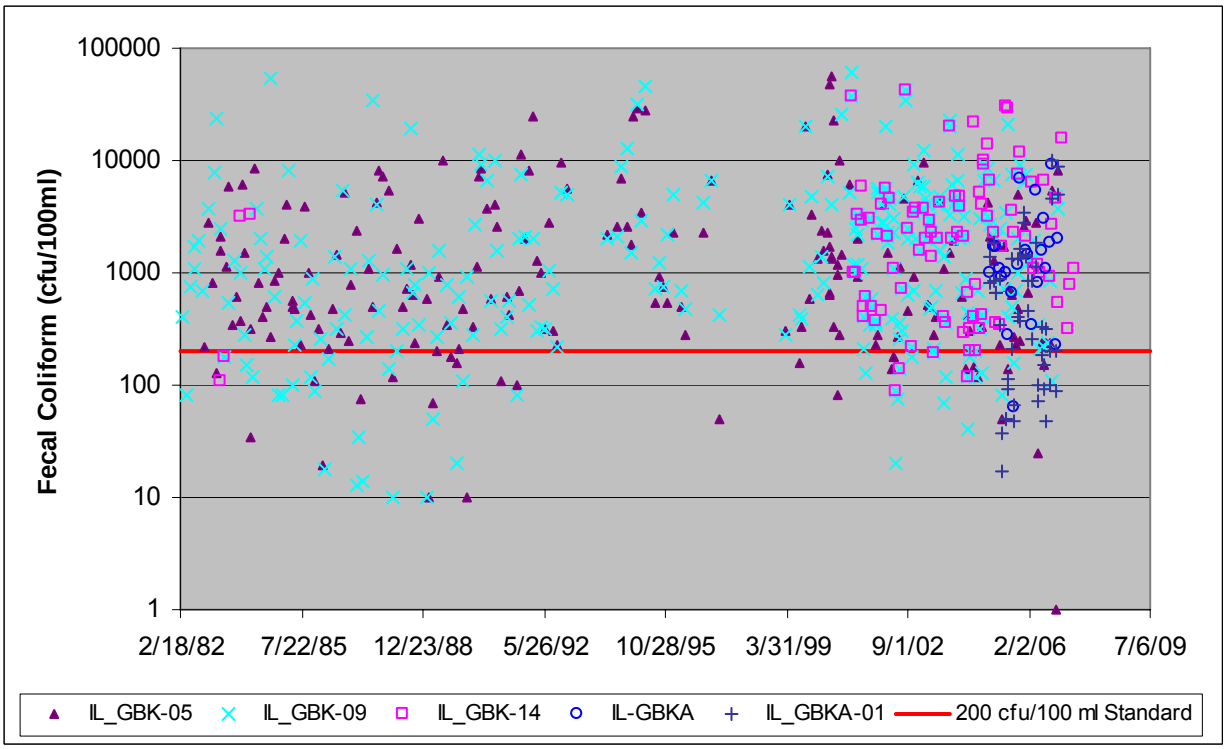
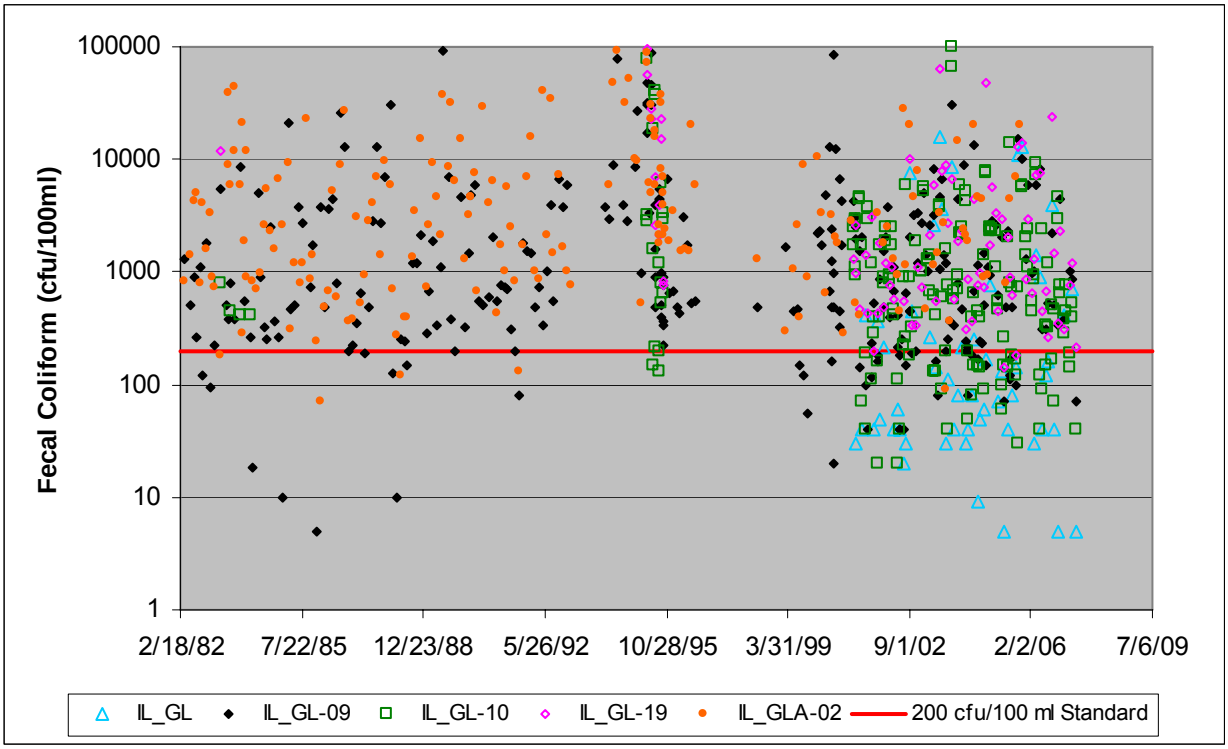


Figure 5-4. Fecal Coliform Time Series for GL, GL-09, GL-10, GL-19 and GLA-02



5.1.2 Dissolved Oxygen

The DO WQS for all segments except GB-16 is a 5.0 mg/L instantaneous minimum for March through July and 3.5 mg/L for August through February. Segment GB-16 is subject to enhanced protection so the WQS is a 5.0 mg/L instantaneous minumum for March through July and 4.0 mg/L for August through February. Five waterbody segments were determined to be impaired for low DO based on this criterion. Data ranged from 1964 to 2007. A data summary for recent dissolved oxygen data is contained in Table 5-3. Figure 5-5 contains summary information for Illinois EPA monthly DO data for GB-16 enhanced waterbody. Figures 5-6 and 5-7 contain continuous hourly monitoring data for GB-16 and GBK-05. Figure 5-8 contains monthly data for GBK-05, GBK-14, GBKA and GBK-09. Figure 5-9 contains continuous hourly data for GBK-09.

Table 5-3: Dissolved Oxygen Data Summary

Segment	Stations	Data Years	Observations	Violations	Minimum
GB-16	IEPA GB-08 IEPA GB-16*	2000- 2006	443	28	3.54
GBK-05	IEPA GBK-05 Sierra WB1 DRSCW WBMG* WSD GBK-05*	1999- 2007	15818	908	1.50
GBK-09	IEPA GBK-09 WW_64, 89 DRSCW WBAD*	1999- 2007	3198	77	4.33
GBK-14	WW_63, 110	2001-2007	40	9	0.00
GBKA	WSD GBKA-04	2005- 2006	23	9	0.80

* Continuous Monitoring Data

Figure 5-5. Dissolved Oxygen Time Series for GB-16 (Monthly Monitoring)

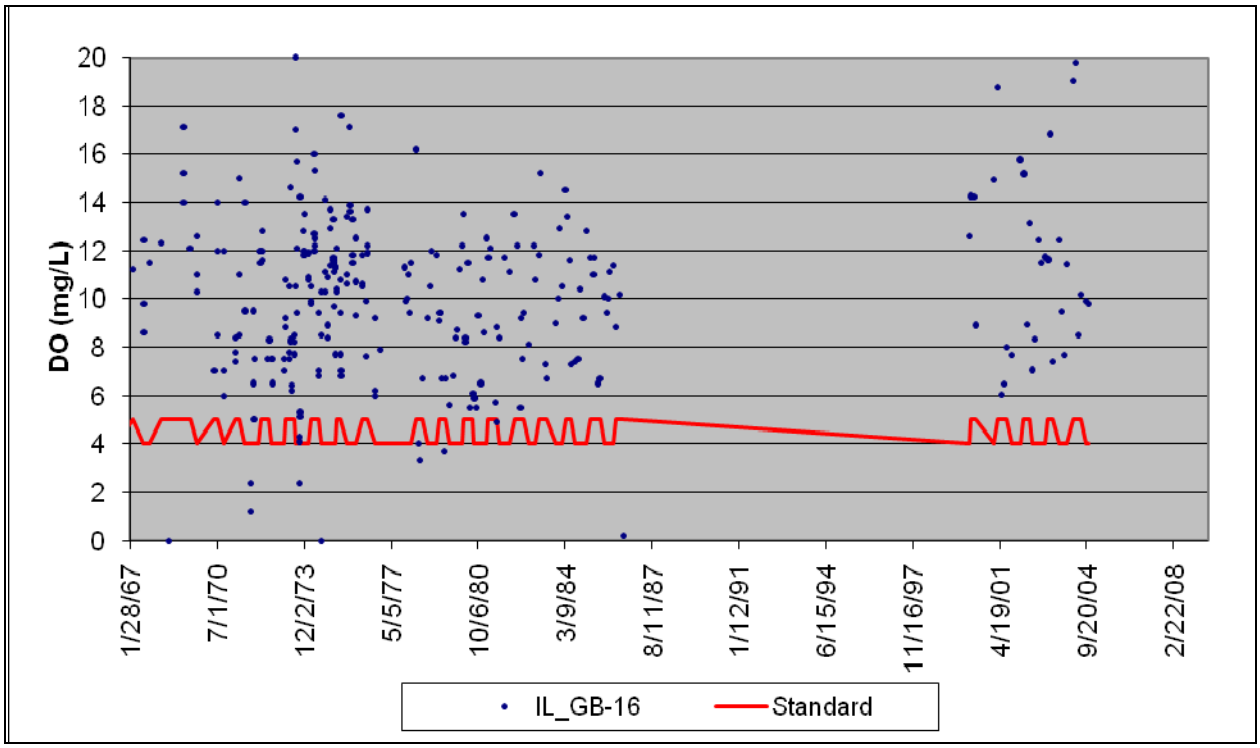


Figure 5-6. Dissolved Oxygen Data for GB-16 Provided by Illinois EPA (Continuous Hourly Monitoring)

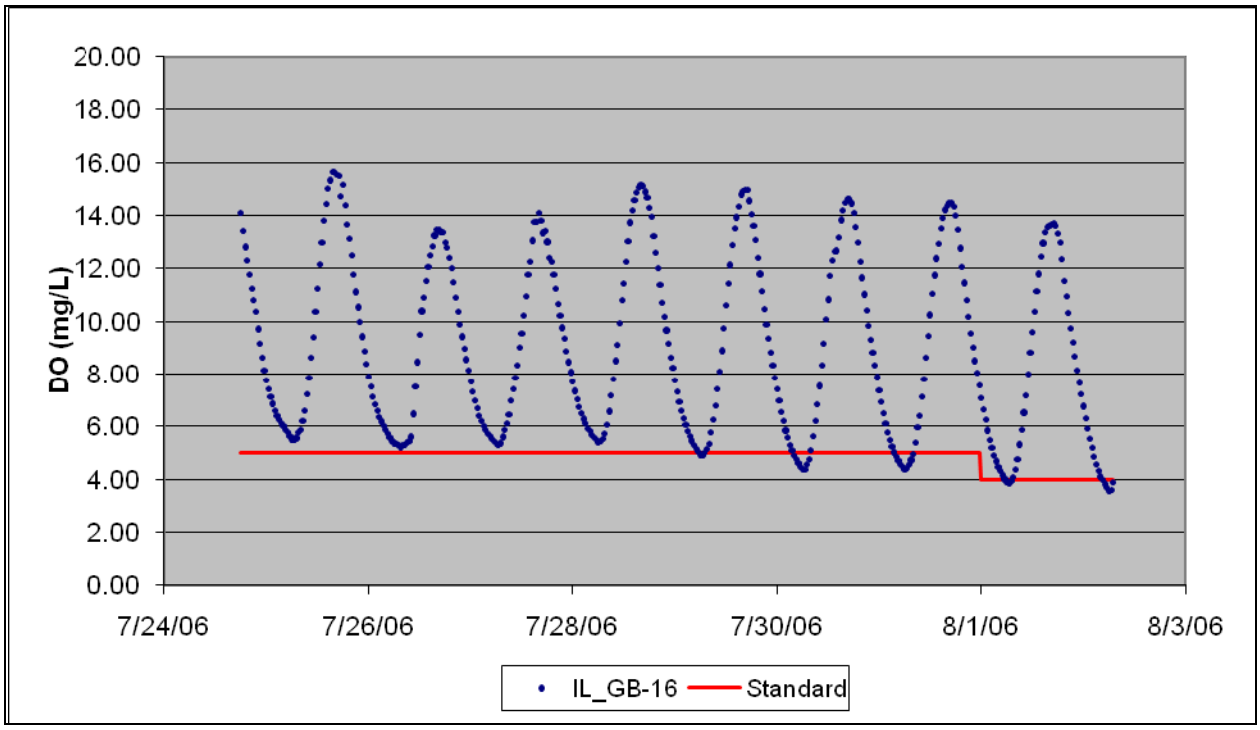


Figure 5-7. Dissolved Oxygen Data for GBK-05 Provided by Wheaton Sanitary District and DuPage River Salt Creek Workgroup (Continuous Hourly Monitoring)

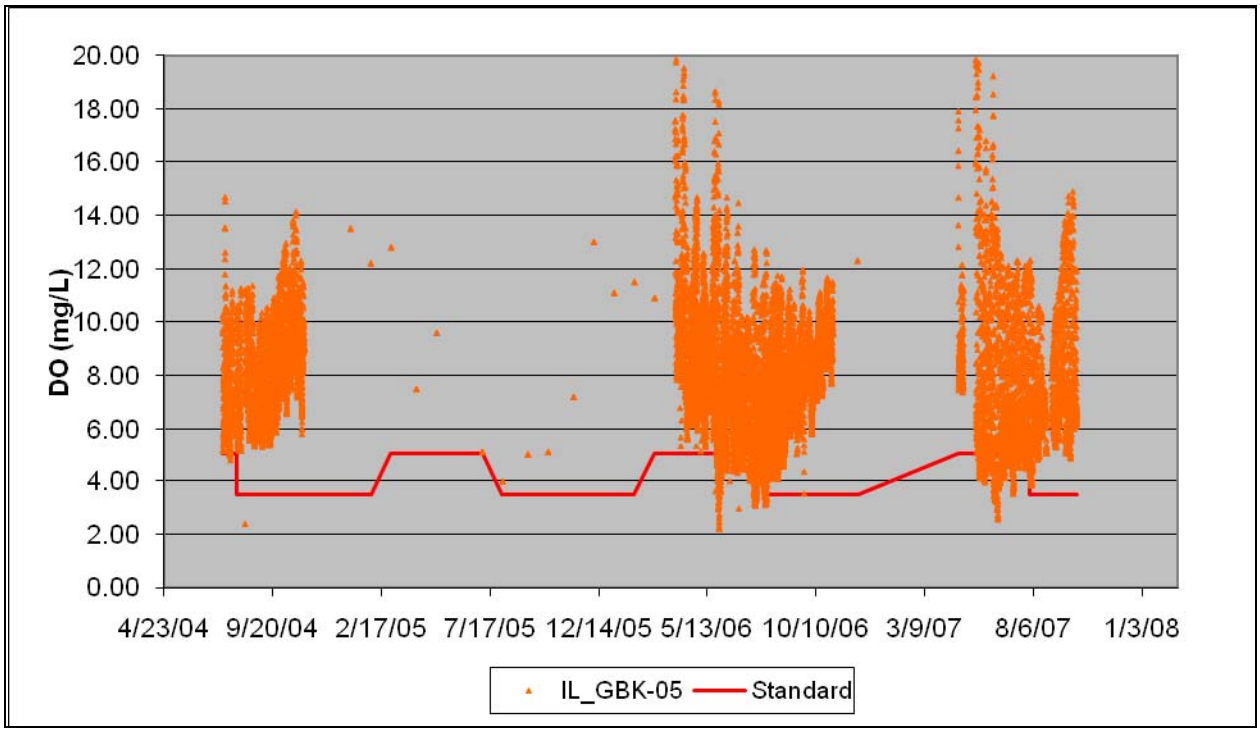


Figure 5-8. Dissolved Oxygen Time Series Data for GBK-05, GBK-14, GBKA and GBK-09 (Monthly Monitoring)

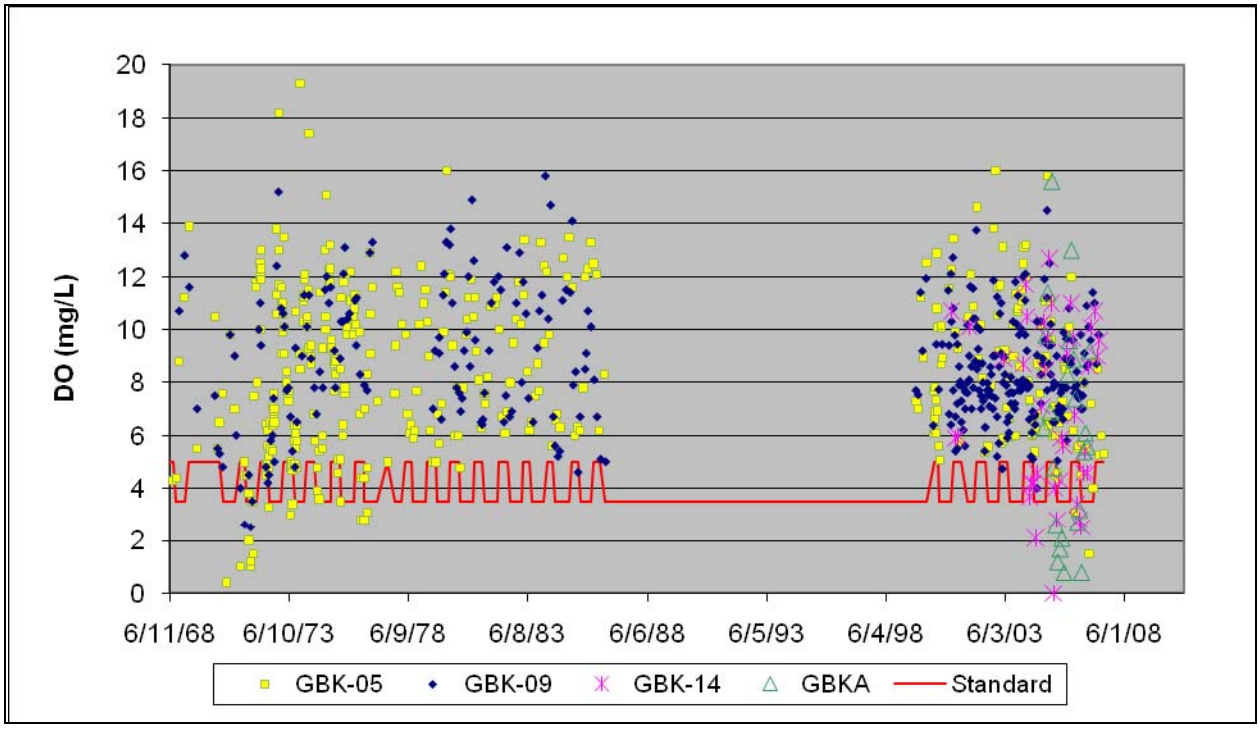
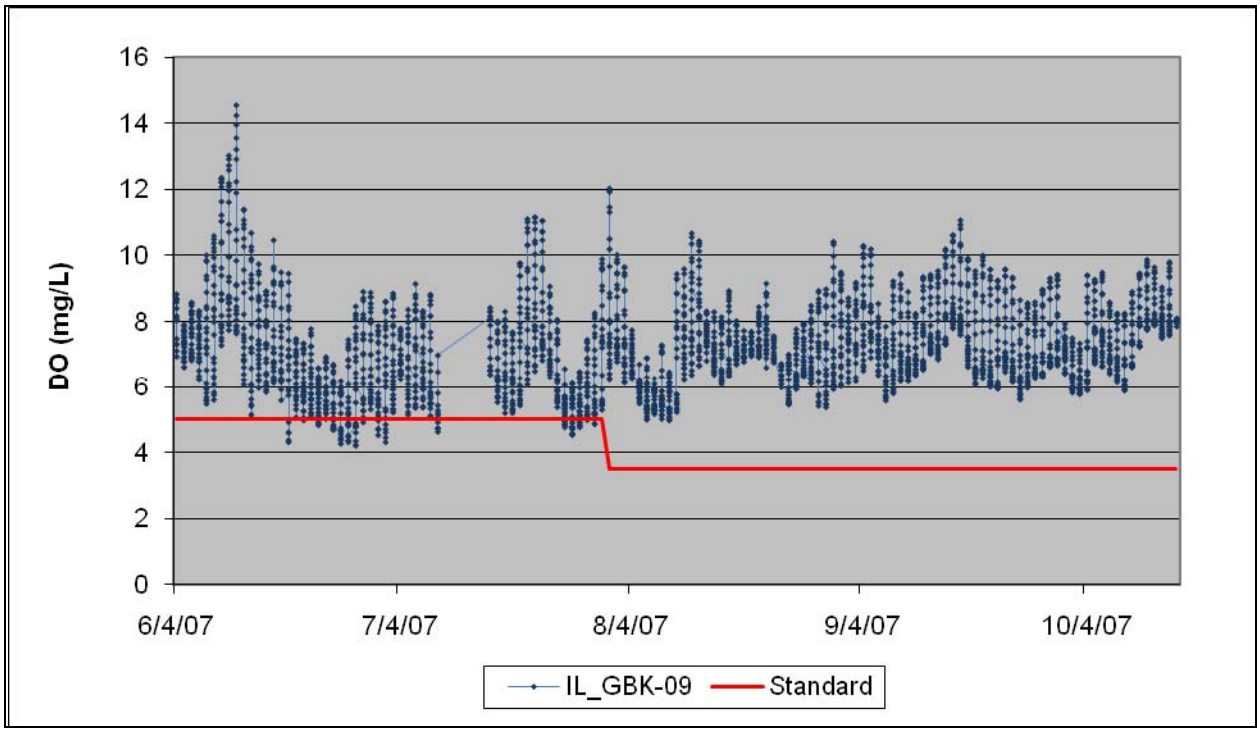


Figure 5-9. Dissolved Oxygen Data for GBK-09 Provided by DuPage River Salt Creek Workgroup (Continuous Monitoring)



5.1.3 pH

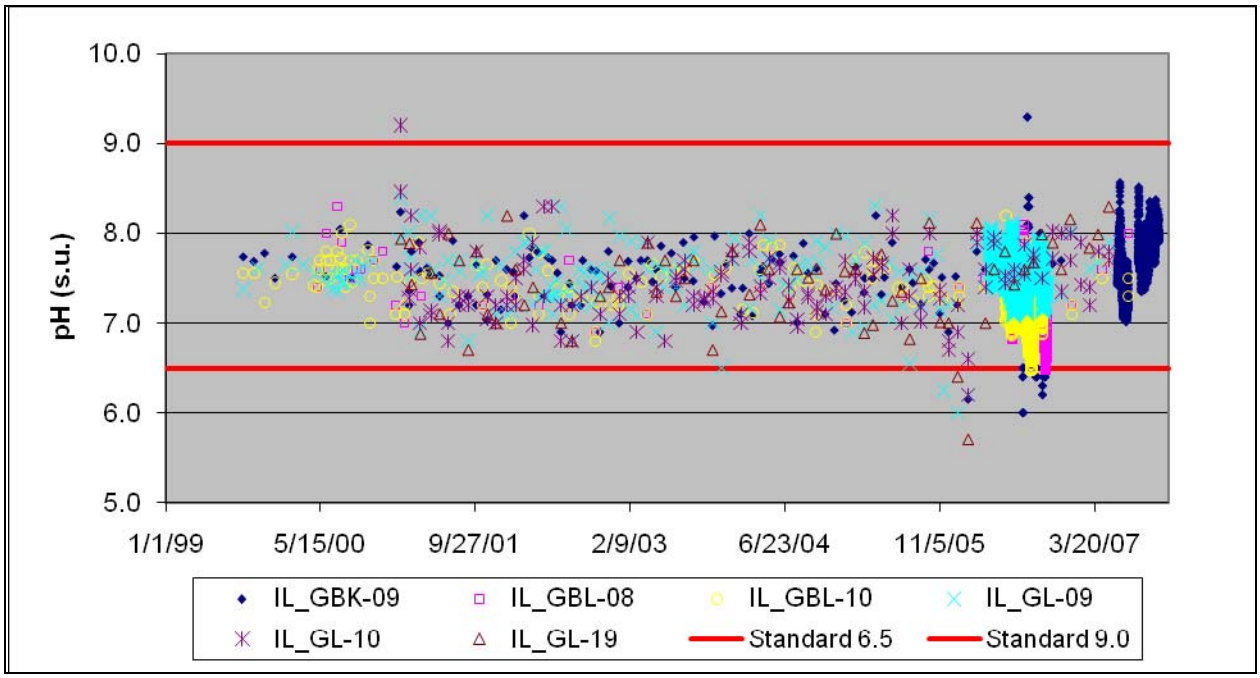
The WQS dictates an acceptable pH range between 6.5 and 9.0 s.u. Six segments are slated for TMDL development and all indicated at least one violation within the available data. Figure 5-10 displays pH data available since 1999 and Table 5-4 contains corresponding summary information.

Table 5-4: Recent pH Data Summary

Segment	Stations	Data Years	Observations	Violations	Min	Max	Average
GBK-09	IEPA GBK-09 WW_64, 89 DRSCW WBAD*	1999-2007	2594	24	6.0	9.3	7.7
GBL-08	DRSCW EBSC* Sierra EB1	2000-2007	1695	8	6.4	8.3	7.2
GBL-10	DRSCW EBHL* Sierra EB2 IEPA GBL-10	1999-2007	2843	6	6.4	8.2	7.2
GL-09	IEPA GL-09 DRSCW SCYR, SCFW* WW_24	1999-2007	6291	3	6.0	8.4	7.6
GL-10	WW_18, 80	2001-2007	149	2	6.2	9.2	7.5
GL-19	WW_121, 109	2001-2007	68	2	5.7	8.3	7.5

*Continuous Monitoring Stations

Figure 5-10: pH Distribution 1999 to 2007



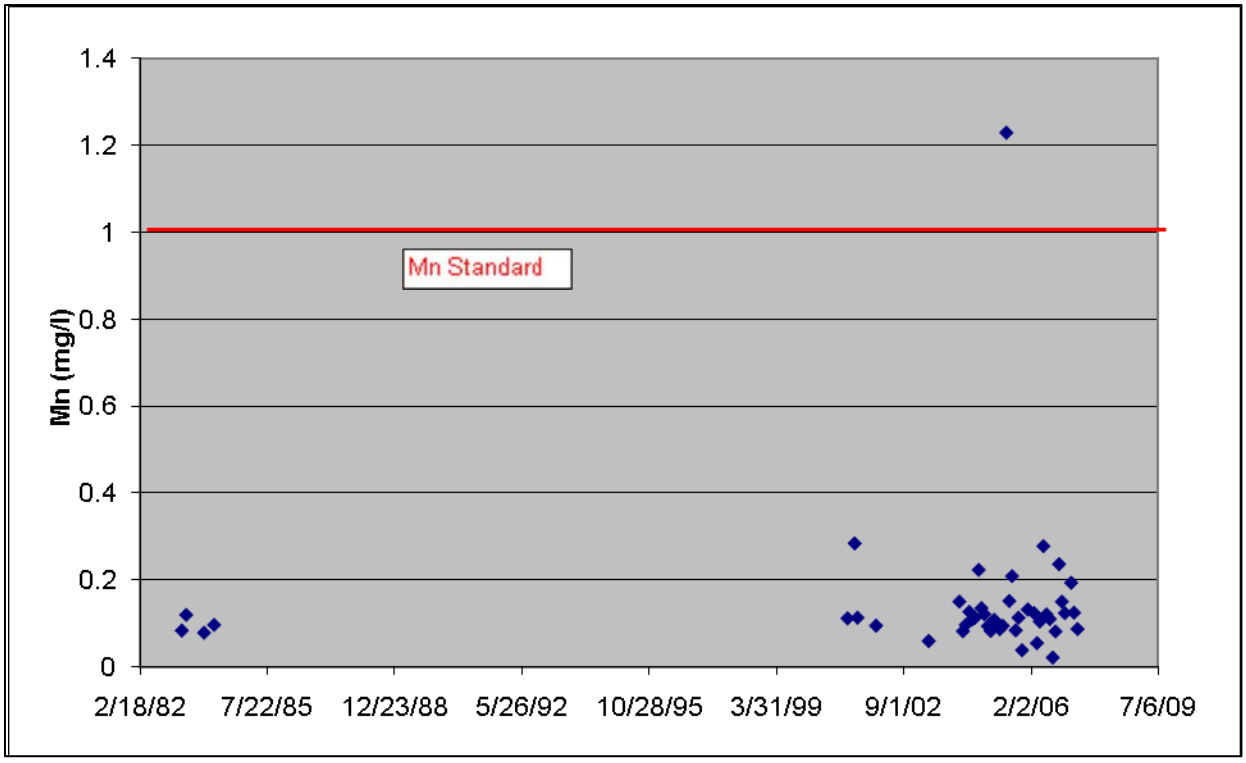
5.1.4 Manganese

The applicable WQS for manganese is 1 mg/L. Table 5-5 and Figure 5-11 summarize available manganese data for a segment on the West Branch of the DuPage River (IL_GBK-14), the only waterbody impaired for manganese. Available total manganese data ranged mostly from 2001 to 2007 with a few data points in 1983 and 1984.

Table 5-5: Manganese Data Summary

Segment	Units	# Observations	# Violations	Min	Max	Average	Median	Standard Deviation
IL_GBK-14	mg/L	45	1	0.02	1.23	0.15	0.11	0.17

Figure 5-11: Manganese Time Series for IL_GBK-14



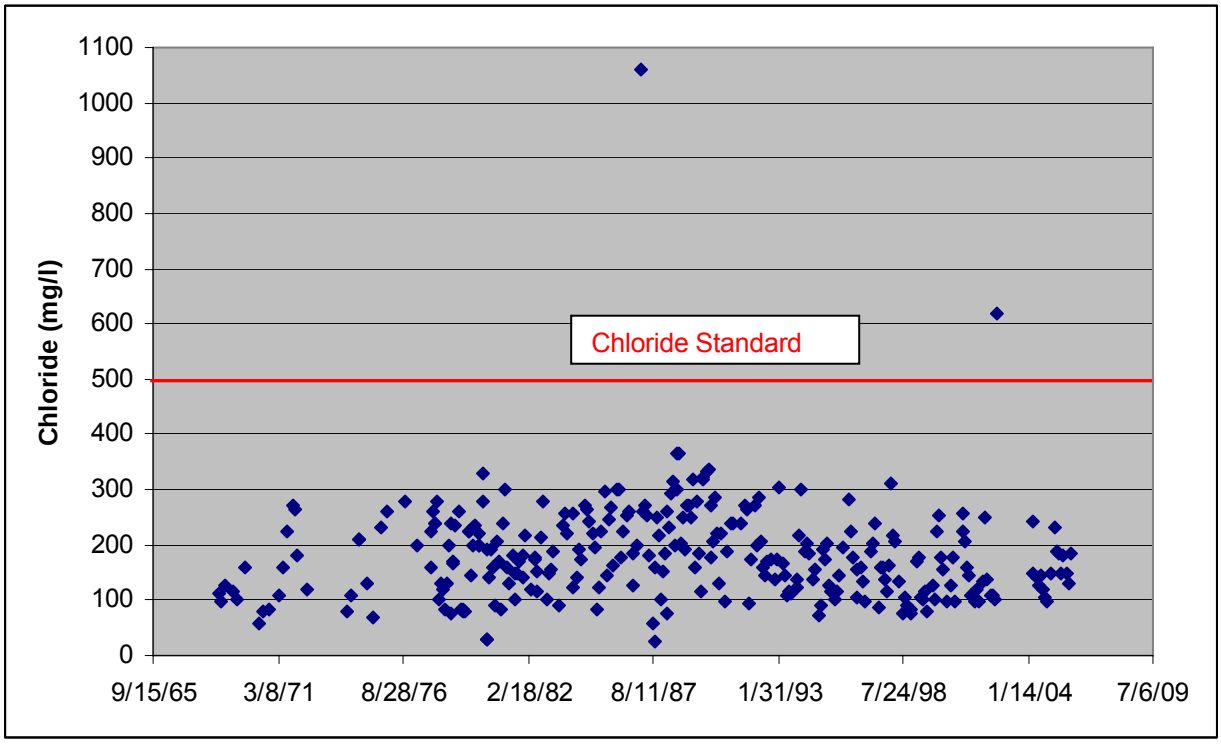
5.1.5 Chloride

Two chloride exceedances were recorded at the IL_GB-11 segment of the DuPage River. The general use water quality standard for chloride is 500 mg/L and available data used for assessment ranged from 1968 to 2005. Table 5-6 and Figure 5-12 summarize the available chloride data.

Table 5-6: Chloride Data Summary

Segment	Units	# Observations	# Violations	Min	Max	Average	Median	Standard Deviation
IL_GB-11	mg/L	287	2	24	1060	182.9	174	90.4

Figure 5-12: Chloride Time Series for IL_GB-11



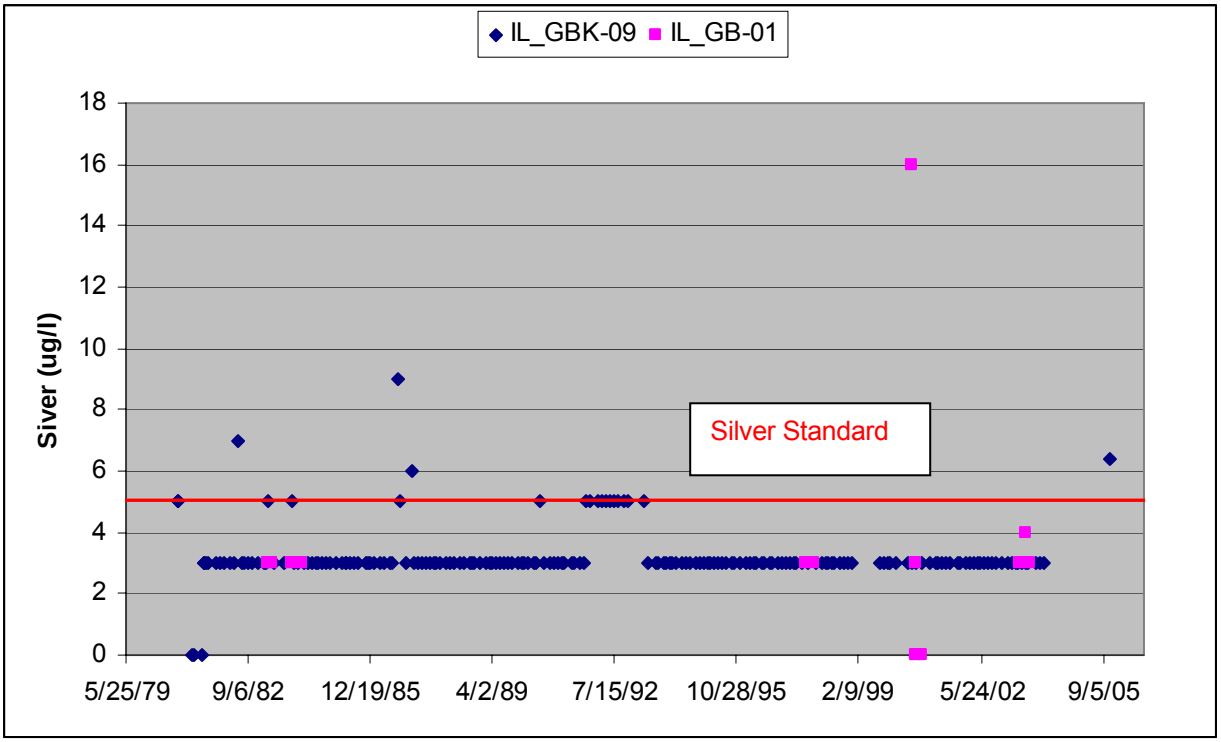
5.1.6 Silver

Two segments were listed for silver impairment within the DuPage River/Salt Creek Watershed, IL_GB-01 on the main stem and IL_GBK-09 on the West Branch of the DuPage River. Table 5-7 and Figure 5-13 summarize total silver data. Ambient data indicate that the silver water quality standard of 5 µg/L was violated on 5 occasions, one in 2000 on IL_GB-01 and the other 4 on IL_GBK-09. Data used for analysis ranged from 1980 to 2003.

Table 5-7: Silver Data Summary

Segment	Units	# Observations	# Violations	Min	Max	Average	Median	Standard Deviation
IL_GB-01	µg/L	18	1	0	16	3.44	3	3.29
IL_GBK-09	µg/L	195	4	0	9	3.21	3	0.90

Figure 5-13: Silver Time Series for IL_GB-01 and IL_GBK-09



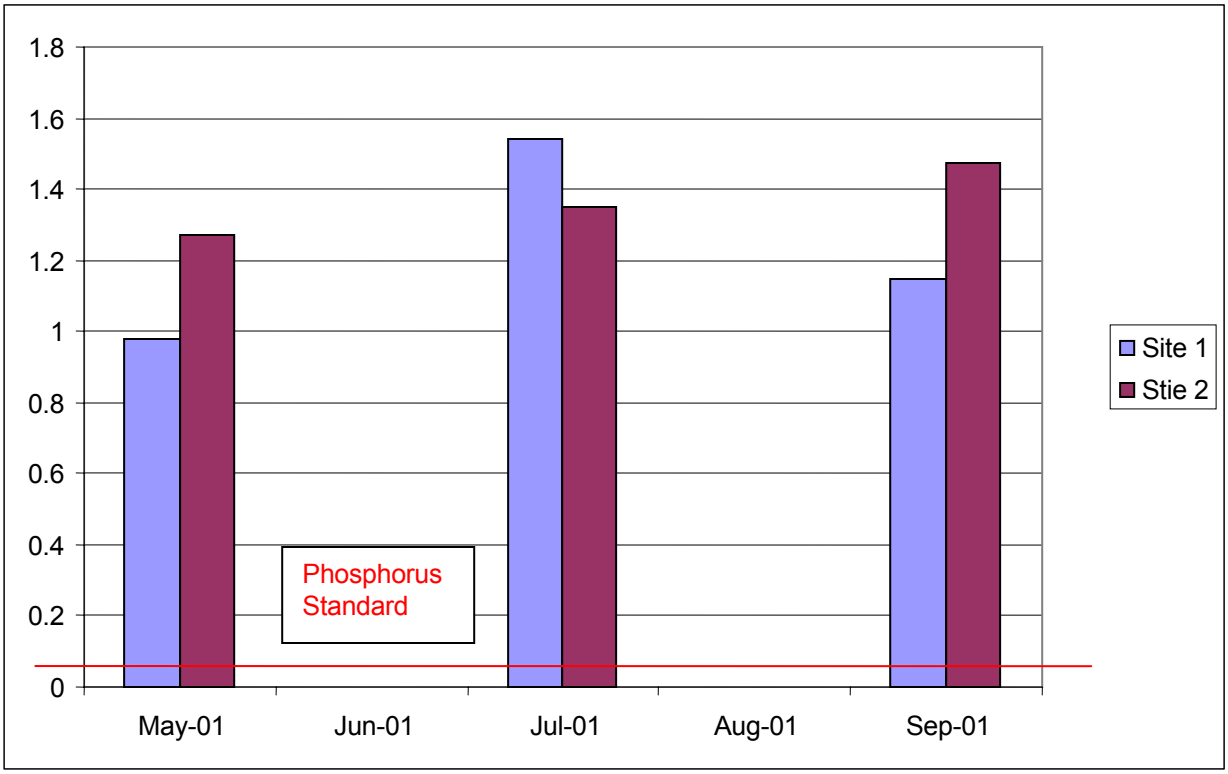
5.1.7 Total Phosphorus

The numeric water quality criteria for total phosphorus is a maximum concentration of 0.05 mg/L and is applicable only to lakes with a surface area of 20 acres or greater. Phosphorus concentrations for Churchill Lagoon (IL_RGG) are summarized in Table 5-8 and Figure 5-14. Data used for assessments were only available in 2001.

Table 5-8: Phosphorus Data Summary

Segment	Units	# Observations	# Violations	Min	Max	Average	Median	Standard Deviation
IL_RGG	mg/L	6	6	0.976	1.540	1.294	1.310	0.210

Figure 5-14. Phosphorus Data for RGG



5.2 Point Sources

A number of point source dischargers actively maintain National Pollutant Discharge Elimination System (NPDES) permits within the DuPage River/Salt Creek watershed. Discharge Monitoring Reports (DMRs) for each discharger will be required for the Stage 3 analysis of the TMDL, as available data will be quantified and analyzed to determine the point source loading for each receiving water. Table 5-9 lists the existing NPDES permits as provided by EPA's Enforcement Compliance History Online (ECHO) database. Geographic locations are provided in Figure 5-8.

Phase I of the NPDES Storm Water program began in 1990 and required medium and large municipal separate storm sewer systems (MS4s) to obtain NPDES coverage. The expanded Phase II program began March 2003 and requires small MS4s in urbanized areas to obtain NPDES permits and implement six (6) minimum control measures. An urbanized area as delineated by the Bureau of Census is defined as a central place or places and the adjacent densely settled surrounding area that together have a residential population of at least 50,000 people and an overall population density of at least 500 people per square miles. Table 5-10 lists the MS4s within the DuPage River/Salt Creek Watershed and Figure 5-17 indicates the location.

MS4 Permit Requirements:

1. Develop a storm water management program comprised of best management practices (BMPs) and measurable goals for each of the following six minimum control measures:
    - o Public education and outreach on storm water impacts
    - o Public involvement and participation
    - o Illicit discharge detection and elimination
    - o Construction site storm water runoff control
    - o Post construction storm water management in new development and redevelopment
    - o Pollution prevention/good housekeeping for municipal operations
2. Submit a completed Notice of Intent. Operators can choose to share responsibilities for meeting the Phase II program requirements. Those entities choosing to do so may submit jointly with other municipalities or governmental entities. The Notice of Intent form is available below.
3. Submit an annual report to IEPA in June of each year starting in 2004. The reports must include:
    - o The status of compliance with the permit conditions, including an assessment of the BMPs and progress toward the measurable goals;
    - o Results of any information collected and analyzed, including monitoring data;
    - o A summary of the storm water activities planned for the next reporting cycle;
    - o A change in any identified best management practices or measurable goals;
    - o If applicable, notice of relying on another governmental entity to satisfy some of the permit obligations.

Table 5-9: Existing NPDES Discharges in the DuPage River/Salt Creek Watershed

Watershed	NPDES Number	Facility	Receiving Water	Permitted Flow (MGD)
DUPAGE R- MAINSTEM	IL0074322	ATC/VANCOM, INC.-	UNNAMED TRIB OF DUPAGE	0.002
DUPAGE R- MAINSTEM	IL0069744	BOLINGBROOK STP #3	DUPAGE RIVER	1.4
DUPAGE R- MAINSTEM	IL0061450	BOUGHTON TRUCKING & MATERIALS	DUPAGE RIVER	0
DUPAGE R- MAINSTEM	IL0045381	CAMELOT UTILITIES INC.	DUPAGE RIVER	0.1
DUPAGE R- MAINSTEM	IL0032727	CITIZENS UTIL CO-#1	LILLY CACHE	0
DUPAGE R- MAINSTEM	IL0049166	CITIZENS UTIL CO-	MINK CREEK	0.4
DUPAGE R- MAINSTEM	IL0021121	CREST HILL WEST STP	ROCK RUN CREEK	1.3
DUPAGE R- MAINSTEM	IL0053163	ELMHURST-CHICAGO	LILY CACHE CREEK	0
DUPAGE R- MAINSTEM	IL0063240	FIRESIDE RESORT	UNNAMED TRIB TO ROCK	0.022
DUPAGE R- MAINSTEM	IL0034479	HANOVER PARK STP #1	W. BR. DUPAGE RVR	2.42
DUPAGE R- MAINSTEM	IL0055913	MINOOKA STP	DUPAGE RIVER TO DES	1.092
DUPAGE R- MAINSTEM	IL0034061	NAPERVILLE	DUPAGE RIVER	22.5
DUPAGE R- MAINSTEM	IL0063975	PIERCE & STEVENS	DUPAGE RIVER	0.034
DUPAGE R- MAINSTEM	IL0074373	PLAINFIELD NORTH STP	DUPAGE RIVER-DES PLAINES	3.5
DUPAGE R- MAINSTEM	IL0020508	PLAINFIELD WWTP	DUPAGE RIVER	1.71
DUPAGE R- MAINSTEM	IL0059765	PRAIRIE GROUP	DUPAGE RIVER	0.103
EAST BR DUPAGE R	IL0032735	CITIZENS UTIL CO-#2	EAST BRANCH OF DUPAGE	3
EAST BR DUPAGE R	IL0028967	GLENDALE HEIGHTS STP	ARMITAGE DITCH	5.26
EAST BR DUPAGE R	IL0021130	BLOOMINGDALE-	EAST BRANCH DUPAGE	3.45
EAST BR DUPAGE R	IL0032689	BOLINGBROOK STP #1	E BR DUPAGE RVR	2.04
EAST BR DUPAGE R	IL0028380	DOWNERS GROVE SD	E. BR. DUPAGE RVR & ST.	11
EAST BR DUPAGE R	IL0031844	DUPAGE COUNTY-	EAST BRANCH DUPAGE	12
EAST BR DUPAGE R	IL0053155	ELMHURST CHICAGO	EAST BRANCH OF DUPAGE	3.5
EAST BR DUPAGE R	IL0021547	GLENBARD WW AUTH-GLENBARD	E. BR. DUPAGE RIVER	16.02
EAST BR DUPAGE R	IL0022471	GLENBARD WW AUTH-LOMBARD	EAST BRANCH DUPAGE RIVER	0
SALT CR	IL0070416	A.G. COMMUNICATIONS	ADDISON CREEK VIA STORM	0.0186
SALT CR	IL0064866	ACCURATE CAST	SALT CREEK	0.0007
SALT CR	IL0033812	ADDISON NORTH STP	SALT CREEK	5.3
SALT CR	IL0027367	ADDISON SOUTH-A.J.	SALT CREEK	3.2
SALT CR	IL0070947	AMOCO PIPELINE-	VARIOUS WATERS OF THE	0
SALT CR	IL0063487	ARLINGTON INTERNATL	SALT CREEK	0
SALT CR	IL0021849	BENSENVILLE STP	ADDISON CREEK	4.7
SALT CR	IL0065021	BLACKHAWK MOLDING	SALT CREEK	0.0038
SALT CR	IL0044890	BROOKFIELD CSOS	SALT CREEK	0
SALT CR	IL0035831	CONGRESS DEV HILSIDE LANDFILL	DES PLAINES RIVER	0
SALT CR	IL0028746	ELMHURST WWTP	SALT CREEK, DES PLAINES	8
SALT CR	IL0026280	ITASCA STP	SALT CREEK	2.6

Watershed	NPDES Number	Facility	Receiving Water	Permitted Flow (MGD)
SALT CR	IL0033588	LAGRANGE PARK CSOS	SALT CREEK	0
SALT CR	IL0036340	MWRDGC EGAN WRP	SALT CREEK	30
SALT CR	IL0068381	OFFICE PARK OF	SALT CREEK	0.21
SALT CR	IL0066427	PRAIRIE MATERIAL	STORM SEWER TRIB TO	0.0074
SALT CR	IL0030813	ROSELLE STP	SALT CREEK	2
SALT CR	IL0030953	SALT CREEK SANITARY	SALT CREEK	3.3
SALT CR	IL0002127	UNION PACIFIC	MUD CREEK TRIB TO	0.775
SALT CR	IL0069124	VANEE FOODS	UNNAMED TRIB TO ADDISON	0
SALT CR	IL0033618	VILLA PARK WET	SALT CREEK	0
SALT CR	IL0050695	WALL'S MHP-ELMHURST	FLAGG CREEK	0.034
SALT CR	IL0045039	WESTERN SPRINGS	SALT CREEK, FLAGG CREEK	0
SALT CR	IL0020061	WOOD DALE NORTH STP	SALT CREEK	1.97
SALT CR	IL0034274	WOOD DALE SOUTH STP	SALT CREEK	1.13
WEST BR DUPAGE R	IL0026352	CAROL STREAM STP	KLEIN CREEK (DESPLAINES	5.4
WEST BR DUPAGE R	IL0054712	BALL HORTICULTURAL	CRESS CREEK	0.04
WEST BR DUPAGE R	IL0027618	BARTLETT WWTP	WEST BRANCH OF DUPAGE	3.679
WEST BR DUPAGE R	IL0067458	BLACHFORD, INC.-WEST	STORM SEWER TRIB TO	0.0967
WEST BR DUPAGE R	IL0045241	BP AMOCO NAPERVILLE	WEST BRANCH OF DUPAGE	0.827
WEST BR DUPAGE R	IL0028428	DUPAGE COUNTY-	WEST BRANCH OF DUPAGE	0.0058
WEST BR DUPAGE R	IL0028398	DUPAGE COUNTY-	SPRING BROOK CREEK	0.5
WEST BR DUPAGE R	IL0063495	KERR-MCGEE-WEST	WEST BRANCH DUPAGE	0.021
WEST BR DUPAGE R	IL0002402	LAGROU DISTRIBUTION	KRESS CREEK	0.0005
WEST BR DUPAGE R	IL0036137	MWRDGC HANOVER	W. BR. DUPAGE RIVER	12
WEST BR DUPAGE R	IL0037028	PLEASANT RIDGE MHP	KLEIN CREEK TO DUPAGE	0.027
WEST BR DUPAGE R	IL0069671	REED KEPPLER FAMILY	TRIB OF KRESS CREEK	0
WEST BR DUPAGE R	IL0048721	ROSELLE-BOTTERMAN	WEST BRANCH OF DUPAGE	1.4
WEST BR DUPAGE R	IL0052043	SIDWELL COMPANY-	WEST BRANCH OF DUPAGE	0.004
WEST BR DUPAGE R	IL0046451	UNION PACIFIC	KRESS CREEK	0.011
WEST BR DUPAGE R	IL0023469	WEST CHICAGO STP	W. BR. DUPAGE RIVER	7.64
WEST BR DUPAGE R	IL0031739	WHEATON S.D.	SPRING CREEK	8.9

Table 5-10: Municipal Separate Storm Sewer Systems in the DuPage River/Salt Creek Watershed

Municipality	MS4 Permit No.	Permit Name	Drainage Area (Sq. miles)
Addison	ILR400001	ADDISON TOWNSHIP	36
Arlington Hts	ILR400282	VILLAGE OF ARLINGTON HEIGHTS	7.4
Aurora	ILR400005	AURORA TOWNSHIP	34
Barrington	ILR400285	VILLAGE OF BARRINGTON	4.9
Bartlett	ILR400286	VILLAGE OF BARTLETT	14.9
Batavia	ILR400009	BATAVIA TOWNSHIP	24.5
Bensenville	ILR400292	VILLAGE OF BENSENVILLE	5.9

Municipality	MS4 Permit No.	Permit Name	Drainage Area (Sq. miles)
Berkeley	ILR400166	BERKELEY VILLAGE	1
Bloomingdale	ILR400013	BLOOMINGDALE TOWNSHIP	36
Bolingbrook	ILR400298	VILLAGE OF BOLINGBROOK	23
Broadview	ILR400167	BROADVIEW VILLAGE	1.4
Brookfield	ILR400302	VILLAGE OF BROOKFIELD	
Carol Stream	ILR400308	VILLAGE OF CAROL STREAM	8
Channahon	ILR400623	VILLAGE OF CHANNAHON	7
Chicago	ILR400173	CHICAGO CITY	1
Clarendon Hills	ILR400175	CLARENDON HILLS VILLAGE	1.7
Crest Hill	ILR400319	CITY OF CREST HILL	3
Darien	ILR400180	DARIEN CITY	8.6
Downers Grove	ILR400040	DOWNERS GROVE TOWNSHIP	45
Downers Grove	ILR400183	DOWNERS GROVE VILLAGE	14
Elk Grove	ILR400048	ELK GROVE TOWNSHIP	15
Elmhurst	ILR400187	ELMHURST CITY	10.2
Franklin Park	ILR400195	FRANKLIN PARK VILLAGE	1.7
Geneva	ILR400056	GENEVA TOWNSHIP	13
Glen Ellyn	ILR400199	GLEN ELLYN VILLAGE	7
Glendale Hts	ILR400342	VILLAGE OF GLENDALE HEIGHTS	5.3
Hanover Park	ILR400347	VILLAGE OF HANOVER PARK	6.7
Hillside	ILR400354	VILLAGE OF HILLSIDE	2.1
Hinsdale	ILR400355	VILLAGE OF HINSDALE	4.5
Hoffman Estates	ILR400210	HOFFMAN ESTATES VILLAGE	
Inverness	ILR400359	VILLAGE OF INVERNESS	6.9
Itasca	ILR400360	VILLAGE OF ITASCA	5.1
Joliet	ILR400361	CITY OF JOLIET	41.4
Lisle	ILR400376	VILLAGE OF LISLE	7.1
Lombard	ILR400378	VILLAGE OF LOMBARD	10.5
Maywood	ILR400384	VILLAGE OF MAYWOOD	0
Melrose Park	ILR400386	VILLAGE OF MELROSE PARK	5.1
Minooka	ILR400638	VILLAGE OF MINOOKA	3.2
Naperville	ILR400396	CITY OF NAPERVILLE	227
Northlake	ILR400406	CITY OF NORTHLAKE	4.4
Oak Brook	ILR400407	VILLAGE OF OAK BROOK	8
Oakbrook Terrace	ILR400232	OAKBROOK TERRACE CITY	1.1
Oswego	ILR400415	VILLAGE OF OSWEGO	14.4
Palatine	ILR400416	VILLAGE OF PALATINE	13.4
Plainfield	ILR400426	VILLAGE OF PLAINFIELD	15.9
Rockdale	ILR400433	VILLAGE OF ROCKDALE	2
Rolling Meadows	ILR400435	CITY OF ROLLING MEADOWS	5.6
Romeoville	ILR400436	VILLAGE OF ROMEOVILLE	14.9
Roselle	ILR400437	VILLAGE OF ROSELLE	5.4
Schaumburg	ILR400443	VILLAGE OF SCHAUMBURG	19.3
Shorewood	ILR400445	VILLAGE OF SHOREWOOD	5
St. Charles	ILR400454	CITY OF ST CHARLES	13
Stone Park	ILR400248	STONE PARK VILLAGE	4
Streamwood	ILR400456	VILLAGE OF STREAMWOOD	1
Villa Park	ILR400463	VILLAGE OF VILLA PARK	4.6
Warrenville	ILR400274	CITY OF WARRENVILLE	90

Municipality	MS4 Permit No.	Permit Name	Drainage Area (Sq. miles)
Wayne	ILR400149	WAYNE TOWNSHIP	36
West Chicago	ILR400466	CITY OF WEST CHICAGO	13.9
Westchester	ILR400468	VILLAGE OF WESTCHESTER	3
Western Springs	ILR400469	VILLAGE OF WESTERN SPRINGS	1.1
Westmont	ILR400254	WESTMONT VILLAGE	5
Wheaton	ILR400470	CITY OF WHEATON	11.4
Winfield	ILR400474	VILLAGE OF WINFIELD	2.7
Wood Dale	ILR400478	CITY OF WOOD DALE	4
Woodridge	ILR400480	VILLAGE OF WOODRIDGE	9

Figure 5-15: Existing NPDES Dischargers in the DuPage River/Salt Creek Watershed

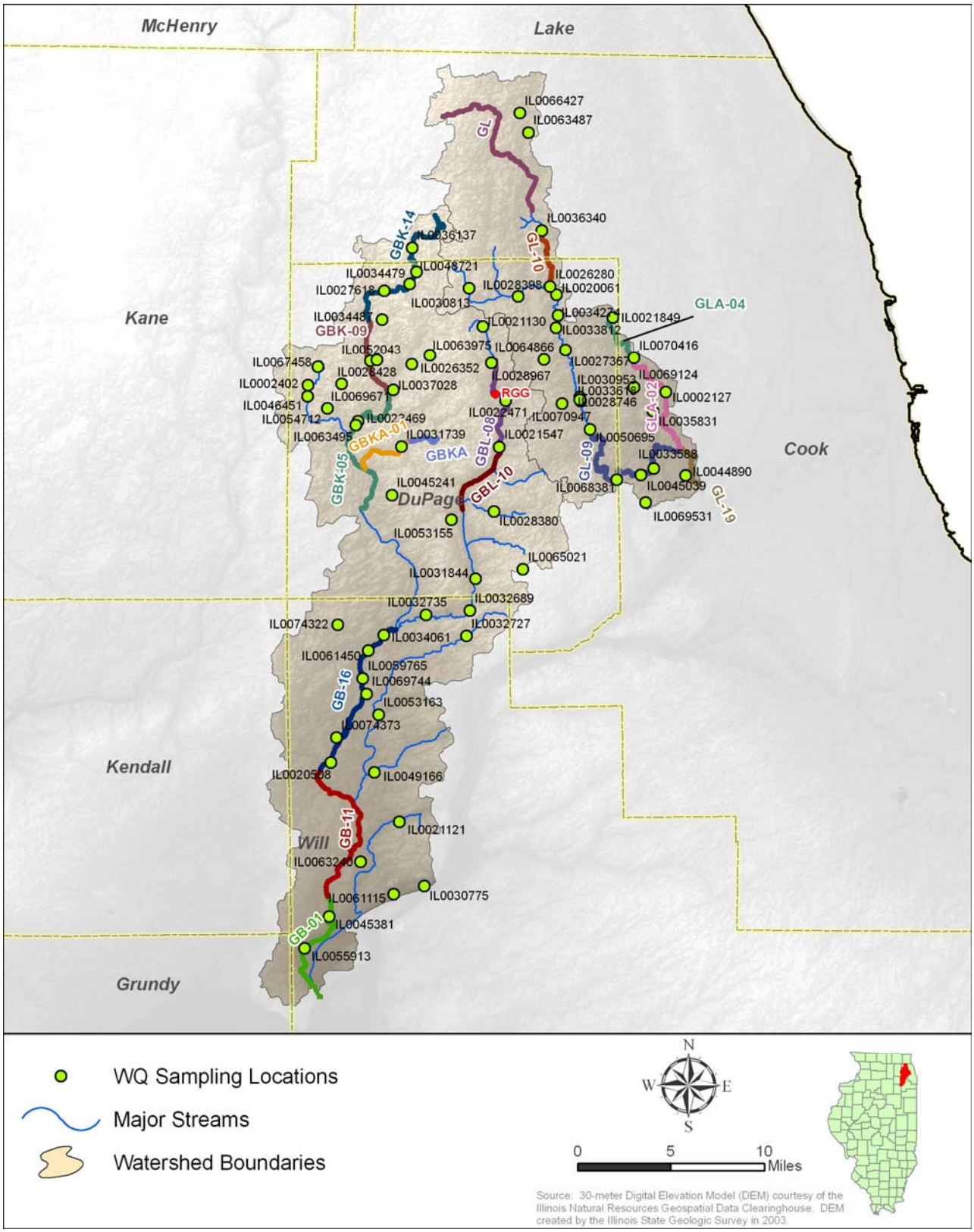
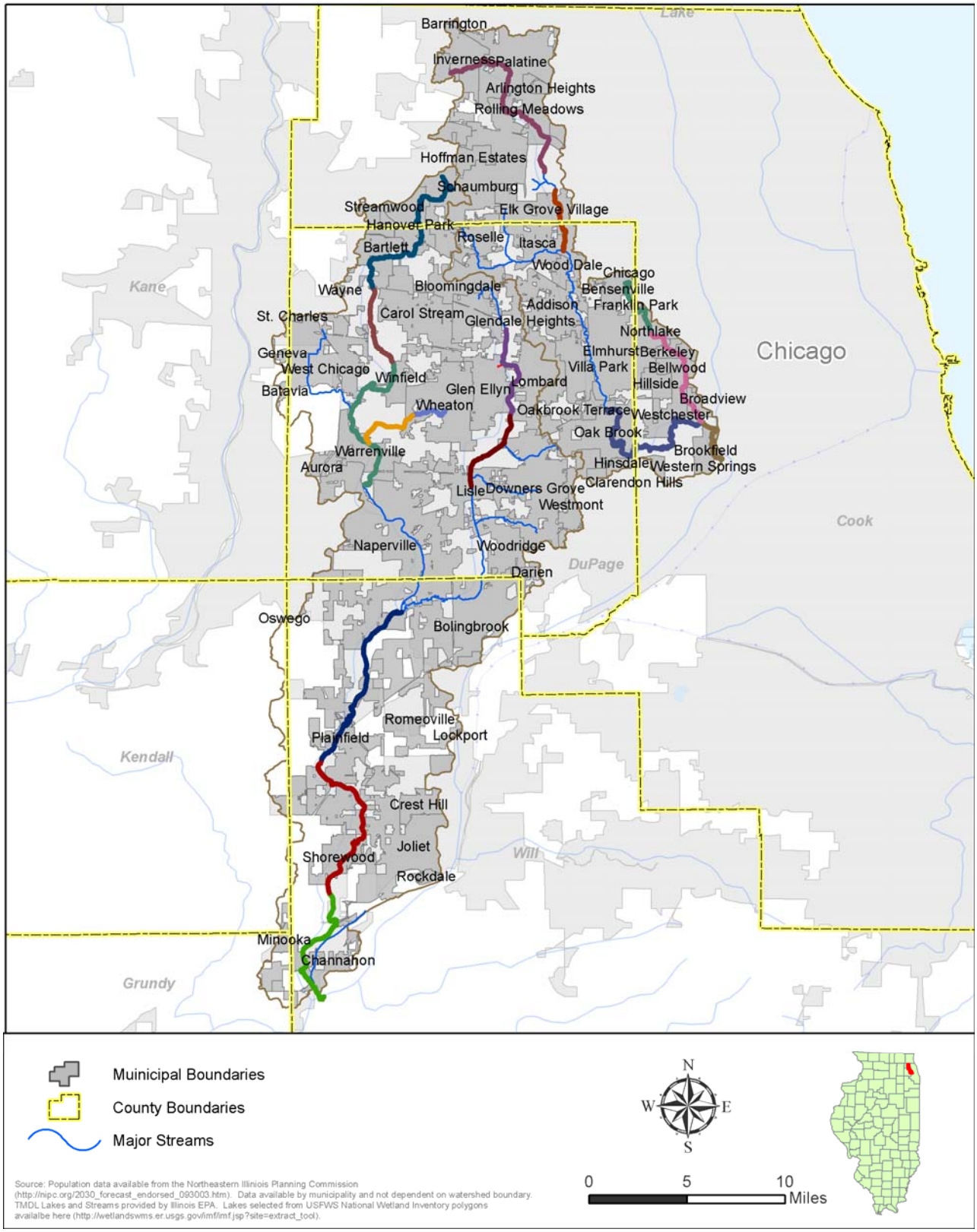


Figure 5-16: Municipal Separate Storm Sewer Systems in the DuPage River/Salt Creek Watershed



5.3 Non-Point Sources

The DuPage River/Salt Creek watershed is dominated by urban growth; current land use is approximately 65% urban. Further, over 20% of the remaining land use is considered agricultural, a primary source of non-point source pollution in waterbodies. To properly manage and maintain water quality in the DuPage River/Salt Creek watershed, the impacts associated with new development and agriculture must be carefully evaluated.

Urban and suburban development can adversely impact water quality in a number of ways. During the construction phase of development, soils destabilized as a result of clearing, grading, and excavation are subject to increased erosion by wind and water. These eroded soils can be carried offsite and deposited in receiving waters such as lakes, rivers and wetlands. Adverse impacts associated with such sediment loading include increased turbidity and habitat modification, including smothering of invertebrates and covering spawning beds. Typically, the construction phase is relatively short-lived; however, the impacts to receiving waters from poorly managed construction activities may be extremely severe and the effects can endure long after the project is over.

Post-construction receiving water quality impacts may become more pronounced due to potentially dramatic changes to the area's hydrology (reduced baseflow and exaggerated peak flow volumes), and the change in land use compared to predevelopment conditions. The increase in impervious areas, such as roadways and parking lots, can often result in increased runoff rates and volumes. This can result in increased streambank erosion which can lead to increased sediment loading and its associated water quality problems. The increased runoff can also accelerate the transport of land-borne pollutants such as heavy metals, oil and grease, pesticides, fertilizers and other nutrients, and toxic organic contaminants. Increased imperviousness can also cause significant elevations in receiving water temperatures during summer months. Winter road deicing activities can contribute high levels of chlorides or sediment.

Agricultural practices in the DuPage River/Salt Creek watershed can also adversely impact water quality. The dominant crops found in the watershed are soybean (43%) and corn (38%), but other harvested crops include winter wheat, grain, and hay. Fertilizers used for such crops typically consist of nitrogen and phosphorus and are considered a potential source of nutrient enrichment in waterbodies.

Water quality impacts may be evaluated in terms of short-term impacts, and long-term impacts. Individual runoff events can cause short-term impacts to receiving waters, and are typically on a timescale of hours to days. Changes to the dry and wet weather hydrology, streambank morphology, and water chemistry of the receiving water are considered long-term impacts. Such long-term chemical impacts are most critical for those waters with longer residence times such as lakes and wetlands, and slow-moving stream segments. With regards to urban development and agriculture, pollutant concentrations are best used to evaluate short-term effects, while pollutant loadings are appropriate for assessing long-term impacts. DuPage River/Salt Creek watershed planners and developers need to understand these impacts and carefully plan in order to mitigate the negative water quality impacts of development and agriculture.

5.4 Watershed Studies and Other Watershed Information

There are a number of groups in the watershed that have collected and developed information and studies that are pertinent to this TMDL. Listed below is some of the information found for this watershed.

- **Chloride Usage Education and Reduction Program Study**

  This study was developed by the DuPage River Salt Creek Workgroup (DRSCW) in response to the Chloride TMDL previously approved. The TMDL identified road salt as a major cause of the chloride impairment. The Study evaluated the current road salting practices and recommends alternatives to reduce chloride. The report is available at the DRSCW website- http://www.drscw.org/reports/ChlorideRecomendations.Final_Report.pdf

- **Stream Dissolved Oxygen Improvement Feasibility Study for Salt Creek and East Branch DuPage River-**

  This study was developed by the DRSCW in response to the dissolved oxygen TMDL previously approved. The goal of the Study was to determine the feasibility and benefits of the removal or modification of dams, and of the construction and operation of in-stream aeration projects on improved dissolved oxygen in Salt Creek and the East Branch of the DuPage River. The first part of this study which characterized the existing conditions is available at this website- http://www.drscw.org/dostudy.htm. The final draft dissolved oxygen feasibility study was completed in June 2009.

- **Bioassessment of West and East Branch DuPage and Salt Creek Watersheds-**

  This study was developed by the DRSCW. Its objectives are to determine the extent to which biological assemblages are impaired and determine the stressors and sources that are associated with those impairments. The first stage of the study was the bioassessment plan which identifies the monitoring procedure and requirements for a watershed based biological assessment of the watersheds. This report is available at the DRSCW website- http://www.drscw.org/reports/bioassessplan.pdf. The final report that includes results of the monitoring is scheduled to be finalized in January 2009.

- **Illinois EPA 319 Funding-**

  Illinois EPA has provided Nonpoint Source Pollution Control Program 319 funding for the DRCSW. Funds were used towards a local project coordinator, the expansion of the dissolved oxygen monitoring and completions of both the bioassessment and dissolved oxygen feasibility studies.

- **Assessment of Impacts of Dams on the DuPage River-**

  This Study was done by the Conservation Foundation and the purpose was to assess the impact of man-made dams on fish passage, recreational uses and water quality. It includes and physical assessment of the dams and characterizes biological data. It indicates that dams on the DuPage River are a significant contributor to the overall degradation of native aquatic species and their habitat. It also indicates the dams might not have a significant effect on water quality, but create a safety hazard for all recreational use. This report is available at the Conservation Foundation website- http://www.theconservationfoundation.org/images/stories/pdf/wp/assessment_of_dupage_river_dams.pdf.

6.0 TMDL Approach and Data Needs

This chapter discusses the methodology that may be used for the development of TMDLs for the DuPage River/Salt Creek watershed. While a detailed watershed modeling approach can be advantageous, a simpler approach is often able to efficiently meet the requirements of a TMDL and yet still support a TMDL-guided and site-specific implementation plan. The final selection of a methodology will be determined with consultation with the Illinois EPA based on following factors:

- Fundamental requirements of a defensible and approvable TMDL
- Data availability
- Fund availability
- Public acceptance
- Complexity of waterbody

A simpler approach shall be used as long as it adequately supports the development of a defensible TMDL. If it is deemed that this approach will not suffice, a more sophisticated modeling approach will be recommended for analysis to help better establish a scientific link between the pollutant sources and the water quality indicators for the attainment of designated uses. Methodology for estimating daily loads will depend on available data as well as the selected analysis.

6.1 Recommended Modeling Approach for Fecal Coliform

Many states currently use load duration curves for fecal coliform TMDLs for its simplicity and effectiveness. Load duration curves use water quality criteria, ambient concentrations, and observed flows to estimate loading capacities for streams under various flow conditions.

The first step in this process is to obtain an appropriate stream flow record. For this TMDL, USGS gages are found throughout the watershed.

Flow duration curves are developed from streamflow records spanning multiple decades. The flow duration curve is based on flow frequency which provides a probability of meeting or exceeding of a given flow. The duration curve is broken into hydrologic categories where high flows represent a duration interval of 0-10%, moist conditions represent 10-40%, mid-range flows 40-60%, dry conditions 60-90% and low flows 90-100%.

Once the flow duration curve is established, a load duration curve can be generated by multiplying streamflow with the numerical water quality standard and a conversion factor to obtain the load per day for a given streamflow. Individual measurements can be plotted against the load duration curve to evaluate patterns of impairment. Values that fall above the load duration line indicate an exceedance of the daily load and hence, water quality standard. These data can aid in determining whether impairment occurs more frequently in one of the hydrologic categories (wet, moist, mid-range, dry or low).

The margin of safety (MOS) for duration curves can be implicit or explicit. Implicit MOS are derived from the inherent assumptions in establishing the water quality target (conservative assumptions). Explicit MOS include setting the water quality target lower than the WQS or not allocating a portion of the allowable load. For the DuPage River/Salt Creek TMDL, an implicit margin of safety is proposed. The load duration analysis performed for this TMDL will be conservative because the TMDL target (no more than 200 cfu/100 ml at any point in time) is more conservative than the more restrictive portion of the fecal coliform water quality standard (geometric mean of 200 cfu/100 ml for all samples collected May through October).

Wasteload allocations (WLA) will be based on NPDES permit limits. Average discharge flow and permit limits will be used to calculate a daily load and serve as the WLA. WLAs for NPDES-permitted stormwater discharges, including current and future Municipal Separate Storm Sewer Systems (MS4s), "Urbanized" areas, construction and industrial discharges and sanitary sewer overflows (SSOs) that do not have numerical effluent limitations will be expressed as a percent reduction instead of a numerical target. The load allocation (LA) for all non-regulated sources, including non-point sources, will also be expressed as a percent reduction. The percent reduction is based on the maximum reduction required to meet WQS plus a margin of safety under critical conditions.

The load reduction for fecal coliform can be established for each flow regime based on load duration curve analysis. Alternatively, a critical condition (worst scenario) can be established by comparing all flow regimes. It is defined as the greatest reduction needed to meet WQS among all hydrologic categories. For example, if an 89% reduction is required to meet the TMDL under wet conditions and a 50% reduction is required under dry conditions, an 89% reduction could be required under all hydrologic conditions to ensure that the TMDL is protective under in all hydrologic conditions. The appropriate method will be selected during Stage 3.

Seasonality of loading will also be evaluated. Flow duration intervals will be plotted by month to determine if there is a strong seasonal component. Although this will not change allocations, this may assist in implementation planning.

6.2 Recommended Modeling Approach for Dissolved Oxygen

QUAL-2K, a spreadsheet model that is based on the fundamental Streeter-Phelps DO sag equation, is recommended for DO TMDL development for impaired waterbodies in the DuPage River/Salt Creek watershed. QUAL-2K is a one-dimensional, steady-state model that can accommodate point and non-point source loading and is capable of modeling DO in streams and well-mixed lakes. QUAL-2K is an updated version of QUAL-2E and has been developed using a Microsoft Excel interface. QUAL-2K allows for model segmentation, the use of two forms of carbonaceous BOD (both slow and rapid oxidizing forms), and is also capable of accommodating anoxia and sediment – water interactions. While the model is simplistic in nature, it is capable of estimating critical BOD concentrations associated with in-stream DO concentrations of 5 mg/L.

6.3 Recommended Modeling Approach for Total Phosphorus

In the event that dam removal is not performed at Churchill Lagoon and the waterbody continues to be subject to WQS, ongoing sampling will provide data to be used for TMDL development. An export coefficient model linked to empirical in-lake response models will be used to determine existing loading and load reductions required to bring Churchill Lagoon into compliance with current WQS. This model, ENSR-LRM (lake response model), was developed by ENSR and has been used on more than 35 lake TMDLs.

ENSR-LRM uses export coefficients for runoff, groundwater and nutrients to estimate loading as a function of land use. Yields will be assigned to each defined parcel (sub-watershed) in the lake watershed. Loading estimates will be adjusted based on proximity to the lake, soils and major Best Management Practices (BMPs) in place. Model yields will be compared to measured data, where available. Export coefficients and attenuation factors will be adjusted such that model loading accurately reflects actual loading based on sample data and measured in-lake concentrations.

Watershed and subwatershed boundaries will be delineated based topography. Watershed land use will be determined using publically available GIS data layers from the Illinois Natural Resource Geospatial Data Clearinghouse, or similar source. ENSR-LRM will be set-up on a sub-watershed level using available land use and average annual precipitation. The spreadsheet-based export coefficient model allows the user to select watershed yield coefficients and attenuation factors from a range appropriate in the region. The model also includes direct inputs for atmospheric deposition, septic systems, point sources, waterfowl and internal loading from lake sediments.

The generated load to the lake is processed through five empirical models: Kirchner & Dillon 1975, Vollenweider 1975, Larsen & Mercier 1976, Jones & Bachmann 1976 and Reckhow 1977. These empirical models predict in-lake phosphorus concentrations based on loading and lake characteristics such as mean water depth, volume, inflow, flushing and settling rates. Predicted in-lake phosphorus is compared to measured data. An acceptable agreement between measured and predicted concentrations indicates loading estimates are appropriate for use in the preparation of a TMDL. Adjustments to the loading portion of the model are made when necessary based on best professional judgment to ensure acceptable agreement between measured and predicted concentrations. These empirical models also predict chlorophyll concentrations and water clarity (Secchi disk transparency). ENSR-LRM also includes a statistical evaluation of algal bloom probability.

Once the model has been calibrated to existing conditions, adjustments to the model can be made to determine predevelopment conditions and the load reductions necessary to meet WQS. In some instances, waterbodies are naturally eutrophic and may not achieve numerical WQS even under predevelopment conditions. In such instances, site specific criteria or maximum practical reductions have been used for TMDL targets and are proposed.

ENSR-LRM is most effective when calibrated with water quality data for the target system, but can be used with limited data. While it is a spreadsheet model with inherent limitations on applied algorithms and resultant reliability of predictions, it provides a rational means to link actual water quality data and empirical models in an approach that addresses the whole watershed and lake. ENSR-LRM is an easy and efficient method of estimating current loads to lakes as well as providing predictions on lake response under countless loading scenarios.

ENSR-LRM, as well as most simplified lake models, predicts phosphorus concentrations and estimates loading on an average annual basis. As required by the EPA, the TMDL must be expressed on a daily basis. However, there is some flexibility in how the daily loads may be expressed (US EPA, 2006). Several of these options are presented in “Options for Expressing Daily Loads in TMDLs” (US EPA, 2007). For TMDLs based on watershed load and in-lake response models providing predictions on an annual basis, the EPA offers a method for calculating the maximum daily limit based on long-term average and variability. This statistical approach is preferred since long periods of continuous simulation data and extensive flow and loading data are not available. The following expression assumes that loading data are log-normal distributed and is based on a long term average load calculated by the empirical model and an estimation of the variability in loading.

$$MDL = LTA * e^{[z\sigma - 0.5\sigma^2]}$$

Where:
MDL = maximum daily limit
LTA = long-term average
Z = z-statistic of the probability of occurrence
$\sigma^2 = \ln(CV^2 + 1)$
CV= coefficient of variation

Data from similar lakes will be used in situations where there are not enough data to determine probability of occurrence or coefficient of variation for the impaired waterbody.

MOS for phosphorus using this method is implicit. There is substantial uncertainty in concentration inputs to the models related to the timing of sampling and analytical methods, and the empirical equations used to predict in-lake phosphorus concentrations, mean and maximum chlorophyll, Secchi disk transparency, and bloom probability also introduce variability into the predictions.

WLA will be determined based on NPDES permit effluent limitations and average flow. WLAs for NPDES-permitted stormwater discharges, "Urbanized" areas, construction and industrial discharges that do not have numerical effluent limitations will be expressed as a percent reduction instead of a numerical target. WLA for MS4s will be based on their urbanized boundaries and at high flow regimes when stormwater events are expected. WLA for SSOs will be zero since these are illicit discharges and not allowed. The SSO issues should be addressed by MS4 program.

The reduction percentage for nonpoint source will be established based on LAs and existing load under critical condition. Critical conditions for lakes typically occur during the summertime, when the potential (both occurrence and frequency) for nuisance algal blooms are greatest. The loading capacity for total phosphorus is set to achieve desired water quality standards during this critical time period and also provide adequate protection for designated uses throughout the year. The target goal is based on average annual values, which is typically higher than summer time values. Therefore a LA based on average concentrations will be sufficiently low to protect designated uses in the critical summer period.

The ENSR-LRM derived TMDL takes into account seasonal variations because the allowable annual load is developed to be protective of the most sensitive (i.e., biologically responsive) time of year (summer), when conditions most favor the growth of algae. Maximum annual loads are calculated based on an overall annual average concentration. Summer epilimnetic concentrations are typically lower than the average annual concentration, so it is assumed that loads calculated in this manner will be protective of designated uses in the summer season, when most critical. It is possible that concentrations of phosphorus will be higher than the annual average during other seasons, most notably in the spring, but higher phosphorus levels at that time does not compromise uses. The proposed TMDL is expected to protect all designated uses of the impaired waterbody.

6.4 Recommended Modeling Approach for pH

QUAL-2K is also capable of estimating in-stream pH. In the modeling framework, both total inorganic carbon and alkalinity are simulated based on inputs. Using these two quantities, the model then simulates in-stream pH. These calculated values will then be the basis for recommending TMDL reductions if necessary.

6.5 Recommended Modeling Approach for Metals

Similar to fecal coliform, load duration curves are recommended for the chloride, silver, and manganese TMDLs. The duration curve will be used to estimate the percent of time that a water quality standard is exceeded. The wasteload allocations will be based on criteria concentrations which will then be converted into a distribution of allowable loads as a function of daily flow.

6.6 Data Needs

Effective TMDL development heavily relies on site-specific data. Sufficient flow and water quality data are required for the evaluation of water conditions and for model calibration. In fact, data availability often dictates the modeling approach used for various watersheds. Five types of data are crucial for the DuPage River/Salt Creek Watershed TMDL development:

- Flow data
- Meteorological data
- Water quality data
- Watershed and waterbody physical parameters
- Source characteristics data

Most necessary data are available for the TMDL with the exception of some water quality data. Available phosphorus data were limited to one year for Churchill Lagoon. Ongoing sampling will help to address the Churchill Lagoon data gaps.

Point source discharge data from all NPDES permittees within the watershed will also be necessary for the Stage 3 analysis. Individual NPDES permits, DMRs, and measured discharge data are all pertinent to TMDL development. Data will be obtained either using EPA's ECHO database or by directly contacting permittees.

Appendix A

Water Quality Data
(CD to be provided in a CD)

Appendix B

Site Photographs

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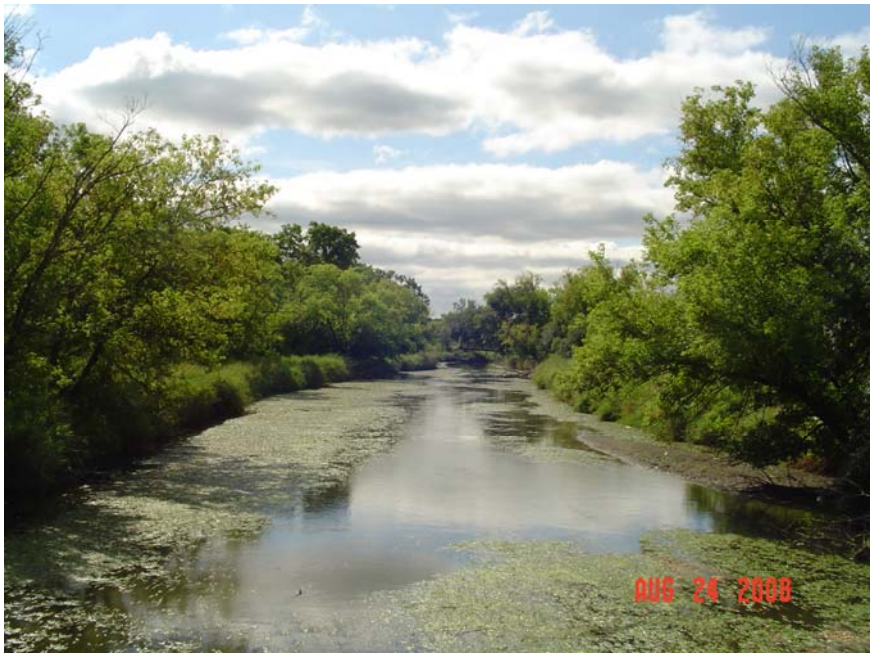
DuPage River (IL_GB-11) at Route 52



West Branch DuPage River (IL_GBK-05) at Geneva Road

West Branch DuPage River (IL_GBK-09) at Route 64

Salt Creek (IL_GL-10) at Route 19

Salt Creek (IL_GL) at Route 58

Churchill Lagoons (IL_RGG)

Appendix C

NPDES Permit Limits
(To be provided in a CD)

Appendix D

Maps of Individual Impaired Waterbody Segments

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DuPage River and Salt Creek Watersheds

Individual Segment Maps

List of Figures

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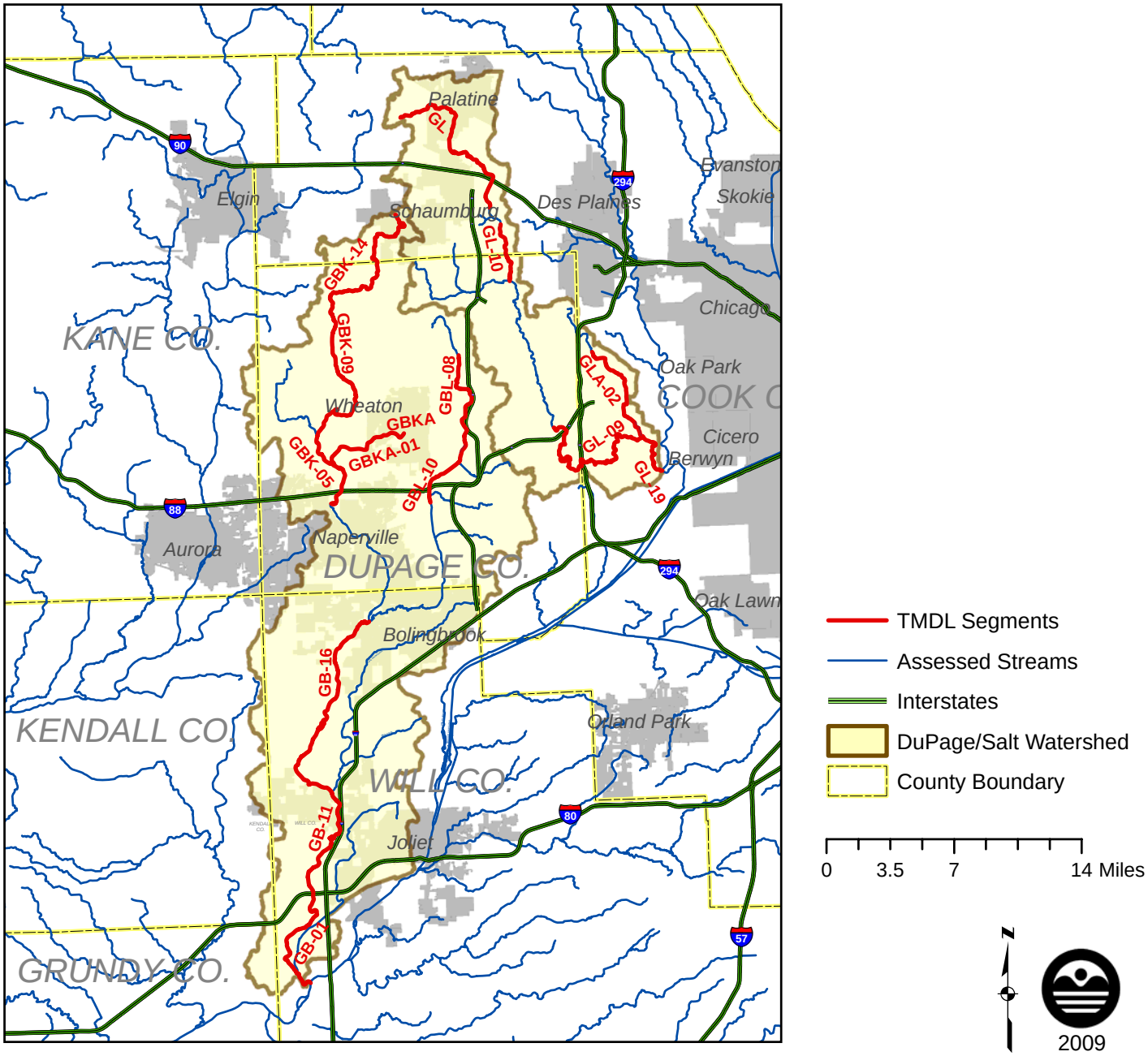
Figure 2. DuPage River GB-11
Figure 3. DuPage River GB-16
Figure 4. West Branch DuPage River GBK-05
Figure 5. West Branch DuPage River GBK-09
Figure 6. West Branch DuPage River GBK-14
Figure 7. Spring Brook GBKA
Figure 8. Spring Brook GBKA-01
Figure 9. East Branch DuPage GBL-08
Figure 10. East Branch DuPage GBL-10
Figure 11. Salt Creek GL
Figure 12. Salt Creek GL-09
Figure 13. Salt Creek GL-10
Figure 14. Salt Creek GL-19
Figure 15. Addison Creek GLA-02



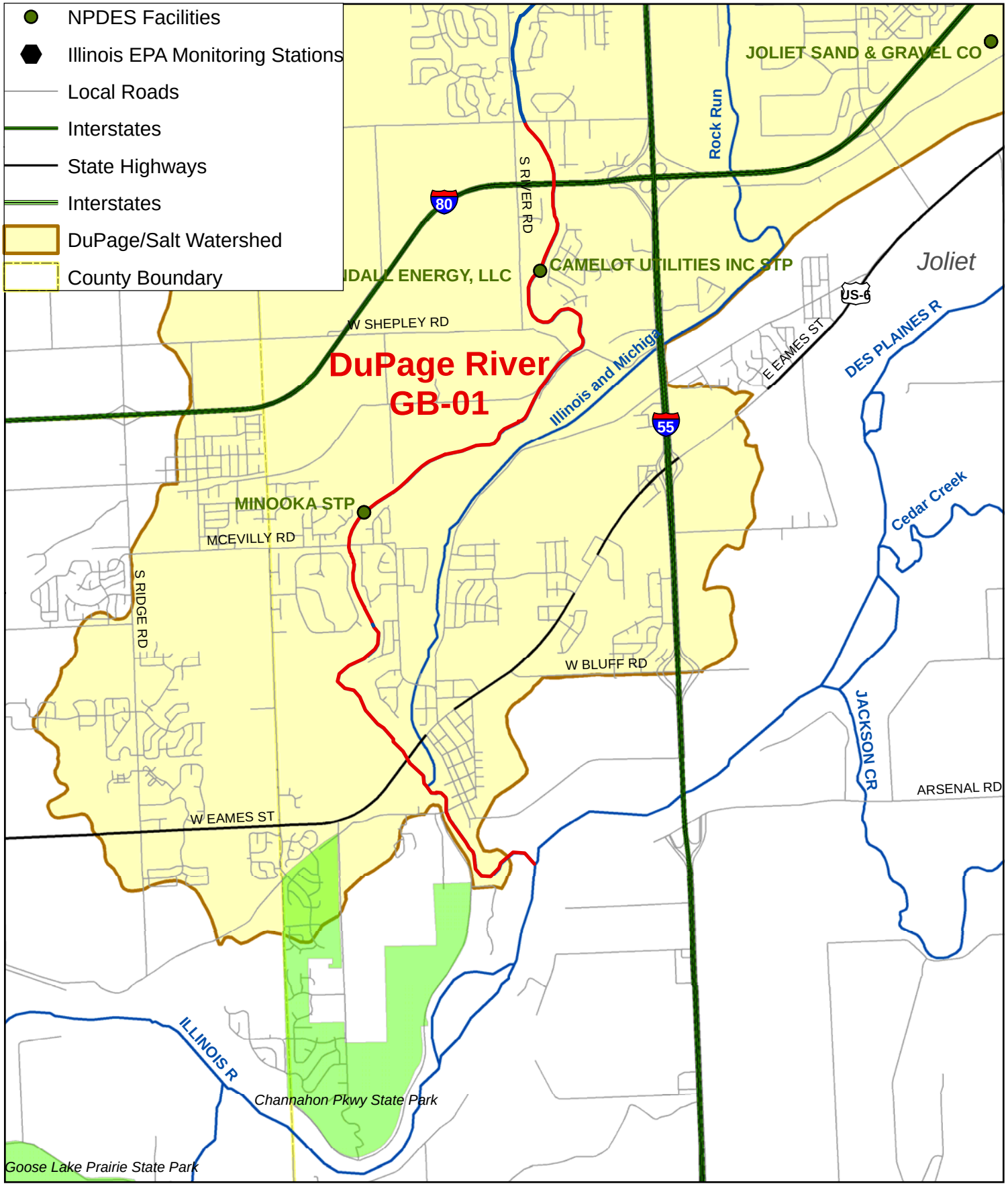


Figure 1. DuPage River GB-01

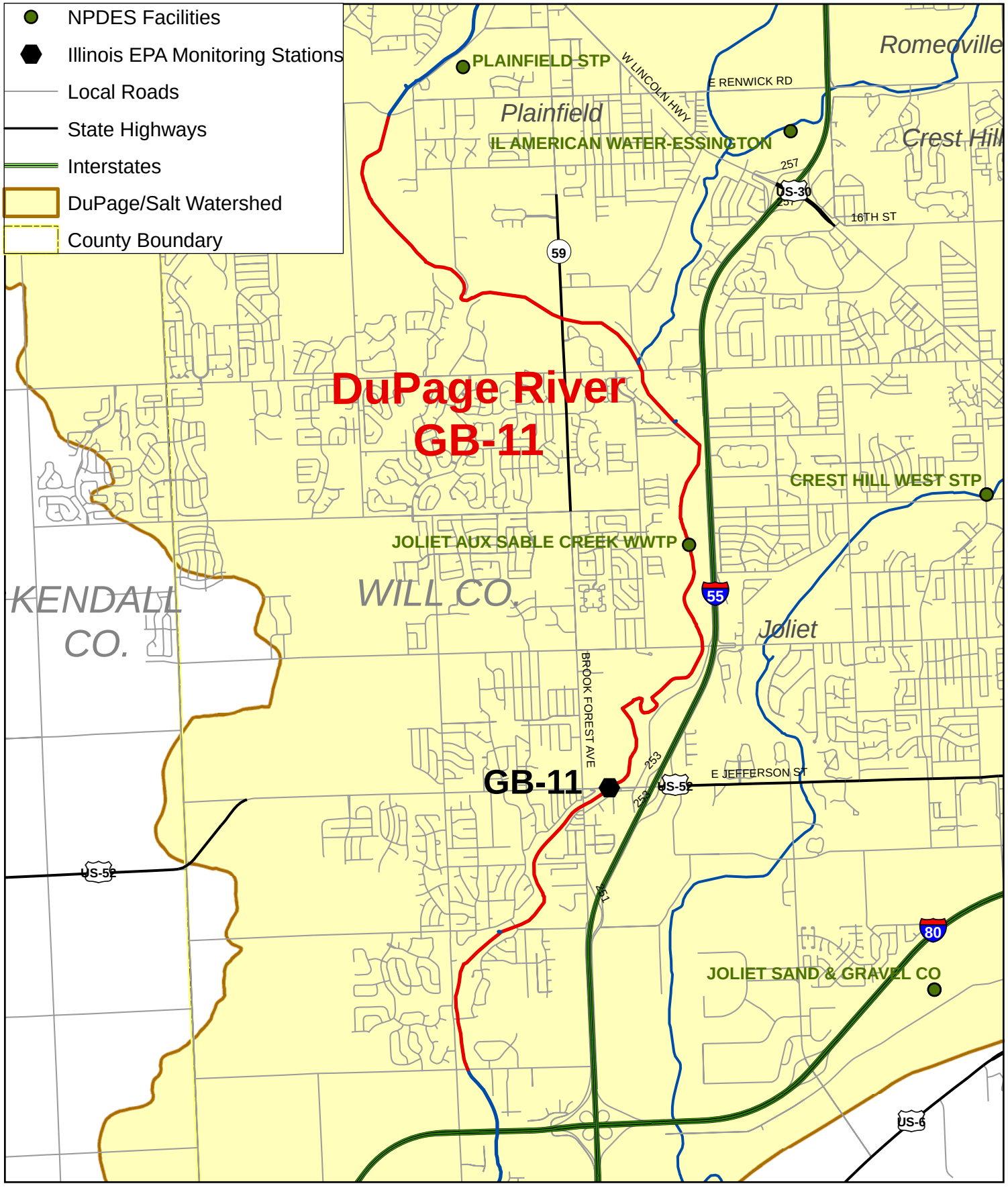


Figure 2. DuPage River GB-11

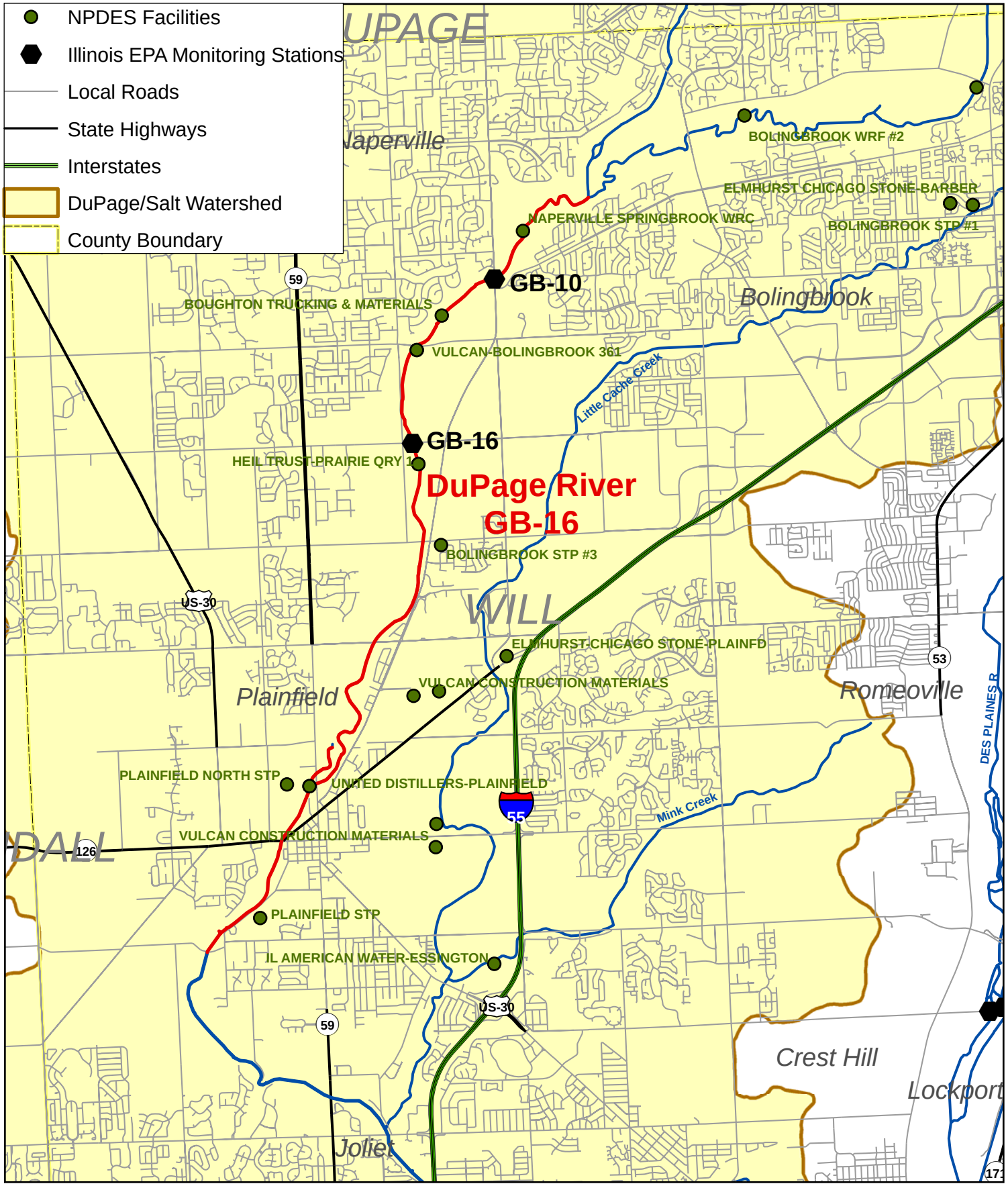


Figure 3. DuPage River GB-16

Figure 4. West Branch DuPage River GBK-05

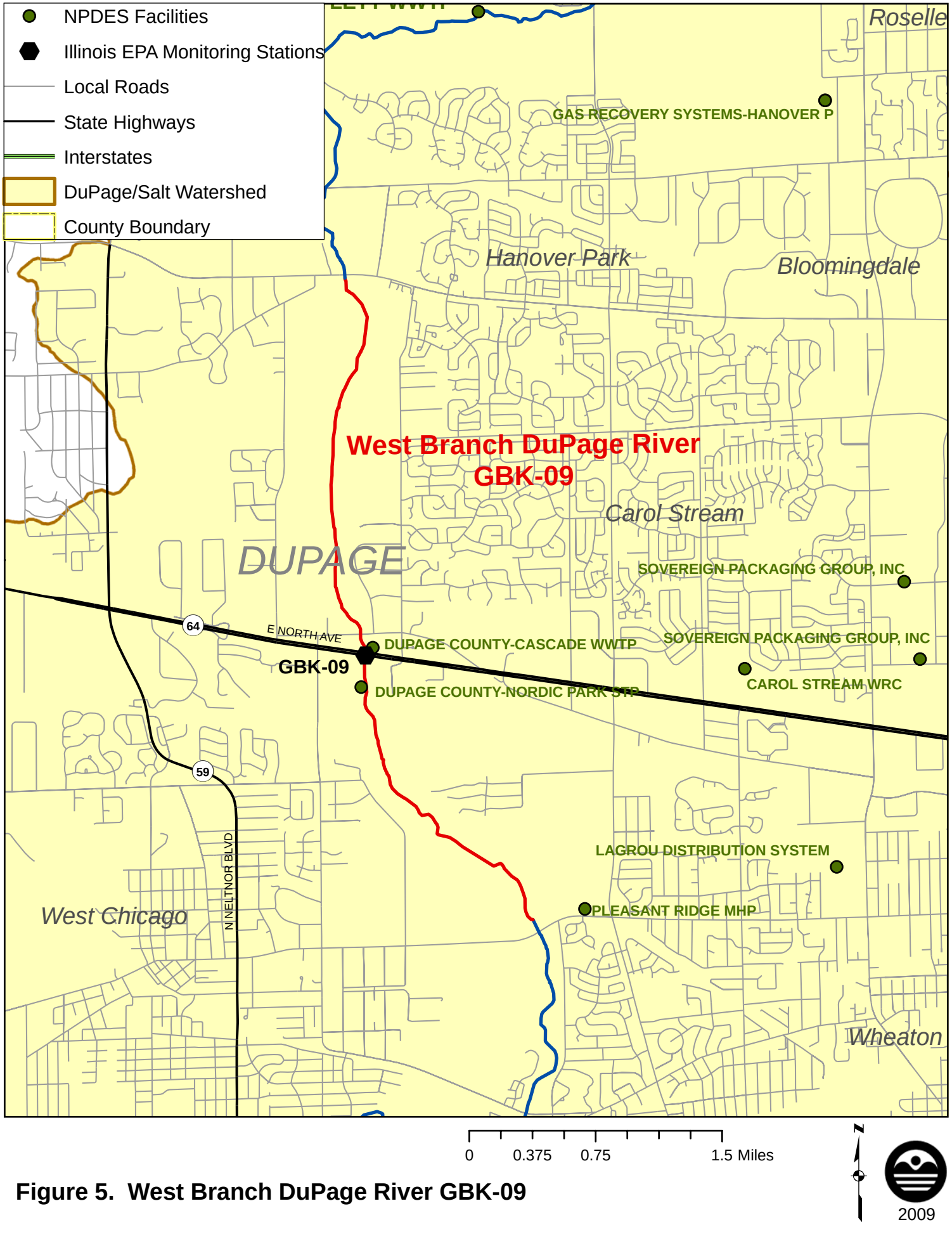


Figure 5. West Branch DuPage River GBK-09

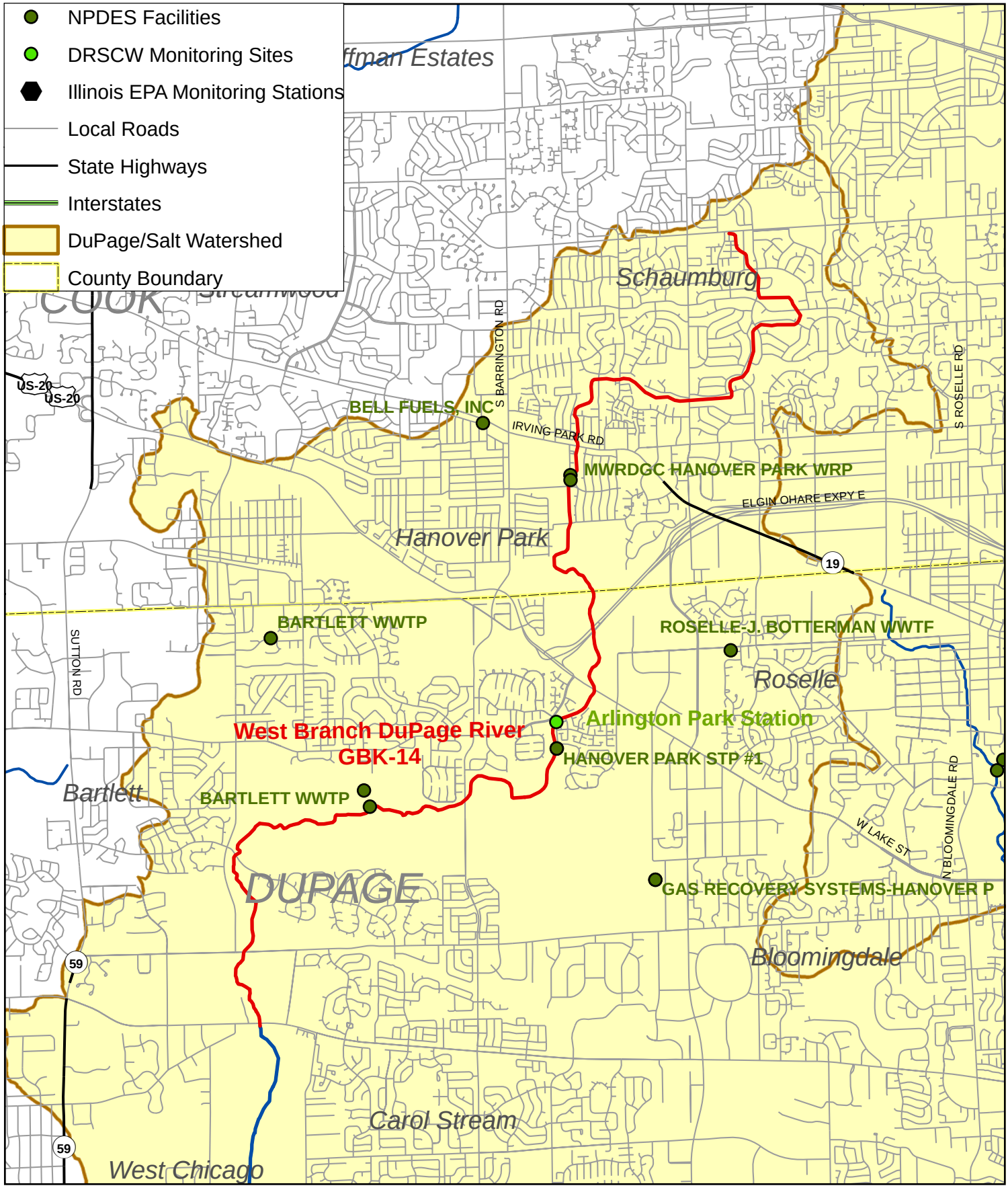


Figure 6. West Branch DuPage River GBK-14

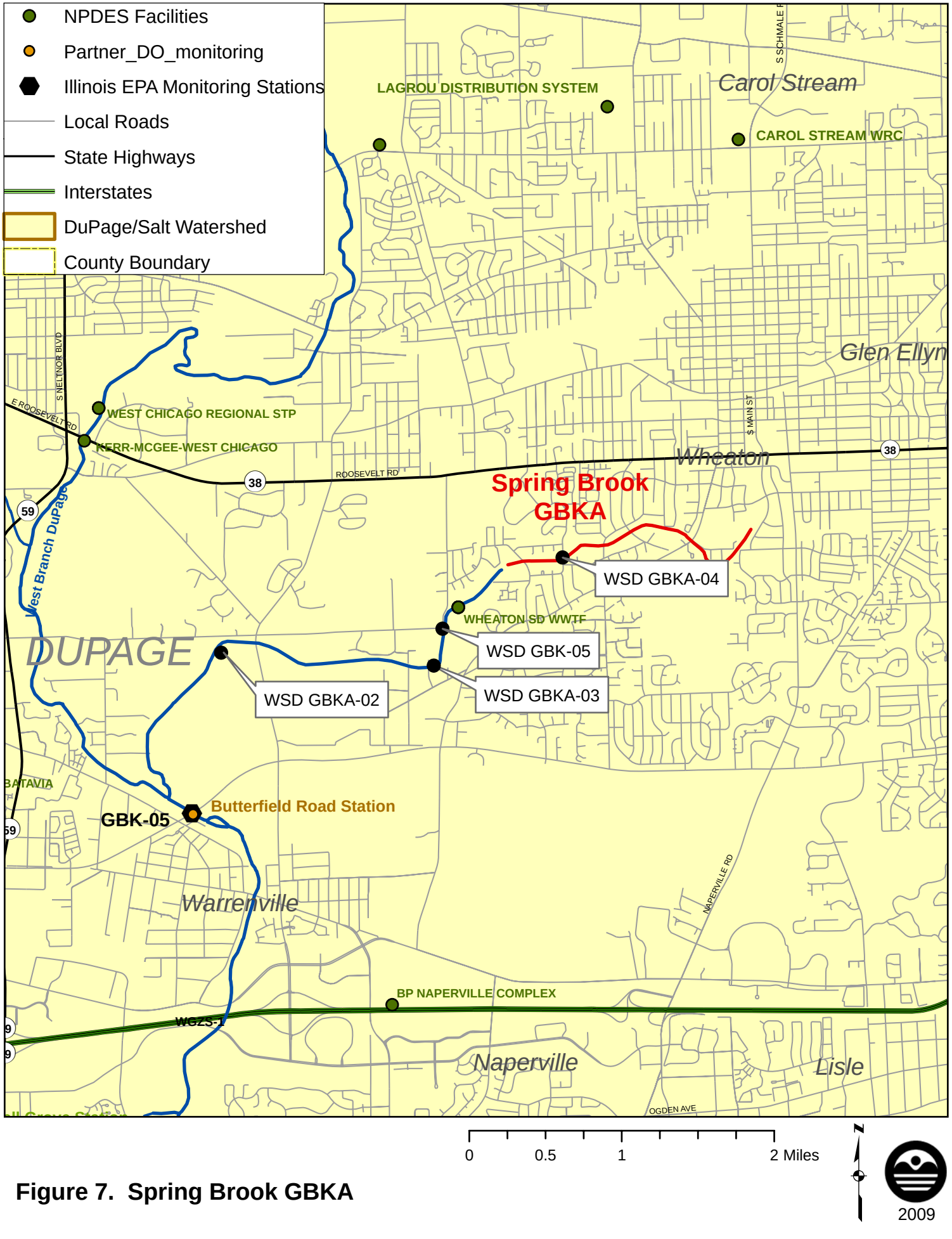


Figure 7. Spring Brook GBKA

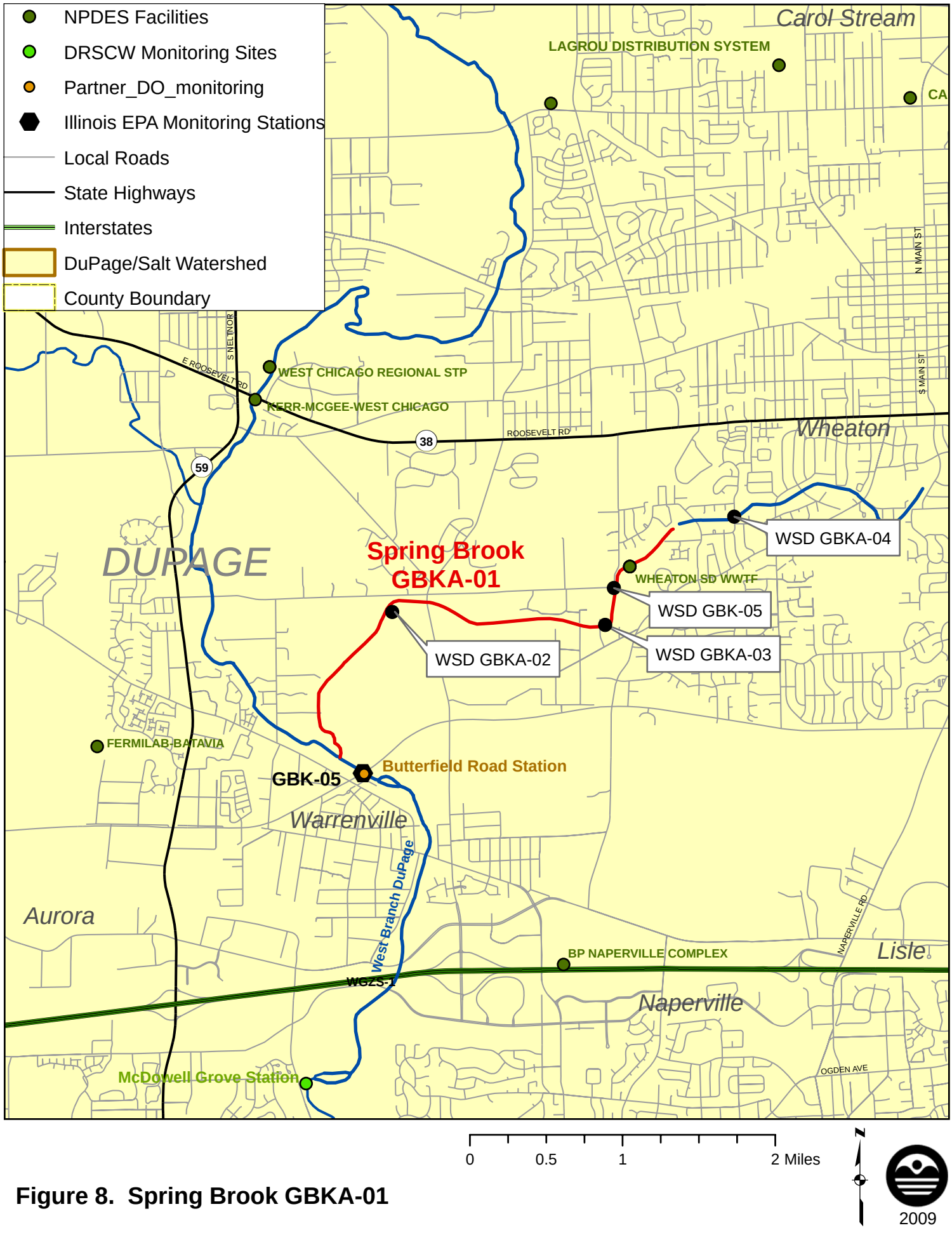


Figure 8. Spring Brook GBKA-01

Figure 9. East Branch DuPage River GBL-08

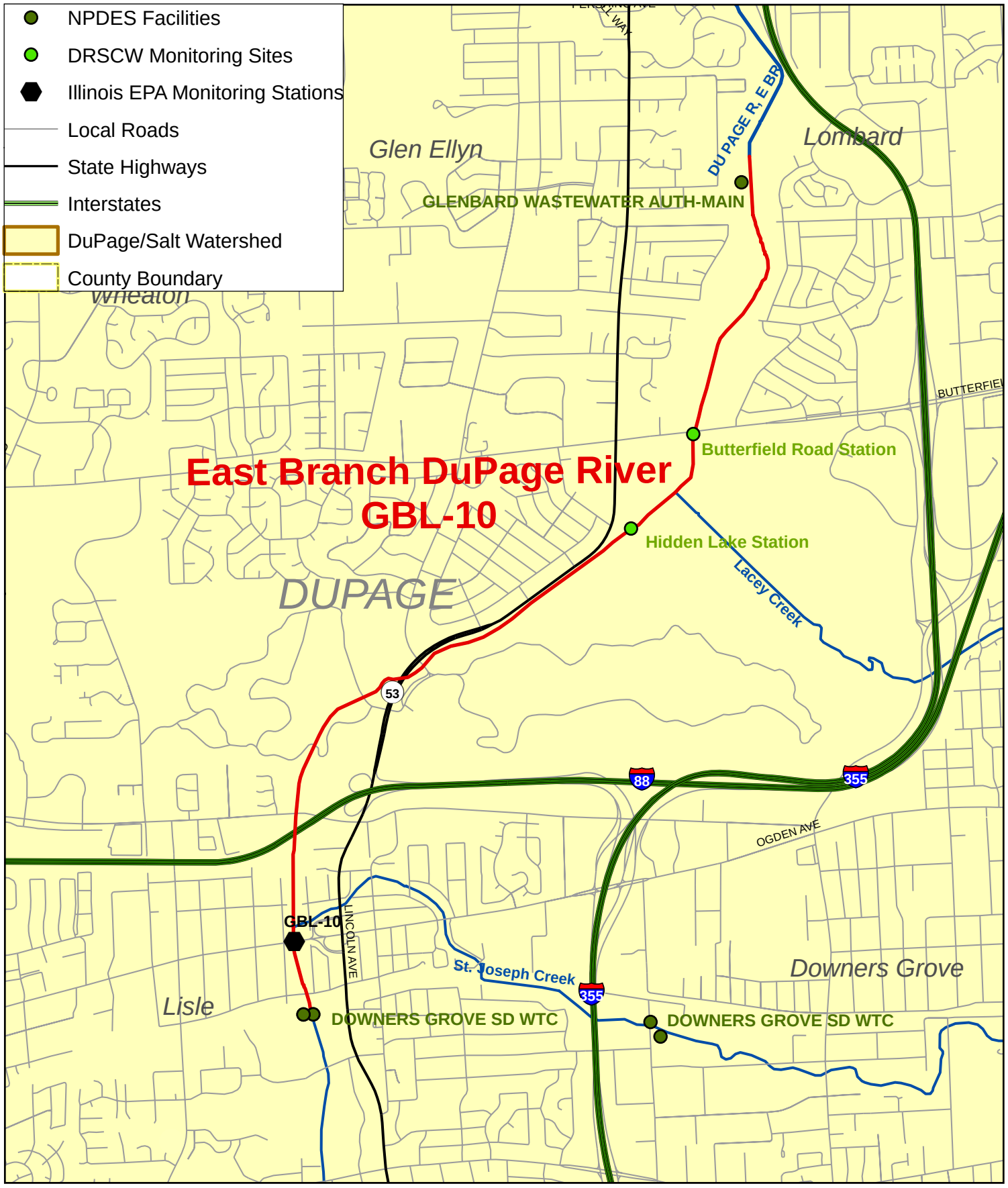


Figure 10. East Branch DuPage River GBL-10

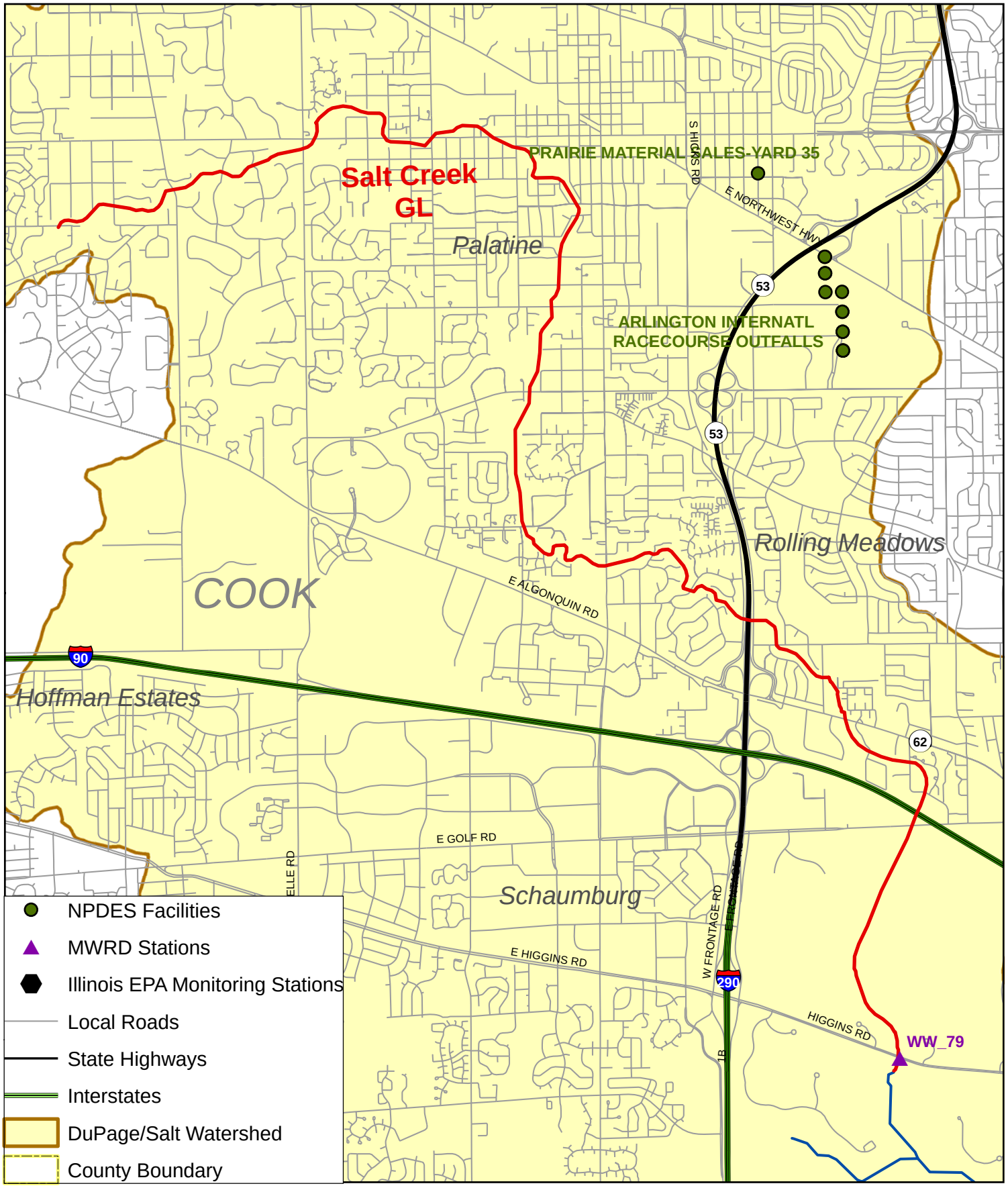


Figure 11. Salt Creek Segment GL

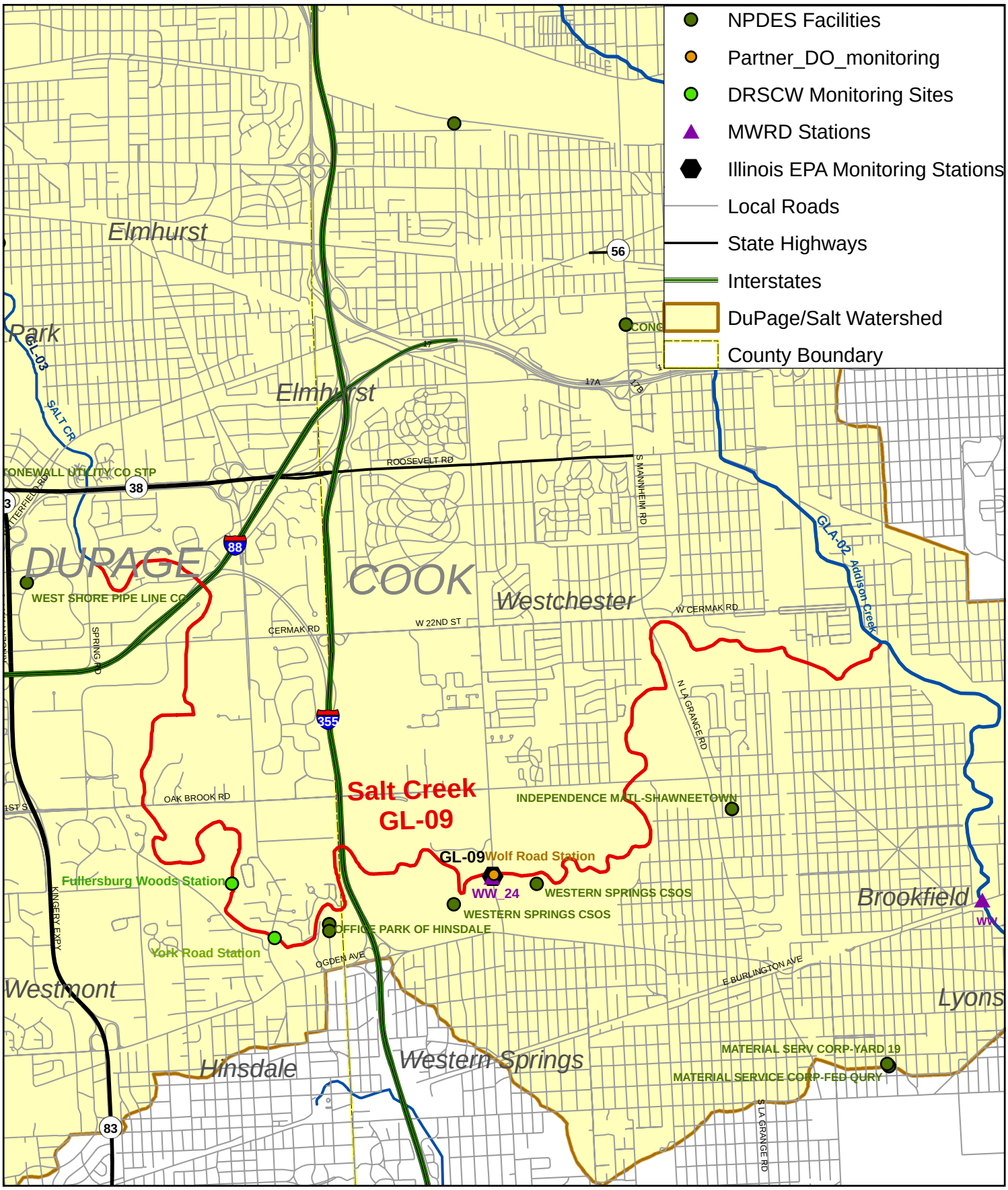


Figure 12. Salt Creek Segment GL-09

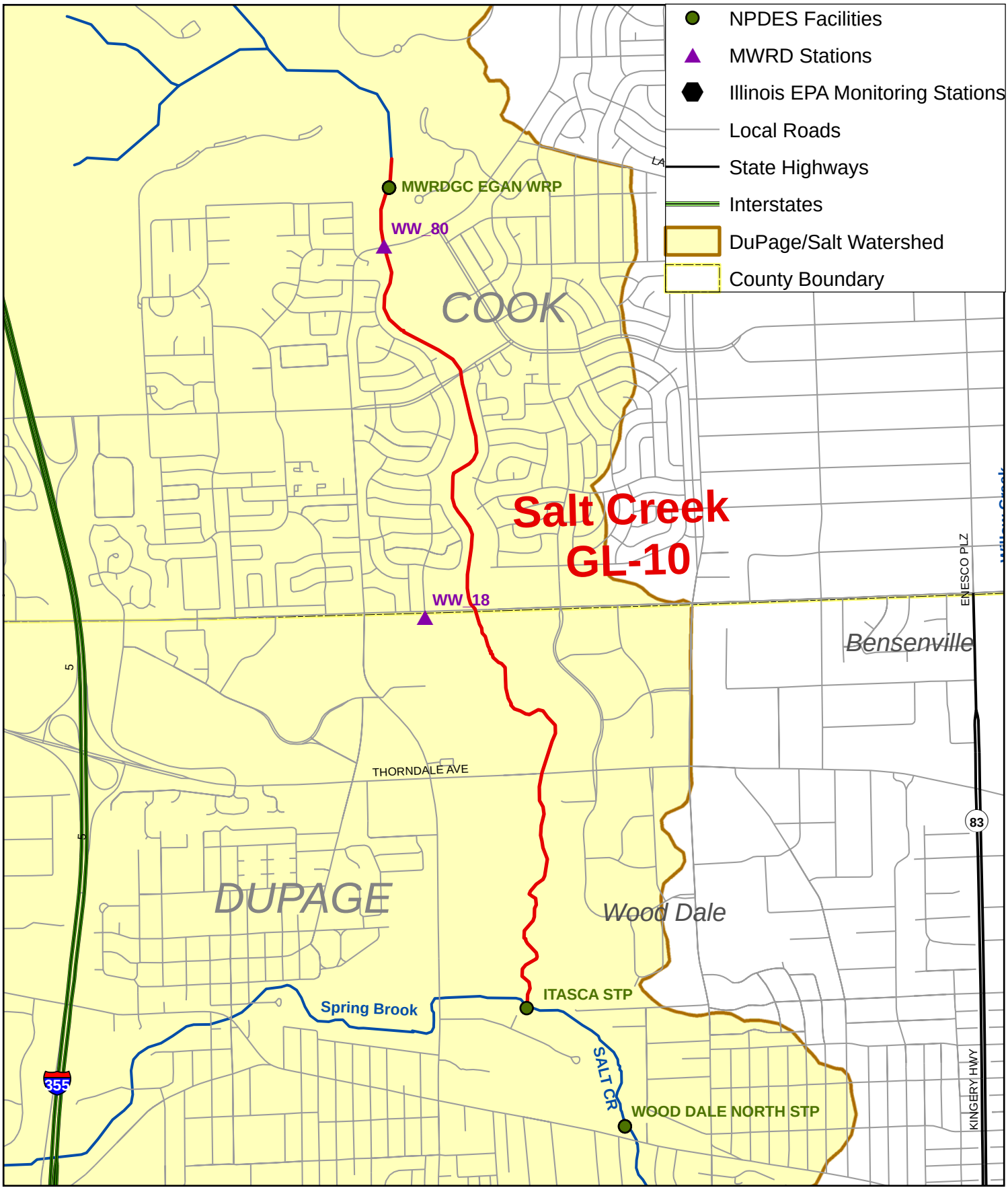


Figure 13. Salt Creek Segment GL-10

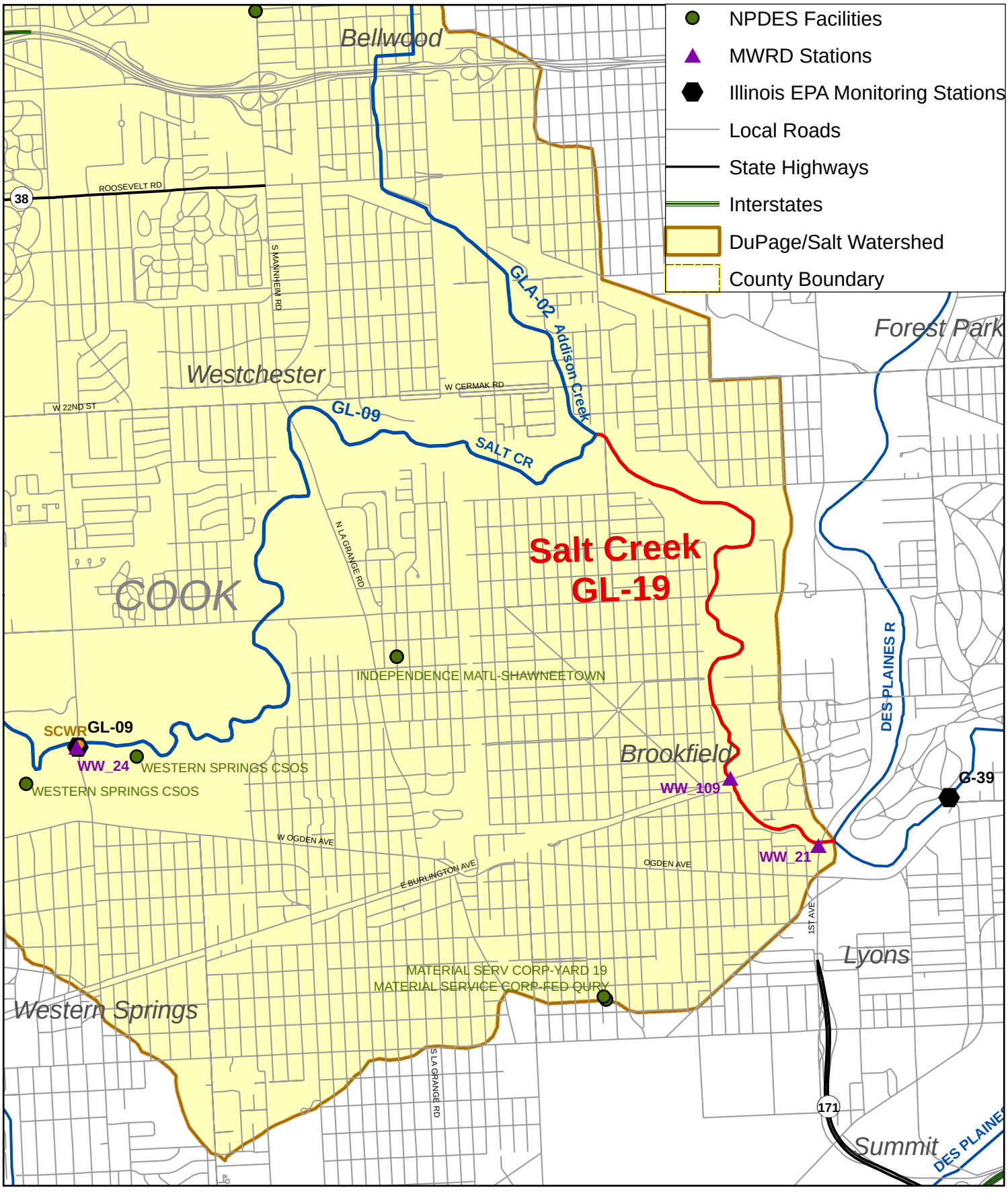


Figure 14. Salt Creek Segment GL-19

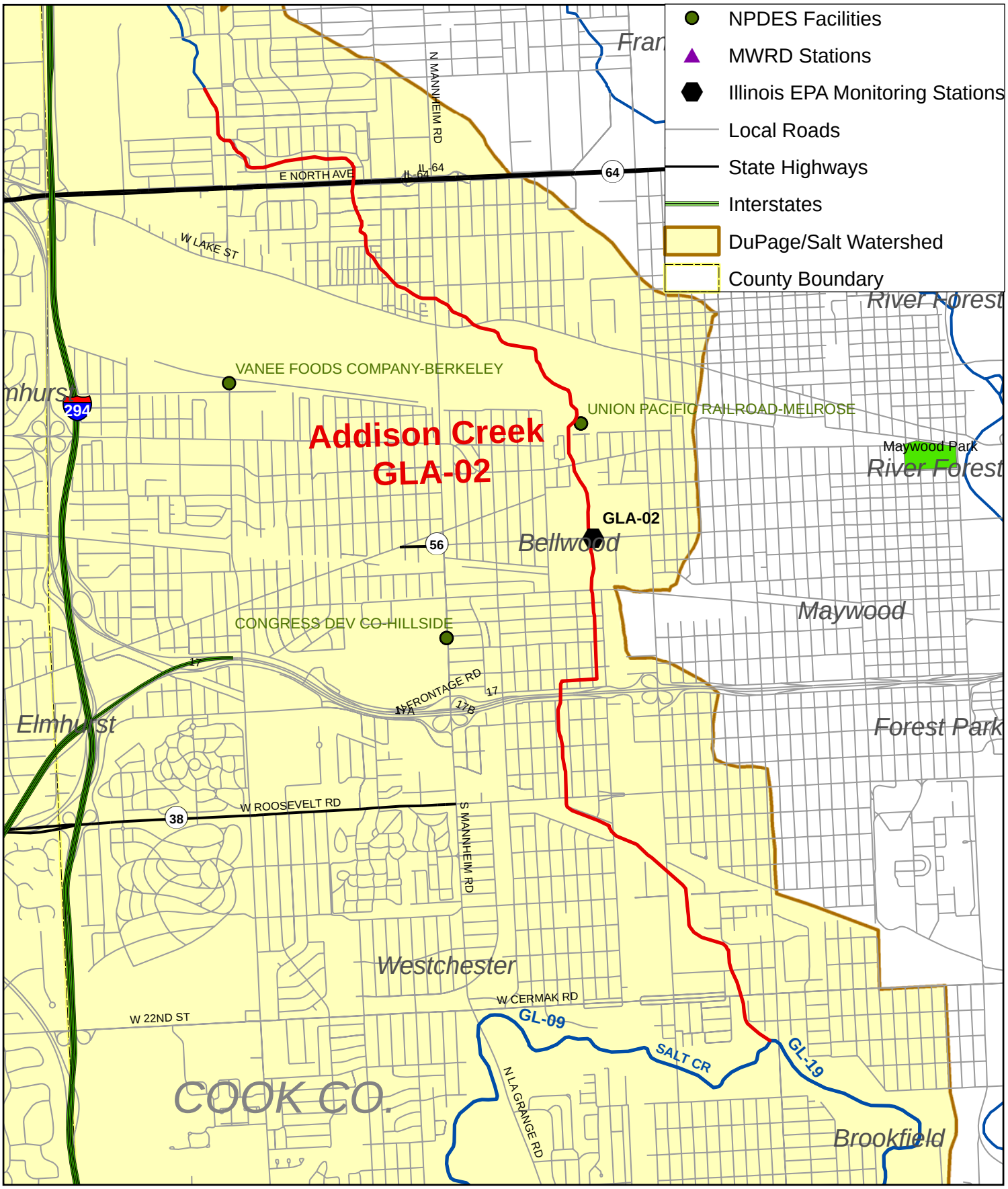


Figure 15. Salt Creek Segment GLA-02

Illinois EPA Water Quality Station Locations

STATION CODE	WATERBODY	LOCATION	COUNTY	LATD	LONGD	TOP MAP NAME	MONITORING TYPE
GB-10	DUPAGE RIVER	PLAINFIELD-NAPERVILLE RD	WILL	41.69024	-88.16624	NORMANTOWN	STREAM AMBIENT
GB-11	DUPAGE RIVER	RT 52 SHOREWOOD	WILL	41.52157	-88.19483	PLAINFIELD	STREAM AMBIENT
GB-16	DUPAGE RIVER	119TH, FURGUSON RD, WEST OF NAPERVILLE	WILL	41.666336	-88.182736	NORMANTOWN	STREAM AMBIENT
GBK-05	W BR DUPAGE RIVER	RT 56 BR WARRENVILLE	DUPAGE	41.82539	-88.17936	NAPERVILLE	STREAM AMBIENT
GBK-09	W BR DUPAGE RIVER	ST CHARLES RD N WEST CHICAGO	DUPAGE	41.91105	-88.17906	WEST CHICAGO	STREAM AMBIENT
GBL-10	E BR DUPAGE RIVER	US 34 BR, 0.2 MI W OF SR 53, LISLE	DUPAGE	41.8006	-88.08141	WHEATON	STREAM AMBIENT
GL-09	SALT CREEK	WOLF RD, 0.5 MI N OF OGDEN AVE (SR34), WESTERN SPRINGS	COOK	41.8257	-87.90021	HINSDALE	STREAM AMBIENT
GLA-02	ADDISON CREEK	WASHINGTON BLVD IN BELLWOOD	COOK	41.88185	-87.86896	RIVER FOREST	STREAM AMBIENT

Appendix E

Stage 1 Responsiveness Summary

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Appendix E: Stage One Responsiveness Summary

This responsiveness summary responds to substantive questions and comments received during the public comment period from January 16, 2009 through April 17, 2009 postmarked, including those from the January 28, 2009 public meeting discussed below.

What is a TMDL?

A Total Maximum Daily Load (TMDL) is the sum of the allowable amount of a pollutant that a water body can receive from all contributing sources and still meet water quality standards or designated uses. This TMDL is for the DuPage River/Salt Creek watersheds. In Illinois, developing a TMDL is a three stage process and this is a stage one report which contains the watershed characteristics, impairments and potential sources. After the stage one report, stage two and stage three will proceed. Stage two would include additional monitoring and stage three is the required modeling, allocations and reductions for each TMDL impairment and would also include an implementation plan.

Background

The DuPage River and Salt Creek watersheds drain approximately 332,600 acres and lies mainly in Cook, DuPage and Will counties. Land use in the DuPage River watershed is 65% urban, 21% agriculture and 10% forest while in Salt Creek it is 85% urban and 12% forest. Waters impaired in this watershed are DuPage River, East Branch DuPage, West Branch DuPage, Spring Brook, Salt Creek, Addison Creek and Churchill Lagoon. The DuPage River is listed on the Illinois EPA 2008 Section 303(d) List as being impaired for chloride, fecal coliform, dissolved oxygen and silver. East Branch is impaired for fecal coliform and pH. West Branch is impaired for dissolved oxygen, fecal coliform, silver, manganese and pH. Spring Brook is impaired for dissolved oxygen and fecal coliform. Salt Creek is impaired for fecal coliform and pH. Churchill Lagoon is impaired for phosphorus. The Clean Water Act and USEPA regulations require that states develop TMDLs for waters on the Section 303(d) List. Illinois EPA develops TMDLs allocations for impairments with numeric water quality standards, but some non-numeric standards may be addressed through the implementation plan. Best Management Practices (BMPs) put in place for TMDL impairments may reduce other parameters associated with it.

Public Meetings

A stage one public meeting was held in Elmhurst on January 28, 2009. The Illinois EPA provided public notices for all meetings by placing an ad in the local newspapers in the watershed; the Chicago Daily Herald, The Will-South DuPage Report and the Central Cook Suburban. These notices gave the date, time, location, and purpose of the meetings. It also provided references to obtain additional information about this specific site, the TMDL Program and other related issues. Individuals and organizations were also sent the public notice by first class mail. An additional stakeholder meeting was held March 31, 2009 in Plainfield, IL. The draft TMDL Report was available for review at the Elmhurst City Hall and on the Agency's web page at http://www.epa.state.il.us/water/tmdl .

The first public meeting on January 28, 2009 started at 6:00 p.m. and was attended by approximately 50 people. The second stakeholder meeting on March 31, 2009, started at 10:00 am and was attended by 20 people. The meeting record remained open until midnight, April 17, 2009.

There will be a public meeting for the stage three TMDL report in the future and a responsiveness summary will be developed for this meeting also.

Questions and Comments

1. The stakeholders in the watershed were not given the opportunity to provide input on how the stage 1 report was to be conducted. Many of the same issues discovered in the first TMDLs are also appearing in this report. Why were we not given the opportunity to provide input in the early stages of planning and conducting the report?

   Response
   The Illinois EPA published the Illinois Integrated Water Quality Report and Section 303(d) List- 2006 in June of 2006. This document lists all the waters for TMDL development in the next two years. All of the segments for this TMDL were listed in Table C-29 of the Integrated Report. The Illinois EPA holds the first public meeting at the beginning of the TMDL process- in stage one. The basic watershed information is completed in this stage and presented to the public. This is also the stage we request any other relevant data in the watershed and public input. Illinois EPA also participates in the DuPage River Salt Creek Workgroup and keeps the Workgroup updated on TMDL issues.

2. The water quality standard for fecal coliform is "based on a minimum five samples taken over a 30 day period". However, Illinois EPA does not have the appropriate number of samples and therefore has elected to use an alternative water quality standard. Illinois EPA should obtain the necessary data to use the more preferred standard for assessment purposes.

   Response
   Illinois EPA does sample at the frequency required by one part of the standard. Stations that are assessed for primary contact in this watershed are sampled approximately monthly. If available, five years of data are used for the primary contact assessments. For this TMDL, most of the assessments were based on data that were received from outside sources. From those stations sampled by outside sources, Illinois EPA will accept sampling at the correct frequency when the standard is applied- May through October. If their data become available this year, they will be used for the TMDL. The DRSC Workgroup is developing a sampling plan for this watershed as part of the implementation process.

3. The report does not state how the effect of animals on fecal coliform will be addressed. Illinois EPA stated in the public meeting that they would try to use some data that have been gathered in other states but the data may not be comparable to this watershed and therefore assumptions may have to be made. This will greatly decrease the reliability of the modeling and ultimately the wasteload allocations and TMDL. Therefore, it is imperative that Illinois EPA obtain the appropriate data and perform the necessary studies to properly account for the effect of wildlife on fecal coliform.

   Response
   Illinois EPA will be addressing the bacteria impairments using the load duration curve analysis. Bacteria data and flow data are the basis of this analysis. Loads are ranked per flow and one can which flow periods in which there are exceedences of fecal coliform bacteria. By using this approach, sources can be tracked by the flow period. For example, if point sources are causing the majority of the problem, exceedences will be seen even in low flow periods when there is no precipitation causing runoff. If the main problem is runoff related, exceedences will be seen in high and medium flow periods only. The analysis also shows the exceedences that are due to storm flows. Exceedences due to wildlife would be expected in high to high-medium flows. Illinois EPA is not aware of any livestock facilities in this watershed and does not have adequate estimates of wildlife populations in this area. If anyone is aware of these data, Illinois EPA would like to obtain this information.

4. Through studies performed by DRSCW, it has been clearly shown that sediment oxygen demand (SOD) has a profound effect on the QUAL-2K model for DO. This model is very sensitive to SOD and therefore SOD monitoring data are critical when modeling for DO. Illinois EPA must obtain the required SOD data in order to properly perform water quality modeling for DO.

   Response
   In response to suggestions made at the Stage One Public Meeting, Illinois EPA will be obtaining SOD samples from the West Branch DuPage River.

5. Illinois EPA is going to use monthly monitoring reports from publicly owned treatment works (POTWs) to provide data for the QUAL-2K model when studying the DO parameter. However, Illinois EPA should use actual data that are readily available.

   Response
   Illinois EPA typically uses the designed average flow (DAF) for NPDES facilities discharging in the watershed. It was brought to our attention at the meeting that this may over-estimate loads from these sources and flow data obtained from the individual facilities would best represent loads in the model. NPDES facilities are not required to give Illinois EPA this flow information, but Illinois EPA will work with facilities to obtain it.

6. The Report does not state how it will address wet weather flow. Illinois EPA should obtain the necessary wet weather data to determine how they are going to address wet weather flows.

   Response
   See response to question 4 for information on how the load duration curves determine wet weather exceedance events. See response to question 4 for information on how the load duration curves determine wet weather exceedance events. The QUAL-2K model assumes steady and non-uniform flow, which means that flow doesn't change over time. However, the QUAL-2K can be run under various flow conditions, for example, dry and wet condition, provided that the pollutant loads are available for these flow conditions. The representative wet weather flows can be used in QUAL-2K to evaluate how a waterbody responds to pollutant loads induced by stormwater runoff.

7. There was very limited data for manganese, with only two violations out of forty-five observations. One violation was extremely high indicating a possible faulty test. What efforts were taken after the sample was analyzed to ensure accuracy and reliability of the results? Are forty-five observations enough to be statistically significant?

   Response
   Illinois EPA did look at the manganese data for West Branch DuPage River (segment GBK-14) and found the extremely high data sample was magnesium which was then deleted from the dataset. There is still one exceedance of manganese which violates the water quality standard and requires a TMDL. According to the water quality standard for manganese, it is a toxic pollutant and one exceedance will result in a listing of impairment for a waterbody (refer to Table C-3 in the 2008 Integrated Report).

8. The DRSCW has monitored chlorides last year and these data shows more violations then Illinois EPA's data. Illinois EPA should include the chloride data in their assessment and in future modeling.

   Response
   Illinois EPA has received these data and will be using it as it applies to stream assessments and in the TMDL model.

9. The report does not state how it will account for naturally occurring phosphorus in the modeling. Illinois EPA should obtain the appropriate local data and perform the necessary studies that properly account for phosphorus as it naturally occurs in this watershed rather than basing it on non-comparable studies and assumptions.

   Response
   The only waterbody that we are doing a phosphorus TMDL on is Churchill Lagoon. Illinois EPA gives TMDL allocations to parameters with numeric water quality standards. Phosphorus as it applies to all lakes has a standard of 0.05 mg/L and takes into account background concentrations. As it turns out, there is a possibility that the dam might be removed for this waterbody. Therefore, the standard would not apply to this water and a TMDL would not be applied since no phosphorus standard has been adopted for streams. We will have more information in stage three of the TMDL process.

10. Instituting TMDLs, if done properly, should improve the water chemistry of our streams. However, they will do very little in improving the aquatic and wildlife habitat without making other improvements like streambank restorations, dam removals, wetland or riparian creation, etc. Instituting TMDLs will shift limited municipal resources towards compliance in meeting TMDL requirements, away from stream corridor improvements. This will have a substantial impact in our ability to make meaningful improvements to our lakes and streams.

    Response
    The outcome of TMDLs is allocations and can result in reductions from point sources and nonpoint sources. Through the NPDES permit program, the TMDL can reduce limits on point sources, but Illinois EPA does not have regulatory authority to make an entity or person apply nonpoint source Best Management Practices (BMPs) on their land. The TMDL recommends BMPs that can be established in the watershed to reduce pollutant loads and we recommend stakeholders begin watershed planning to see where it is feasible for BMPs to be installed. There are some watersheds that already have stakeholder groups formed (e.g., DRSCW) and are ready for planning to begin and there are other watersheds that use the TMDL to begin the process of planning. One tool the agency has is the 319 Nonpoint Source Program in which groups can get funding for watershed planning. There will be more information in the stage 3 implementation plan.

11. Page ES-1 reads, “Waterbodies included on the 303(d) list require Total Maximum Daily Load (TMDL) development.” This statement is not entirely true. For example, an impaired water could be deemed to be impaired as the result of a natural cause, such as being classified into Category 4C.

    Response
    The 303(d) List is considered Category 5 in the Integrated Report. All Category 5 impairments require a TMDL. 4c is separate category and a TMDL will not be developed for these.

12. Should TSS and Sedimentation/siltation be included in Table 1-4, as no water quality standard criteria exist for those parameters?

    Response
    Yes, these parameters had TMDLs developed previously. The Agency no longer develops TMDLs for any parameter lacking a numeric standard. The Agency believes parameters with numeric standards have been through a rigorous approval process and wasteload allocations can apply.

13. While DuPage County recognizes the limited data complications present during this TMDL development process and how these pose difficulties in determining the geometric mean, the County has strong objection to changing the single sample maximum criterion (SSM) from 400 colony forming units (cfu) to 200 cfu. Making such a change would alter the risk level from 0.8% to approximately 0.55%. While

the proposed SSM criterion change is stated to be an implicit margin of safety (MOS), the change goes far beyond the MOS and completely changes the bacteria criterion against which the bacteria data are being assessed. A more appropriate reference to the implicit MOS would be to simply reference the load duration analysis itself, particularly that the percent reduction will be required from the greatest difference between recorded bacteria data and bacteria loads, calculated from flow data. The model should also provide calculated post-reduction daily bacteria levels, which would allow one to verify if the GM, theoretically, is being met.

Response
Illinois EPA is not changing the assessment methodology for fecal coliform. It is still assessed using the geometric mean of 200 cfu/100ml and a single sample maximum of 400 cfu/100ml. The allocations for NPDES wasteloads will be based on the permit limit of 400 cfu/100ml. If the facility is meeting their permit limit, no change will be required. We are required by USEPA to use the 200 cfu/100 ml for fecal coliform as the target load for the stream water quality. The post reduction bacteria levels are required to be under this target.

14. It is not clear to DuPage County why IEPA is pursuing a TMDL that includes the chloride, manganese, and silver parameters. Table C-3 in the IL 2008 Integrated Assessment (page 59) states that for toxic parameters, including these three, the "most recent consecutive three years of data are used." Looking at the data for the chloride and silver parameters, it is obvious that there are ten or more observations for each of the two parameters. Therefore, again referencing Table C-3, even a moderate impairment would require that two or more observations in the most recent consecutive three years of data exceed the applicable acute toxicity standard. Based on these data which indicate only one excursion in the applicable time period, the assessment units should not be impaired for chloride and silver and these parameters should not be included in the TMDL report.

Response
Chloride, manganese and silver are all three toxic parameters and one exceedance of the water quality standard indicates moderate impairment (refer to Table C-3 in the 2008 Integrated Report).

15. There are concerns over the way in which IEPA prioritizes its watersheds for TMDL development. While it is certainly important for public water supply areas to be addressed initially, the fact that IEPA bases prioritization on a sum of the total impairments with numerical criteria is questionable. More attention should be given to the available data (focusing on both quality and quantity of the data) and localized groups in the watershed seeking to enact the implementation plan included in a developed TMDL report rather than simply seeking to produce a report that includes all impairments for all assessment units within a single watershed. Again, single parameter TMDL reports should be considered if the existing data at the time of development are only sufficient enough for that particular parameter. Such a limitation allows for more focused analysis and implementation on that particular parameter for which a reliable TMDL report has been developed.

Response
As part of our prioritization effort, we are required to rank impaired waters by the severity of pollution. Severity of pollution is determined by summing the impairments in the waterbodies. The watersheds with more impairment were identified and listed with higher priority than those listed with fewer causes of impairment. Illinois EPA, along with many other states and following the recommendations of USEPA, develops TMDLs on a watershed basis. Implementation can take place on a single water segment or on a larger scale. Those decisions would be made by local stakeholders.

16. It does not seem logical that waste load allocations are going to be assigned for the phosphorus impairment at Churchill Lagoon. There are active plans to restore the lagoon into a free flowing stream, meaning that the phosphorus standard will no longer be applicable at this site. DuPage County

recommends that IEPA pursue moving that assessment unit into category 4B next assessment cycle, as measures taken will allow the waterway to meet applicable water quality standards within a reasonable period of time without the need for a TMDL report.

Response
As stated in the response to comment 9, if the lake standard for phosphorus will no longer be applicable to the waterbody, the TMDL will not proceed. The water will be assessed using the stream methodology.

17. Page 6-2 reads, "Stormwater dischargers are required to meet the percentage reduction or the existing in-stream standard for the pollutant of concern, whichever is less restrictive." Where is this requirement stated? References attached to statements such as this one would be appreciated.

Response
The statement is removed to the report since it is not applicable to the State of Illinois.

18. Page 1-8, Table 1-2. "Potential source(s)" of fecal coliform should include waterfowl. These animals have been shown to be significant sources of FC in lakes and streams (see *Characterization of E.coli Levels at 63rd Street Beach,* R. L. Whitman, et al, USGS, 2001 and *Effect of Waterfowl on Indicator Bacteria Populations in a Recreational Lake in Madison,* WI, J.H. Standridge, et al., Applied and Environmental Microbiology, September 1979). This is especially important in reach GBK-14 which has nearly stagnant flow during dry weather periods and is frequented by Canada Geese and other waterfowl. DNA fingerprinting of FC should be conducted in FC impaired reaches to determine if the impairment is from a human source, and if not, the impairment should be attributed to background conditions. If conducted following the TMDL, bacteria source tracking should precede any actions required to meet a wasteload allocation (WLA).

Response
Bacteria source tracking uses genetic and/or phenotypic test to identify bacteria strains that are host specific so that the host animal and source of the fecal contamination can be identified. The disadvantage is that a reference library of genetic or phenotypic fingerprints for bacteria isolated from known sources (sewage, livestock and wildlife) is needed to identify the sources. This is a very time consuming and expensive component of the study. Without a large reference library the tracking is very unreliable. Illinois EPA will not include source tracking in the TMDL process, but local stakeholders could use this as part of their watershed plans and/or implementation process.

19. Do all monitoring entities collecting data in the DuPage River/Salt Creek watershed have Quality Assurance Project Plans (QAPPs) and Standard Operating Procedures (SOPs) for their monitoring programs?

Response
Yes, data from DRSCW, Lake County Health Department, MWRGDC, Sierra Club, and Wheaton Sanitary District have QAPPs and SOPs. Data from these entities are used for water quality assessments and therefore require both.

20. What is meant by the phrase "….compliance was measured at the surface of the stream….?" Were all water quality constituents, including dissolved oxygen, measured at the surface? At what depth were the samples collected?

Response
Dissolved oxygen is measured at one foot below the surface of the water using a sonde unit probe. Water is collected for other parameters using a grab sample that is collected uniformly from the bottom to the top of the water.

21. Monitoring stations WW_109 and WW_21 in segment GL-19 are listed incorrectly on the map. The District does not have an ambient monitoring location identified as WW_21. Monitoring station WW_21 should be identified as WW_24 and is located at the point on the map where WW_109 is indicated. Monitoring station WW_24 is located where WW_21 is indicated.

Response
Illinois EPA used latitude and longitude information from the MWRDGC website. If these are incorrect, new location information needs to be obtained. Illinois EPA received data from MWRDGC with monitoring data for station WW_21 (Salt Creek at First Avenue) from January 2001 until April 2002. WW-24 (Salt Creek at Wolf Road) has data from January 2001 until May 2007. WW_109 (Salt at Brookfield Road) has data from July 2002 until May 2007.

22. TMDL segments need to be better defined. It is practically impossible to determine from the maps where the segments begin and end. Segments should be defined by geographical features or, preferably, latitude and longitude coordinates.

Response
Illinois EPA will be more specific in the final stage 1 draft report. Individual maps of each impaired segment will be included along with a table that includes latitude and longitude coordinates for each monitoring station.

23. Despite the fact that the Illinois EPA identified the West Branch DuPage River as impaired due to zinc concentrations, no TMDL will be developed for this pollutant. The text of the report does not discuss the issue of zinc impairment of the West Branch DuPage River. This issue is only addressed as a footnote to Table 1-1. Based upon the identification of zinc impairment, the Illinois EPA has begun to place zinc limits in NPDES permits for municipal plants discharging to this river including the Village of Hanover Park Sewage Treatment Plant. Without conducting the formal TMDL process for zinc, there can be no assurance that the Illinois EPA's strategy will eliminate zinc impairment of the West Branch DuPage River. After extensive sampling and investigation of zinc concentrations within the Hanover Park sewer service area, it has been determined that the domestic concentrations of zinc are nearly the same as the industrial discharge concentrations. The domestic sewage accounts for roughly 80% of the WWTP flow while industry discharge only accounts for 20%. Even if industry is limited to zero discharge of zinc, the effluent would not meet the monthly zinc effluent limit of 0.046 mg/L. The technology to remove zinc and the cost associated with such an upgrade are significant. There is a concern that scarce tax dollars will be spent on point source control of zinc without solving the impairment.

Response
Domestic and industrial discharges are both considered point sources. The NPDES program has been established for control of point source discharges. This program is relied upon for reductions if there are impairments only due to point sources.

24. There is a single exceedance of manganese for segment GBK-14. That exceedance occurs during a period of relatively high sampling (4 year period accounting for perhaps 30 of the sample points). It would be of interest to know what the flow rates were when the outlier was sampled and see what proportion of the samples were collected under similar flow regimes. With one exceedance, the parameter does not meet the guideline for an impairment set out in the 2008 Integrated Assessment Report. In addition, it is our information that the standard for manganese is being revised for the State of

Illinois. In our assessment with the new standard, there is no exceedance. The TMDL for this parameter should be suspended.

Response
According to our assessment methodology (2008 Integrated Report on page 59, Table C-3) for aquatic life designated use, a single exceedance violates the chronic toxic standard for manganese. Once this standard is violated, the water body is impaired. Illinois EPA is in the process of developing new manganese standards, but this is in the initial stages. The Illinois Pollution Control Board must review and approve any changes to water quality standards before they can be utilized in Illinois EPA water quality assessments. In regards to flow analysis, as part of the stage 3 development a load duration curve will be utilized and this takes into account flow at the time each sample was taken. This can determine the flow regime in which violations take place and sources that attribute at that flow regime.

25. The two exceedences for chloride do not meet the standards set out in the 2008 Integrated Report for an impairment. However, there is DRSCW data that shows multiple exceedences for multiple sites and violations were correlated to storms. In addition, the Bioassessment plan found TDS higher than 1000 mg/L in several tributaries during summer months; chloride is most likely the bulk of these dissolved ions. We are satisfied that chloride levels are exceeded across the program area during winter months but also in a more limited area, warm weather periods, and that the principle source is winter de-icing compounds. Since you had poor data and there are de-icing operation already underway in the upper DuPage and Salt, a TMDL should not be completed for chloride. It is unlikely that such a development will contain more detailed analysis or recommendations than the 2007 DRSCW Chloride Usage Education and Reduction Study which was a completed due to the chloride TMDL allocations on the West and East Branches of DuPage.

Response
Please refer to the response for comment 14. Chloride is also a toxic chemical and falls under the same assessment as manganese. As required by the Clean Water Act, Illinois EPA will develop a TMDL. As with manganese, load duration curves will be utilized for chloride. Illinois EPA will have information in the implementation plan on the de-icing program/ chloride reduction study.

26. The silver data presented do not meet the standard set out in the Integrated Report. The Bioassessment study looked at 19 sites of the West Branch DuPage and all sites exceeded threshold levels, but did not exceed the probably effects levels as did PCBs found in sediment. Silver may be a problem, but not a priority at this time.

Response
Please refer to the response for comment 14. Silver is also a toxic chemical and falls under the same assessment protocol as manganese. Illinois EPA will not be developing a TMDL for PCBs in sediment as there are no standards for this parameter in sediment.

27. While agriculture may be an important source of nutrient loading, in terms of the Upper DuPage and Salt Creek the small proportion of the area with agriculture use means its effect should not be exaggerated. A more important source of nutrient loading is residential landscaping areas that are the dominant land use management practice in the areas and may produce up to 41% of the NPS phosphorus loadings in tributary watersheds (loadings in tributary watersheds Upper DuPage River Watershed Plan Update). This land use is ignored in chapter 5.3.

Response
While the Salt Creek watershed has only twelve percent agriculture land use, the DuPage River as over twenty percent. Residential areas are not ignored in the analysis. Urban Low/Medium Density which

represents residential areas comprise 30 percent in the DuPage River watershed and almost 47 percent in Salt Creek watershed.

28. Non-point source impairments are strong concerns for the ultimate health of the watershed. Wastewater plants in the region have already reached the point of cost effective treatment for these parameters. Significant investment in wastewater treatment will produce minimal benefit to the watershed. If additional improvements are required at wastewater plants, their carbon footprints are likely to increase thereby adversely affecting the quality of air in the region. We would highly encourage focusing on non-point sources.

    Response
    The TMDL will focus on all sources of pollutants and Illinois EPA is required to have allocations for both point and non-point sources in the watershed.

29. There has been substantial modification of the cross section of the West Branch of the DuPage River over the last few years, and additional modifications are anticipated over the next two or three years. During construction, the entire river flow is pumped around the construction site. It is well documented that when the water is inside pipes, organics remove DO from the water. This means that lower than normal DO levels should be occurring in the River whenever bypass pumping is being conducted on the River. In addition, a multi-year thorium removal project is expected to require two or three more years to complete. As a result, DO sampling of the river during this period will not be representative of the River's natural DO level after the work has been completed. IN addition, the dam in McDowell Woods Forest Preserve was removed in fall of 2008, and the dam in Warrenville is scheduled for removal in 2009. Removal of the dams is expected to increase DO levels in the previously impounded sections as well as downstream.

    Response:
    Regular monitoring of these waterways will continue and this includes DO. Assessment of the results should help focus the need and nature of any BMPs needed.

30. Based on a recent study on Salt Creek, significant phosphorus reductions in the Egan Plant's effluent did not have a measurable impact on either the algae biomass or DO. Egan supplies approximately 50% of the effluent received by Salt Creek. Studies have found a very strong correlation between habitat and diversity in fish and macro-invertebrate populations, suggesting that, at this time, habitat is the primary limiter in our streams and rivers. Therefore, we believe that a focus on habitat, rather than phosphorus removal, would be the most cost effective approach for improving aquatic life in local waterways.

    Response:
    As we are only in the water characterization stage, Illinois EPA has not done a source analysis. The stage 3 modeling will look at the permitted facilities and see if reductions need to be made by nonpoint and/or point sources. The TMDL Implementation Plan will be utilizing the biological study that was developed for this watershed and habitat improvement BMPs (best management practices) will be discussed.

31. Copper was identified as a municipal point source impairment for Spring Brook. We must ask that this be removed. Effluent sampling from the municipal point source that discharges to it does not show impairment. Please note that the January 4, 2006 data point was off by a factor of 10. That datum should have been recorded as 0.011 mg/L instead of 0.11 mg/L.

    Response:
    The municipal point source provided data for this assessment and the correction was made for the sampling data for January 4, 2006. According to these data, there was a sample from July 6, 2005 that

exceeded the chronic standard of 0.020 mg/L. According to our copper standard, this exceedance indicates moderate impairment in the stream.

32. Does the regular dissolved oxygen standard apply to all waters or does the enhanced protection standard apply to some of the waters in this watershed?

Response:
Language has been added to the report on waters with enhanced dissolved oxygen protection. Basically DuPage River segments GB-11, GB-16 and West Branch DuPage River segment GBK-02 are waters with enhanced protection for dissolved oxygen. These waters were assessed using the more stringent enhanced protection standard. Segment GB-16 is the only segment that is impaired for dissolved oxygen according to the enhanced protection standard.