Village of Oak Brook

Stormwater Management Program Plan

Prepared for:

Village of Oak Brook

Development Services Department

1200 Oak Brook Road

Oak Brook, IL 60523

EXECUTIVE SUMMARY

The Village of Oak Brook (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 Oak Brook 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 ILR400407 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. The Village will also put an article in the Village newsletter once a year regarding stormwater 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. The Village will also attempt to engage outside organizations such as the DuPage County Sheriff for cleanup activities. 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 isresponsible 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 outfall~~s~~ 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 (Burns & McDonald) 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 (Burns & McDonald) 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.

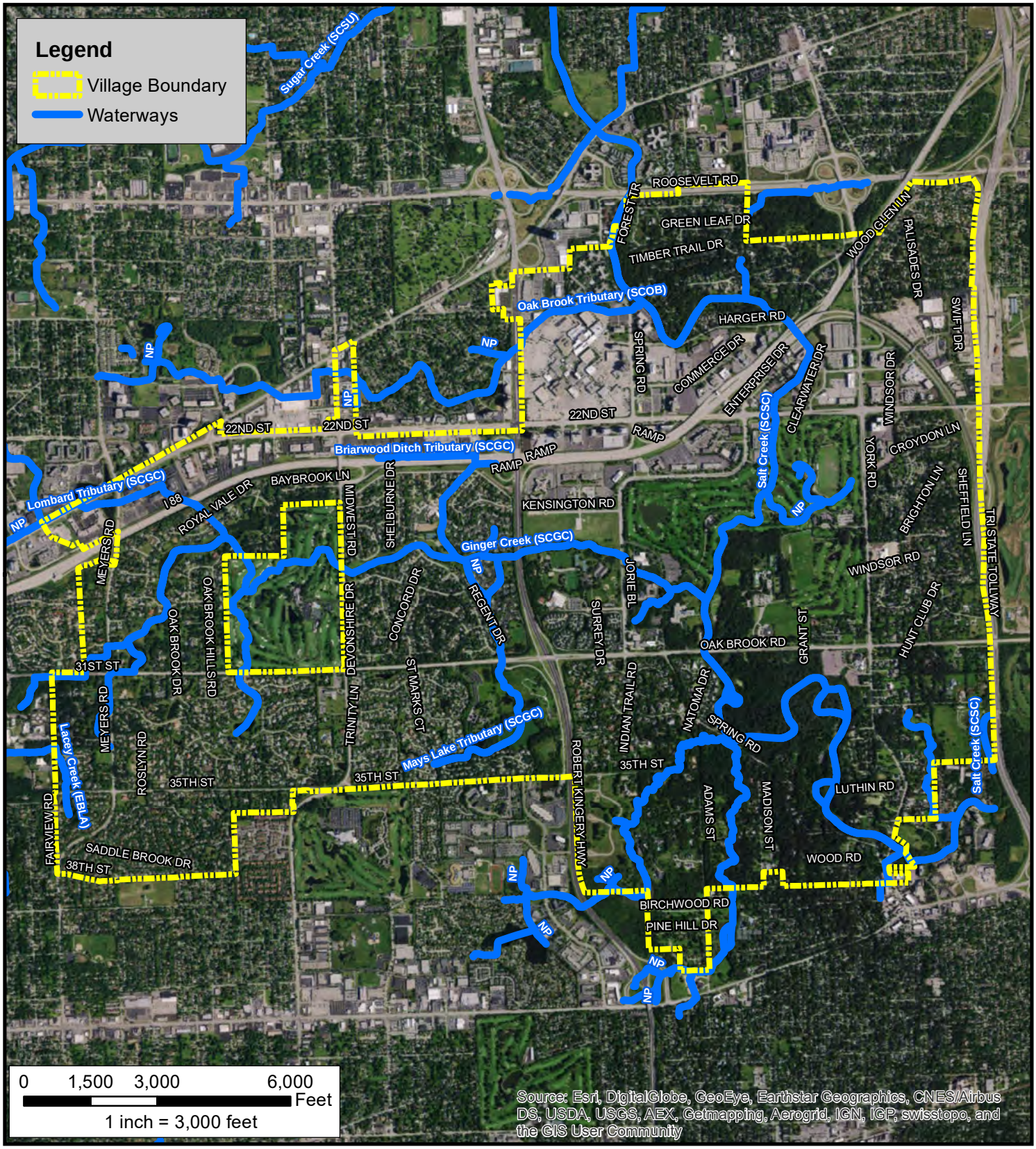
LIST OF APPENDICES

1. Village of Oak Brook Corporate Limits Exhibit
2. Village of Oak Brook Street Map
3. Salt Creek Watershed Exhibit
4. Major Watershed of Illinois Map
5. Illinois River Watershed Map
6. Village of Oak Brook 2016 Notice of Intent
7. Village of Oak Brook Annual Facility Inspection Reports: Years 9-13
8. IEPA General NPDES Permit No. ILR40
9. Salt Creek Watershed – Restoring Balance
10. Salt Creek Watershed: A Resource Worth Preserving
11. Sample Inspection Forms: ILR40 and ILR10
12. Sample Contractor Certification Forms
13. IEPA Forms – NOI, ION, and NOT
14. Outfall Screening Checklist, Forms, Instructions, and Reports
15. Sample Inspection Checklists
16. Typical Soil Erosion and Sediment Control Details
17. Example Public Education and Outreach Materials
18. Construction Site Inspection Forms
19. Outfall Inspection Data Forms and Reports
20. Detention Pond Checklists
21. Pre-Construction Meeting Forms
22. Employee Training Agendas or Course Information

23. Compliance Documentation – Public Education and Outreach
24. Compliance Documentation – Public Participation/Involvement
25. Compliance Documentation – Illicit Discharge Detection and Elimination
26. Compliance Documentation – Construction Site Runoff Control
27. Compliance Documentation – Post-Construction Runoff Control
28. Compliance Documentation – Pollution Prevention/Good Housekeeping
29. Total Maximum Daily Loads Report – East Branch of the DuPage River
30. Total Maximum Daily Loads Report – Salt Creek

APPENDIX 1

Village of Oak Brook Corporate Limits Exhibit



Document Path: N:\OAKBROOK\160465\GIS\Exhibits\Exhibit 1 Corporate Limits.mxd

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

JOB# 160465

TITLE

CORPORATE LIMITS

DATE 09/20/16

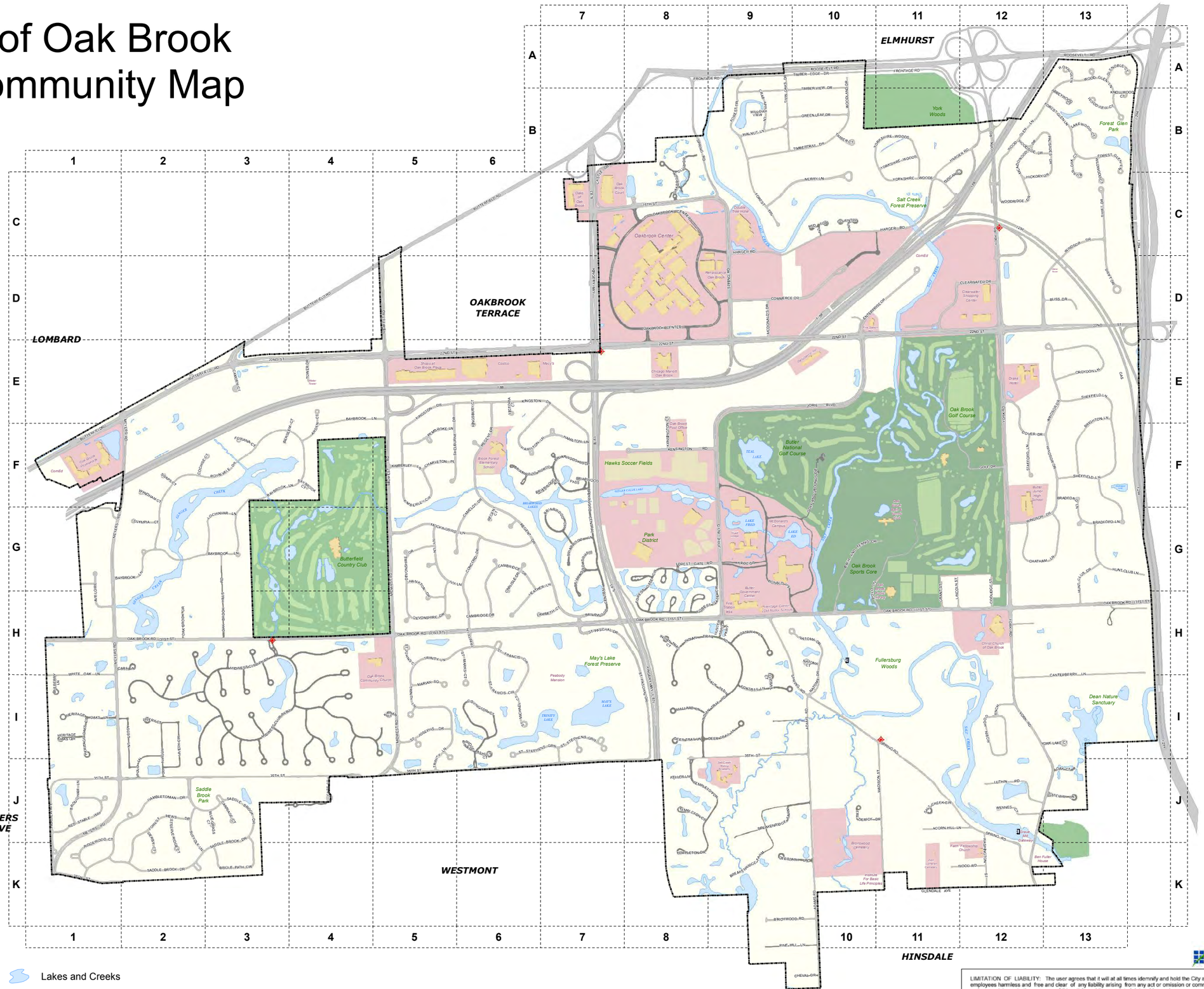
EXHIBIT

APPENDIX 2

Village of Oak Brook Street Map

Village of Oak Brook
2015 Community Map

Street	Location
16TH ST: B6-9	
22ND ST: B6-7,D3-14	
31ST ST: G1	
35TH ST: I1-10	
38TH ST: J1	
ABBEYWOOD CT: A13	
ACORN HILL LN: J11-12	
ADAMS RD: H10, I10, J10	
ARDEN CT: D4, E4	
ASCOT LN: H1-2, I2	
ASHLEY CT: I6	
AVE LOIRE : F1, G1	
BAYBROOK CT: E4	
BAYBROOK LN: E3-5, F1-3	
BERSEEM CT: E4	
BILTMORE RD: D2	
BIRCHWOOD RD: K9-10	
BLISS DR: C13, D13	
BLUE GRASS CT: I2	
BRADFORD LN: F13	
BREAKENRIDGE FARM: I9-10, J9	
BRIARWOOD CENTRAL: E7, F7, G7	
BRIARWOOD CIR: F7	
BRIARWOOD LN: F7	
BRIARWOOD LOOP: E7, F7	
BRIARWOOD NORTH: E6-7	
BRIARWOOD PASS: E7	
BRIARWOOD SOUTH: F7, G7	
BRIDGEWAY CT: H6, I6	
BRIDLE PATH CIR: I3, J2-3	
BRIGHTON LN: E13, F13	
BROUGHAM LN: I1	
BRYAN ST: A10-11	
BURR OAK CT: B13	
BURR OAK RD: I13	
BUTTERFIELD RD: A7-8, B5-7, C3-5, D1-3, E1	
CAMBRIDGE DR: F6, G6	
CAMDEN CT: D3	
CAMELOT DR: F6	
CANTERBERRY LN: H12-14	
CARA LN: G1, G2	
CARLISLE DR: F6, G6	
CARRIAGE CT: I3	
CASS AVE: I4	
CASS CT: I4	
CASTLE DR: B7-8	
CHARLETON PL: E5-6	
CHATHAM LN: F12-13, G12-13	
CHEVAL DR: L9	
CLEARWATER DR: C12, D11-12	
COCHISE CT: E2-3	
COMMERCE DR: C9-11	
CONCORD DR: F6, G6	
COOLIDGE ST: G12	
COVENTRY LN : B10, C10	
COVINGTON CT: H6, I6	
CRAB APPLE LN: A9	
CROYDON LN: D13	
DEER PATH LN: J9-10	
DEER TRAIL LN: H9, I8-9	
DEGENER AVE: A14, B14	
DERBY CT: I2, J2	
DEVONSHIRE DR: F5, G5	
DICKENS AVE: A14	
DOVER DR: E12-13	
DRURY LN: A8-9	
E BRUSH HILL RD: A9-11	
E GLENDALE AVE : J12	
ENTERPRISE DR: C11, D10-11	
FAIRVIEW AVE : I1, J1	
FOREST GATE CIR: F8-9, G8-9	
FOREST GATE RD: F8-9	
FOREST GLEN LN: A13, B13-14	
FOREST MEWS DR: I2, J1-2	
FOREST TRL: A9, B9	
FOX LN: I13-14, J13	
FOX TRAIL CT: H9	
FOX TRAIL LN: H9	
FOXIANA CT: E3	
FREDERICK DR: I10, J10	
FRONTAGE RD: A9, B12	
GATEWAY LN: I12-13	
GLENDALE AVE: J10-12	
GLENOBLE CT: A13-14	
GOLF AND GROUNDS DR: E10, F10	
GOLF DR: E12	
GRANT ST: G11, H11	
GREEN LEAF DR: A10	
HAMBLETONIAN DR: I1-2, J1	
HAMILTON AVE : A14, B14	
HAMILTON LN : B14, D7, E6-7	
HAMPTON DR: G5	
HARGER RD: A12, B11-12, C9-11	
HAWTHORNE CT: I14	
HAWTHORNE LN: I13-14	
HAWTHORNE ST: B14	
HEATHER LN: G6-7	
HERITAGE OAKS CIR: H1	
HERITAGE OAKS CT: H1	
HERITAGE OAKS LN: H1	
HICKORY DR: B12-13	
HUNT CLUB DR: G13	
HUNT CLUB LN: F13, G13-14	
HUNTER TRAIL PKWY: G6-9	
I 294: A14, B11-14, C11-14, D13-14, E14, F14, G14, H14, I14	
I 88: A12-13, B11-12, C10-13, D3-10,D-13, E1-3	
IL 83: A7-8, B7-8, C7, D7, E7, F7, G7-8, H8, I8	
INDIAN TRAIL CT: G8	
INDIAN TRAIL RD: G8-9, H8-9, I8	
IVY LN: F5, G5-6	
JORIE BLVD: D10, E9-10, F9, G9	
KANAN CT: H5	
KELLER LN: J8	
KENSINGTON CT: E8	
KENSINGTON RD: E8-9	
KIMBERLEY CIR : E5, F5	
KIMBERLEY LN : E5	
KINGSBURY CT: D6, E6	
KINGSTON DR: D5-7, E5, E7	
KNOLLWOOD CT: A14	
KROC DR: F9, G9	
LAKEWOOD CT: A13, B13	
LAMBETH CT: G6-7	
LINCOLN RD : G11	
LIVERY CIR: H2, I2	
LIVERY CT: H2	
LOCHINVAR LN : F3	
LUTHIN RD: I12	
MADISON ST: I10, J10	
MALLARD LN: H8	
MARIAN SQ: H5	
MARION AVE: A14, B14	
MCDONALD'S DR: C9, D9	
MEADOWOOD DR: B12-13	
MERRY LN: B9-10	
MEYERS RD: D2, E2, F1-2, G1, H1, I1, J1	
MIDWEST CLUB PKWY : G2-4, H2-5, I2-5	
MIDWEST RD: C5, D5, E5, F5, G5, H5, I4-5	
MOCKINGBIRD LN: F5-6	
MULBERRY LN: G1, H1	
NATOMA CT: H10	
NATOMA DR: G9-10, H10	
OAK BROOK CLUB DR: B8-9	
OAK BROOK CTR: B8-9, C7-9, D8-9	
OAK BROOK DR: G2	
OAK BROOK HILLS RD: F3, G3	
OAK BROOK RD: F10-11, G1-14	
OAK CT: I13	
OAKBROOK CTR : B8, C7-9, D8	
OGDEN AVE: J14	
OLD MILL RD: I13, J12-13	
OLYMPIA CT: F2	
OTTAWA LN: G9, H9	
PALISADES DR: A13, B13	
PEMBROKE LN: E5-6	
PINE HILL LN: L9	
POLO LN: G10, G11, H2, I2	
RED FOX LN: B10, C10	
RED STABLE WAY: I1	
REGENT CT: F6	
REGENT DR: D6, E6, F6-7, G7	
RIDGEWOOD CT: I1, J1	
ROBIN HOOD RNCH: H12, I12	
RONALD LN: F9-10, G9-10	
ROOSEVELT RD: A8-14	
ROSLYN RD: H2, I2	
ROYAL GLEN CT: A13	
ROYAL LAKE DR: E2-4, F2	
SADDLE BROOK DR: I1-3, J1-3	
SALT CREEK CIR: I11, J11	
SALT CREEK LN: J13	
SAUK PATH: H8-9	
SHEFFIELD LN: E13, F13	
SHELBURNE DR: D6, E6	
SPINNING WHEEL RD: J13-14	
SPRING RD: A9, B9, C9, D9, G9, H9-10, I10-11, J11-12	
ST FRANCIS CIR : G6, H6, J9	
ST JOHNS CT : G5, H5	
ST JOSEPHS DR : H5	
ST MARKS CT : G6, H6	
ST MICHAEL CT : H6	
ST PASCHAL DR : G7-8, H8, I8	
ST STEPHENS GRN : H7, I6-7	
STAFFORD LN: E12, F12	
STEEPLE RIDGE CT: I2, J2	
SUFFOLK LN: I2, J2	
SWAPS CT: E2	
SWIFT DR: B13, C13-14	
TEMPLETON DR: : J8, K8	
TEMPLETON CT: J8	
TIMBER CT: A10, B10	
TIMBER EDGE DR: A10-12	
TIMBER TRAIL DR: A10, B9-10	
TIMBER VIEW DR : A9-10	
TOWER LN : D4	
TRINITY LN: G5-6, H5, I5	
TUSCAN CT: B11-12	
TWIN OAKS DR: A10, B10	
TECHNOLOGY DR: E1	
VICTORIA CT: D6, E6	
W BUTTERFIELD RD: A7-8	
WALNUT LN: A9-10	
WASHINGTON ST: J12	
WENNES CT: J12	
WHITE OAK LN: G1	
WILDWOOD CT: B13	
WILLOW VIEW LN: A9	
WINDSOR DR: C13, D13, E13, F12-13	
WOOD GLEN LN: A12-14, B12	
WOOD RD: J11-12	
WOODLAND DR: A10	
WOODRIDGE DR: B12	
WOODSIDE DR: B12-13	
WOODVIEW CT: A13-14	
WYNDHAM CT: E2	
YORK LAKE CT: I12-13	
YORK RD: A12, B12, C12, D12, E12, F12, G12, H12, I12-13, J12	
YORKSHIRE WOODS: A11, B11-12	



Map Legend

- Oak Brook Corporate Limit
- Public Road
- Private Road
- Building
- Bike Path
- Warning Siren
- Lakes and Creeks
- Graue Dam
- Old Oak Brook Dam

LIMITATION OF LIABILITY: The user agrees that it will at all times idemnify and hold the City and its officers and employees harmless and free and clear of any liability arising from any act or omission or commission. The City makes no claim as to the accuracy of this article and its associated data tables and assumes no responsibility for their position or content accuracy. In providing such articles the City assumes no obligation to assist the user in the use, development, or maintenance of any applications derived from this article. The City assumes no responsibility for the accuracy of any subsequent copies of this article.

20140208_2013_Community_Map_24x36 - JPK
Data Sources: Village of Oak Brook, GISC, DuPage & Cook Counties

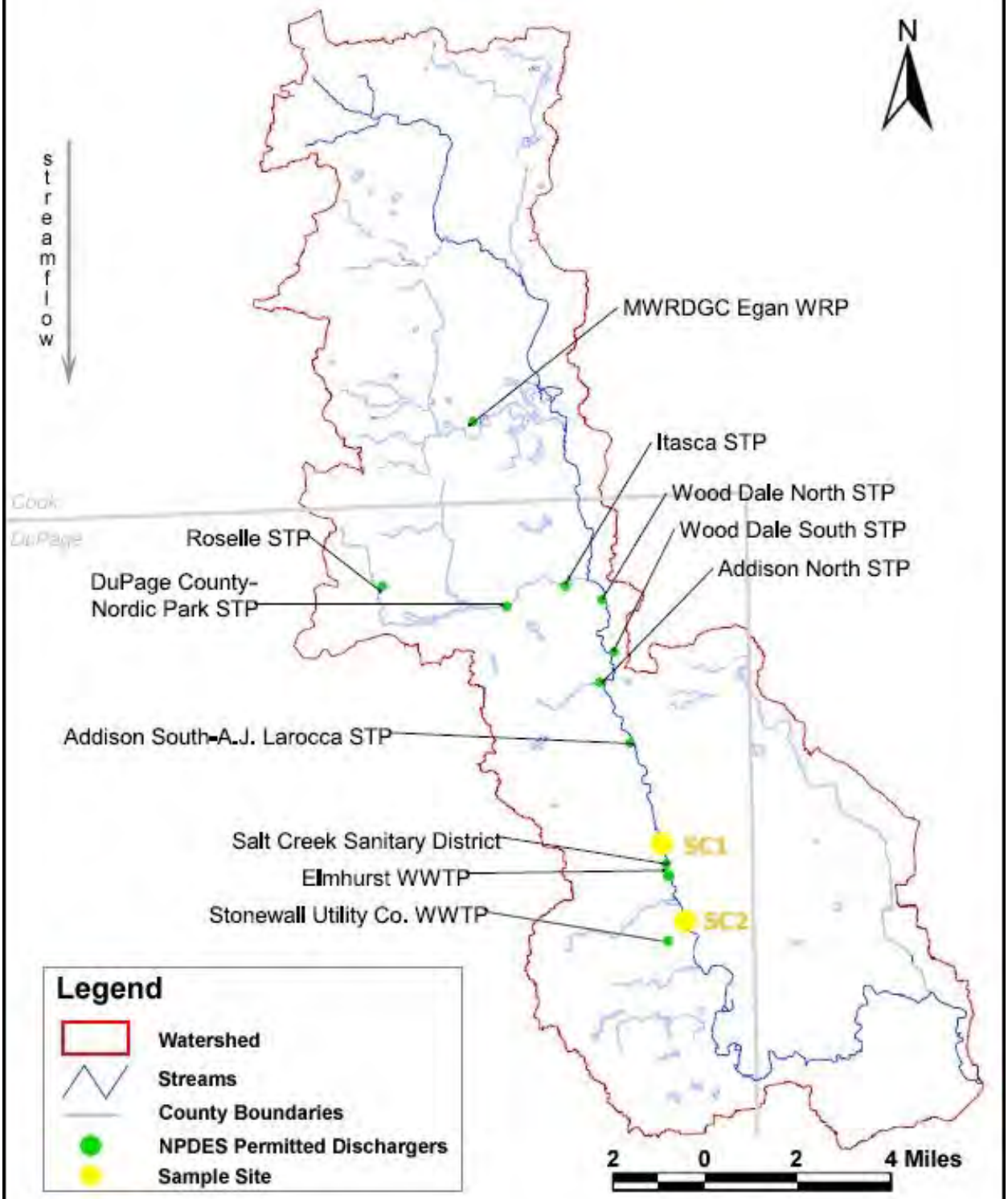
APPENDIX 3

Salt Creek Watershed Exhibit

Sierra Club - River Prairie Group

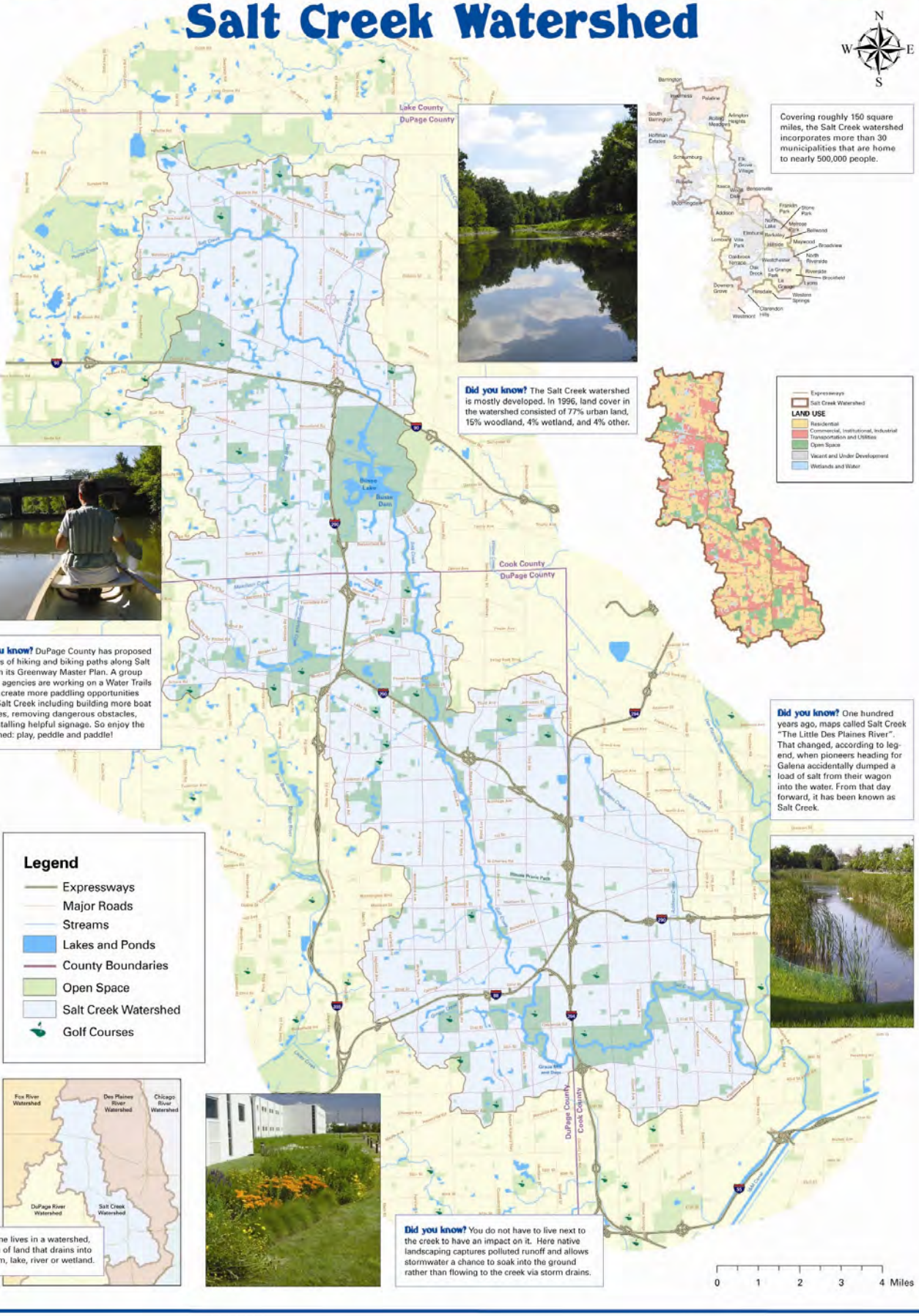
Upstream Dischargers of Significance

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.

Expressways
Salt Creek Watershed
LAND USE
Residential
Commercial, Institutional, Industrial Transportation and Utilities
Open Space
Vacant and Under Development
Wetlands and Water

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.

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

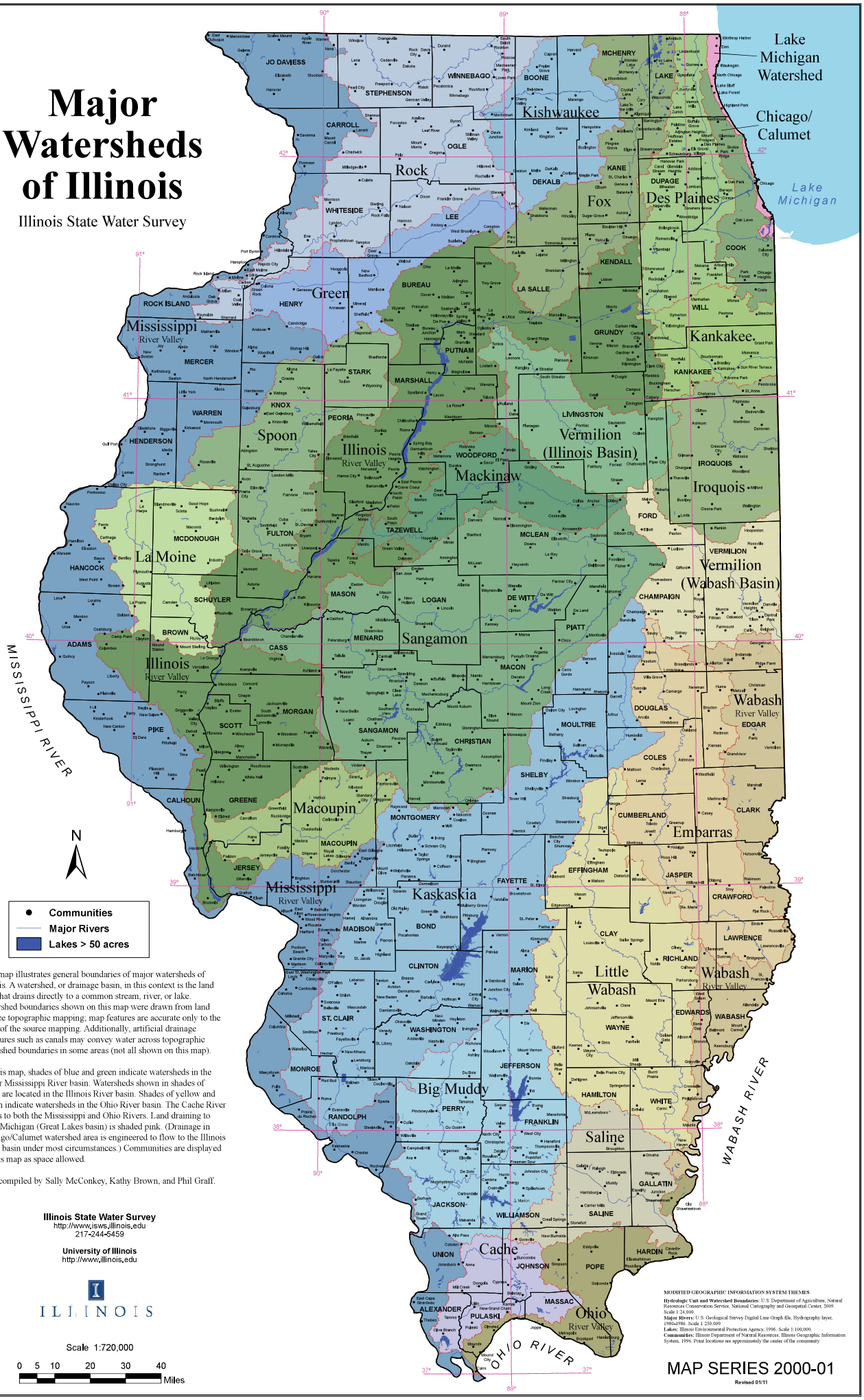
Did you know? You do not have to live next to the creek to have an impact on it. Here native landscaping captures polluted runoff and allows stormwater a chance to soak into the ground rather than flowing to the creek via storm drains.

APPENDIX 4

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

Scale 1:720,000

0 5 10 20 30 40 Miles

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

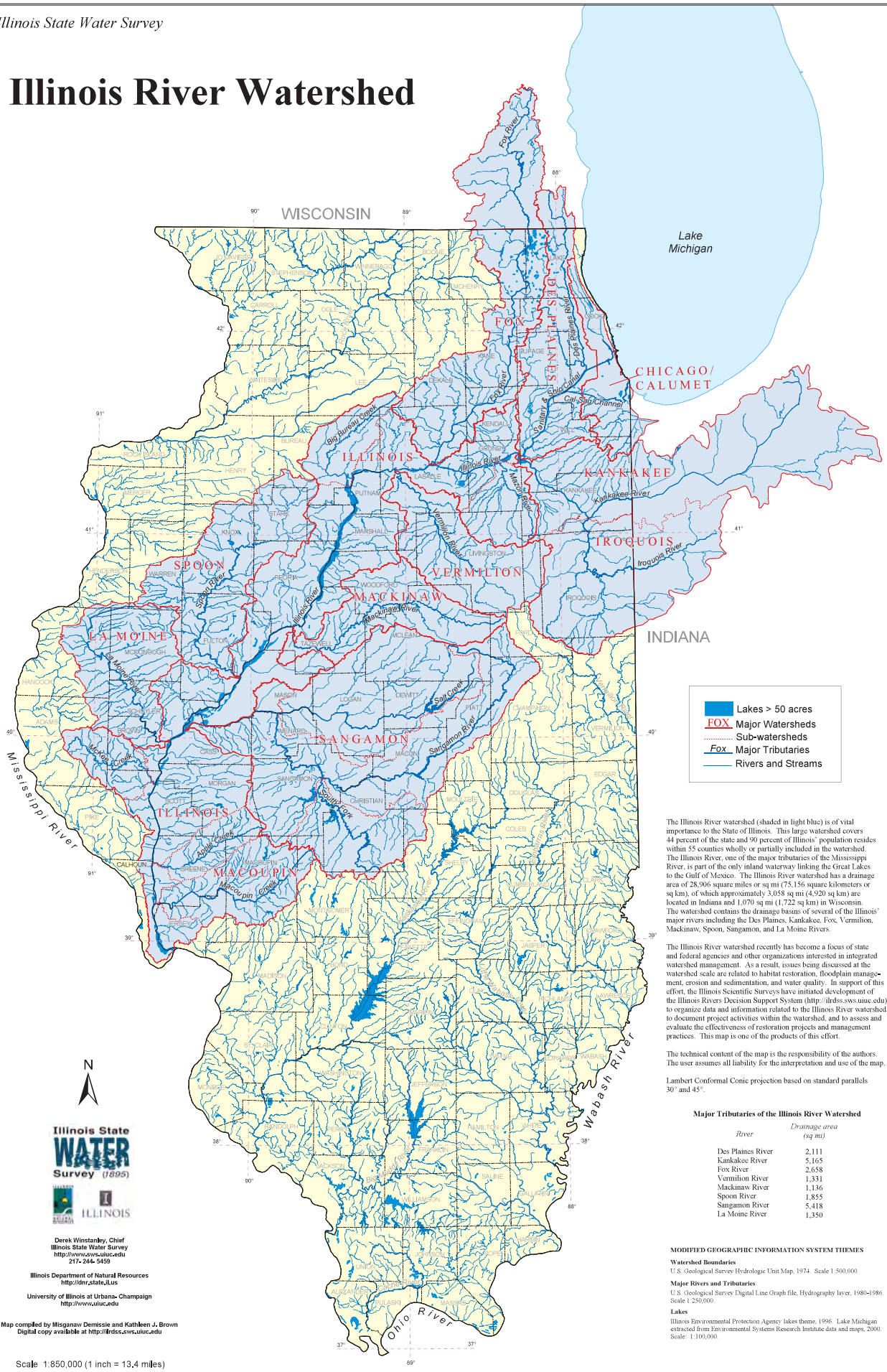
Revised 01/11

APPENDIX 5

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 (02-03-24491-4M)

APPENDIX 6

Village of Oak Brook 2016 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: Village of Oak Brook
2. MS4 Mailing Address: 1200 Oak Brook Road

   City: Oak Brook State: IL
3. Operator Type: Village Other:
4. Operator Status: Local Other:
5. Name(s) of governmental entity(ies) in which MS4 is located:

   Village of Oak Brook
6. Area of land that drains to your MS4 in square miles: 8
7. Latitude and Longitude at approximate geographical center of MS4 for which you are requesting authorization to discharge:

   Latitude: 41 Degrees 50 Minutes: Seconds:

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

   Salt Creek

   Ginger Creek

   Lacey Creek

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

Name: Jim Bosma, P.E. Title: Village Engineer Phone: 630-368-5130

Area of Responsibility: Stormwater Administrator

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:

DuPage County employs a Stormwater Outreach Coordinator and is engaged in contracts with consultants to provide education and outreach pertaining to the reduction of pollutants in stormwater runoff. These efforts take place throughout the entirety of DuPage County. Oak Brook intends to participate under the regional program implemented by DuPage County for this minimum control measure.

Measurable Goals (include 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 publications developed or updated per year.

Milestones:

Go to Additional Pages

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

Go to Additional Pages

☒ 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

Go to Additional Pages

☒ 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

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:

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

Go to Additional Pages

☐ A.6 Other Public Education

B.Public Participation/Involvement

Measurable Goals (include shared responsibilities)

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. Input is obtained by hosting and participating in stakeholder meetings, as well as facilitating the involvement of the public, including underrepresented sectors, in the process. Oak Brook intends to participate under the regional program implemented by DuPage County for this minimum control measure.

☐ 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:

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:

6 meetings

Year 2:

7 meetings

Year 3:

8 meetings

Year 4:

9 meetings

Year 5:

10 meetings

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:

Conduct a meeting for the public to provide input as to the adequacy of the established Storm Water Management Program.

Measurable Goals, including frequencies:

Number of meetings held per year.

Milestones:

Year 1:

1 meeting

Year 2:

1 meeting

Year 3:

1 meeting

Year 4:

1 meeting

Year 5:

1 meeting

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:

Conduct assessments to gauge citizen and partner 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 assessment

Year 2:

1 assessment

Year 3:

1 assessment

Year 4:

1 assessment

Year 5:

1 assessment

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:

Host events, such as Adopt-a-Stream, River Sweep, and Storm Drain Stenciling, where 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

Go to Additional Pages

C. Illicit Discharge Detection and Elimination

Qualifying Local Programs:

DuPage County is in partnership 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. Oak Brook intends to participate under the regional program implemented by DuPage County for this minimum control measure.

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:

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

Go to Additional Pages

☐ C.2 Regulatory Control Program

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

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)

Go to Additional Pages

☐ C.4 Illicit Discharge Tracing Procedures

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

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 letters, flyers, posters, brochures 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

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:

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

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:

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:

50 percent

Year 2:

60 percent

Year 3:

70 percent

Year 4:

80 percent

Year 5:

90 percent

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:

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. Oak Brook intends to participate under the regional program implemented by DuPage County for this minimum control measure.

- ☐ D.1 Regulatory Control Program
- ☐ D.2 Erosion and Sediment Control BMPs
- ☐ 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:

Review construction permit submittals to identify opportunities for avoidance of impacts to channels, wetlands, and adjoining property and require all necessary erosion and sediment control plans.

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

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:

Inspect to ensure that disturbed sites meet soil erosion and sediment control requirements outlined in the DuPage County Countywide Stormwater and Flood Plain Ordinance. The Ordinance mandates that all developments provide both temporary and permanent erosion and sediment control and those developments disturbing one acre or greater of land shall comply with the requirements of general permit ILR10.

Measurable Goals, including frequencies:

The percentage of enforcement actions initiated, versus the total number of inspections performed, per year.

Milestones:

Year 1:

40 percent

Year 2:

35 percent

Year 3:

30 percent

Year 4:

25 percent

Year 5:

20 percent

Go to Additional Pages

☐ D.7 Other Construction Site Runoff Controls

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, wetland mitigation, and post-construction best management practices. Oak Brook intends to participate under the regional program implemented by DuPage County for this minimum control measure.

Measurable Goals (include shared responsibilities)

☐ E.1 Community Control Strategy

☒ 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

Go to Additional Pages

☒ E.3 Long Term O & M Procedures (You may need to go to the next page to fill in this information)

Brief Description of BMP:

Maintain Village owned property on which native vegetation was established for pollutant control purposes. These properties typically contain riparian, wetland, or floodplain areas or post-construction best management practices.

Measurable Goals, including frequencies:

The percentage of Village owned properties planted with native vegetation maintained per year.

Milestones:

Year 1:

55 percent

Year 2:

60 percent

Year 3:

65 percent

Year 4:

70 percent

Year 5:

75 percent

Go to Additional Pages

☒ 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:

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.

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

Go to Additional Pages

☐ E.5 Site Inspections During Construction

☒ E.6 Post-Construction Inspections

Brief Description of BMP:

Conduct post-construction inspections at sites containing post-construction best management practices, 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

Go to Additional Pages

☒ E.7 Other Post-Construction Runoff Controls (You may need to go to the next page to fill in this information)

Brief Description of BMP:

Annual training in current green infrastructure or low impact design techniques.

Measurable Goals, including frequencies:

Percentage of applicable employees and contractors involved in the management of public surfaces trained.

Milestones:

Year 1:

80

Year 2:

85

Year 3:

90

Year 4:

95

Year 5:

100

Go to Additional Pages

F. Pollution Prevention/Good Housekeeping

Measurable Goals (include shared responsibilities)

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 drainageways (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. Oak Brook intends to participate under the regional program implemented by DuPage County for this minimum control measure.

☒ F.1 Employee Training Program (You may need to go to the next page to fill in this information)

Brief Description of BMP:

Send staff to training to learn procedures and practices that will minimize the discharge of pollutants from municipal operations into the storm sewer system. 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.

Measurable Goals, including frequencies:

The number of staff members attending training per year.

Milestones:

Year 1:

25 employees

Year 2:

30 employees

Year 3:

35 employees

Year 4:

40 employees

Year 5:

45 employees

Go to Additional Pages

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

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 drainageways 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

Go to Additional Pages

☒ F.3 Municipal Operations Storm Water Control(You may need to go to the next page to fill in this information)

Brief Description of BMP:

Develop standard operating procedures and checklists for municipal operators to use to assess the need for pollution prevention measures for wash water, spills, leaks, debris, deicing materials, and other chemicals on their property.

Measurable Goals, including frequencies:

Number of corrections made in response to assessments.

Milestones:

Year 1:

10 corrections

Year 2:

5 corrections

Year 3:

3 corrections

Year 4:

2 corrections

Year 5:

1 correction

Go to Additional Pages

☐ 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:

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

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)).

Jim Bosma, P.E.	Village Engineer	05/27/2016
Authorized Representative Name	Title	Date

J Bosma

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

APPENDIX 7

Village of Oak Brook Annual Facility Inspection Reports: Years 9-13

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 _____

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

Name: Village of Oak Brook

Mailing Address: 1200 Oak Brook Road County: DuPage

City: Oak Brook State: IL Zip: 60523 Telephone: 630-368-5270

Contact Person: Mike Hullihan, P.E. Email Address: mhullihan@oak-brook.org
(Person responsible for Annual Report)

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

Village of Oak Brook

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))

Owner Signature: _____ Date: 5/14/12

Printed Name: Michael Hullihan Title: Village Engineer

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.

Illinois Environmental Protection Agency

Annual Facility Inspection Report

NPDES Permit for Stormwater Discharges from Municipal Separate Storm Sewer Systems (MS4)

March 2011 – March 2012

Village of Oak Brook

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

The Village of Oak Brook is relying on cooperating with DuPage County in a countywide effort for this permit program.

F. Attach a list of construction projects that your entity has paid for 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 0407

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

Name: Village of Oak Brook

Mailing Address: 1200 Oak Brook Road County: DuPage

City: Oak Brook State: IL Zip: 60523 Telephone: 630-368-5270

Contact Person: Mike Hullihan, P.E. Email Address: mhullihan@oak-brook.org
(Person responsible for Annual Report)

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

Village of Oak Brook

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))

Owner Signature: Date: 5/14/13

Printed Name: Michael Hullihan Title: Village Engineer

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.

Illinois Environmental Protection Agency

Annual Facility Inspection Report

NPDES Permit for Stormwater Discharges from Municipal Separate Storm Sewer Systems (MS4)

March 2012 – March 2013

Village of Oak Brook

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

The Village of Oak Brook is relying on cooperating with DuPage County in a countywide effort for this permit program.

F. Attach a list of construction projects that your entity has paid for 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, 2013 To March, 2014

Permit No. ILR40 0407

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

Name: Village of Oak Brook Mailing Address 1: 1200 Oak Brook Road

Mailing Address 2: County:

City: Oak Brook State: IL Zip: 60523 Telephone: 630-368-5270

Contact Person: Mike Hullihan, P.E. Email Address: mhullihan@oak-brook.org
(Person responsible for Annual Report)

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

Village of Oak Brook

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))

Owner Signature: Date: 5/8/14

Michael Hullihan Printed Name: Village Engineer 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.

Illinois Environmental Protection Agency

Annual Facility Inspection Report

NPDES Permit for Stormwater Discharges from Municipal Separate Storm Sewer Systems (MS4)

April 1, 2013 – March 30, 2014

Village of Oak Brook

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

The Village of Oak Brook is relying on cooperating with DuPage County in a countywide effort for this permit program.

F. Attach a list of construction projects that your entity has paid for 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 0407

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

Name: Village of Oak Brook Mailing Address 1: 1200 Oak Brook Road

Mailing Address 2: County: DuPage

City: Oak Brook State: IL Zip: 60523 Telephone: 630-368-5270

Contact Person: Mike Hullihan, P.E. Email Address: mhullihan@oak-brook.org
(Person responsible for Annual Report)

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

Village of Oak Brook

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))

Owner Signature: Date: 5/6/15

Michael Hullihan Village Engineer

Printed Name: Title:

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

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

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.

Illinois Environmental Protection Agency

Annual Facility Inspection Report

NPDES Permit for Stormwater Discharges from Municipal Separate Storm Sewer Systems (MS4)

April 1, 2014 – March 30, 2015

Village of Oak Brook

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

The Village of Oak Brook is relying on cooperating with DuPage County in a countywide effort for this permit program.

F. Attach a list of construction projects that your entity has paid for 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, 2015 To March, 2016

Permit No. ILR40 0407

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

Name: Village of Oak Brook Mailing Address 1: 1200 Oak Brook Road

Mailing Address 2: County: DuPage

City: Oak Brook State: IL Zip: 60523 Telephone: 630-368-5130

Contact Person: James Bosma, P.E. Email Address: jbosma@oak-brook.org
(Person responsible for Annual Report)

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

Village of Oak Brook

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))

J A Bosma
Owner Signature:

5/26/16
Date:

James Bosma
Printed Name:

Village Engineer
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.

Illinois Environmental Protection Agency

Annual Facility Inspection Report

NPDES Permit for Stormwater Discharges from Municipal Separate Storm Sewer Systems (MS4)

April 1, 2015 – March 30, 2016

Village of Oak Brook

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

The Village of Oak Brook is relying on cooperating with DuPage County in a countywide effort for this permit program.

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

N/A

APPENDIX 8

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

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

PART I. COVERAGE UNDER GENERAL PERMIT ILR40 ..... Page 2

PART II. NOTICE OF INTENT (NOI) REQUIREMENTS ..... Page 3

PART III. SPECIAL CONDITIONS ..... Page 4

PART IV. STORM WATER MANAGEMENT PROGRAMS ..... Page 6

PART V. MONITORING, RECORDKEEPING, AND REPORTING ..... Page 12

PART VI. DEFINITIONS AND ACRONYMS ..... Page 14

ATTACHMENT H. STANDARD CONDITIONS ..... Page 16

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 9

Salt Creek Watershed – Restoring Balance

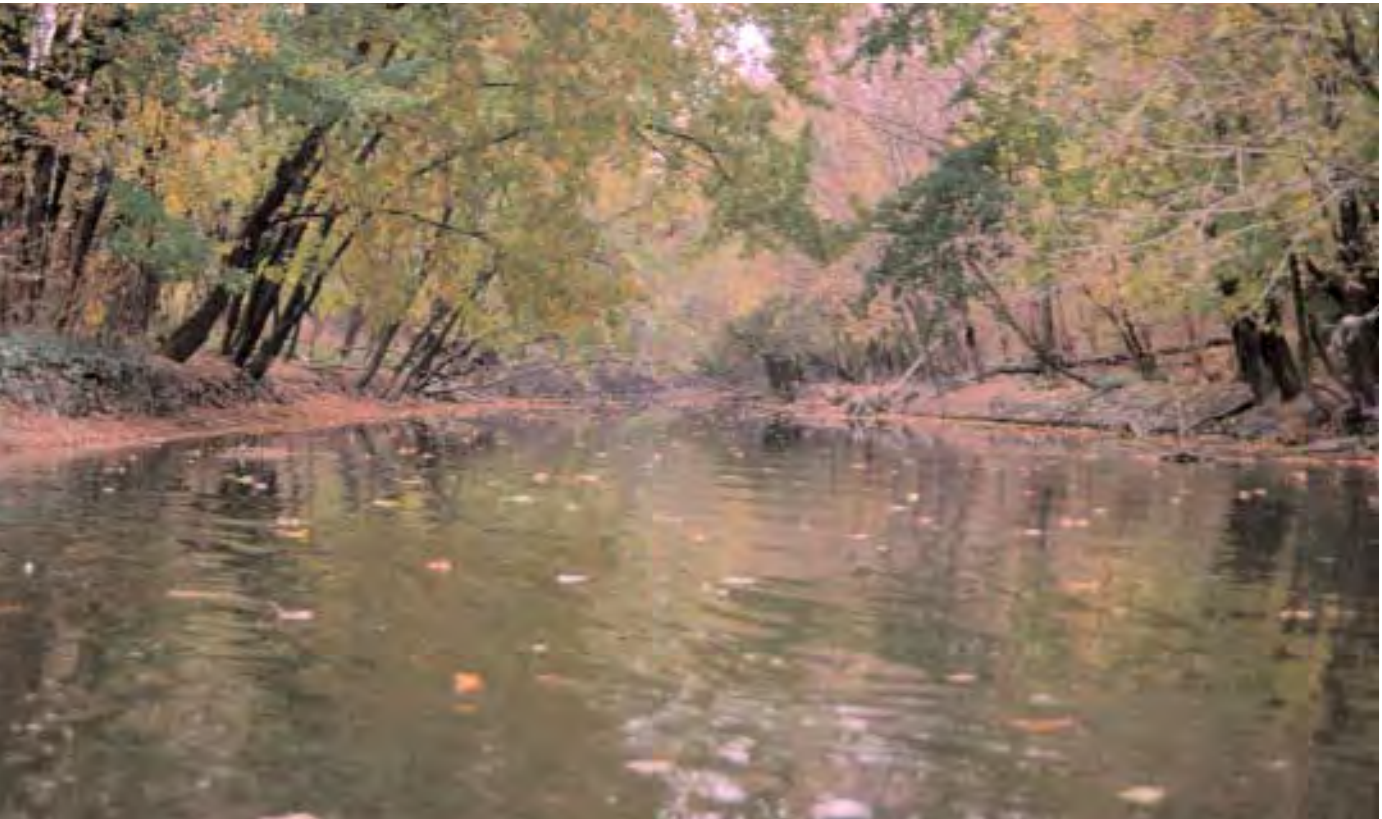
SALT·CREEK
WATERSHED·NETWORK

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.

tributariesnetworkcleanup
...and tomorrow
resourcehabitatrecreation

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

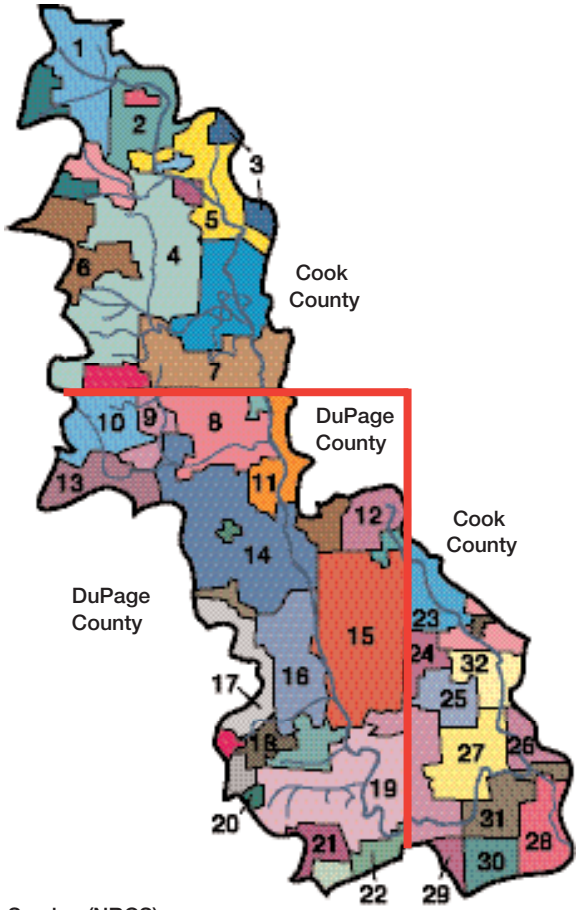
The Watershed Planning Team divided into three working subcommittees to develop specific concern statements and goals for the eight categories, which are presented in the next section.

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.

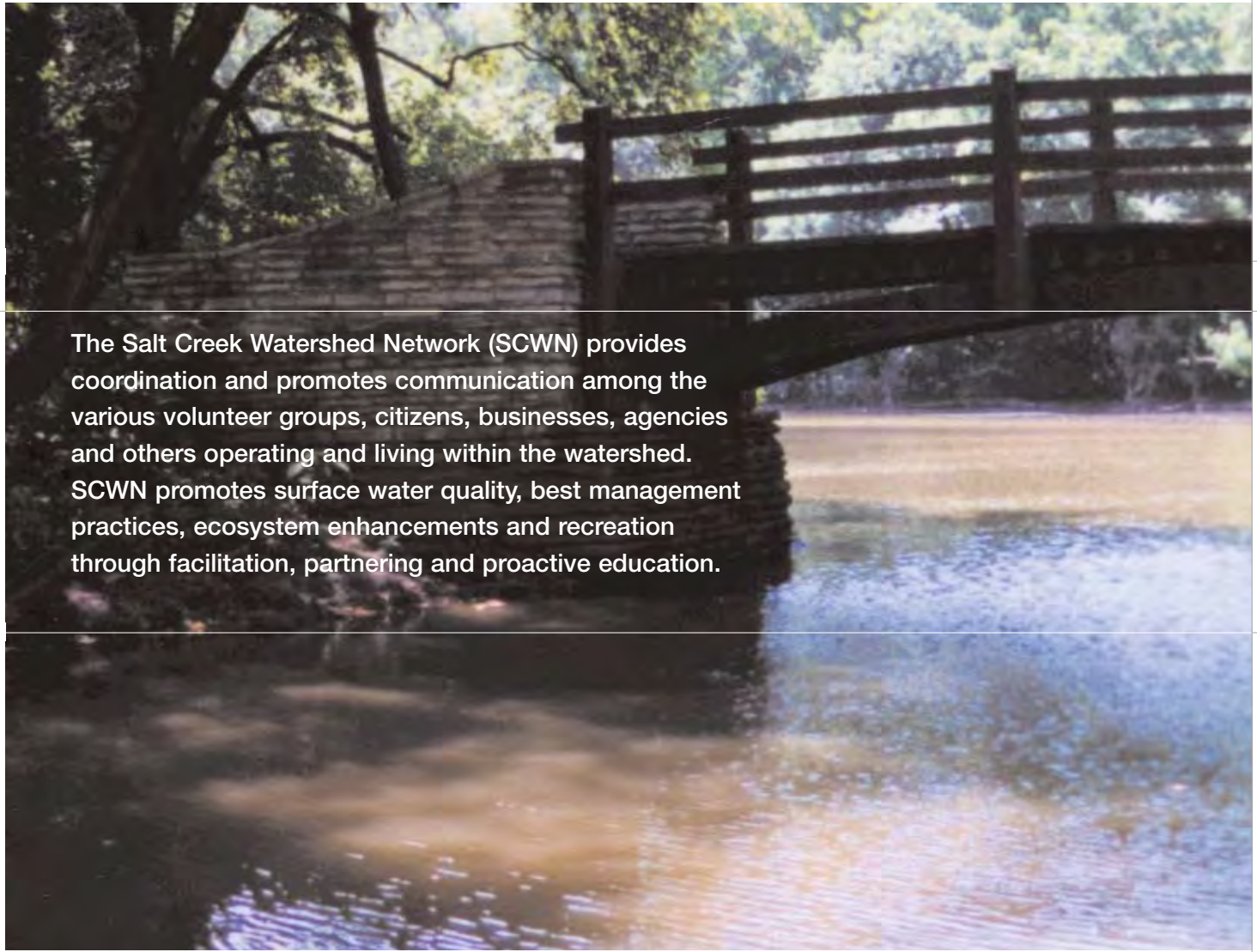
ISSUE: Streambank Maintenance

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.

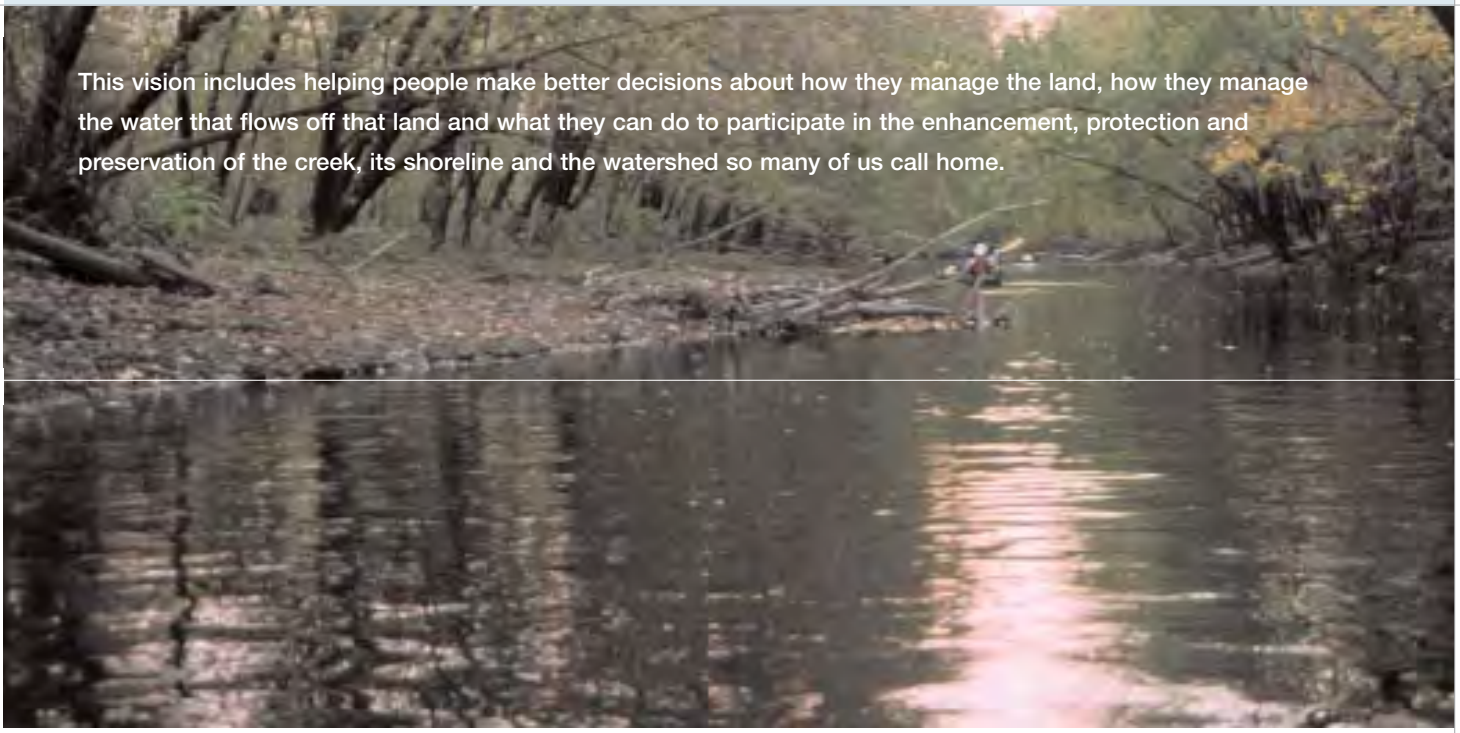
A VISION FOR THE SALT CREEK WATERSHED

> 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

Watershed Planning Team

Dan Arrigoni Wood Dale
Amy Bodwell Brookfield Zoo
Deborah Connors Lake Zurich
Cliff Counsell Elmhurst
Ken Gortowski Elmhurst
Jennifer Hammer The Conservation Foundation
Ron Hursh La Grange Park
Dave Lloyd Des Plaines Valley Volunteers
Mike Lofton Hofmann Dam River Rats
John Mach Hofmann Dam River Rats
Fred Maier Village of Itasca Alliance
Gary Mechanic Illinois Paddling Council
Nick Nikola Friends of Critters and Salt Creek
Keith Olson Elmhurst
Mary Prisby Elmhurst
Tom Richardson Oak Brook
Jeff Swano Brookfield
Craig Wright Wood Dale
Toy Zoubek Wood Dale

Technical Advisory Team

Amy Bodwell Brookfield Zoo
Carey Brand CH2MHill
Al Cochin Illinois Environmental Protection Agency
Christy Deloria U.S. Fish and Wildlife Service
Dennis Dreher Northeast Illinois Planning Commission
Keith Eichorst U.S. Natural Resource Conservation Service
Jennifer Hammer The Conservation Foundation
Ross Hill DuPage County Forest Preserve District
Don Labrose DuPage County Forest Preserve District
Fred Maier Spring Brook Nature Center
Rick McAndless Soil & Water Conservation District
Gary Mechanic Des Plaines River Watershed
Neil Patterson Cook County Forest Preserve District
Steve Pescitelli Illinois Department of Natural Resources
Steve Plumb Elmhurst Park District
Valerie Spale Salt Creek Greenway Association
Dennis Streicher Elmhurst
Jeff Swano Enviro Impact Solutions
Kent Taylor Open Lands

Additional Input Provided by

Gail and Irv Bedard Wood Dale
Lynda Jelinek Brookfield
Jonathan Morrison Lombard
Larry Nalezny Wood Dale
Chuck Thompson Mount Prospect
Jay Welty Westchester
Arthur Wiegla Wood Dale Stormwater Commission

The SCWN Board of Directors

Amy Bodwell Brookfield
Ron Hursh La Grange Park
Nick Nikola Elk Grove Village
Keith Olson Elmhurst
Christine Oszak Villa Park
Tom Richardson Oak Brook
Jeff Swano Brookfield

Design, Editing and Printing

Tania Allen Designer
Gabriella Klein Editor
ScotPress/The Maclyn Group Printer

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:

The Salt Creek Watershed Network
8738 Washington Avenue
Brookfield, IL 60513
Phone: (708) 485-4190
Fax: (708) 485-0547
Web site: www.sa[illegible]k.org

ACKNOWLEDGMENTS

Thanks to the Illinois Environmental Protection Agency for a grant to undertake the watershed planning process. SCWN appreciates the support of the Conservation Foundation of Naperville for administering these funds. Additional thanks goes to the Natural Resource Conservation Service for facilitating the watershed planning process.

APPENDIX 10

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 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 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.

Streambank stabilization using bioengineering 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.

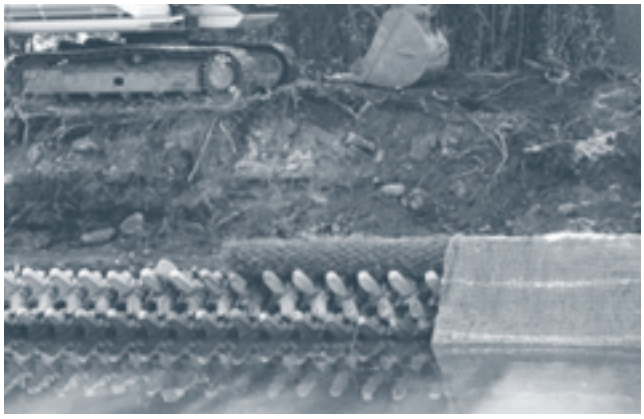
To be successful, the shade canopy along the stream bank must be reduced (to 50 percent or less) to allow more sunlight to penetrate and encourage plant growth. Plants can be introduced as plugs or seeds, though plugs are recommended for lower bank areas because they provide quicker stabilization and 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

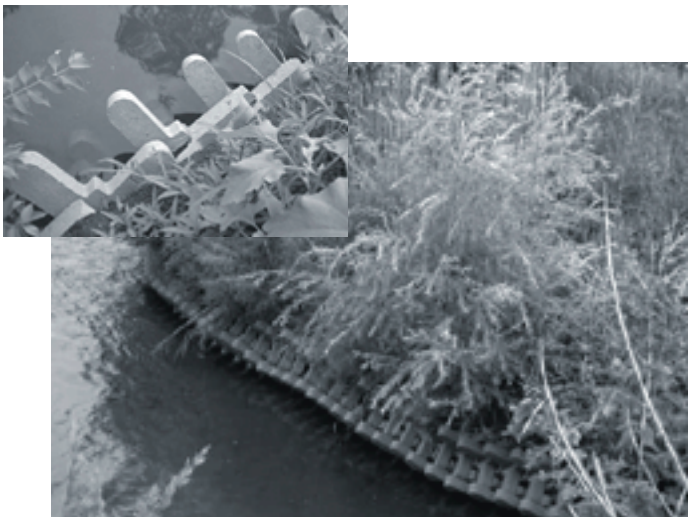
Numerous private backyards in Elk Grove Village were eroding into Salt Creek during flooding events. Water quality was diminishing due to increased sedimentation and fallen trees were creating snags that blocked water flow and required frequent removal by the Village. By the late 1990s, Village staff 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

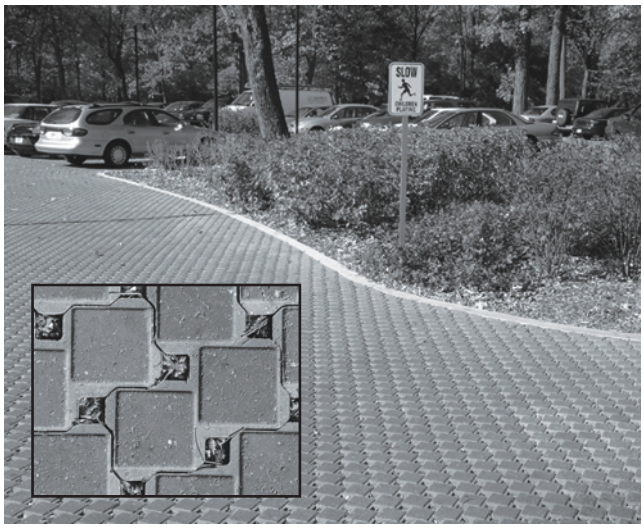
Why is this Important?

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.city-ofchicago.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.rain-gardens.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

This manual was produced with funding from the Illinois Environmental Protection Agency by the Northeastern Illinois Planning Commission, the Salt Creek Watershed Network, and the Brookfield Zoo. The authors would specifically like to thank Jason Navota, Kathy Maynard, Michael Norbeck (intern), and Michael Anderson (intern) of NIPC, Jeff Swano and Tom Richardson of the Salt Creek Watershed Network, and Amy Bodwell of the Salt Creek Watershed Network and the Brookfield Zoo. Photographs courtesy of: Nick Nicola (front and back cover, pages 6, 11, 12, 13, 14); Jason Navota (page 4, 8, 16); NIPC (pages 1, 3, 5, 15, 16); Brookfield Zoo (page 9); Pizzo & Associates (page 7); and Tom Richardson (page 8).

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

This document was prepared using Illinois Environmental Protection Agency funds under Section 319 of the Clean Water Act.

APPENDIX 11

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 ☐ 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: _____

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 12

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 13

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

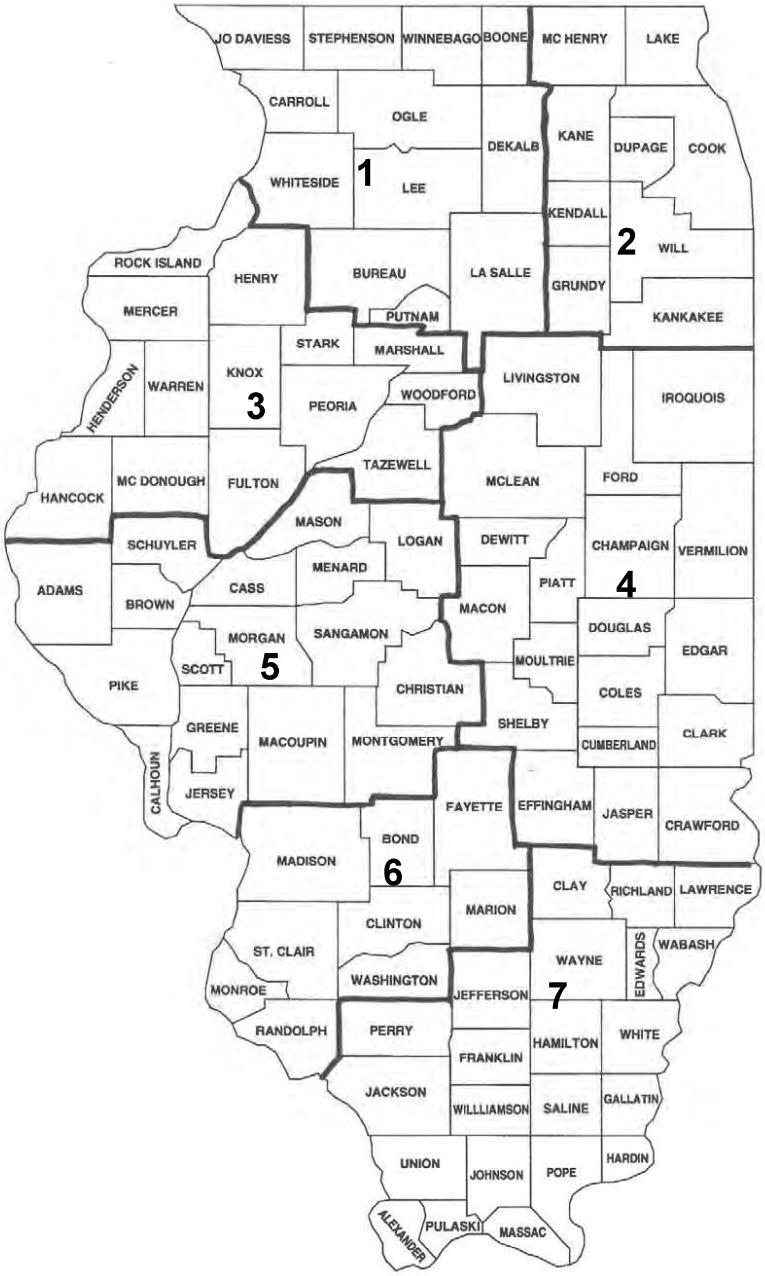
Region 3 - PEORIA
Jim Kammueller, Manager
Phone: 309/693-5463 Fax: 309/693-5467

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) _____

MS4 Community: ◯ Yes ◯ No

CONTRACTOR INFORMATION

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 14

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)

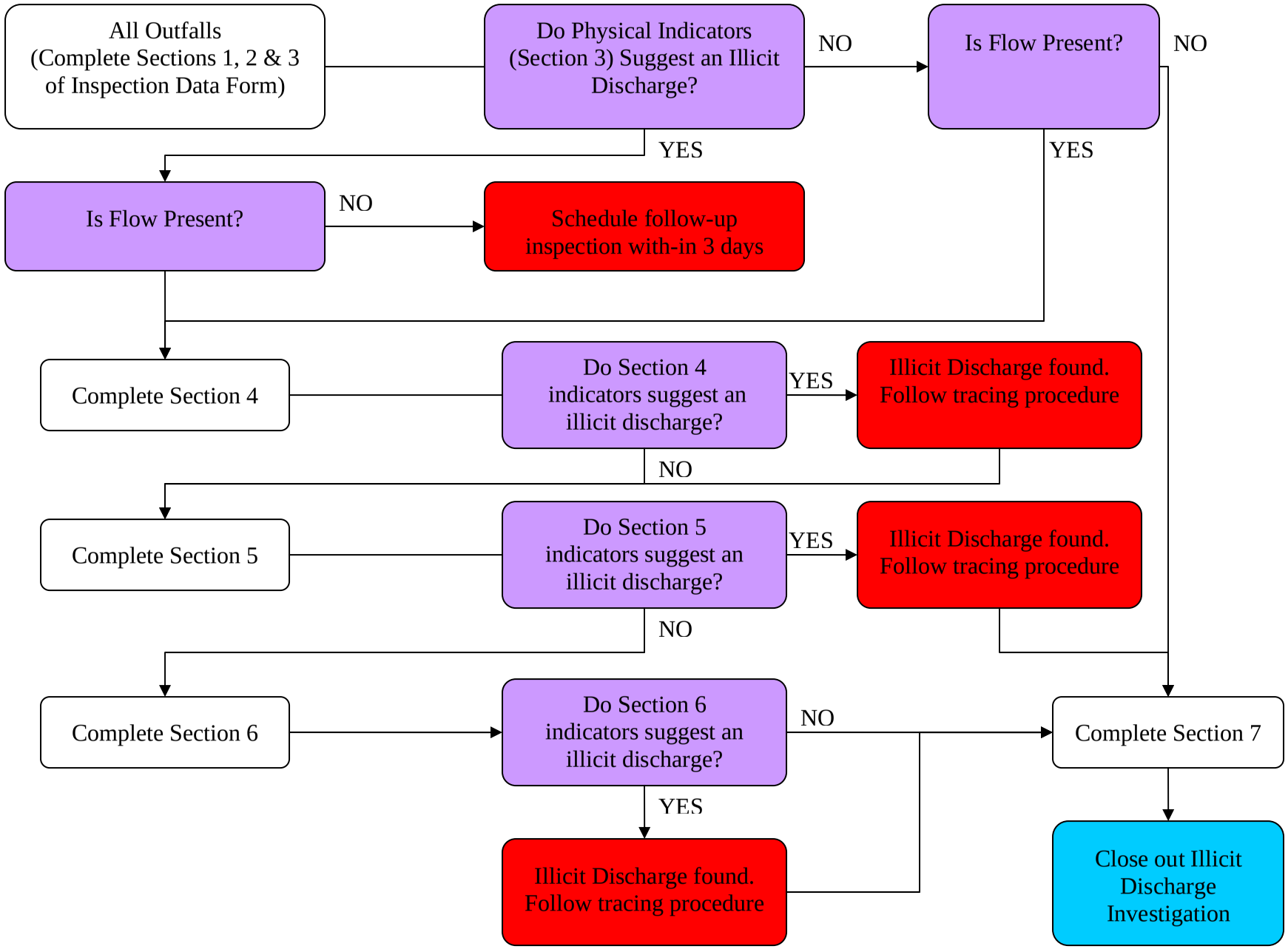
1. Sample for the lab?	☐ Yes	☐ No
2. If yes, collected from:	☐ Flow	☐ Pool

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 15

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

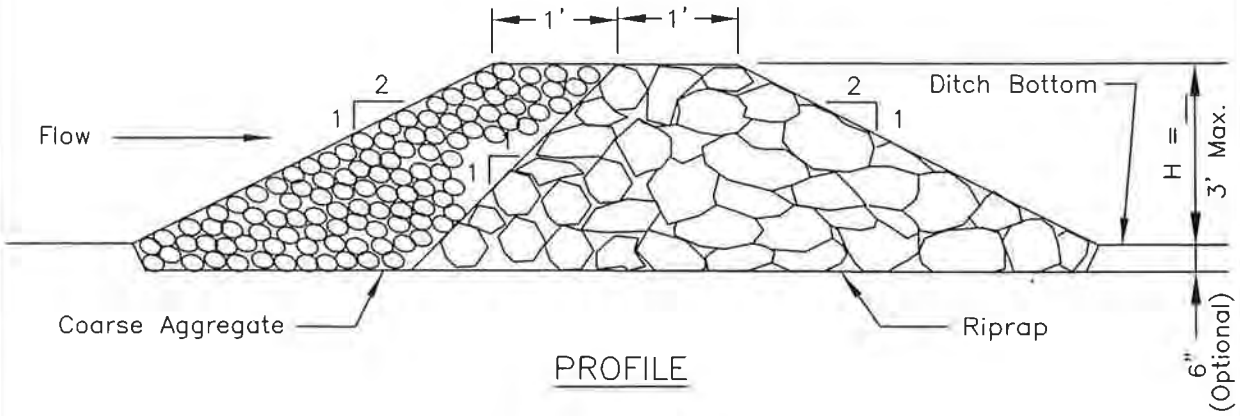
Inspected by:	**Date:**	
	Weather Conditions:	

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				

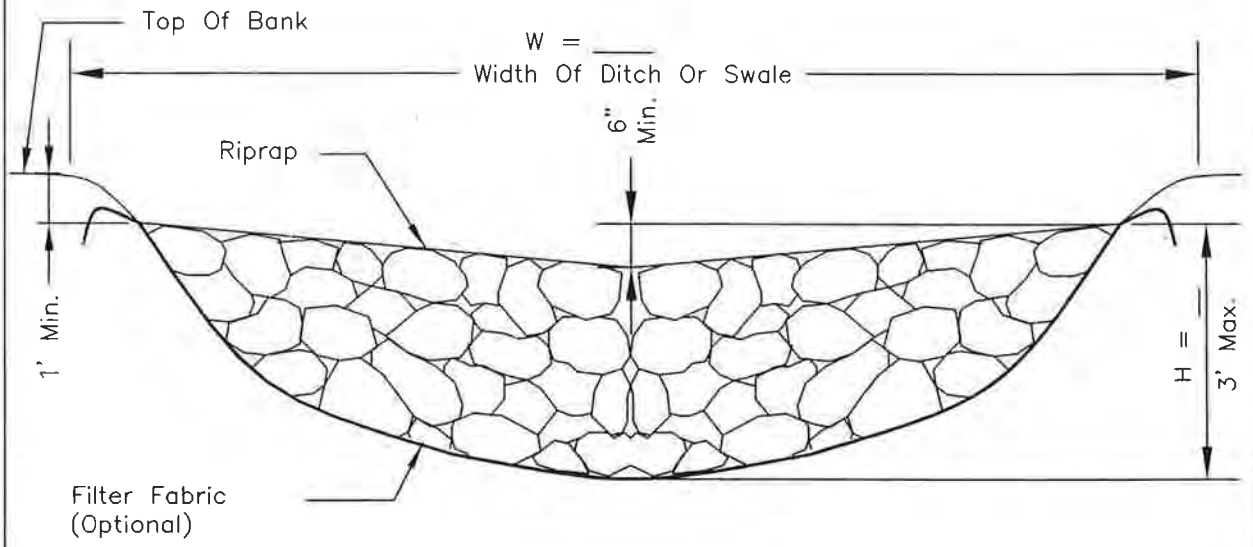
APPENDIX 16

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			
Project			
Designed		Date	
Checked		Date	
Approved		Date	

NRCS
Natural Resources Conservation Service

STANDARD DWG. NO.
IL-605R
SHEET 1 OF 1
DATE 1-29-99

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

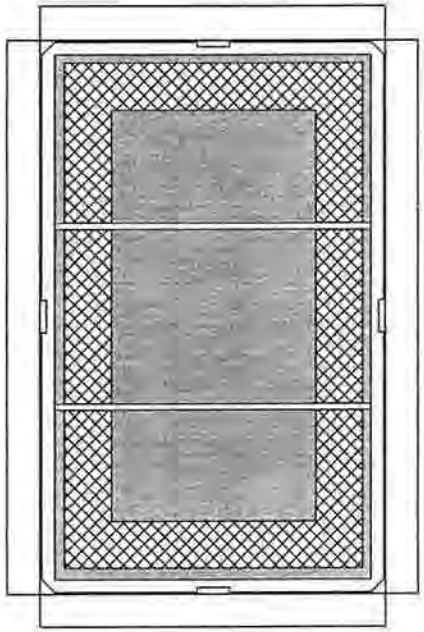
Inlet filter system HR shall consist of a replaceable reinforced filter bag with hydrocarbon removal capabilities suspended from a retainer ring, or frame. Inlet Filter Systems shall be the Catch-All **HR**, with Overflow, as furnished by Marathon Materials, Inc., or pre-approved equal.

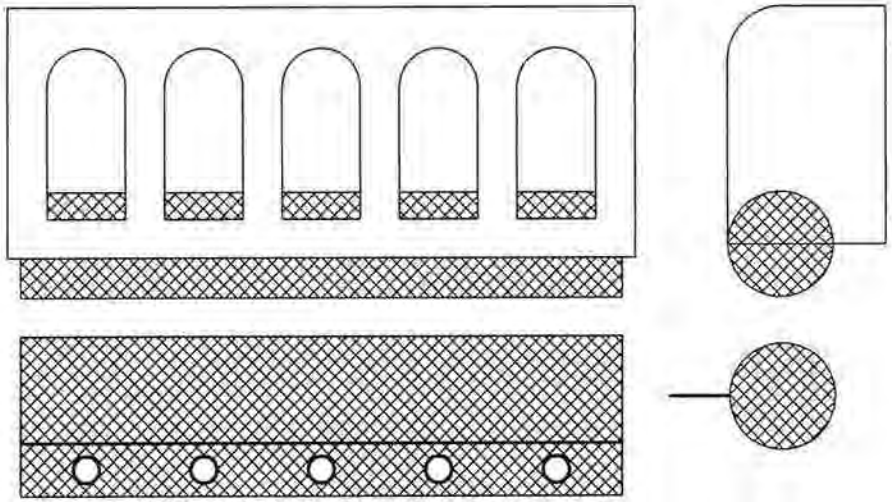
The filter bag shall be constructed of a non-woven polypropylene filter geotextile fabric with a minimum weight of 4 oz./yd.^{2}, a minimum flow rate of 145 gal./min./ft.^{2}, and designed for a minimum silt and debris capacity of 2 cu. ft. The filter bag shall be reinforced with a polyester mesh fabric 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

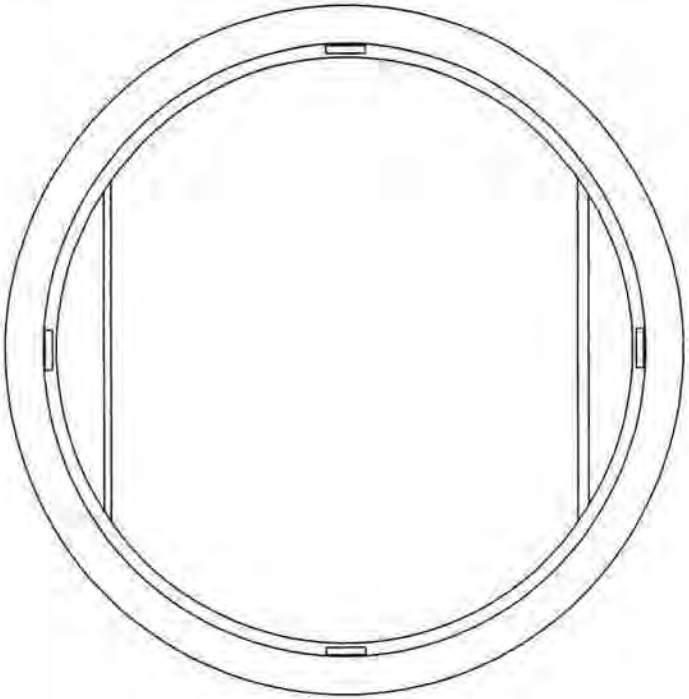
All costs for furnishing and installing the inlet filter system HR shall be included in the unit bid price. Periodic cleaning and new bags shall be paid for separately.

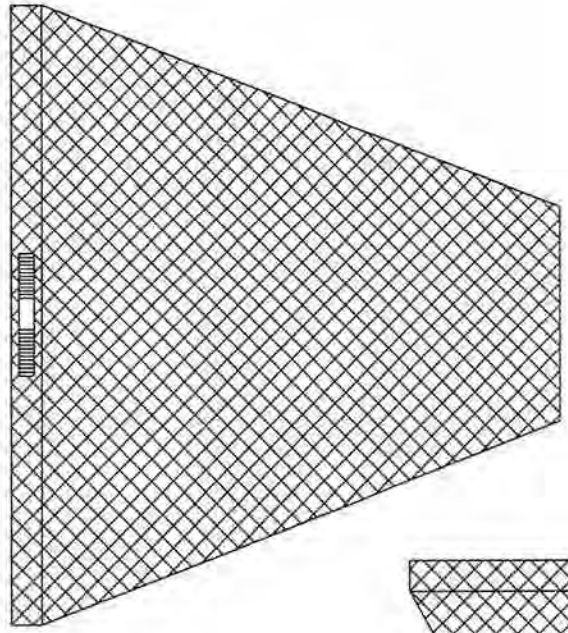


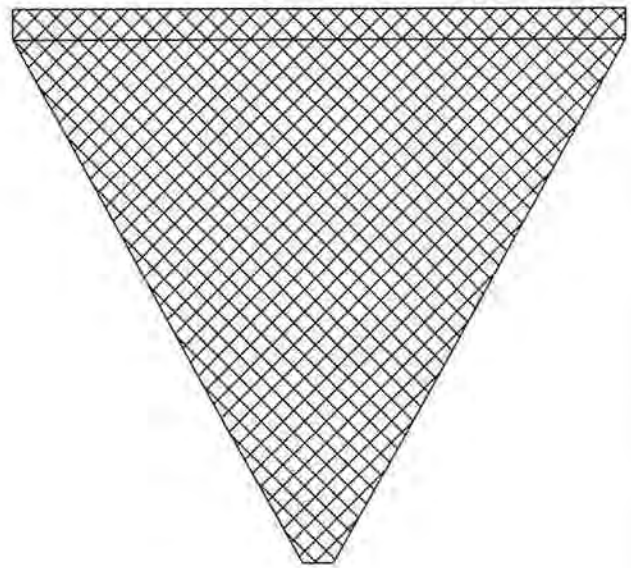


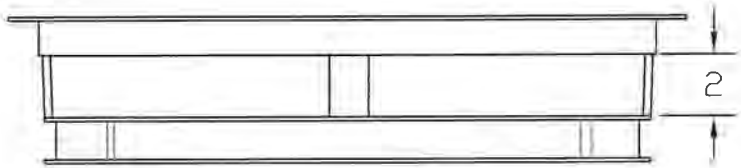
This detail depicts the typical placement of the HR (hydrocarbon removal) pillow. An HR pillow is hemmed to the entire perimeter of the sediment bag +/- 4" from the top of the bag and extends +/- 4" towards center. Curb boxes are protected with a separate pillow that is secured to either the curb box vanes or the top flange of the Catch-All frame.

DATE	REVISIONS	Catch-All HR Adsorbent Pillow
5.12.04	Original	
		Marathon Materials, Inc.







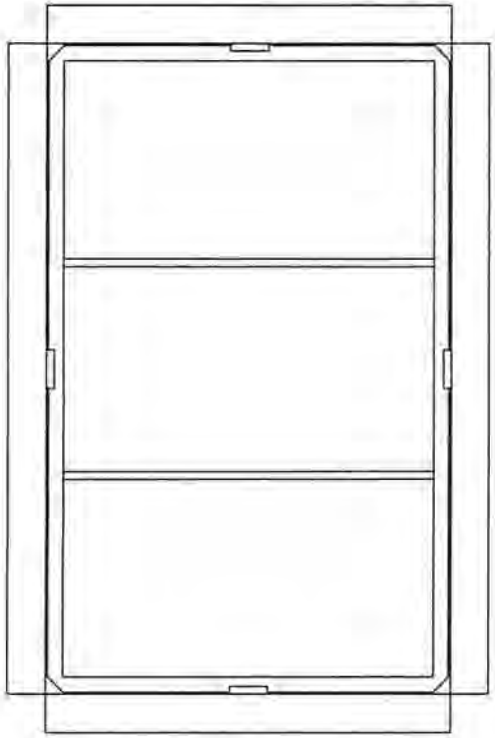


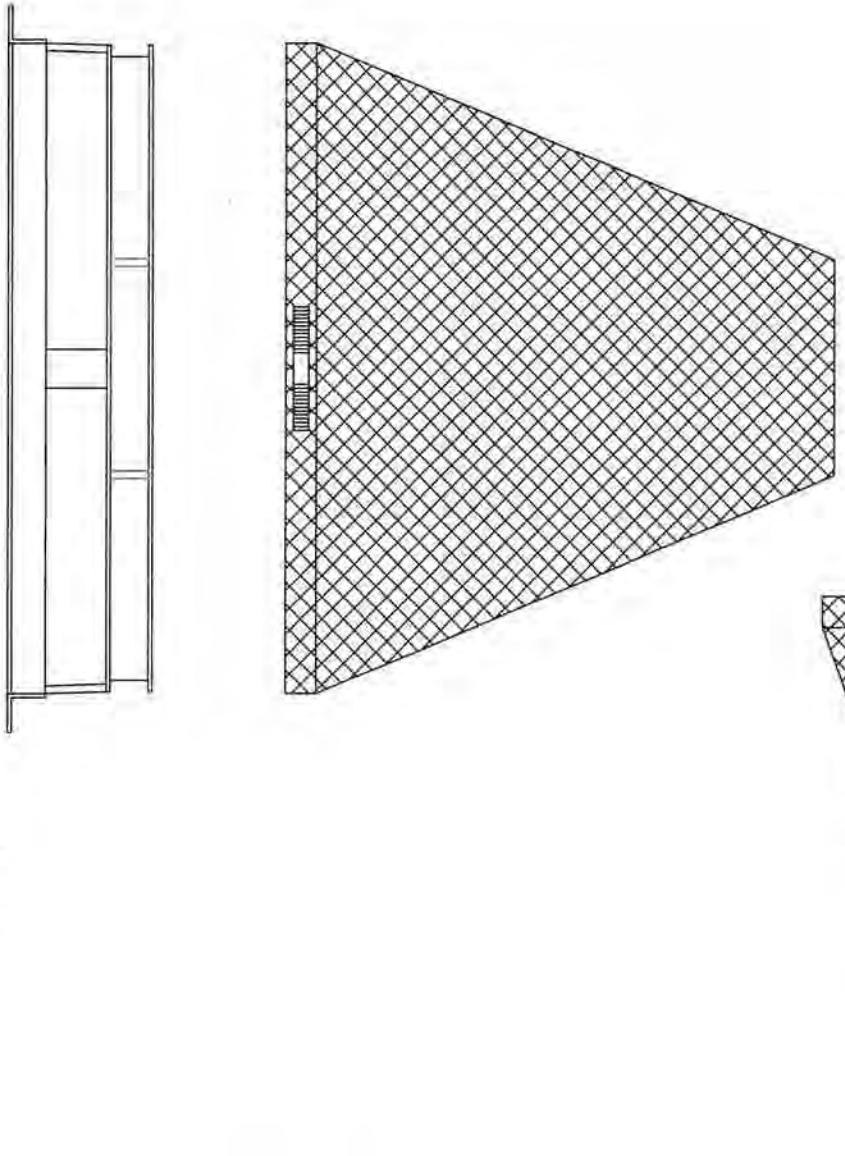
GENERAL NOTES:
FRAME: Top flange fabricated from 1¼"x1¼"x⅛" angle. Base rim fabricated from 1½"x½"x⅛" channel. Handles and suspension brackets fabricated from 1¼"x¼" flat stock. All steel conforming to ASTM-A36.
SEDIMENT BAG: Bag fabricated from 4 oz./sq.yd. non-woven polypropylene geotextile reinforced 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.



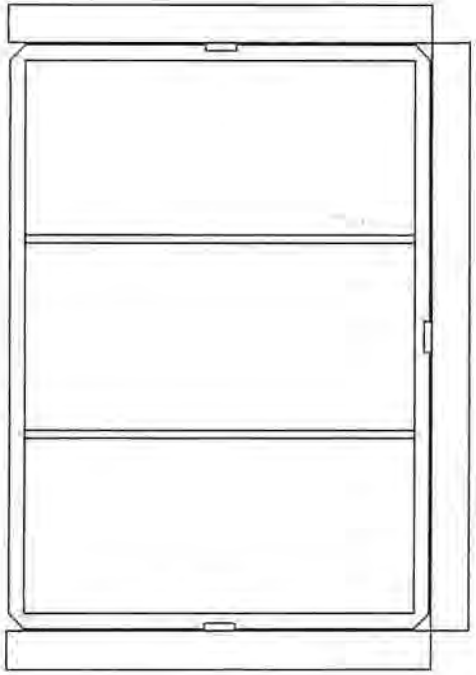


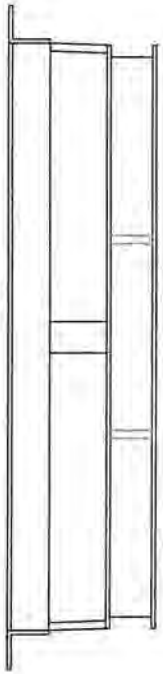
GENERAL NOTES:
FRAME: Top flange fabricated from 1¼"x1¼"x⅛" angle. Base rim fabricated from 1½"x½"x⅛" channel. Handles and suspension brackets fabricated from 1¼"x¼" flat stock. All steel conforming to ASTM-A36.
SEDIMENT BAG: Bag fabricated from 4 oz./sq.yd. non-woven polypropylene geotextile reinforced with polyester mesh. Bag secured to base rim with a stainless steel band and lock.

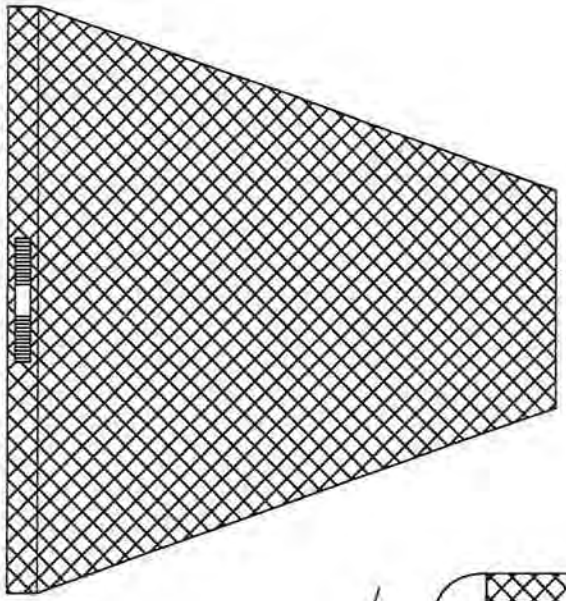
DATE	REVISIONS
01-22-02	Original

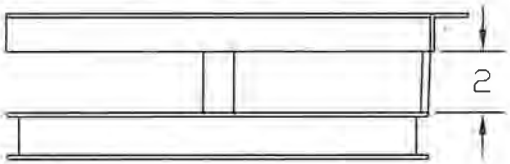
Typical Rectangular Catch-All

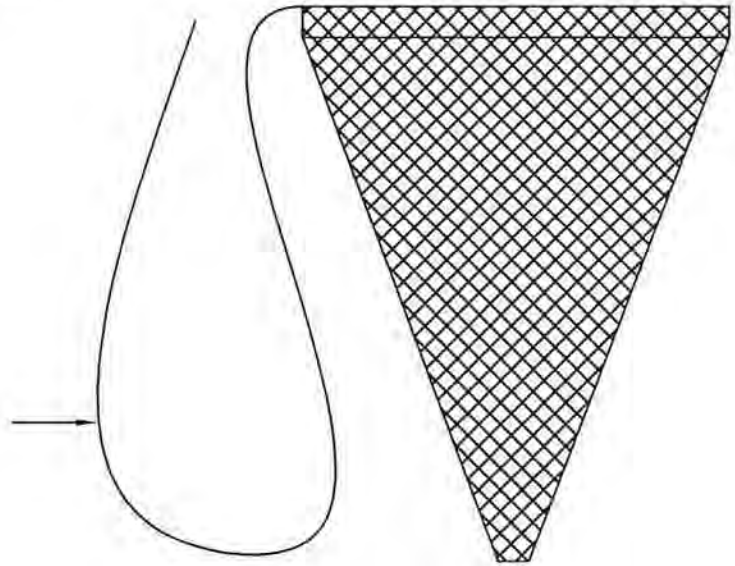
Marathon Materials, Inc.









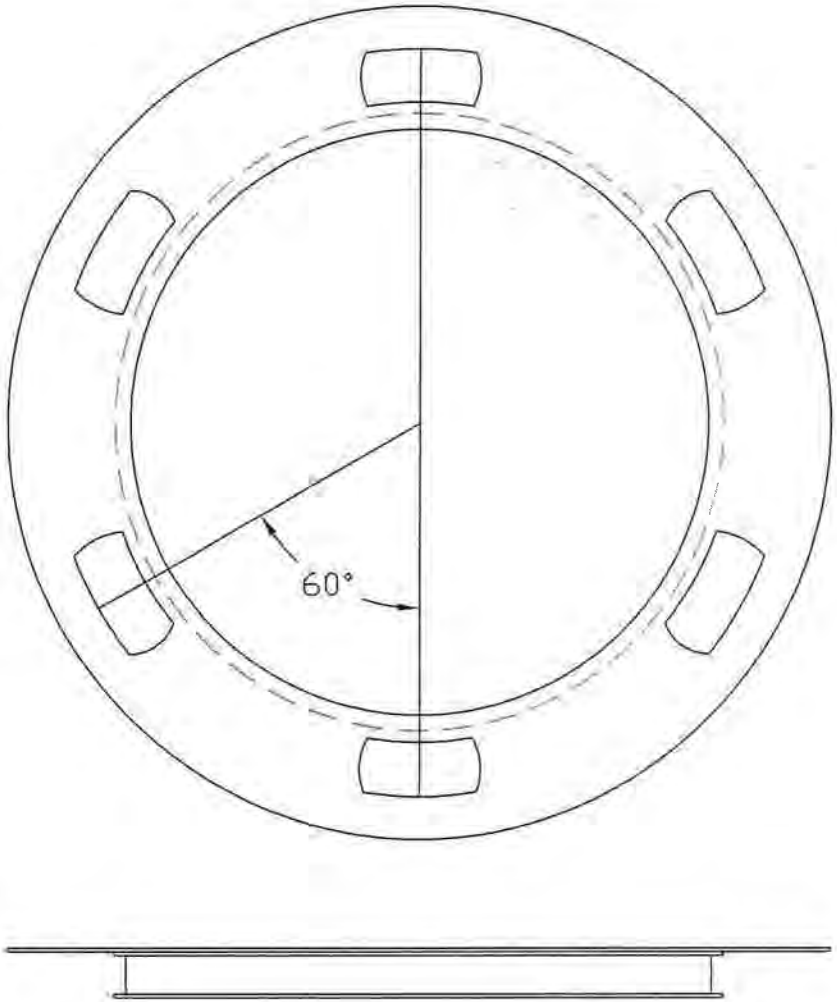


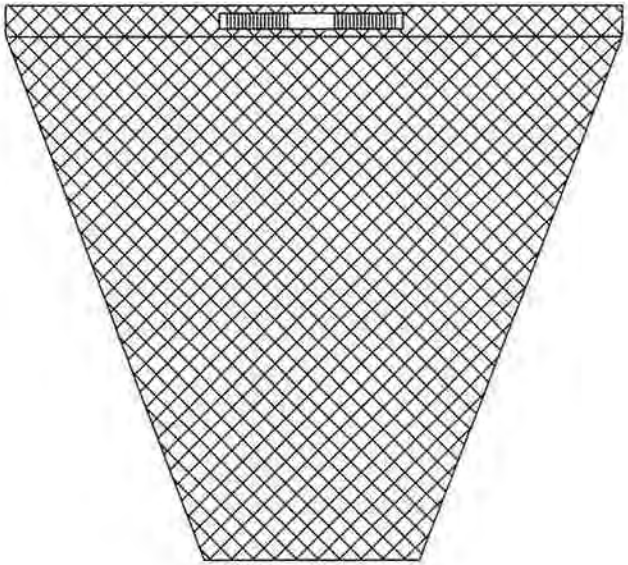
GENERAL NOTES:
FRAME: Top flange fabricated from 1¼"x1¼"x⅛" angle. Base rim fabricated from 1½"x½"x⅛" channel. Handles and suspension brackets fabricated from 1¼"x¼" flat stock. All steel conforming to ASTM-A36.
SEDIMENT BAG: Bag fabricated from 4 oz./sq.yd. non-woven polypropylene geotextile reinforced 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

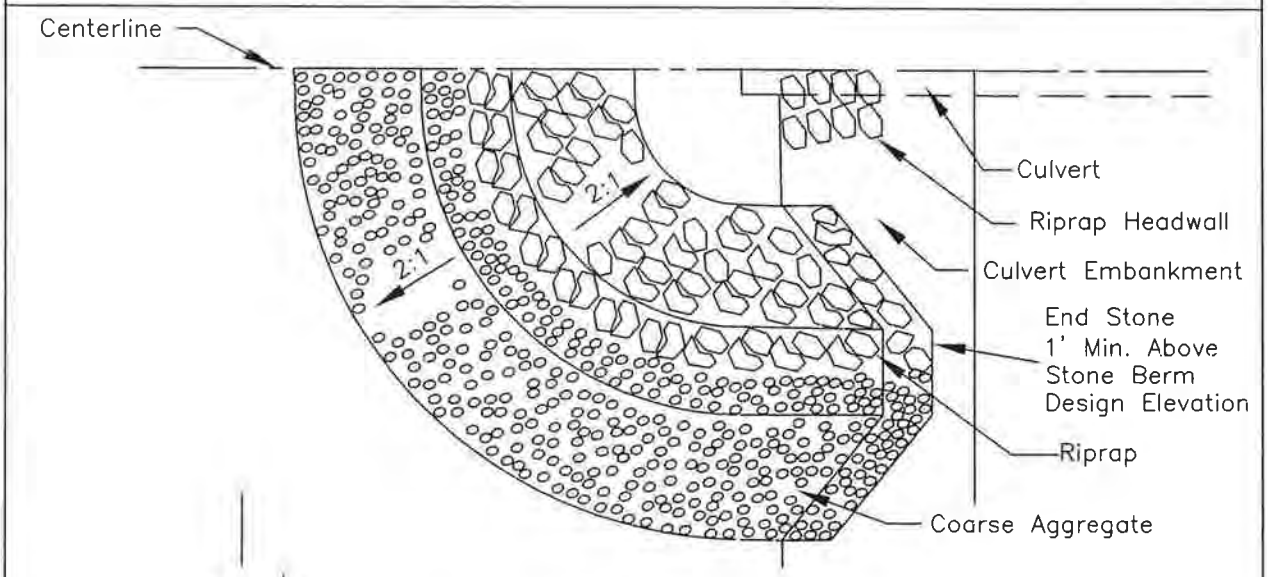
III. HR (*Hydrocarbon Removal*) Pillow Capacities

HR Pillow - 2.6 oz. Adsorbent/lf.

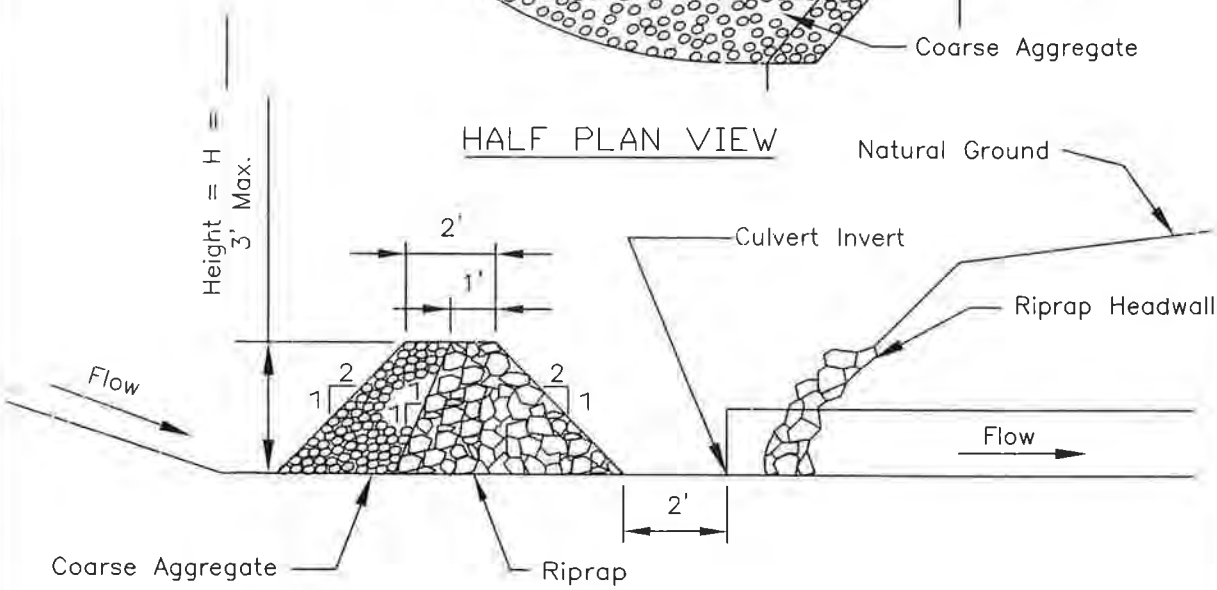
Type of Oil	Capacity by Weight – Oil / Adsorbent
Diesel	10:1
Fuel Oil	9:1
Machine Oil	8:1
30W Motor Oil	7:1

All capacities are rounded down

CULVERT INLET PROTECTION - STONE



HALF PLAN VIEW



CENTERLINE CROSS SECTION

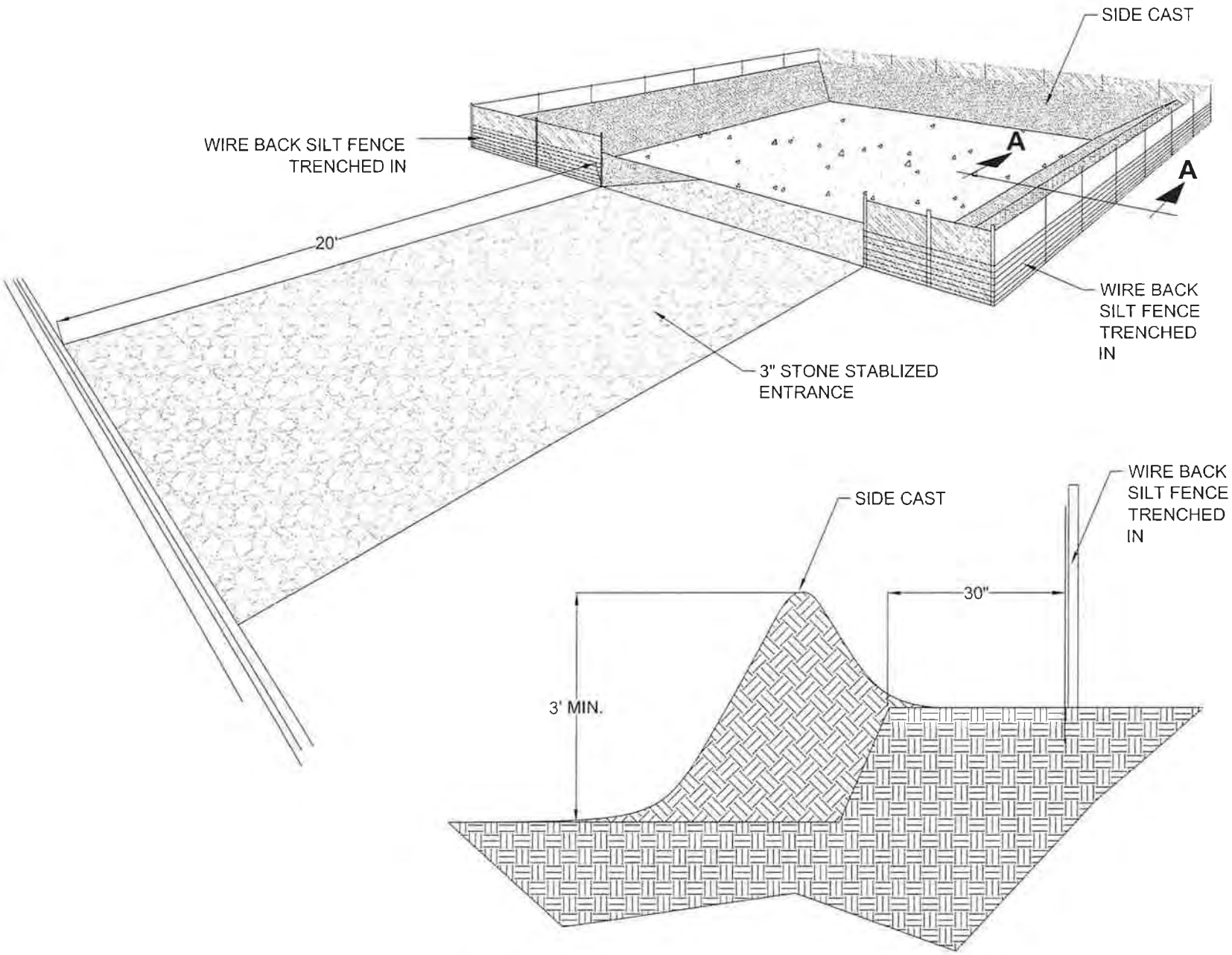
Notes:

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		
Project		
Designed	Date	
Checked	Date	
Approved	Date	

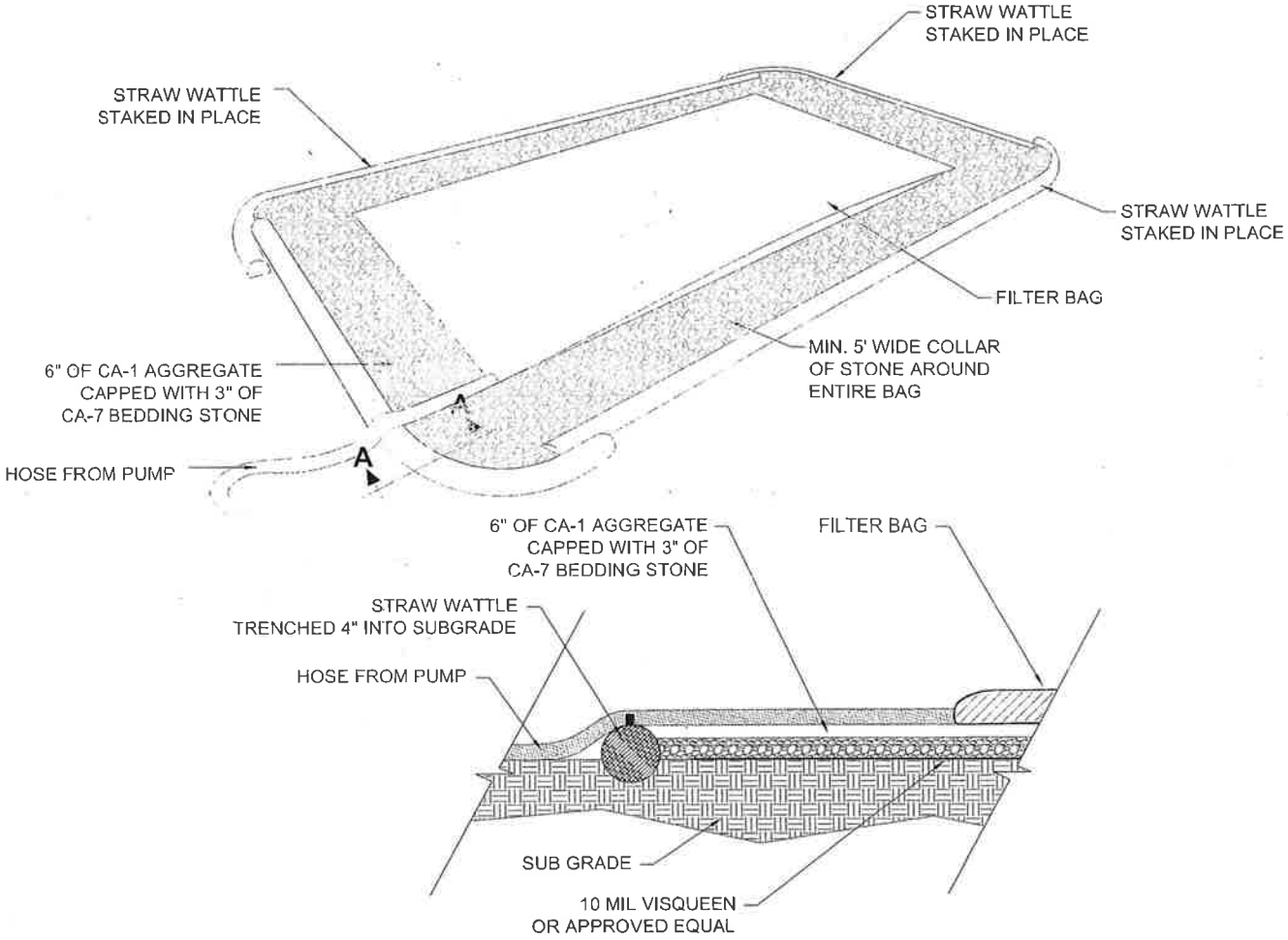
NRCS
Natural Resources Conservation Service

STANDARD DWG. NO.
IL-508ST
SHEET 1 OF 1
DATE 1-29-99



SECTION 'A'

CONCRETE WASH OUT BASIN

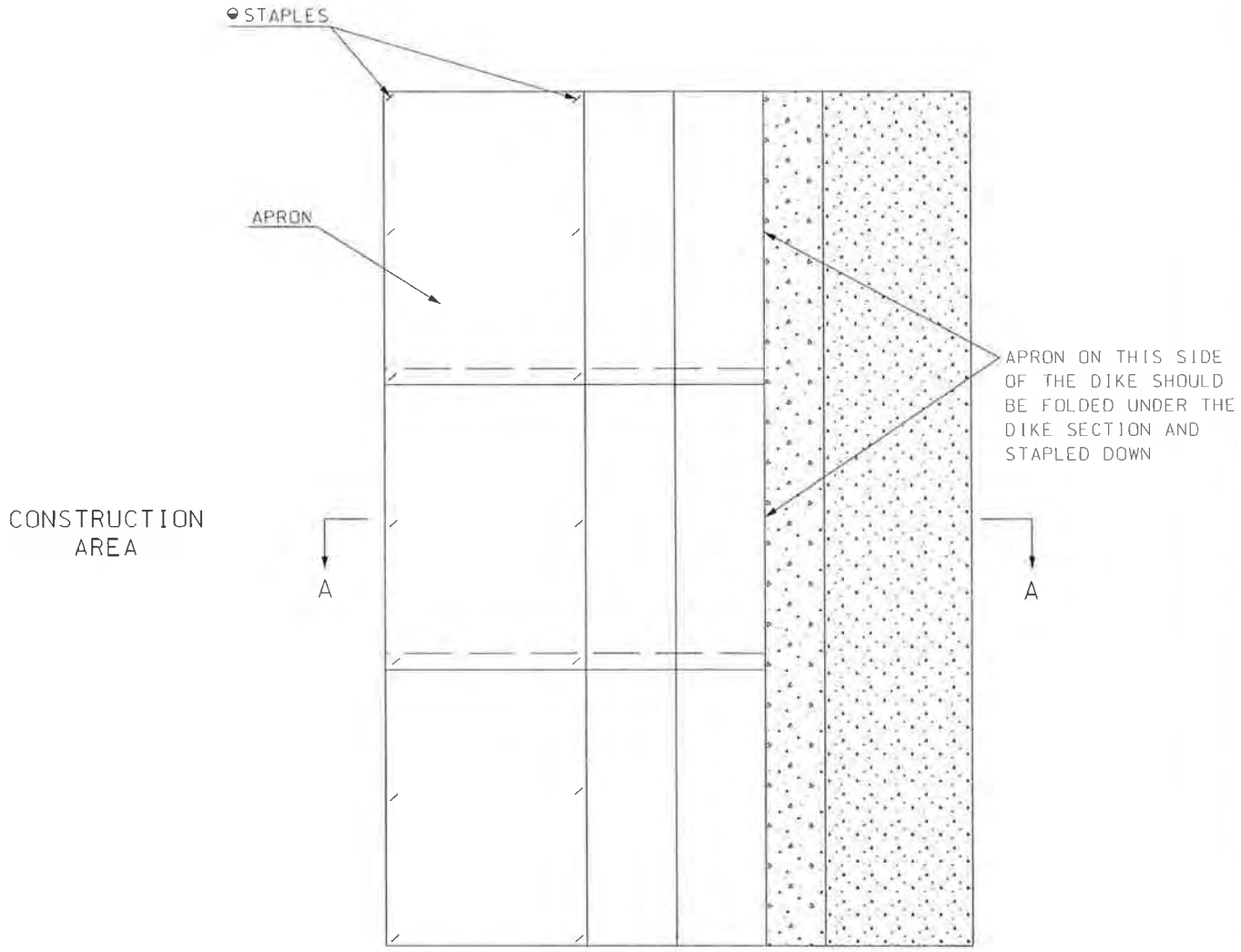


SECTION 'A'

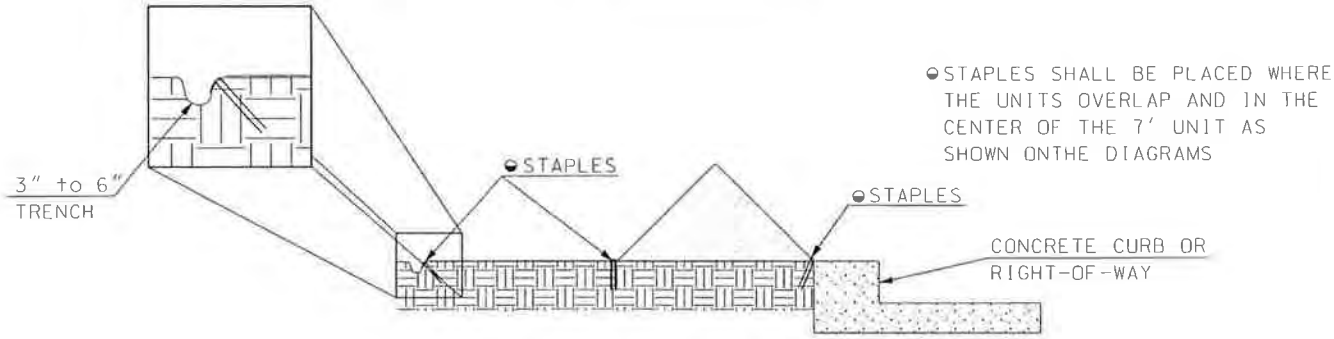
NOTES:
(1) ACTUAL SIZE AND LAYOUT DETERMINED IN THE FIELD
(2) PUMP INTAKE HEAD SHOULD BE FLOATED AT SURFACE OR PLACED IN A STABILIZED SUMP PIT

DEWATERING FILTER PAD

TRIANGULAR SILT DIKE INSTALLATION FOR CONTINUOUS BARRIER

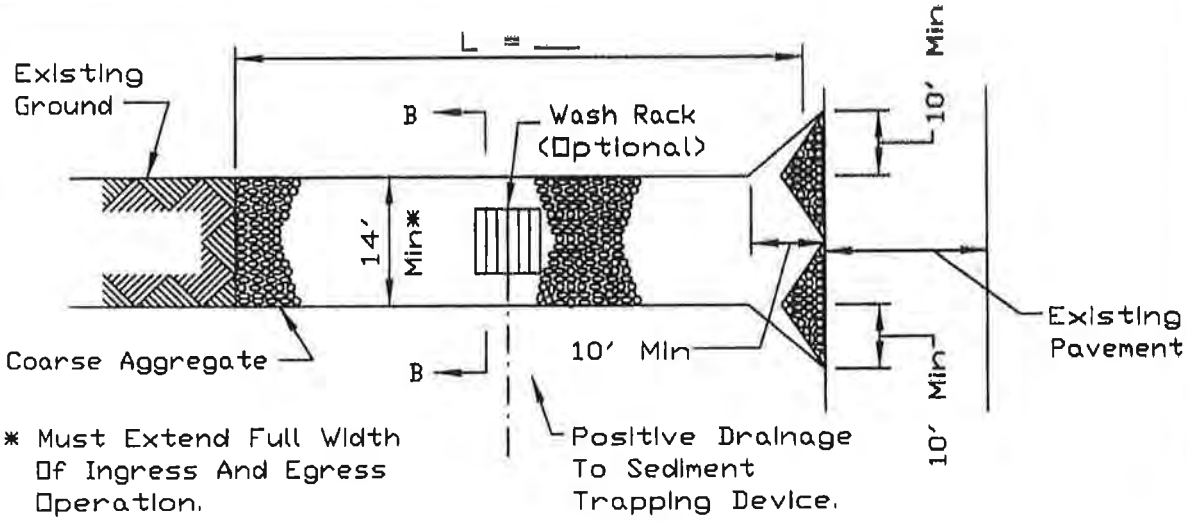


DIKE SECTION

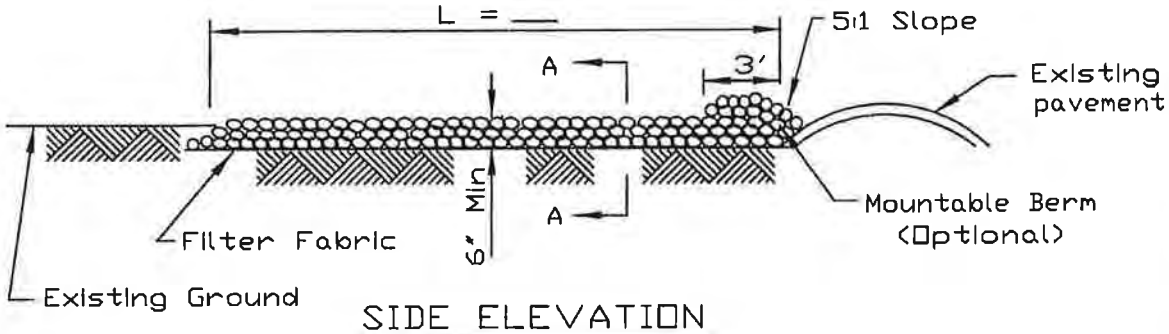


DETAIL A-A

STABILIZED CONSTRUCTION ENTRANCE PLAN



PLAN VIEW



SIDE ELEVATION

NOTES:

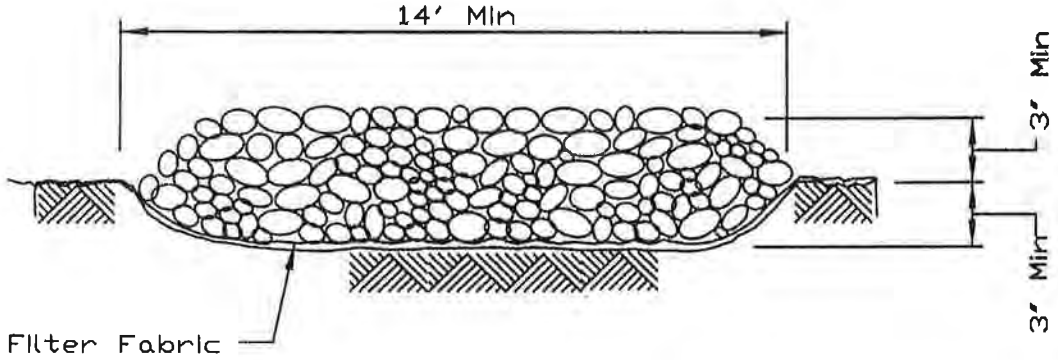
1. Filter fabric shall meet the requirements of material specification 592 GEOTEXTILE, Table I or 2, Class I, II or IV and shall be placed over the cleared area prior to the placing of rock.
2. Rock or reclaimed concrete shall meet one of the following IDOT coarse aggregate gradation, CA-1, CA-2, CA-3 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			
Project			
Designed		Date	
Checked		Date	
Approved		Date	

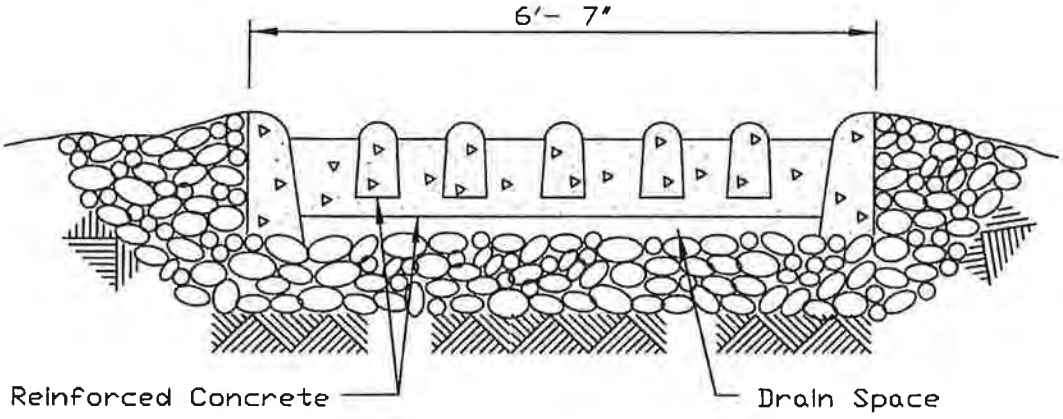
NRCS
Natural Resources Conservation Service

STANDARD DWG. NO.
IL-630
SHEET 1 OF 2
DATE 8-18-94

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:

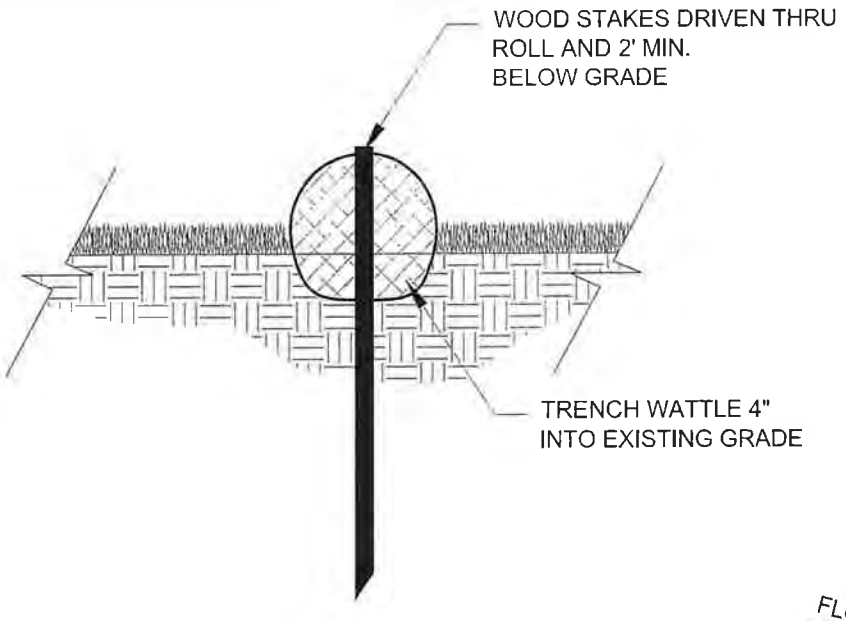
1. Location
2. Length
3. Width
4. Thickness
5. Type of materials

All plans shall include the installation, inspection, and maintenance schedules with the responsible party identified.

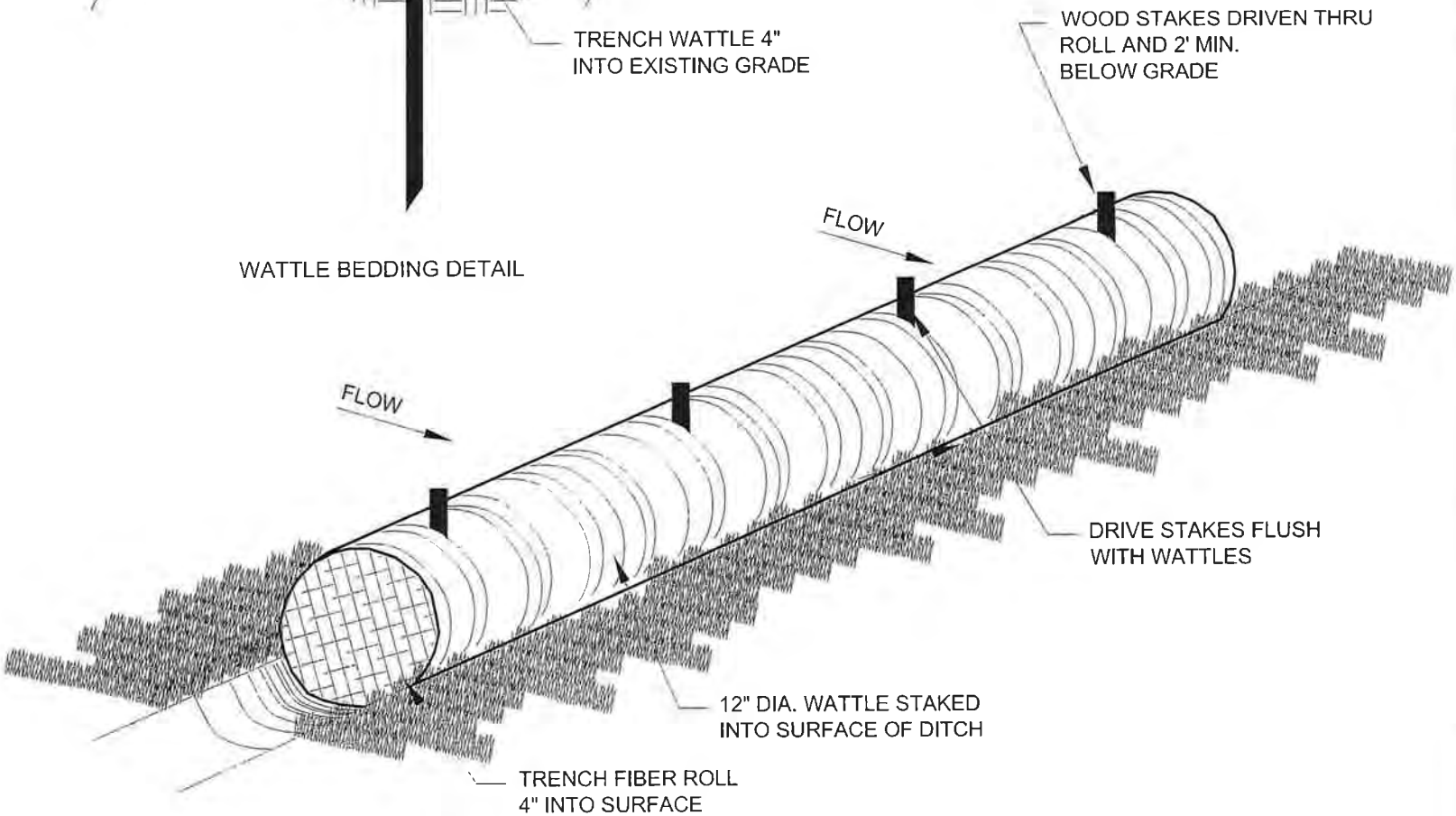
Standard drawing STABILIZED CONSTRUCTION ENTRANCE PLAN IL-630 may be used as the plan sheet.

OPERATION AND MAINTENANCE

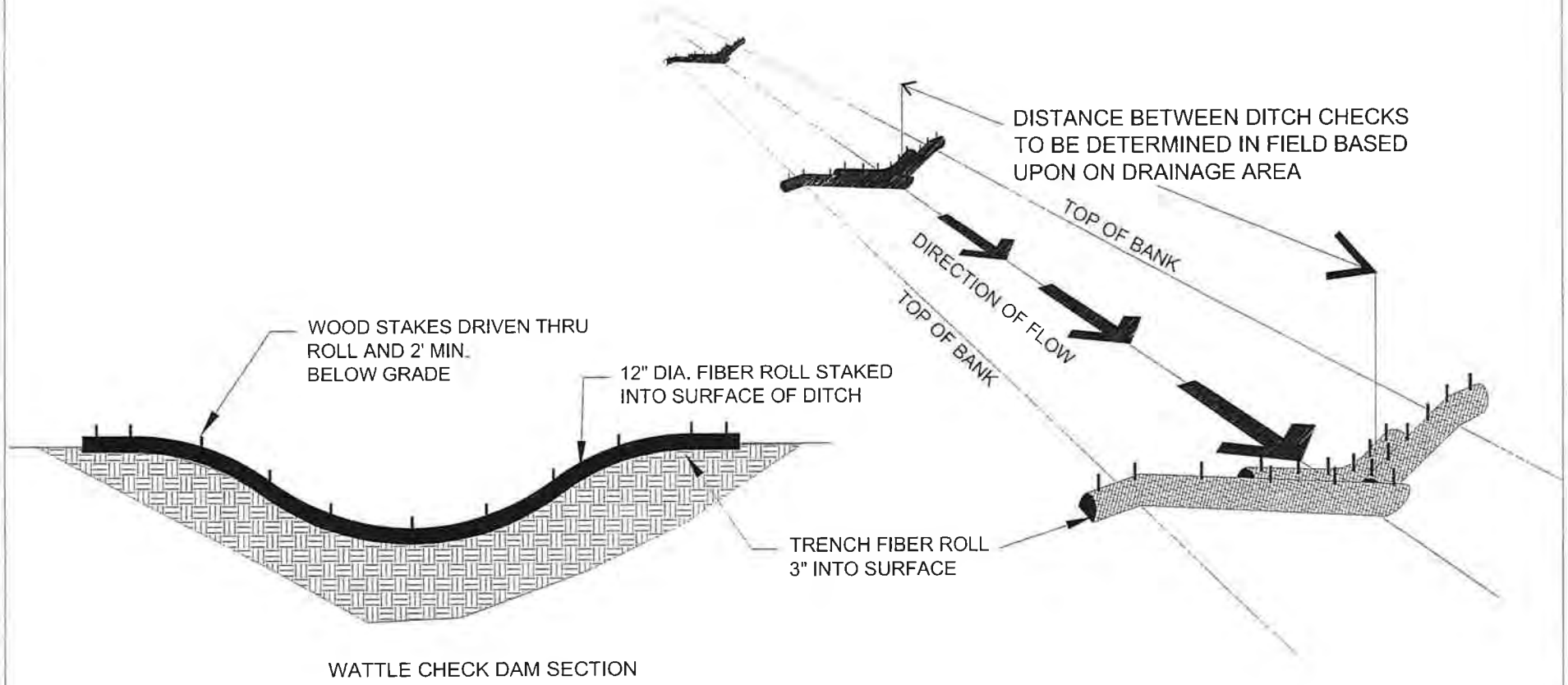
The entrance shall be maintained in a condition that will prevent tracking of sediment onto public right-of-ways or streets. This may require periodic top dressing with additional aggregate. All sediment spilled, dropped, or washed onto public right-of-ways must be removed immediately. Periodic inspection and needed maintenance shall be provided after each rain.



WATTLE BEDDING DETAIL

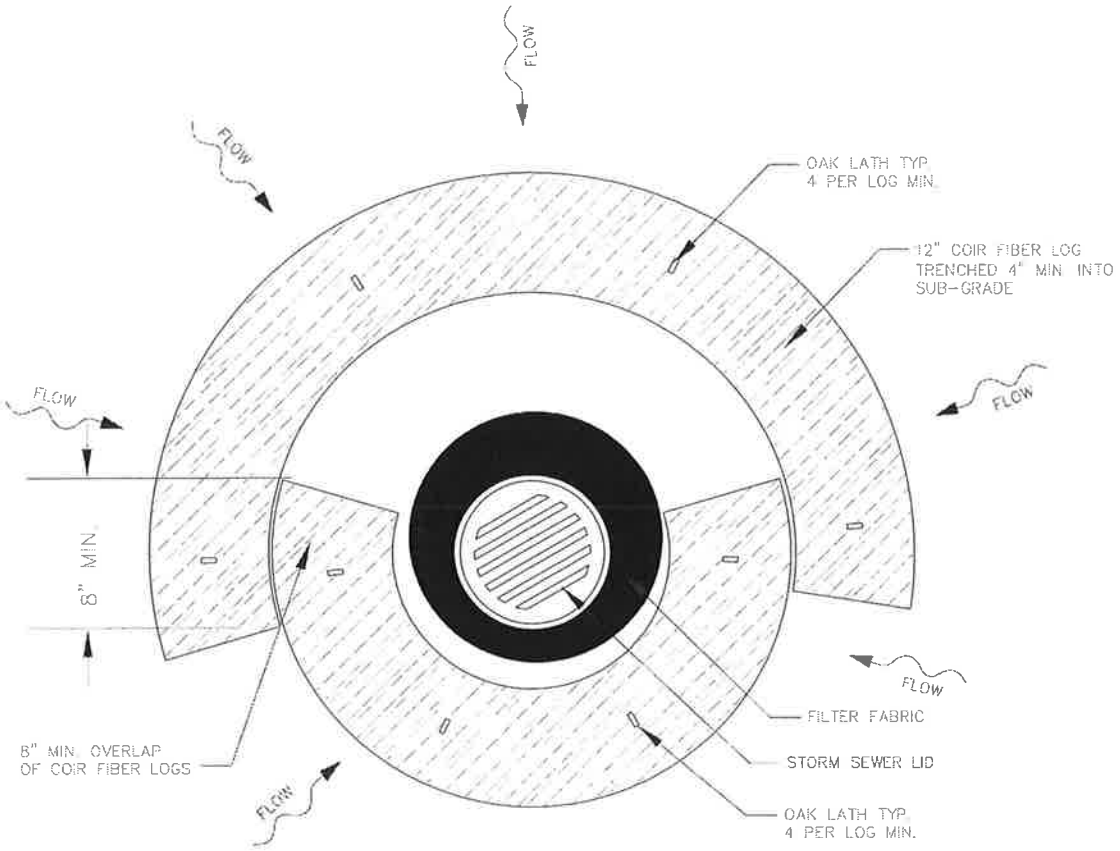


WATTLE BARRIER PLAN



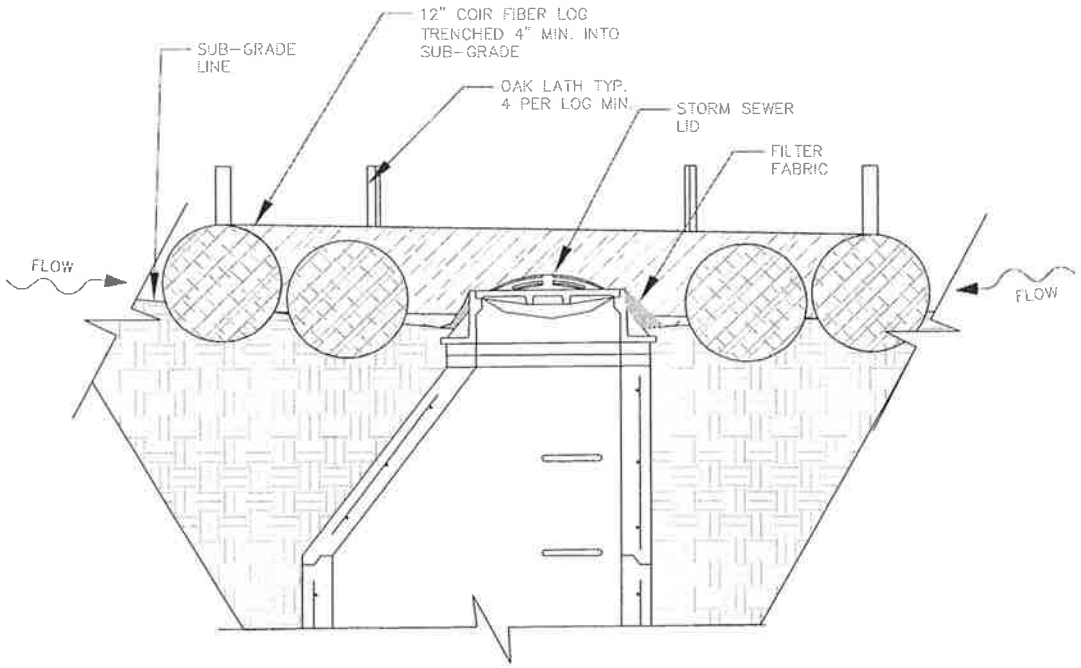
WATTLE CHECK DAM SECTION

WATTLE DITCH CHECK DETAILS



YARD GRATE INLET PROTECTION

PLAN VIEW



YARD GRATE INLET PROTECTION

SECTION

APPENDIX 17

Example Public Education and Outreach Materials

Public Works Website Links

Helpful Resources

Here are some links that we recommend to use, with regards to general Public Works information:

- Centers for Disease Control and Prevention (CDC)
- DuPage County (household hazardous waste)
- DuPage Water Commission (DWC)
- Illinois Department of Transportation (IDOT)
- Illinois Environmental Protection Agency (IEPA)
- Illinois State Toll Highway Authority
- JULIE (Joint Utility Locating Information for Excavators)
- United States Department of Agriculture (gypsy moth handbook)
- 2015 Consumer Confidence Report

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.

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

www.twitter.com/lovebluedupage

Tag your BMPs! #LoveBlueDuPage

Love Blue. Live Green.
DuPage County

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. Remembe , 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
stormwatermgmt@dupageco.org

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 18

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 ☐ 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 ☐ 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 19

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)

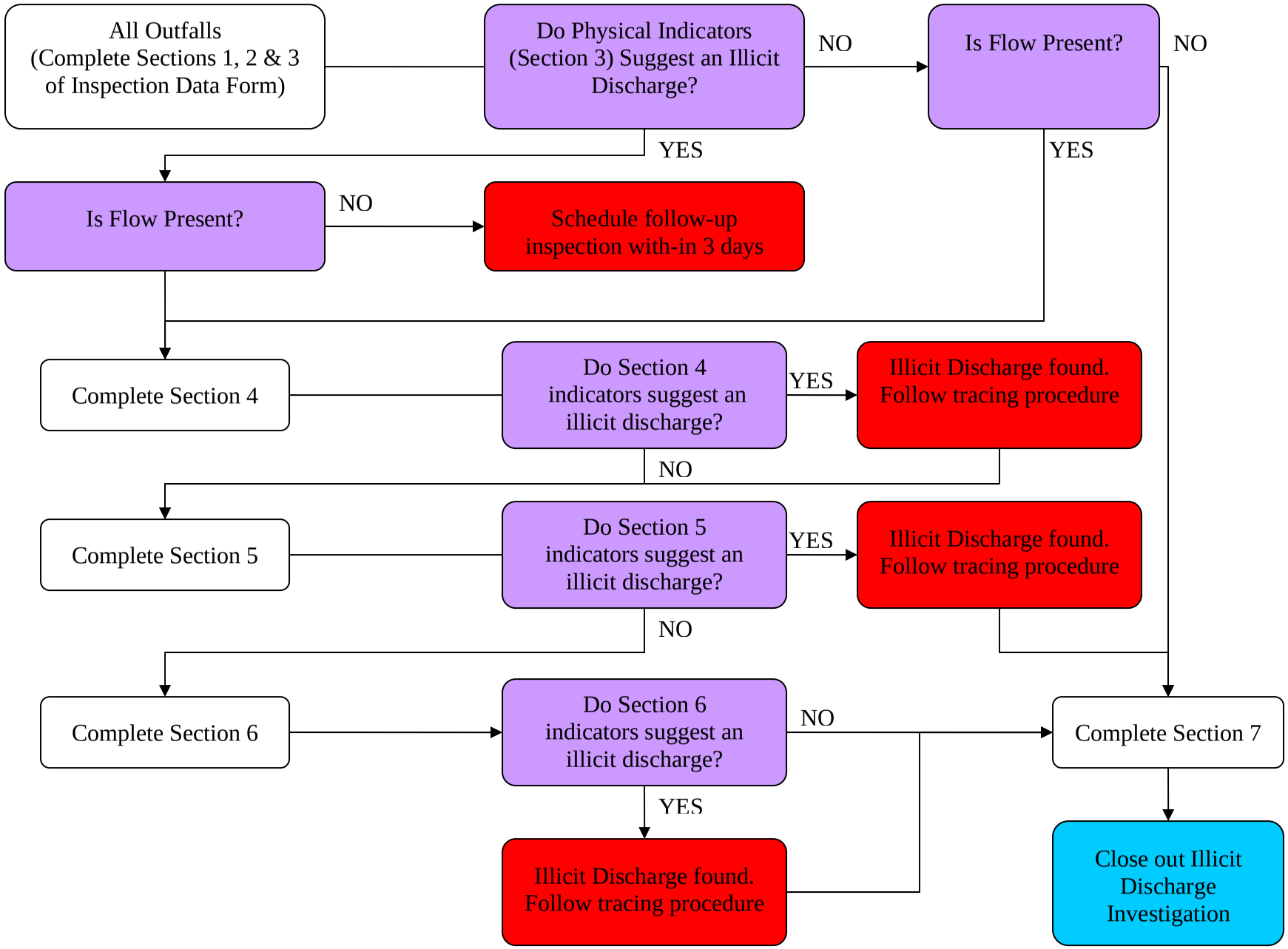
1. Sample for the lab?	☐ Yes	☐ No
2. If yes, collected from:	☐ Flow	☐ Pool

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 20

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				
18				
19				
20				

APPENDIX 21

Pre-Construction Meeting Forms

Village of Oak Brook

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 Oak Brook
  - ( ) 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 Oak Brook

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 Oak Brook

Christopher B. Burke Engineering, Ltd.

Preconstruction Meeting Agenda Items

( ) 7. NPDES – Sediment & Erosion Control
- ( ) A. Inspections by Developer Forwarded to Village via email to jbosma@oak-brook.org
- ( ) 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 Oak Brook

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.

Village of Oak Brook

Christopher B. Burke Engineering, Ltd.

Preconstruction Meeting Agenda Items

( ) J. Wetland Improvements
- ( ) i. Annual Reports – To be forwarded to the Village for review (jbosma@oak-brook.org)

( ) 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 22

Employee Training Agendas or Course Information

Oak Brook 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

Travis M. Parry, PE, CFM, CMS4S
Christopher B. Burke Engineering, Ltd.

What is NDPES?

National Pollution Discharge Elimination System

Permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States:

- 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 owned by 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
  - 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:
- Construction – Silt Fence
- Municipal – Street Sweeping

Why Are We Here?

- Required to develop a SWMP 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

Why Are We Here?

Village must regulate all discharges to the MS4

- Construction Sites
- Commercial Uses
- Industrial Uses
- Municipal Facilities
- Private Residences

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

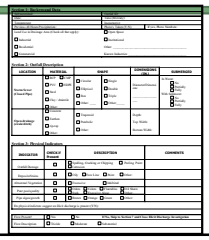
Outfall Inspections

7. Overall Outfall Characterization
   a) Sample collected
   b) Where

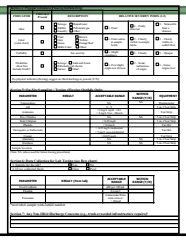
8. Non Illicit Discharge Concerns
   a) Trash
   b) Erosion
   c) Etc.

Outfall Inspections

Outfall Inspections

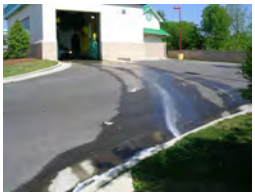


Outfall Inspections



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

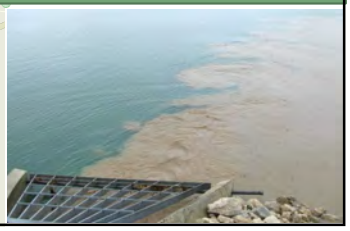
Illicit Discharges

Trash and Debris

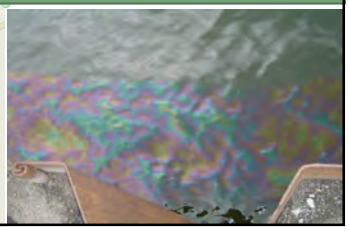
Illicit Discharges Industrial

- 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

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

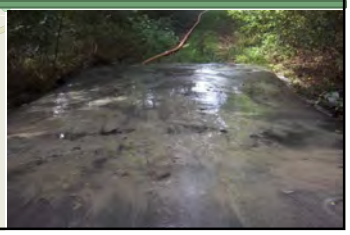
Dewatering…Floating the Pump

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

Pollution Prevention and Good Housekeeping

- Procedures or activities that municipalities and their employees can do to prevent or reduce stormwater contamination from municipal operations.

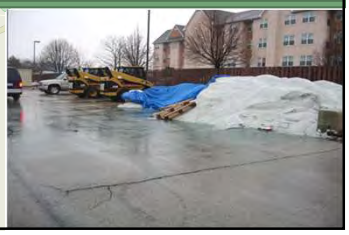
Pollution Prevention and Good Housekeeping

Municipal Activity	Potential Pollutants							
	Sediment	Nutrients	Trash	Metals	Bacteria	Oil & Grease	Organics	Particulates	Oxygen Demanding Substances
Building and Grounds Maintenance and Repair	X	X	X	X	X	X	X	X	X
Parking/Storage Area Maintenance	X	X	X	X	X	X	X		X
Waste Handling and Disposal	X	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	X
Outdoor Container Storage of Liquids		X		X		X	X	X	X
Outdoor Storage of Raw Materials	X	X	X			X	X	X	X
Outdoor Process Equipment	X		X	X		X	X		
Onsewater Activities			X	X	X	X	X	X	X
Landscape Maintenance	X	X	X		X			X	X

Pollution Prevention and Good Housekeeping

- Education and training are first and most important steps in reducing or preventing discharges from municipal activities

Salt Piles



Pollution Prevention and Good Housekeeping

8

Pollution Prevention and Good Housekeeping

8

Salt Storage

- Store piles under a roof or impermeable layer
  - Minimize contact with precipitation and storm water runoff
- Out of 100 yr Floodplain
- Stored on impermeable surfaces
- Contained within a curb or berm
- Store at least 50 feet from wetlands or streams
- Can contaminate surface and ground water

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

- Municipal project with no SE/SC measures

8

Pollution Prevention and Good Housekeeping

- Salt box next to inlet

8

Pollution Prevention and Good Housekeeping

- Uncovered drums

8

Pollution Prevention and Good Housekeeping

- Oil Recycling Storage Tanks

8

Pollution Prevention and Good Housekeeping

- Inspection and maintenance procedures and schedules
  - Create and follow!

Pollution Prevention and Good Housekeeping

- Pet Waste Pick Up Station

8

Pollution Prevention and Good Housekeeping

- Demonstration Areas

8

Pollution Prevention and Good Housekeeping

- Clearly Marked Procedures and Equipment
- Signage

8

Pollution Prevention and Good Housekeeping

8

Pollution Prevention and Good Housekeeping

- Proper Disposal of Municipal Generated Wastes

8

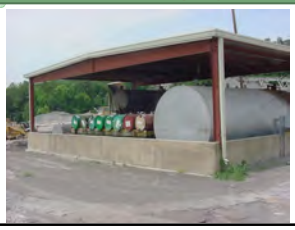
Pollution Prevention and Good Housekeeping

8

Pollution Prevention and Good Housekeeping

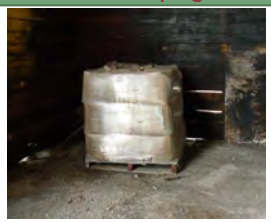
8

Pollution Prevention and Good Housekeeping



8

Pollution Prevention and Good Housekeeping



8

Pollution Prevention and Good Housekeeping

8

Pollution Prevention and Good Housekeeping

8

Pollution Prevention and Good Housekeeping

- Municipal Projects

8

Pollution Prevention and Good Housekeeping

- Watermain Breaks

8

Pollution Prevention and Good Housekeeping

- Dewater CORRECTLY!

8

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

www.emeraldseedandsupply.com
www.aot.state.vt.us
www.nwequipsales.com
www.aot.state.vt.us
www.greatamericantec.com
www.thedeicingbusiness.com
www.depweb.state.pa.us/news/lib/news/oilsheenJPG.jpg
www.nscc.govt.nz

APPENDIX 23

Compliance Documentation – Public Education and Outreach

BY DOUG PATCHIN

SPRING 2016

This winter Public Works has been busy with snow and ice removal, and removing Ash trees lost to the Emerald Ash Borer. Staff removed approximately 100 trees. During spring restoration, tree stumps will be ground, then dirt and seed will be added to level off parkways. Replacement trees will be scheduled for fall planting.

With the weather warming, it's time to take care of some simple, yet important housekeeping tasks. Homeowners should do a "walk around" inspection of their yard. Make sure drainage pathways that take water away from foundations are pitched away from your home and clear of debris. Keep drainage in mind during the upcoming garden and spring clean-up season. Avoid trapping water against your home's foundation with too much soil or mulch. Gutters, downspouts, and area drains have a tendency to collect debris over the winter. Now is a great time to ensure these drainage features are clog-free and running free.

As spring is fast approaching, Public Works would like to update residents on upcoming street improvements scheduled for 2016

Street receiving resurfacing are:

- Acorn Hill Lane, Washington Street and Wood Road
- Bath & Tennis Drive
- Camden Court and Tower Drive (Water Tower Area)
- Clearwater Drive
- St. Stephens Green
- Camelot Drive

Streets receiving signifi ant reconstruction:

- Avenue Lorie
- Mockingbird Lane

Spring is also a good time to check timers and scheduling of your home's irrigation system.

As a water conservation reminder, outdoor watering is permitted as follows:

Odd-Numbered Street Addresses

Tuesday, Thursday and Saturday

Even-Numbered Street Addresses

Wednesday, Friday and Sunday

6:00 AM until 10:00 AM & 6:00 PM until 10:00 PM

WATERING IS PROHIBITED ON MONDAY

Watering cans or hand-held watering devices may be used at any time on any day.

Customers with private wells are encouraged to utilize their wells for all outside watering purposes.

Newly planted sod or seed may be watered for a maximum period of two (2) weeks from the date of installation. Please notify the Village's Water Department at 630 368-5270.

Doug Patchin
Director of Public
Works & Engineering
(630) 368-5270
dpatchin@oak-brook.org

Public Works *News*

BY DOUG PATCHIN

As the seasons change and the weather starts to cool, Public Works is preparing for fall and winter activities. Leaf pickup season will soon be upon us, followed by snow. Staff has begun to service our leaf equipment and prepare plow trucks for snow. I know that with warm weather it sounds and feels too early to mention snow, but with quick changing seasons we need to have our plow equipment ready to go at the drop of a snowflake. Before we get into winter, let's slow down and discuss autumn leaf pickup.

We recommend you mulch your leaves and return this beneficial material back to your lawn or landscape. If you are going to utilize the Village's leaf pickup, please follow the Autumn Leaf Schedule on the right. If you employ a landscape contractor, please schedule their leaf clean up with our scheduled pickup dates. The leaf pickup equipment we utilize has a large vacuum unit which picks up leaves on the right side (the passenger side of the unit). The vacuum equipment works best with the pickup straight out to the side, any leaf piles placed in the street limits our ability to efficiently pick up leaves because our trucks must drive on the opposite side of the road into oncoming traffic lanes. This is only one reason it's important for leaves to be placed behind the curb and not in the street. Secondly, when leaves are placed in the street, and if it rains, leaves can block street drains and cause streets/yards to flood. Most importantly, when leaves are placed on the street pavement, leaf piles can cause a dangerous situation for pedestrians and vehicles. Where leaves are piled on both sides of the street, the street may become impassable for one vehicle. In order to have an efficient, effective, and safe leaf pickup program, we need your cooperation in adhering to the following procedures.

- **DO NOT** pile leaves on the street, leaves are to be placed behind the curb or at the edge of the pavement.
- **DO NOT** bag your leaves if you want the Village to pick them up. The equipment we use can only pick up piles of loose leaves.
- Rake **ONLY LEAVES** into the pile. **NO** shrub clippings, sticks or other debris are permitted as these other materials will clog our equipment.
- Please place your leaves a day or two prior to the scheduled pick up dates. Any leaves placed afterwards will not be collected until the next scheduled pickup date.

Below is the 2016 Autumn Leaf Schedule. Inquiries regarding the leaf pick up program and schedule may be directed to the Public Works Department at (630) 368-5270. A map depicting the pickup areas and schedule dates is also available on the Village website (www.oak-brook.org).

Fall is also a good time to schedule preventive maintenance around your house. Cleaning your gutters, downspouts, and yard drains of leaves and debris will avoid water damage during the winter freeze/thaw cycles. Your home heating system and filters should also be cleaned and checked; irrigation systems should be serviced and winterized.

PICKUP SCHEDULE

ZONE	DATES	AREAS
1	October 10, 18 November 4 December 1	Yorkshire Woods, Steeplechase, Woodside Estates,
2	October 11, 19 November 8 December 2	Forest Glen, York Woods
3	October 12, 21 November 11 December 5	Timber Trails, Merry Lane
4	October 13, 25 November 16 December 6	South of 31st Street and East of Route 83; including Lincoln, Grant and Coolidge
5	October 14, 27 November 21 December 7	Brook Forest, Briarwood, Trinity Lakes
6	October 17 November 1, 28 December 8	Ginger Creek, Saddle Brook, Heritage Oaks, White Oak Lane, Avenue Loire

Inquiries regarding the above schedule may be directed to the Public Works Department at (630) 368-5270. A map is available at the Village website (www.oak-brook.org) depicting pickup areas.

Doug Patchin
Director of Public
Works & Engineering
(630) 368-5270
dpatchin@oak-brook.org

Refuse & Recycling

Refuse Services

- Village of Oak Brook refuse services are contracted out to Republic Services (former Allied Waste).
  New residents should contact Republic Services at (708) 345-7050 to establish billing and select a service level. ((Note: Republic Services bills quarterly in advance.))
- Residents having a refuse, recycling, or yard waste issue should first call Republic Services at (708) 345-7050. If the issue is not resolved residents should then contact the Village at (630) 368-5000 and ask for Donna.

Refuse Collection

- Pick-up is on Mondays for 1x per week pick and on Mondays and Thursdays for 2x per week pickup
- Cans or bags may weigh up to 50 pounds when full, and may hold up to 32 gallons of refuse.
- Collection of amounts of building materials, carpeting, dirt, concrete, furnishings, etc.; and appliances containing hazardous components should be coordinated between Republic Services and the customer. Call Republic Services at (708) 345-7050 prior to the collection day to arrange for an estimate of cost.
- Large, wheeled toters are available through Allied Waste for an additional charge
- Please check with Republic Services before purchasing any container larger than 32 gallons since most have design features that are not compatible with Republic Services' equipment.
- Refuse must be placed at the curb unless the resident has arranged with Allied Waste for rear door collection.
- Unlimited amounts of household refuse in cans or bags will be collected each week.

Collection Services Price Quotations

OPTION	SERVICE	2016	2017	2018	2019
Weekly Curbside Refuse	Flat Rate	$21.65/mo.	$22.41/mo.	$23.19/mo.	$24.01/mo.
Twice Weekly Curbside	Flat Rate	$40.23/mo.	$41.64/mo.	$43.10/mo.	$44.61/mo.
Weekly Backdoor	Flat Rate	$40.49/mo.	$41.90/mo.	$43.37/mo.	$43.89/mo.
Twice Weekly Backdoor	Flat Rate	$60.35/mo.	$62.46/mo.	$64.65/mo.	$66.91/mo.
Yard Waste Sticker		$3.15	$3.25	$3.40	$3.50
Yard Waste Cart		$285	$294	$303	$312

2016 Holiday Schedule for Refuse Service

Holiday	Holiday Date	Schedule	Pickup Date	2nd Pickup Date *
New Year's Day	1/1/2016	Normal schedule**	12/28/2015	12/31/2015
Memorial Day	5/30/2016	Service delayed one day	5/31/2016	6/3/2016
Independence Day	7/4/2016	Service delayed one day	7/5/2016	7/8/2016
Labor Day	9/5/2016	Service delayed one day	9/6/2016	9/9/2016
Thanksgiving	11/24/2016	Normal schedule**	11/21/2016	11/25/2016
Christmas	12/26/2016	Service delayed one	12/27/2016	12/30/2016

		day		
New Year's Day (2017)	1/2/2017	Service delayed one day	1/3/2017	1/6/2017

** except for customers with twice-weekly service
Note: Lincoln's Birthday, Washington's Birthday, Martin Luther King Jr. Day, Presidents' Day, Columbus Day, and Veteran's Day do not affect the service schedule.

Yard Waste Collection

- A 90-gallon wheeled totter is also available at a rate of $285 per season.
- Branches may be tied together in bundles approximately four foot long and two foot in diameter weighing up to 50 pounds. A yard waste sticker must be attached to each bundle.
- Curbside collection of yard waste (e.g. grass clippings, twigs, leaves, plant material, etc.) is provided from April 1 through November 30 on Mondays.
- Yard waste is collected at the curbside only.
- Yard waste may be placed in 33 gallon biodegradable paper bags (plastic bags cannot be accepted) weighing up to 50 pounds when full. A yard waste sticker must be attached to each bag.
- Yard waste stickers are available at the following nearby vendors at a cost of $3.15 per sticker.

Yard Waste Sticker Collectors

- Jewel - 4 East Ogden Avenue - Westmont
- Jewel - 944 South York - Elmhurst
- Village Hall - 1200 Oak Brook Road

Stickers may also be purchased by mail, contact Republic Services at (708) 345-7050 for more information.

Christmas Trees

Clean Christmas trees (free of all ornaments, lights, tinsel, flocking, etc.) will be collected separately at the curb on the first two collection days after January 1. No sticker is required for Christmas trees during these two collections.

Additional Information

- For additional recycling opportunities, please visit Earth 911.

- For more information about recycling items not mentioned above or information about annual Household Hazardous Disposal, please visit The County of DuPage Wheaton, Illinois.

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.

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

www.twitter.com/lovebluedupage

Tag your BMPs! #LoveBlueDuPage

Love Blue. Live Green.
DuPage County

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. Remembe , 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
stormwatermgmt@dupageco.org

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.

Job Board

More >>

There are no jobs posted for this department at this time.

Stormwater Management

A Message from the Chairman

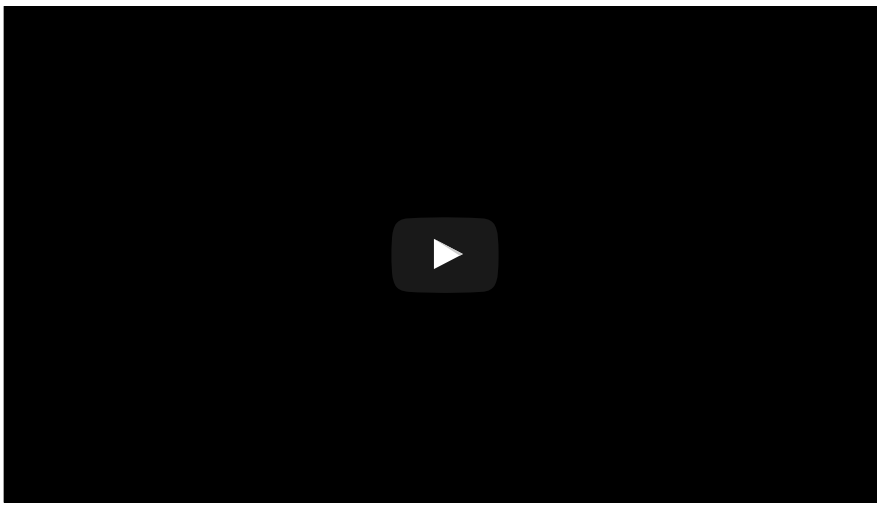
Welcome to Stormwater Management's webpage. Since the inception of DuPage County Stormwater Management 27 years ago, the County has been at the forefront of regional stormwater planning. As Chairman of the Stormwater Management Planning Committee, I work with the County Board, municipalities and staff 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:

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 24

Compliance Documentation – Public Participation/Involvement

Public Works Services

Maintenance Activities

The Village maintains over 55 miles of streets. Maintenance activities include, but are not limited to: snow removal and ice control, pavement markings, signage, traffic signals, street lights, and right of way brush removal.

Snow & Ice Control

It is the Village's commitment to maintain Village-owned streets and public parking areas in a safe and passable condition especially in the winter months. In order to accomplish this, street crews apply highway deicer salt to pavement surfaces until snow accumulation reaches an 1 ½" or more. At that time, salting operations are suspended and plowing operations begin. During snow plowing operations, snow is pushed to the side of the street and is continuously repeated until the storm subsides. Once the storm has passed and all streets have been plowed of snow, a final drive-through pass of the village is done and another application of salt is applied to rid the pavement of any unplowed snowpack. Under normal conditions, it is the goal of the department to have all streets plowed and salted within 10 hours after the storm has stopped. Obviously, with larger snowfall totals, completion times are extended.

As unfortunate as it seems, safety and traffic flow dictates that main streets be plowed first, followed by secondary streets and finally cul-de-sacs and dead-ends.

It is important to note that not all streets within the corporate limits of Oak Brook are the responsibility of the Village to plow. For instance, Route 83 and 22nd Street are plowed by the Illinois Department of

Transportation (IDOT), while 31st Street, Meyers Road, Midwest Road and the vast majority of York Road is plowed by DuPage County.
For a map depicting the areas of responsibility, please see the Snow Plow Map.

Concerns regarding these streets should be addressed to each agency; their telephone numbers can be found at Public Works.

Leaf Pick-up

The Village provides for an annual leaf collection program wherein residents can deposit their leaves on the parkway adjacent to the street for the Village to collect and haul away see Leaf Pick Up Map. Prior to the start of the program, which generally kicks off in mid-October, information that outlines the program and establishes actual collection dates can be found at 2015 Autumn Leaves Schedule.

Tree Pruning

Parkway tree pruning is conducted on a regularly scheduled basis to maintain the Village's inventory of over 9,000 trees in a safe and healthy condition. In order to reduce the severity of pruning, we have established a four year cycle wherein all parkway trees are professionally pruned every four years. The pruning program is contracted out to professional companies whose crews are required to have certified arborist as supervisors.

It is important to note that in most instances, parkway trees are required to be trimmed higher than private or yard trees to avoid limb damage from passing trucks and vehicles.

Storm Sewers

In order to maintain positive drainage and to mitigate potential contaminates from entering the various creeks and drainage ways , the Village conducts storm sewer inlet cleaning on an annual basis. Certain troublesome areas are repeatedly cleaned and cleared of root growth, while trouble free areas are cleaned on a three year cycle. Additionally, streets, both in the commercial and resident neighborhoods, are routinely swept to maintain a clean appearance while keeping debris from entering and clogging the storm sewer system.

Sanitary Sewers

Sanitary sewers that serve individual homes or commercial properties are either maintained by the Flagg Creek Water Reclamation District or the Downers Grove Sanitary District. Should you experience a sanitary backup or have concerns regarding sanitary service, you

should call whichever district services your property.

Pedestrian / Bicycle Safety Pathway

The Village's pedestrian and bicycle safety pathway system is comprised of approximately 15 miles of stone and asphalt pathways that interconnect many areas of the village. Depending on the section, maintenance of the system is the responsibility of either the Village or the Oak Brook Park District. Inspections of the Village's portion are conducted annually to insure that the system is properly maintained.

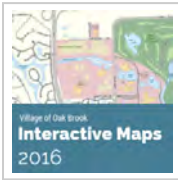
Mosquito Abatement

Mosquito abatement services are contracted out by the Village for the purpose of reducing adult nuisance complaints and mitigating disease vector should it arise. The emphasis of the program is the eradication of mosquitoes while they are still in the larval stage and are incapable of biting. To this end, all standing bodies of water are continuously inspected and treated if brooding is discovered. Additionally, the larvalciding program includes treatment of streets drainage inlets and inaccessible areas by either helicopter or backpack treatment techniques. As complete as we feel our program is, it is impossible to kill all mosquitoes. As such, and to keep the nuisance level to an acceptable level, we periodically conduct a village-wide spray (adulticiding). This "knocks down" the adult population, but again, is only partially effective.

Concerning West Nile Virus, when recommended by our mosquito abatement contractor (an expert in the field) and the Illinois Department of Public Health, we will conduct Village-wide sprays to, again, reduce the adult mosquito population, mitigating the virus. Regardless, residents should take personal steps to avoid exposing themselves. Residents should also use the mosquito hotline to report possible breeding sites (standing water) or nuisance conditions. For more information, visit the Center for Disease Control.

Interactive Maps

Geographic Information Systems (GIS) - A geographic information system (GIS) is a computer-based tool for mapping and analyzing data and events for the Village of Oak Brook.



Interactive Maps

The Village of Oak Brooks is a member of the GIS Consortium which is an organization of 31 Chicago-area communities unified by common goals to share resources, information, staffing, and technology so that municipalities can optimize the value of geographic information systems (GIS). GIS continues to help our Village government automate and improve traditional business processes, from mapping incidents to supporting infrastructure systems and projects.

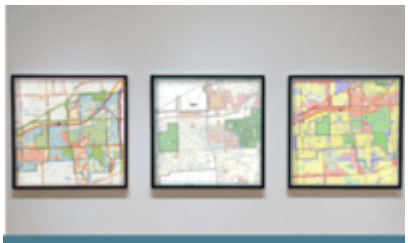
The property search box below allows Village residents to view property information including PINs (parcel identification numbers), addresses, school districts, zoning and more. The goal of the GIS system is to maintain and make updates to a comprehensive spatial database capable of serving the needs of Village residents. GIS also gives our Village government the resources needed to support and maintain the Village infrastructure and to provide improved services to our residents, businesses, and visitors.

Property Search

24/7 access to information related to your address! Learn about School Districts, State Representatives, services and other important information related to your property in the Village of Oak Brook.

Enter an address to start:

Property Address: Submit Query



Village of Oak Brook

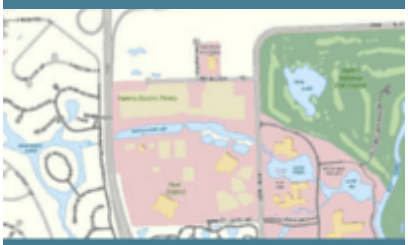
Map Gallery

2016

Village of Oak Brook

Special Events

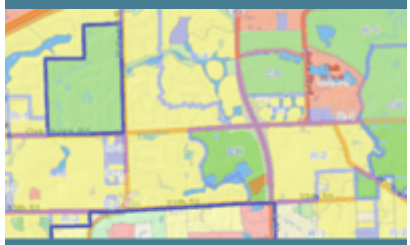
2016



Village of Oak Brook

Street Map

2016



Village of Oak Brook

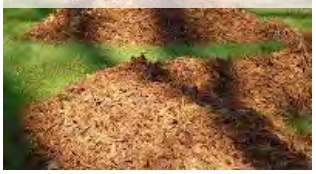
Zoning Map

2016

The Village of Oak Brook Map Gallery provides access to interactive maps and applications. To find out more about a map, please click on it's associated thumbnail.

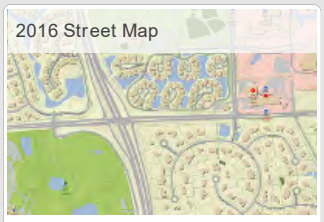
Search maps

Leaf Pick Up



Village of Oak Brook

2016 Street Map



2016 Zoning Map

2016 Polling Locations

2016 Street Improvement Project

Annexation History

Bike Paths

Secondary School Districts

1 2

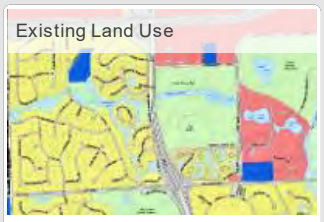
The Village of Oak Brook Map Gallery provides access to interactive maps and applications. To find out more about a map, please click on it's associated thumbnail.

Search maps

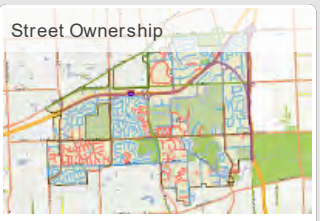
Elementary School Districts

Fire Districts

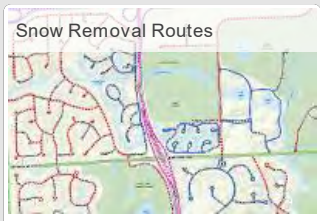
Existing Land Use



Street Ownership

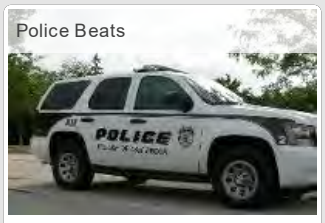


Snow Removal Routes



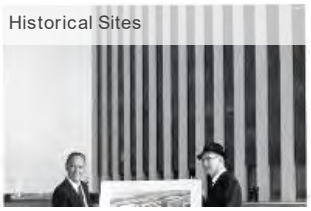
Sports Core Layout

Police Beats



Location of Village Facilities

Historical Sites



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 25

Compliance Documentation
Illicit Discharge Detection and Elimination

Title 15
ILLICIT DISCHARGE

Chapter 1
PURPOSE

15-1-1: SHORT TITLE:

This title shall be known and may be cited as the IDDE ORDINANCE OF OAK BROOK, ILLINOIS. (Ord. G-897, 9-8-2009, eff. 9-8-2009)

15-1-2: PURPOSES OF THIS TITLE:

A. The purpose of this title is to ensure the health, safety, and general welfare of the citizens of Oak Brook, Illinois, and protect and enhance water quality in a manner pursuant to and consistent with the federal water pollution control act (33 USC section 1251 et seq.) through the regulation of nonstormwater discharges to the storm drainage system. This title establishes methods for controlling the introduction of discharges other than those occurring as a direct result of precipitation and/or snowmelt into the municipal separate storm sewer system (MS4) and the storm drainage system in order to comply with requirements of the national pollutant discharge elimination system (NPDES) phase II permit process. Other purposes of this title include:

1. To regulate the contribution of pollutants to the MS4 and the storm drainage system by nonstormwater discharges; and

2. To prohibit illicit connections and discharges to the MS4 and the storm drainage system; and

3. To protect and enhance the quality, quantity, and availability of surface and ground water resources; and

4. To preserve and enhance existing aquatic and riparian environments and encourage restoration of degraded areas; and

5. To promote equitable, acceptable, and legal measures for stormwater management. (Ord. G-897, 9-8-2009, eff. 9-8-2009)

Chapter 2
DEFINITIONS

15-2-1: INTERPRETATION OF TERMS AND WORDS:

The terms and words used in this title shall be interpreted as follows:

A. Words used in the present tense include the future tense; and

B. Words used in the singular number include the plural number and words used in the plural number include the singular number; and

C. The words "shall", "will", and "must" are mandatory, not permissive; and

D. The phrase "administrator" refers to the individual responsible for the enforcement. (Ord. G-897, 9-8-2009, eff. 9-8-2009)

15-2-2: DEFINITIONS:

Within the context of this title, the following words and terms shall have the meanings set forth except where otherwise specifically indicated. Words and terms not defined shall have the meanings indicated by common dictionary definition.

ADMINISTRATOR: The person administering the implementation and enforcement of this title. The administrator shall be the village engineer.

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.

COMMUNITY: The village of Oak Brook acting as a unit of local government.

COUNTY: The county of DuPage, Illinois.

DEPARTMENT: The DuPage County stormwater management division or successor agency.

DIRECTOR: The DuPage County director of stormwater management or successor position or his or her designee.

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: Either of the following:

A. 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 community; or

B. 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 has not been approved by the community.

ILLICIT DISCHARGE: Any direct or indirect nonstormwater discharge to the storm drainage system except as exempted in subsection 15-5-1C of this title.

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 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.

OVERSIGHT COMMITTEE: The zoning board of appeals of the village of Oak Brook.

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.

PLAN: The DuPage County stormwater management plan, adopted by the DuPage County board in September 1989, as amended from time to time, county ordinance OSM-0001-89.

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, 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, rivers, creeks, natural and humanmade or altered drainage channels, reservoirs, and other drainage structures.

STORMWATER: Any surface 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.

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:

A. All interstate waters;

B. Intrastate waters used in interstate and/or foreign commerce;

C. Tributaries of the above;

D. Territorial seas at the cyclical high tide mark; and

E. Wetlands adjacent to all the above. (Ord. G-897, 9-8-2009, eff. 9-8-2009)

Chapter 3
GENERAL PROVISIONS

15-3-1: APPLICABILITY:

This title shall apply to all water entering the storm drainage system from any developed or undeveloped lands within the jurisdiction of the village unless explicitly exempted by subsection 15-5-1C of this title, including any amendments or revisions thereto. (Ord. G-897, 9-8-2009, eff. 9-8-2009)

15-3-2: INTERPRETATION:

A. The provisions of this title shall be held to be the minimum requirements for the promotion of the public health, safety, comfort, convenience, prosperity, and general welfare and the environment of the residents of the village, and to effectuate the purposes of this title and enabling legislation.

B. Where the conditions imposed by any provision of this title are either more restrictive or less restrictive than comparable conditions imposed by any other applicable statute, law, ordinance, regulation, or rule, the provision that is most restrictive or imposes the higher standards or requirements shall apply.

C. The provisions of this title shall be interpreted to be cumulative of, and to impose limitations in addition to, all other ordinances, laws, codes, and regulations in existence or which may be passed governing any subject matter of this title. To the greatest extent possible, the provisions of this title shall be construed to be consistent with, and not in conflict with, the provisions of such other ordinances, laws, codes, and regulations and with each other, to the end that all such provisions may be given their fullest application. (Ord. G-897, 9-8-2009, eff. 9-8-2009)

Chapter 4
ADMINISTRATION

15-4-1: RESPONSIBILITY FOR ADMINISTRATION:

The administrator shall administer, implement, and enforce the provisions of this title. Any powers granted or duties imposed upon the administrator may be delegated in writing by the administrator to persons or entities acting in the beneficial interest, or in the employ of, the village as representatives, contractors, designees, and/or assigns. (Ord. G-897, 9-8-2009, eff. 9-8-2009)

15-4-2: DUTIES OF ADMINISTRATOR:

The duties and functions of the administrator shall include:

A. Determining policy related to and directing the enforcement of this title, as applicable; and

B. Supervising the execution of this title; and

C. Notifying the IEPA of any amendments to this title. (Ord. G-897, 9-8-2009, eff. 9-8-2009)

15-4-3: REPRESENTATIVE CAPACITY:

In all cases when any action is taken by the administrator, or his or her duly appointed designee, to enforce the provisions of this title, such action shall be taken in the name of and on behalf of the village and neither the administrator nor his or her designee, in so acting for the village, shall be rendered personally liable. (Ord. G-897, 9-8-2009, eff. 9-8-2009)

Chapter 5
DISCHARGE PROHIBITIONS

15-5-1: PROHIBITION OF ILLICIT DISCHARGES:

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:

1. Discharges that are not a direct result of precipitation and/or snowmelt within the drainage area of the MS4.

2. Discharges from an illicit connection.

C. The following discharges are exempt from discharge prohibitions established herein provided they do not cause an adverse effect on water quality as determined by the administrator:

1. Discharges caused by governmental public works and stormwater management units as part of their standard operations in compliance with all applicable regulations.

2. 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.

3. Water line and fire hydrant flushing.

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 lines, 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 village 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 village as being substantially like any of the discharge types enumerated in this subsection C. (Ord. G-897, 9-8-2009, eff. 9-8-2009)

15-5-2: PROHIBITION OF ILLICIT CONNECTIONS:

A. The construction, use, maintenance, or continued existence of illicit connections to the storm drainage system or MS4 is prohibited.

B. This prohibition expressly includes, without limitation, illicit connections made in the past regardless of whether the connection was permissible under law or practices applicable or prevailing at the time of connection.

C. A person is considered to be in violation of this title if the person connects a line conveying sewage to the storm drainage system or MS4, or allows such a connection to continue.

D. Connections in violation of this title must be disconnected and redirected, if necessary, to an approved wastewater management system or the sanitary sewer system upon approval of the village and the appropriate sanitary treatment facility.

E. 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 village 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 administrator. (Ord. G-897, 9-8-2009, eff. 9-8-2009)

Chapter 6
COMPLIANCE MONITORING

15-6-1: NOTIFICATION OF SPILLS:

A. 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 spill 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 a 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 village 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 village within three (3) business days of the phone notice.

3. 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.

B. Proper notice, including containment and cleanup as outlined in subsection A of this section shall exempt the notifying parties from applicable fines set forth in section 15-7-6 of this title.

C. Failure to provide notification of a release as provided above is a violation of this title.

D. Notwithstanding the language of subsection B of this section, 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. (Ord. G-897, 9-8-2009, eff. 9-8-2009)

Chapter 7
VIOLATIONS, ENFORCEMENT, AND PENALTIES

15-7-1: ENFORCEMENT; VIOLATIONS:

A. The administrator shall have primary responsibility for the enforcement of the provisions of this title. The village may enter into agreements with other governmental units for the purpose of implementing this title.

B. A person violates this title when that person:

1. Performs any act expressly prohibited by any provision of this title; or

2. Disobeys, neglects, or fails to carry out or comply with any provision of this title or of any order or notice issued by the administrator; or

3. Allows any condition or act that violates any provision of this title to continue unabated on property owned, leased, managed, or under the control of such person; or

4. Directs, orders, permits, or allows a second person to do any act expressly prohibited by any provision of this title, or to maintain or continue unabated any condition or act that violates any provision of this title on property owned, leased, managed or under the control of the first person. (Ord. G-897, 9-8-2009, eff. 9-8-2009)

15-7-2: NOTICE TO CORRECT VIOLATIONS; ADMINISTRATOR MAY TAKE ACTION:

A. The administrator may issue a notice of violation ordering a person to take action to achieve compliance with the provisions of this title and/or to cease and desist from any action conducted in violation of this title. Failure to comply with the terms and conditions of a notice of violation and/or order to cease and desist shall constitute a violation of this title.

1. The administrator shall set forth the form and content of any notices issued under this title.

2. The administrator may issue a warning of violation ordering a person to take action to achieve compliance with the provisions of this title. If a person fails to comply with the terms and conditions of a warning, the administrator may, thereafter, issue a notice of violation.

3. The administrator may issue a warning of violation and disburse educational materials outlining appropriate measures to minimize the discharge of pollutants.

B. If a person fails to comply with an order issued under this section, the administrator may direct the appropriate legal counsel to commence any legal proceeding authorized by this title, under the law or equity, necessary to enforce any provision of this title and/or to protect public health and safety. Any legal action brought under this title shall be in the name of the village of Oak Brook. (Ord. G-897, 9-8-2009, eff. 9-8-2009)

15-7-3: EMERGENCY CEASE AND DESIST ORDERS:

A. The village may issue an emergency order in the event of the following:

1. Any person has violated, or continues to violate, any provision of this title or any order issued hereunder, or that the person's past violations are likely to recur; and

2. That the person's violation has caused or contributed to an actual or threatened discharge to the MS4 or storm drainage system and an imminent threat of violation is present.

B. The village may issue the emergency order to the violator directing that the violator:

1. Immediately cease and desist all such violations; and/or

2. Immediately comply with all title requirements; and/or

3. 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.

C. Any person notified of an emergency order under this subsection 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 village 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 village may allow the person to recommence its discharge when it has demonstrated to the satisfaction of the village that the period of endangerment has passed, unless further termination proceedings are initiated against the discharger under this title. 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 administrator 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. (Ord. G-897, 9-8-2009, eff. 9-8-2009)

15-7-4: VIOLATIONS DEEMED A PUBLIC NUISANCE:

Any condition caused or permitted to exist in violation of any provision of this title shall constitute a threat to public health and safety and is declared and deemed a public nuisance. (Ord. G-897, 9-8-2009, eff. 9-8-2009)

15-7-5: NUISANCE ABATEMENT:

Whenever a nuisance shall be found to exist on any premises, the administrator may order such

nuisance to be abated upon determination that the nuisance constitutes a threat to public health or safety.

A. In the event of an emergency situation, as determined by the administrator, involving an immediate threat to public health and safety, the administrator may direct the village attorney to immediately commence any legal or equitable proceeding necessary to restrain, abate, and/or remedy said situation. The administrator 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 administrator.

B. In all other cases, the administrator 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 administrator may direct that appropriate proceedings commence to compel the abatement or removal of such a nuisance in any manner allowed by law, equity, or this title and/or authorizing the village 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 title, shall be liable to the village for any costs incurred by the village to effect such abatement, or removal, including reasonable attorney fees and other costs of enforcement, to be recovered by a court of competent jurisdiction. (Ord. G-897, 9-8-2009, eff. 9-8-2009)

15-7-6: FINES:

Any person who violates, disobeys, omits, neglects, or refuses to comply with, or who resists enforcement of any provision of this title, shall be subject to a fine pursuant to section 1-3-1 of this code. Each calendar day a violation continues to exist shall constitute a separate offense. (Ord. G-897, 9-8-2009, eff. 9-8-2009)

15-7-7: REMEDIES NOT EXCLUSIVE:

The remedies listed in this title are not exclusive of any other remedy available under this title or under any applicable federal, state, or local law and do not supersede or limit any and all other penalties provided by law. The administrator may seek, at his discretion, cumulative remedies. (Ord. G-897, 9-8-2009, eff. 9-8-2009)

Chapter 8
SUSPENSION OF MS4 ACCESS

15-8-1: SUSPENSION OF MS4 ACCESS DUE TO DETECTION OF ILLICIT DISCHARGES:

A. Any person discharging to the MS4 in violation of this title may have their MS4 access terminated if such termination would abate or reduce an illicit discharge. The village shall notify a violator of the proposed termination of its MS4 access. The violator may petition the village for a reconsideration and hearing. A person commits an offense if the person reinstates MS4 access to premises terminated pursuant to this section without the prior approval of the village.

B. In emergency situations, the village 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 village 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. The village shall obtain an emergency court order authorizing such termination. (Ord. G-897, 9-8-2009, eff. 9-8-2009)

Chapter 9
APPEALS

15-9-1: RIGHT TO APPEAL:

A. Every request for an appeal shall be made in writing to the administrator. The administrator may delegate the hearing of appeals to the oversight committee of the village in the manner provided for below.

B. Any person aggrieved by any decision, ruling, or determination by the administrator, or by any interpretation or application of any provision of this title may appeal such matter. An appeal of any decision made by the administrator shall be made within seven (7) calendar days of the decision contested; except for an appeal involving the assessment charge or calculation of any fine or penalty, in which cases such an appeal shall be brought before said amount becomes thirty (30) days past due.

1. The appeal procedure shall commence when the person aggrieved notifies the administrator in writing of the intent to appeal the decision of the administrator. Such notice shall contain a short, clear, statement stating the following:

   a. Identifying the decision of the administrator which such person is appealing and how this title has been misread, misinterpreted, or misapplied in this instance and/or any mistakes of fact the aggrieved believes the administrator to have relied upon.

b. The name and both a mailing address and a telephone number of the person making the request, which contact information shall be used for giving notices related to the appeal. The person making the request shall attach all written materials on which he or she intends to rely upon in support of the request.

2. The administrator may, without conducting a hearing, grant relief sought by the appeal, or may set the matter over for a hearing in the manner provided in subsection B3 of this section.

3. Upon receipt of such notice of appeal, if relief is not granted by the administrator, the administrator shall set a date for a hearing. Such hearing shall take place no fewer than fourteen (14) days nor more than thirty (30) days from the date that the administrator receives such notice of appeal unless the administrator and party requesting the hearing agree to a different schedule. The administrator shall notify the person making the appeal of the date of such hearing.

4. At the hearing, the person making the appeal may appear in person or be represented by counsel. 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.

C. The oversight committee shall have the authority to reverse, modify, or affirm any decision, ruling, or determination by the administrator made pursuant to this title upon appeal. The oversight committee shall not act in a manner that would violate or in any way conflict with any federal or state standard or requirement. The oversight committee or village board may adopt such additional rules and procedures as it deems appropriate for performing such matters.

D. The decision of the oversight committee may be appealed to the village board. (Ord. G-897, 9-8-2009, eff. 9-8-2009)

15-9-2: ENFORCEMENT MEASURES AFTER APPEAL:

If the violation has not been corrected pursuant to the requirements set forth in the notice of violation, or, in the event of an appeal, within seven (7) days of the decision of the administrator or oversight committee upholding the decision of the administrator, then representatives of the village are authorized to take any and all measures necessary to abate the violation and/or restore the property. In no case shall an appeal stay or bar the village from commencing a legal action seeking emergency relief. (Ord. G-897, 9-8-2009, eff. 9-8-2009)

Chapter 10
MISCELLANEOUS PROVISIONS

15-10-1: SEVERABILITY:

The provisions of this title are hereby declared to be severable. If any provision, clause, sentence, or paragraph of this title or the application thereof to any person, establishment, or circumstances shall be held invalid, such invalidity shall not affect the other provisions or application of this title. (Ord. G-897, 9-8-2009, eff. 9-8-2009)

15-10-2: MOST RESTRICTIVE PROVISIONS APPLY:

A. The provisions of this title shall be interpreted to be cumulative of, and to impose limitations in addition to, all other ordinances, laws, codes, and regulations in existence or which may be passed governing any subject matter of this title. To the greatest extent possible, the provisions of this title shall be construed to be consistent with, and not in conflict with, the provisions of such other ordinances, laws, codes, and regulations, and with each other, to the end that all such provisions may be given their fullest application.

B. This title is not intended to modify or repeal any other ordinance, rule, regulation, or other provision of law. Where any provision of this title imposes restrictions different from those imposed by any other ordinance, rule, regulation, or other provision of law, whichever provision is more restrictive or imposes higher protective standards for human health or the environment shall control. (Ord. G-897, 9-8-2009, eff. 9-8-2009)

15-10-3: ULTIMATE RESPONSIBILITY:

The standards set forth herein and promulgated pursuant to this title are minimum standards; therefore, this title does not intend or imply that compliance by any person will ensure that there will be no contamination, pollution, or unauthorized discharge of pollutants. (Ord. G-897, 9-8-2009, eff. 9-8-2009)

Illicit Discharge Detection and Elimination

The Illinois Environmental Protection Agency (IEPA) General NPDES Permit No. ILR40 requires DuPage County to develop, implement and enforce a program to detect and eliminate illicit discharges in the municipal separate storm sewer system (MS4). As part of this IDDE program, the County is required to effectively prohibit, through ordinance, or other regulatory mechanism, non-storm water discharges into the 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 non-permitted discharges to the separate storm sewer system, and a program to respond to such reports in a timely manner. Examples of common illicit discharges include sewage, industrial and commercial discharges not covered under another NPDES permit, chlorinated pool water, and spilled or dumped liquids, such as oil.

DuPage County Illicit Discharge Detection and Elimination Ordinance

An IDDE Ordinance for the unincorporated areas of DuPage County was adopted by the County Board on May 26, 2009. With the adoption, the IDDE Ordinance was simultaneously included as Section 16 of the County Code and into Appendix F to the DuPage County Stormwater Management Plan.

Illicit Discharge Monitoring

In an attempt to minimize equipment and staff costs associated with duplicate monitoring efforts, DuPage County has partnered with a majority of the municipal and township permit holders within the County to implement illicit discharge monitoring activities. During dry weather conditions, County staff surveys outfalls and monitors those that are actively discharging. Analysis is performed on the discharged water for a variety of parameters to determine if the flow consists of stormwater or runoff from one of the 21 allowed uses, as stated in ILR40. The monitoring plan anticipates that all of the outfalls discharging into DuPage County's waterways included in the 1:100,000 scale of the National Hydrography Dataset (NHD) will be monitored during the five-year permit cycle. You can view a map detailing the monitoring cycle.

Suspected Illicit Discharge

In a neighborhood or at a commercial site, look for pipes in disrepair or hoses that lead to a storm drain or body of water. Watch for stains, suds, unusual odors, structural damage to streets or gutters, and abnormal vegetative growth in nearby lakes and streams. Sump pumps, irrigation water, and certain other non-stormwater discharges are not illicit. On or near the water, the most obvious way to spot an illicit discharge is during dry weather. Since storm sewer systems exist to carry stormwater runoff, they are generally active during rain events. Without the presence of rain, water flowing from stormwater outfalls or along swales may carry with it bad news. Some key things to look for are: heavy foam, gray or discolored water, odors (sewage, chlorine, rotten eggs, detergent, chemical, petroleum), oily sheen, trash or unnatural debris, stained pipe, sediment rocks or vegetation and algae growth at or near the outlet. For more information on how to spot an illicit discharge, please review our brochures, A Citizens Guide to Monitoring Stormwater and More Than Rain Down the Drain.

To report a suspected illicit discharge into a municipal separate storm sewer system within DuPage County, please contact the Illicit Discharge Hotline at 630-407-6796 or by email. Please provide information regarding the outfall location, the type of discharge observed, approximate time of the discharge and contact information if you wish to receive a follow-up.

RECEIVED
MAY 29 2013
VILLAGE OF OAK BROOK
ENGINEERING DEPARTMENT

RESOLUTION

SM-0006-09

INTERGOVERNMENTAL AGREEMENT BETWEEN THE COUNTY OF DUPAGE, ILLINOIS AND VILLAGE OF OAK BROOK, ILLINOIS FOR THE IMPLEMENTATION OF THE ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM

WHEREAS, the Village of Oak Brook, Illinois ("VILLAGE") and the County of DuPage, Illinois ("COUNTY") are public agencies within the meaning of the Illinois "Intergovernmental Cooperation Act" and as authorized by Article 7, Section 10 of the Constitution of the State of Illinois; and

WHEREAS, the purposes of the "Intergovernmental Cooperation Act" and Article 7 of the Constitution of the State of Illinois include fostering cooperation among government bodies; and

WHEREAS, the United States Congress has adopted the Clean Water Act and, thereafter, the Water Quality Act to combat water pollution; and

WHEREAS, the aforesaid Federal legislation authorized the establishment of the National Pollution Discharge Elimination System ("NPDES") permitting program, under which permitting is, generally, administered by the states; and

WHEREAS, the Illinois Environmental Protection Agency ("IEPA") has issued a General National Pollution Discharge Elimination System Permit for Discharges from Small Municipal Separate Storm Sewer Systems ("Phase II") to the COUNTY and several DuPage County municipalities; and

WHEREAS, NPDES Permits require permitees to develop, implement, and adequately fund a plan to detect and address non-storm water discharges, including illegal dumping, to the storm sewer systems of the permitees; and

WHEREAS, the Illinois General Assembly has authorized the COUNTY to prevent the pollution of any stream or any body of water within the COUNTY by 55 ILCS 5/5-15015; and

WHEREAS, illicit discharges of pollutants into storm sewer systems is a significant source of water pollution to DuPage County streams and waterbodies; and

WHEREAS, the COUNTY has adopted the DuPage County Stormwater Management Plan ("PLAN"), pursuant to 55 ILCS 5/5-1062, which PLAN recognizes that improved water quality is an integral part of the proper management of storm and flood waters; and

WHEREAS, the DuPage County Stormwater Management Division has worked closely with the municipal engineers of the co-permitee municipalities to develop a program to detect, prohibit and eliminate illicit discharges into the storm sewer systems of the COUNTY and co-permittees in order to prevent water pollution, and in particular, to comply with the requirements of their General NPDES Phase II permit; and

WHEREAS, the DuPage County Stormwater Management Division and the municipal engineers of the co-permitee municipalities have developed a program that includes public education, monitoring and tracing of illicit discharges; and

WHEREAS, the IEPA encourages partnership between permittees to develop and implement aspects of the storm water management program so that redundant expenses and efforts are eliminated; and

WHEREAS, the attached AGREEMENT is intended to reduce or eliminate redundant NPDES Phase II permit program expenses and efforts by and between the COUNTY and VILLAGE; and

WHEREAS, the attached AGREEMENT is also intended to reduce and, or, prevent the pollution of any stream or any body of water within the COUNTY and VILLAGE, and to reduce and, or, prevent pollutants from entering the Waters of the United States; and

WHEREAS, improving water quality in the COUNTY and VILLAGE, and reducing or eliminating the public's exposure to water-borne pollutants is in the best interests of the COUNTY, the VILLAGE, and their residents; and

WHEREAS, the Stormwater Management Planning Committee of the DuPage County Board has reviewed and recommends approval of the attached AGREEMENT; and

NOW, THEREFORE, BE IT RESOLVED by the DuPage County Board that the attached AGREEMENT between the COUNTY and the VILLAGE is hereby accepted and approved; and

BE IT FURTHER RESOLVED that the Chairman of the DuPage County Board is hereby authorized and directed to execute the AGREEMENT on behalf of the COUNTY.

Enacted and approved this 13th day of October, 2009 at Wheaton, Illinois.

Robert J. Schillerstrom, Chairman
DuPage County Board

ATTEST:

Gary A. King, County Clerk

Ayes: 15
Absent: 3

EXHIBIT A

AN INTERGOVERNMENTAL AGREEMENT BETWEEN THE VILLAGE OF OAK BROOK AND THE COUNTY OF DUPAGE, ILLINOIS FOR THE IMPLEMENTATION OF THE ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM

THIS INTERGOVERNMENTAL AGREEMENT is entered into this 13th of October, 2009 between the Village of Oak Brook of DuPage County (hereinafter referred to as the "MUNICIPALITY") a body corporate and politic, with offices at 1200 Oak Brook Road, Oak Brook, Illinois 60523 and the County of DuPage, Illinois (hereinafter referred to as the "COUNTY") a body corporate and politic, with offices at 421 North County Farm Road, Wheaton, Illinois 60187-3978.

RECITALS

WHEREAS, the MUNICIPALITY and COUNTY are public agencies within the meaning of the Illinois "Intergovernmental Cooperation Act", as specified in Illinois Statute, 5 ILCS 220/1 *et. seq.*, and as authorized by Article 7, Section 10 of the Constitution of the State of Illinois; and

WHEREAS, the purposes of the "Intergovernmental Cooperation Act" and Article 7 of the Constitution of the State of Illinois include fostering cooperation among governmental bodies; and

WHEREAS, General National Pollutant Discharge Elimination System ("NPDES") Permit No. ILR40 authorizes discharges from Small Municipal Separate Storm Sewer Systems (MS4s); and

WHEREAS, MS4s are defined in 40 CFR 122.26(b)(16) as designated for permit authorization pursuant to 40 CFR 122.32; and

WHEREAS, the COUNTY and MUNICIPALITY each submitted an Illinois MS4 Notice of Intent ("NOI") to the Illinois Environmental Protection Agency ("IEPA") for coverage under ILR40; and

WHEREAS, the COUNTY and MUNICIPALITY noted on their respective NOI that they intend to act as cooperating permit holders to fulfill the requirements of ILR40's Illicit Discharge Detection and Elimination ("IDDE") minimum control measure; and

WHEREAS, the General NPDES Permit No. ILR40 requires development, implementation, and enforcement of a storm water management program designed to reduce the discharge of pollutants from small municipal storm sewer systems 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 Federal Water Pollution Control Act (33 U.S.C. § 1251 *et seq.*); and

WHEREAS, the storm water management program must include the minimum control measures described in the General NPDES Permit No. ILR 40, Part IV, Section B; and

WHEREAS, the General NPDES Permit No. ILR40 Part IV, Section D authorizes Sharing Responsibility; and

WHEREAS, the COUNTY agrees to develop and implement a program to monitor and trace illicit discharges into small MS4s on behalf of the MUNICIPALITY as one of the minimum control measures for its stormwater management program; and

WHEREAS, the COUNTY and the MUNICIPALITY recognize that additional benefits of illicit discharge detection and elimination include increased water quality, reduction in pollutant loads in waterways, improved wildlife habitat, and public education opportunities; and

WHEREAS, the COUNTY has adopted the DuPage County Illicit Discharge Detection and Elimination Ordinance ("ORDINANCE") to ensure the health, safety, and general welfare of the citizens of DuPage County, and protect and enhance water quality in a manner pursuant to and consistent with the Federal Water Pollution Control Act (33 U.S.C. § 1251 *et seq.*) through the regulation of non-storm water discharges to the storm drainage system; and

WHEREAS, the MUNICIPALITY has adopted Ordinance 2009-SWM-IDDE-G-897, An Ordinance Amending the Code of Ordinances to add Title 15 (Illicit Discharge Detection and Elimination Ordinance) to the Village Code of the Village of Oak Brook; and

WHEREAS, the COUNTY and the MUNICIPALITY have determined that it is in their best interest to cooperate in the enforcement and implementation of their respective ordinances; and

WHEREAS, the COUNTY and the MUNICIPALITY have determined that it is reasonable, necessary, and in the public interest and welfare for the COUNTY to conduct monitoring and tracing responsibilities associated with illicit discharge detection and elimination subject to the terms and conditions set forth herein.

NOW THEREFORE, in consideration of the foregoing preambles and the promises, terms and conditions set forth herein, and in the spirit of intergovernmental cooperation, the parties agree as follows:

1.0 RECITALS INCORPORATED.

1.1 The foregoing recitals are hereby incorporated as though fully set forth herein.

2.0 COUNTY RIGHTS AND RESPONSIBILITIES.

2.1 The COUNTY agrees to undertake the monitoring of outfalls and tracing of illicit discharges within the municipal limits of the MUNICIPALITY utilizing COUNTY personnel and equipment.

2.2 The COUNTY agrees to prepare, at its sole expense, plans, processes, and procedures for the program meeting the requirements of the NPDES permit to monitor and trace illicit discharges into the MS4 on behalf of the MUNICIPALITY.

2.3 The COUNTY agrees to obtain copies of the Notice of Intent (NOI) for each facility within the jurisdiction of the COUNTY and the MUNICIPALITY having an individual NPDES permit to discharge storm water associated with industrial activity through the IEPA for the purposes of fair and accurate monitoring and tracing.

2.4 The COUNTY agrees to monitor MS4 outfalls within the jurisdiction of the MUNICIPALITY, and to the extent it is so authorized, trace all discharges determined to be illicit with the objective of identifying the source of such illicit discharge.

2.5 The COUNTY agrees to notify the MUNICIPALITY within a reasonable time prior to the COUNTY conducting dye testing as part of tracing procedures.

2.6 The COUNTY agrees to notify the MUNICIPALITY within twenty four (24) hours of detecting an illicit discharge within the municipal limits of the MUNICIPALITY. Promptly upon completion of the COUNTY'S investigation, the COUNTY shall inform the MUNICIPALITY of the location of the illicit discharge, the time(s) and date(s) of the discharge, and any additional information that would be necessary or prudent for the MUNICIPALITY to have in order to carry out enforcement proceedings.

2.7 The COUNTY agrees to provide the MUNICIPALITY with any information required for enforcement action and prosecution by the MUNICIPALITY and produce County personnel in court, as necessary and upon adequate notice.

2.8 The COUNTY agrees to create and manage a countywide hotline for reporting illicit discharges.

2.9 The COUNTY agrees to prepare the Illicit Discharge Detection and Elimination section of the annual report on behalf of the MUNICIPALITY. The annual report is required by the IEPA and is due by June 1st of each year in accordance with General NPDES Permit No. ILR40. The COUNTY will submit a copy of the Illicit Discharge

Detection and Elimination section annual report to both the IEPA and the MUNICIPALITY.

3.0 MUNICIPALITY RIGHTS AND RESPONSIBILITIES

3.1 The MUNICIPALITY agrees to provide the COUNTY with a current storm sewer atlas. If a storm sewer atlas is not available, the MUNICIPALITY will work to provide a storm sewer atlas to the COUNTY within 6 months.

3.2 The MUNICIPALITY agrees to provide annual updates of the storm sewer atlas to the COUNTY.

3.3 The MUNICIPALITY agrees to assign to the COUNTY any rights of access to the storm drainage system under the jurisdiction of the MUNICIPALITY as the COUNTY deems necessary.

3.4 The MUNICIPALITY agrees to provide timely prosecution of any person found to be in violation of their ordinance that fail to come into compliance in accordance with the ordinance, provided that the MUNICIPALITY receives timely notification from the COUNTY that a violation exists. Further, the COUNTY agrees to provide prosecution witnesses required without cost to the MUNICIPALITY.

3.5 The MUNICIPALITY shall provide the COUNTY with documentation of any enforcement action and prosecution from the previous one (1) year for inclusion in the annual report.

4.0 GOVERNMENT REGULATION.

4.1 The COUNTY and the MUNICIPALITY shall each comply with the applicable requirements of all county, municipal, state, federal and other applicable governmental authorities, now in force, or which may hereafter be in force, pertaining to the performance of this Agreement, with the most stringent standards governing.

5.0 MISCELLANEOUS TERMS.

5.1 This Agreement shall be approved by ordinance or resolution and executed for and on behalf of the COUNTY and MUNICIPALITY.

5.2 Certified copies of each party's respective adopting ordinance or resolution shall be attached hereto and made a part hereof as evidence of the authority exercised by the undersigned officers of the COUNTY and MUNICIPALITY.

5.3 This Agreement shall become effective upon the date set forth above, and continue in full force and effect unless terminated in accord with Paragraph 5.5, below.

5.4 This Agreement may be amended or modified only by written instrument duly approved and signed by both parties to the Agreement.

5.5 Either party may give notice of its intent to terminate this Agreement in accord with Paragraphs 8.1 and 8.2 below.

5.6 This Agreement may be executed in one or more counterparts, each of which shall for all purposes be deemed to be an original and all of which shall constitute the same instrument.

5.7 The headings of the paragraphs and subparagraphs of this Agreement are inserted for convenience of reference only and shall not be deemed to constitute part of this Agreement or to affect the construction hereof.

6.0 ENTIRE AGREEMENT.

6.1 This Agreement represents the entire agreement between the COUNTY and MUNICIPALITY with respect to the Illicit Discharge Detection and Elimination Program and supersedes all prior negotiations, representations or agreements, either written or oral.

7.0 NOTICES REQUIRED UNDER THIS AGREEMENT.

7.1 All notices required to be given under the terms of this Agreement shall be in writing and either (a) served personally during regular business hours; (b) served by facsimile transmission and e-mail during regular business hours; or (c) served by certified or registered mail, return receipt requested, properly addressed with postage prepaid. Notices served upon the MUNICIPALITY shall be directed to:

Village of Oak Brook
Attn: Village Engineer
1200 Oak Brook Road
Oak Brook, IL 60523
Fax: 630-368-5128
Email: engineering@oak-brook.org

Notices served upon the COUNTY shall be directed to:

DuPage County Stormwater Management Division
Attn: Director, Stormwater Management
421 N. County Farm Road
Wheaton, IL 60187-3978
Fax: 630-407-6701
E-mail: Water.Quality@dupageco.org

Notices served personally or by facsimile transmission and e-mail shall be effective upon receipt, and notices served by mail shall be effective upon receipt as verified by the United States Postal Service. Each party may designate a new location for service of notices by serving notice thereof in accordance with the requirements of this paragraph.

8.0 TERM OF AGREEMENT

8.1 As will be used for staff and budget requirements, the COUNTY and the MUNICIPALITY agree to not change enforcement status within the term of this Agreement.

8.2 This agreement will expire on the 31st of March, 2013. This agreement can be extended for additional NPDES permit cycles at the mutual agreement of both parties. The permit cycle is defined for a five (5) year period beginning one (1) year before the expiration date of the current NPDES permit for the MUNICIPALITY and continues until one (1) year before the expiration of the subsequent NPDES five (5) year permit.

9.0 SEVERABILITY

9.1 In the event any provision of this Agreement shall be held to be unenforceable or void, such provision shall be deleted and all other provisions shall remain in full force and effect to the fullest extent allowed by law and equity.

10.0 GOVERNING LAW

10.1 This Agreement will be governed by the laws of the State of Illinois as to both interpretation and performance. The forum for resolving disputes concerning the party's respective performance, or failure to perform, under this Agreement, will be the judicial circuit court for DuPage County.

IN WITNESS WHEREOF, the parties to this Agreement set their hands and seals as of the date first written above.

VILLAGE OF OAK BROOK

BY: _____
John W. Craig
Village President

ATTEST BY: _____
Charlotte Pruss
Village Clerk

COUNTY OF DUPAGE

BY: _____
Robert J. Schillerstrom
Chairman, DuPage County Board

ATTEST BY: _____
Gary A. King
County Clerk

OBJECTID	OUTFALLID	NORTHING	EASTING	LATITUDE	LONGITUDE	MATERIAL	GEOMETRY	INCHES	GRATE	FES	POND	IN_DUPAGE	WATERSHED	OBJECTID_1	OUTFALLKEY	MONITOR_DA	INSPECTOR	LOCATED	SUBMERGED	DISCHARGE	COLOR	ODOR	TURBIDITY	FLOATABLES	SAMPLED	pH	TEMP	CONDUCTANC	SALINITY	AMMONIA	SURFACTANT	FLOURIDE	COMMENTS_1
5262	8773540-0952497	1877354.00	1095249.70	41.82	-87.93	RCP	UNK	54	0	1	0	1	SCSC	40.000000	8773540-0952497	7/20/2009		Yes		None	None	None	None	None	No	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
9650	8792656-0958438	1879262.62	1095845.04	41.83	-87.92			15			1	1	SCSC	0.000000												0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
9653	8793165-0847457	1879313.72	1084747.16	41.83	-87.96			36			1	1	SCGC	0.000000												0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
9654	8793365-0847350	1879334.43	1084736.11	41.83	-87.96			18			1	1	SCGC	0.000000												0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
9655	8794045-0853824	1879401.76	1085383.45	41.83	-87.96			12			1	1	SCGC	0.000000												0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
9656	8795092-0859109	1879506.63	1085913.03	41.83	-87.96			12			1	1	SCGC	0.000000												0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
9652	8795574-0843125	1879557.67	1084312.69	41.83	-87.97			18			1	1	SCGC	0.000000												0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
9657	8797564-0868412	1879753.34	1086843.00	41.83	-87.96			36			1	1	SCGC	0.000000												0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
9658	8797631-0868594	1879760.74	1086860.83	41.83	-87.96			21			1	1	SCGC	0.000000												0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
9242	8800190-0806116	1880019.00	1080611.60	41.83	-87.98	RCP	C	21	0	1	1	1	SCGC	0.000000												0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
9243	8800203-0802836	1880020.30	1080283.60	41.83	-87.98	RCP	C	18	0	1	1	1	SCGC	0.000000												0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
9244	8800208-0806223	1880020.80	1080622.30	41.83	-87.98	RCP	HE	18	0	1	1	1	SCGC	0.000000												0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
9651	8800210-0839686	1880020.14	1083967.50	41.83	-87.97			12			1	1	SCGC	0.000000												0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
9497	8801468-0806633	1880146.77	1080663.34	41.83	-87.98	RCP	HE	48	0	0	1	1	SCGC	0.000000												0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
9245	8802555-0807202	1880255.50	1080720.20	41.83	-87.98	OTHER	UNK	12	0	0	1	1	SCGC	0.000000												0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
9496	8803773-0807068	1880377.30	1080706.87	41.83	-87.98	RCP	HE	16	0	1	1	1	SCGC	0.000000												0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
9250	8804682-0805731	1880468.20	1080573.10	41.83	-87.98	OTHER	UNK	10	0	0	1	1	SCGC	0.000000												0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
9254	8805719-0807406	1880571.90	1080740.60	41.83	-87.98	RCP	VE	15	0	1	1	1	SCGC	3465.000000	8805719-0807406	9/24/2015	MBF, JO, GK, IM	Yes	Partially	None	Clear	None	None	None	No	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
9257	8809262-0807568	1880926.20	1080756.80	41.83	-87.98	RCP	HE	21	0	1	1	1	SCGC	0.000000												0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
9659	8809356-0864601	1880932.65	1086461.73	41.83	-87.96			36			1	1	SCGC	3710.000000	8809356-0864601	8/3/2016	mbf	Yes	Partially	None						0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	eroded. no visible pipe
9258	8811461-0803677	1881146.10	1080367.70	41.83	-87.98	RCP	C	18	0	1	0	1	SCGC	0.000000												0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
5401	8818817-0862125	1881881.70	1086212.50	41.83	-87.96	OTHER	UNK	42	0	0	1	1	SCGC	2802.000000	8818817-0862125	9/24/2015	WTS	Yes	No	Substantial	Clear	None	None	None	No	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
9268	8819699-0774746	1881969.90	1077474.60	41.83	-87.99	RCP	C	48	0	1	1	1	SCGC	3466.000000	8819699-0774746	10/1/2015	RPS	Yes	Partially	None		None	None	None	No	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
9498	8819773-0774890	1881977.31	1077489.06	41.83	-87.99	RCP	C	12	0	1	1	1	SCGC	3467.000000	8819773-0774890	10/1/2015	RPS	Yes	Partially	None		None	None	None	No	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
9270	8823359-0781241	1882335.90	1078124.10	41.83	-87.99	OTHER	UNK	12	0	0	1	1	SCGC	0.000000												0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
5408	8825155-0893136	1882515.50	1089313.60	41.83	-87.95	OTHER	UNK		0	0	0	1	SCGC	0.000000												0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
9274	8830968-0784885	1883096.80	1078488.50	41.84	-87.99	CMP	C	24	0	0	1	1	SCGC	3468.000000	8830968-0784885	10/1/2015	RPS	Yes	Partially	None		None	None	None	No	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
9277	8833645-0855945	1883364.50	1085594.50	41.84	-87.96	RCP	C	30	0	1	1	1	SCGC	3460.000000	8833645-0855945	9/24/2015	RPS	Yes	Partially	None		None	None	None	No	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
9278	8833697-0788321	1883369.70	1077832.10	41.84	-87.99	RCP	C	15	0	1	1	1	SCGC	3478.000000	8833697-0788321	10/1/2015	RPS	Yes	Partially	None		None	None	None	No	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
9280	8835353-0785392	1883535.30	1078539.20	41.84	-87.99	RCP	C	24	0	0	1	1	SCGC	3470.000000	8835353-0785392	10/1/2015	RPS	Yes	Partially	None		None	None	None	No	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
9281	8836362-0829964	1883636.20	1082996.40	41.84	-87.97	RCP	C	48	0	1	1	1	SCGC	3463.000000	8836362-0829964	9/24/2015	RPS	Yes	Partially	None		None	None	None	No	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
9282	8837473-0831599	1883747.30	1083159.90	41.84	-87.97	RCP	C	18	0	1	0	1	SCGC	3461.000000	8837473-0831599	9/24/2015	WTS	Yes	No	None		None	None	None	No	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
9284	8838075-0835844	1883807.50	1083584.40	41.84	-87.97	RCP	C	30	0	1	1	1	SCGC	3464.000000	8838075-0835844	9/24/2015	RPS	Yes	No	None		None	None	None	No	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
9286	8839711-0835687	1883971.10	1083568.70	41.84	-87.97	RCP	C	18	0	1	1	1	SCGC	3462.000000	8839711-0835687	9/24/2015	WTS	Yes	Partially	None		None	None	None	No	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
5439	8839835-0890025	1883983.50	1089002.50	41.84	-87.95	OTHER	UNK		0	0	0	1	SCGC	2796.000000	8839835-0890025	9/24/2015	RPS	No		None		None	None	None	No	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
9287	8840669-0791984	1884066.90	1079198.40	41.84	-87.98	OTHER	UNK		0	0	1	1	SCGC	3477.000000	8840669-0791984	10/1/2015	RPS	No		None		None	None	None	No	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
9623	8841057-0803489	1884101.18	1080351.93	41.84	-87.98			10			0	1	SCGC	0.000000												0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
9290	8841133-0845140	1884113.30	1084514.00	41.84	-87.97	RCP	C	18	0	1	1	1	SCGC	3458.000000	8841133-0845140	9/24/2015	RPS	Yes	Partially	None		None	None	None	No	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
9292	8842630-0843953	1884263.00	1084395.30	41.84	-87.97	RCP	C	36	0	1	1	1	SCGC	3457.000000	8842630-0843953	9/24/2015	RPS	Yes	Partially	None		None	None	None	No	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
5450	8842853-0875242	1884285.30	1087524.20	41.84	-87.95	RCP	C	36	0	1	1	1	SCGC	2797.000000	8842853-0875242	9/24/2015	RPS	Yes	Partially	None		None	None	None	No	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
5459	8845662-0861793	1884566.20	1086179.30	41.84	-87.96	OTHER	R	30	0	1	1	1	SCGC	2800.000000	8845662-0861793	9/24/2015	WTS	Yes	Partially	None		None	None	None	No	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
9300	8847217-0798034	1884721.70	1079803.40	41.84	-87.98	RCP	C	12	0	0	0	1	SCGC	3475.000000	8847217-0798034	10/1/2015	RPS	Yes	No	None		None	None	None	No	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
9301	8847434-0809238	1884743.40	1080923.80	41.84	-87.98	RCP	C	12	0	0	1	1	SCGC	3471.000000	8847434-0809238	10/1/2015	RPS	Yes	No	None		None	None	None	No	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
9303	8847574-0809243	1884757.40	1080924.30	41.84	-87.98	RCP	C	12	0	0	1	1	SCGC	3472.000000	8847574-0809243	10/1/2015	RPS	Yes	No	None		None	None	None	No	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
9304	8847703-0797869	1884770.30	1079786.90	41.84	-87.98	CMP	C	15	0	0	0	1	SCGC	3474.000000	8847703-0797869	10/1/2015	RPS	Yes	No	None		None	None	None	No	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
9305	8847857-0806517	1884785.70	1080651.70	41.84	-87.98	RCP	C	12	0	1	0	1	SCGC	3473.000000	8847857-0806517	10/1/2015	RPS	Yes	No	None		None	None	None	No	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
9306	8848045-0760240	1884804.50	1076024.00	41.84	-88.00	RCP	UNK	12	0	0	0	1	SCGC	0.000000												0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
9643	8856942-0941275	1885693.10	1094124.35	41.84	-87.93			48		1		1	SCSC	0.000000												0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
9642	8871376-0923353	1887134.02	1092337.43	41.85	-87.94			36				1	SCSC	0.000000												0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
5614	8872238-0923459	1887223.80	1092345.90	41.85	-87.94	CMP	C	36	0	0	0	1	SCSC	151.000000	8872238-0923459	7/13/2009	AN/GW	Yes		None	None	None	None	None	No	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
5675	8877151-0925586	1887715.10	1092558.60	41.85	-87.94	OTHER	UNK	6	0	0	0	1	SCSC	147.000000	8877151-0925586	7/13/2009	AN/GW	Yes		None	None	None	None	None	No	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
9641	8878852-0927362	1887883.60	1092732.98	41.85	-87.94			6				1	SCSC	0.000000												0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
5707	8880235-0929160	1888023.50	1092916.00	41.85	-87.93	OTHER	UNK	18	0	0	0	1	SCSC	144.000000	8880235-0929160	7/13/2009	AN/GW	Yes		None	None	None	None	None	No	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
5747	8883770-0931593	1888377.00	1093159.30	41.85	-87.93	RCP	C	36	0	1	0	1	SCSC	140.000000	8883770-0931593	7/13/2009	AN/GW	Yes		None	None	None	None	None	No	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
5776	8887405-0901625	1888740.50	1090162.50	41.85	-87.94	RCP	C	42	0	1	0	1	SCSC	125.000000	8887405-0901625	7/13/2009	AN/GW	Yes		None	None	None	None	None	No	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
9636	8887974-0899976	1888795.79	1090002.18	41.85	-87.95			15				1	SCSC	0.000000												0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
9624	8887978-0866858	1888794.88	1086688.18	41.85	-87.96			15			0	1	SCOB	3707.000000	8887978-0866858	8/3/2016	RPS	No								0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
9640	8892017-0926217	1889199.46	1092621.57	41.85	-87.94			10				1	SCSC	0.000000												0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
5796	8892704-0926264	1889270.40	1092626.40	41.85	-87.94	RCP	C	21	1	1	0	1	SCSC	132.000000	8892704-0926264	7/13/2009	AN/GW	Yes		None	None	None	None	None	No	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
9635	8893529-0897545	1889351.63	1089757.79	41.85	-87.95			15				1	SCSC	0.000000												0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
5801	8894400-0872786	1889440.00	1087278.60	41.85	-87.96	DIP	C	18	0	1	0	1	SCOB	694.000000	8894400-0872786	10/19/2010		Yes		None	None	None	None	None	No	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	dry, north bank
9639	8894621-0925384	1889461.88	1092537.05	41.85	-87.94			6				1	SCSC	0.000000												0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
5807	8894896-0886717	1889489.60	1088671.70	41.85	-87.95	RCP	C	21	0	1	1	1	SCOB	698.000000	8894896-0886717	10/19/2010		Yes		None	None	None	None	None	No	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	filled from creek, north bank
5822	8896394-0907880	1889639.40	1090788.00	41.85	-87.94	RCP	C	12	0	0	0	1	SCSC	126.000000	8896394-0907880	7/13/2009	AN/GW	Yes		None	None	None	None	None	No	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
9634	8897479-0892944	1889744.86	1089294.19	41.85	-87.95			21				1	SCSC	0.000000												0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
9638	8897587-0913691	1889753.54	1091370.18	41.85	-87.94			12				1	SCSC	0.000000												0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
9633	8898065-0892586	1889805.85	1089258.11	41.85	-87.95			42				1	SCSC	0.000000												0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
5827	8898172-0917064	1889817.20	1091706.40	41.85	-87.94	RCP	C	21	0	1	0	1	SCSC	131.000000	8898172-0917064	7/13/2009	AN/GW	Yes		None	None	None	None	None	No	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
9637	8898249-0909578	1889818.65	1090959.94	41.85	-87.94			15				1	SCSC	0.000000												0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
5830	8898291-0916526	1889829.10	1091652.60	41.85	-87.94	RCP	C	15	0	1	0	1	SCSC	130.000000	8898291-0916526	7/13/2009	AN/GW	No		None	None	None	None	None	No	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
9632	8898423-0892131	1889837.67	1089210.47	41.85	-87.95			42				1	SCSC	0.000000												0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
5855	8912282-0887748	1891228.20	1088774.80	41.86	-87.95	DIP	C	15	1	0	0	1	SCSC	114.000000	8912282-0887748	7/13/2009	AN/GW	Yes		None	None	None	None	None	No	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	

APPENDIX 26

Compliance Documentation – Construction Site Runoff Control

Chapter 7
SOIL EROSION AND SEDIMENT CONTROL REQUIREMENTS

9-7-1: SOIL EROSION AND SEDIMENT CONTROL GENERAL REQUIREMENTS:

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:

1. The susceptibility of the existing soils to erosion.
2. Existing native and mature vegetation.
3. Existing natural or established drainageways.
4. The natural contours of the land.
5. Development phasing.
6. Emphasis first on erosion control, then sediment control.
7. Winter shutdown.

B. Temporary erosion and sediment control measures shall be functional and consistent with this chapter and the NPDES stormwater permit in effect prior to land disturbance activities.

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.

D. Soil stabilization measures shall include the use of temporary or permanent measures. (Ord. G-976, 7-24-2012)

9-7-2: SOIL EROSION AND SEDIMENT CONTROL PLAN DESIGN CRITERIA:

A. Channels and adjoining properties shall be protected from erosion and sedimentation. Where concentrated flow leaves a development site, effective energy dissipation shall be placed on site at

discharge locations.

B. Erosion control blanket shall be required on all interior site runoff storage facilities side slopes between normal water level and high water level.

C. Erosion control blanket to be placed in wetland or buffer shall be one hundred percent (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.

D. Land disturbance activities in streams shall be avoided, where possible. If disturbance activities are unavoidable, the following requirements shall be met:

1. Temporary stream crossings shall be constructed of nonerosive material.

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 forty eight (48) hours after channel disturbance is completed.

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:

1. The use of straw bales as a filter barrier or ditch check is prohibited.

2. Silt fences can be used to intercept sheet flow only. Silt fences cannot be used as velocity checks in ditches or swales, nor can they be used where they will intercept concentrated flows.

3. Ditch checks shall be constructed using nonerodible materials or prefabricated devices. Straw or hay bales are not acceptable.

4. Reinforced silt fences (normal silt fence reinforced with woven wire fencing) can be used to intercept sheet flow runoff from disturbed areas greater than one acre.

5. All undisturbed wetland, floodplain, 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:

a. A dual row of silt fence, and a row of orange construction fence, or

b. A dual silt fence barrier, with one of the fences being of high visibility material.

c. Alternative practices offering comparable protection to wetland, floodplain, waters, and buffer areas may be used to prevent impact where applicable.

d. Additional soil erosion and sediment control measures may be required to adequately protect these sites.

F. Disturbed areas with drainage areas of one acre or greater, but fewer than five (5) acres shall, at a minimum, be protected by a sediment trap or equivalent control measure at a point downslope of the disturbed area.

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 subsection H of this section, with a perforated filtered riser pipe or equivalent control measure at a point downslope of the disturbed area.

H. Sediment basins 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 on site 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 one year, the one 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.

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.

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).

K. All discharges to undisturbed area, stabilized area or watercourse shall be designed at a nonerosive velocity corresponding to the soil and vegetative cover of the undisturbed area.

L. All storm sewers, storm drain inlets and culverts that are, or will be functioning during construction shall be protected by sediment and erosion control measures. The sediment and erosion control measures shall be maintained until the site is stabilized.

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.

N. All temporary and permanent stormwater conveyance channels, including ditches, swales, diversions, and the outlets of all channels and pipes shall be designed and constructed to withstand velocities that have the potential to cause damage or soil erosion.

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.

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).

Q. To the extent possible, soil stockpile locations shall be shown on the soil erosion and sediment control plan.

R. Soil stockpiles shall not be located in a drainageway, floodplain area or a designated buffer, unless otherwise approved, under specific conditions to be established by the director or administrator.

S. Stockpiles to remain in place more than three (3) days shall be provided with soil erosion and sediment control measures.

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.

U. All temporary erosion and sediment control measures shall be removed within thirty (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.

V. Design criteria, standards and specifications for erosion and sediment control shall be taken from one of the following sources:

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".

2. Other: Other design criteria, standards and specifications, provided prior written approval is obtained from the administrator or director.

W. Applicant with land disturbing activities greater than one acre shall provide a statement acknowledging that the site complies with the IEPA NPDES ILR10 permit, if applicable. (Ord. G-976, 7-24-2012; Ord. G-1003, 6-11-2013)

9-7-3: INSPECTION:

Inspections, remedial work, and recordkeeping 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. ILR10 for sites that fall within that jurisdiction. (Ord. G-976, 7-24-2012)

APPENDIX 27

Compliance Documentation – Post-Construction Runoff Control

Chapter 8
POSTCONSTRUCTION BEST MANAGEMENT PRACTICES

9-8-1: PCBMPs REQUIRED:

PCBMPs are required to treat the stormwater runoff for pollutants of concern and reduce runoff volume for all developments with the exceptions and exclusions noted below. Upon a documented finding by the director or administrator that providing PCBMPs is impractical, then the appropriate PCBMP fee in lieu shall be paid by the applicant in lieu of providing full or partial PCBMPs.

A. PCBMPs are waived for the following developments:

1. When comparing the impervious area of the predevelopment site to the with-development impervious area of the same development site, excluding any areas of the development site for which PCBMPs have already been provided and maintained, and the net new impervious area is less than two thousand five hundred (2,500) square feet in the aggregate since April 23, 2013; or

2. The development is limited to the resurfacing of an existing roadway; or reconstruction of an existing roadway with less than two thousand five hundred (2,500) square feet of net new impervious area per quarter mile being added compared to the predevelopment condition; or the replacement of an existing culvert or bridge; or

3. The development is a regional stormwater management development or a flood control development which are also considered to be PCBMPs; or

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

5. The development is limited to the construction, or reconstruction, of a pedestrian walkway/bike path, in which the pedestrian walkway/bike path shall not exceed sixteen feet (16') in width, including shoulders; and is being constructed for general public use; or

6. The development is limited to the modification of an existing stormwater management facility to incorporate best management practices which in itself is considered PCBMPs; or

7. The development is a water or sewer improvement development; or

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 buildings, substations, pads, parking lots or other associated utility support facilities.

B. The following are prohibited from providing on site infiltration PCBMPs:

1. Fueling and vehicle maintenance areas.

2. Areas within four hundred feet (400') of a known community water system well as specified, or within one hundred feet (100') 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.

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.

4. Development in soils classified as hydrologic soils group A by the NRCS.

5. Developments over soils with the seasonally high groundwater table within two feet (2') of the surface. (Ord. G-1003, 6-11-2013)

9-8-2: DESIGN CRITERIA:

A. PCBMPs shall provide volume and pollutant control using one of the following practices:

1. Infiltration of 1.25 inches for all new impervious surfaces; or

2. Native vegetated wetland bottom site runoff storage basin; or

3. PCBMPs not constructed pursuant to subsection A1 or A2 of this section shall be constructed in accordance with subsection C of this section.

B. Design criteria may be taken from the DuPage County ordinance appendix E, "Water Quality Best Management Practices Technical Guidance Manual", or approved equivalent.

C. If the practices listed under subsection A1 or A2 of this section are not utilized, then volume control and pollutant control shall be provided separately for all new impervious surfaces in accordance with the following criteria:

1. The required volume control shall be calculated as the product of the new impervious area and a 1.25 inch rainfall event. No abstractions are taken on the rainfall depth.

2. The volume calculated shall be subtracted from any volume of site runoff storage that is also required.

3. A control structure or underdrain may be used provided that the draw down time is between forty eight (48) and ninety six (96) hours.

4. When a trench or other excavation is used, the expected void space (typically no greater than 36 percent) within the uniformly graded stone, sand or aggregate portion of the fill material may

be included in the volume calculation. Silt sized particles ($^{1}/_{16}$ millimeter) 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.

5. The bottom/invert of the trench shall be set above the seasonally high water table.

6. Applicants 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. (Ord. G-1003, 6-11-2013)

9-8-3: OFF SITE LOCATION:

Required PCBMPs 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 six (6) major watershed divisions within the county are identified in subsection 9-1-5B of this title. (Ord. G-1003, 6-11-2013)

Chapter 1
PUBLIC WORKS REGULATIONS

8-1-1: DEFINITIONS:

CERTIFICATED AREA OF OAK BROOK UTILITY COMPANY: Those areas of land that have received certificates of convenience and necessity from the Illinois commerce commission for water service from the Oak Brook utility company.

DAY: A calendar day.

INFECTIOUS DISEASE: Dutch elm disease, elm yellows, oak wilt, pine wilt or any other disease infecting deciduous or coniferous trees.

LANDSCAPE WATERING: Outdoor use of water for sprinkling, watering, or irrigating shrubbery, trees, lawns, grass, ground covers, plants, vines, gardens, vegetables, flowers or any other vegetation.

LOT: A designated parcel of land in a subdivision or other parcel of land intended for transfer of ownership or for building development as a complete and individual unit.

NOXIOUS WEEDS: Marijuana, giant ragweed, common ragweed, Canada thistle, perennial sowthistle, musk thistle, perennial members of the Sorghum genus, including Johnsongrass, Sorghum alum, and Kudzu, or other weeds of a like kind.

PARKWAY: That part of a public way between the paved roadway portion and right of way line, in the case of a public right of way, or in the case of a private street, the easement line.

PRACTICABLE: That which is performable, feasible or possible, rather than that which is simply convenient.

PUBLIC RIGHT OF WAY: Any land dedicated to the public for access and utility purposes including, but not limited to, streets and alleys.

PUBLIC UTILITY EASEMENT: Any designated parcel of land on, over or under which a liberty, privilege, or advantage for use of land is granted to the village of Oak Brook and those public or private utility companies operating under franchise or agreement from the village of Oak Brook.

PUBLIC WAY: Public rights of way, public street areas by common usage, public bicycle or pedestrian paths, or access easement areas granted to the village. Public ways do not include right of way under the jurisdiction of the state of Illinois or DuPage County.

SOUND ENGINEERING JUDGMENT: A decision(s) consistent with generally accepted engineering principles, practices and experience.

UTILITY FACILITY: All structures, devices, objects, and materials of utility providers (including, but not limited to, track and rails, wires, ducts, fiber optic cable, antennas, vaults, boxes, manholes, equipment enclosures, cabinets, pedestals, poles, conduits, grates, covers, pipes, sewers, cables, transformers and appurtenances thereto) located on, over, above, along, upon, under, across, or within public ways. For purposes of this title, the term "utility facility" shall not include any utility facility

owned or operated by the village.

UTILITY PROVIDER: The individual or entity owning or operating any utility facility.

WATER: For the purpose of this chapter, the term "water" shall mean water provided by the village of Oak Brook water system.

WATER SERVICE: That part of the water system consisting of a water service connection and water service extension.

WATER SERVICE CONNECTION: That part of the water system consisting of a service pipe extending from the water main to and including a shutoff valve or curb stop (b-box).

WATER SERVICE EXTENSION: That part of the water system consisting of a service pipe from the water service pipe shutoff valve or curb stop to the water meter located on the premises being served.

WORK: Any construction, access to construction site,installation, alteration, excavation, maintenance or repair. Work includes planting, cutting, pruning or removing trees or shrubs. (Ord. G-637, 7-13-1999; Ord. G-759, 9-28-2004; Ord. G-846, 11-13-2007)

8-1-2: PURPOSE; SCOPE; JURISDICTION:

The purpose of this title is to set forth rules, regulations and standards to regulate and control work in public ways and public utility easements and all sewer, water distribution, utility, street and driveway approach construction in the village in order to promote the public health, safety, convenience and general welfare within the village.

The regulations and requirements herein are established in order to provide for the orderly and harmonious development of the village, for the coordination of construction, and to secure a uniform system of utilities, improvements and services, constructed to standards intended to provide safe and dependable service to the public. (Ord. G-637, 7-13-1999)

8-1-3: PUBLIC WORKS CONSTRUCTION STANDARDS:

The village board may adopt, from time to time, public works construction standards upon the recommendation of the village engineer and village manager. The public works construction standards shall contain construction regulations and standards, and engineering permit instructions and conditions. All work in public ways shall be designed and constructed substantially in compliance with the public works construction standards.

The village shall use sound engineering judgment when administering the public works construction standards and the village engineer may vary the public works construction standards upon the approval of the village manager in specific cases which are in harmony with the spirit of the standards and when deemed appropriate. Nothing herein shall be construed to limit the ability of the village to regulate its public ways for the protection of the public health, safety and welfare. (Ord. G-637, 7-13-1999; Ord. G-846, 11-13-2007)

8-1-4: APPLICABILITY OF PROVISIONS; PERMIT REQUIRED; EXCEPTIONS:

A. Applicability: Within the village, all work within public ways and public utility easements shall meet the requirements of and be carried out in compliance with this title and other pertinent village ordinances.

B. Permit Required: It shall be unlawful to proceed with any work within public ways and public utility easements or with any water service extension construction without first having secured a permit therefor from the village.

C. Application For Permit: Application for a permit under this title shall be on forms furnished by the village for that purpose and shall include a description of the nature and location of the work to be done and such other information as required by the village. No work shall commence until such permit has been issued by the village.

A copy of the permit issued under this title and a copy of the approved plans and specifications shall be kept at the location of the work at all times while such work is in progress.

D. Insurance Required: Each applicant for a permit required for work within public ways and public utility easements shall carry adequate liability and property damage insurance as set forth in title 1, chapter 8 of this code.

The legal liability of the permittee to the village and any person for any of the matters that are the subject of the insurance policies or self-insurance required by this section shall not be limited by such insurance policies or self-insurance or by the recovery of any amounts thereunder.

E. Village Review Of Permit Applications: Completed permit applications, containing all required documentation, shall be examined by the village engineer within a reasonable time after filing. If the application does not conform to the requirements of applicable ordinances, codes, laws, rules, and regulations, the village engineer shall reject such application in writing, stating the reasons therefor. If the village engineer is satisfied that the proposed work conforms to the requirements of this title and applicable ordinances, codes, laws, rules, and regulations, the village engineer shall issue a permit therefor as soon as practicable. In all instances, it shall be the duty of the applicant to demonstrate, to the satisfaction of the village engineer, that the construction proposed under the application shall be in full compliance with the requirements of this title.

F. Applicant's Duty To Update Information: Throughout the entire permit application review period and the construction period authorized by the permit, any amendments to information contained in a permit application shall be submitted by the permittee in writing to the village within thirty (30) days after the change necessitating the amendment. (Ord. G-637, 7-13-1999; Ord. G-846, 11-13-2007)

8-1-5: COMMENCEMENT AND COMPLETION OF WORK:

A. Work Commenced Within Ninety Days: Work for which a permit has been issued shall commence within ninety (90) days after the issuance of the permit therefor or within such extended period of time as determined by the appropriate village official upon good cause shown. If the work is not so commenced, the permit shall automatically be terminated, the fee forfeited, and the performance security returned. Applicants for such terminatedpermits may reapply and such an application will be treated as a new application.

B. Expiration; Extension Of Time: Permits issued in accordance with the provisions of this chapter shall expire at the end of the period of time as set forth in the permit. If the permittee shall be unable to complete the work within the time period, he/she shall, prior to the expiration of the permit, present in writing to the village a request for an extension of time, setting forth therein the reasons for the requested extension. If in the opinion of the village engineer such an extension is necessary and not contrary to the public interest, he/she may grant the permittee additional time for completion of the work. (Ord. G-637, 7-13-1999)

8-1-6: LOCATION OF EXISTING UTILITIES OR UTILITY FACILITIES:

Any applicant or permittee proposing to perform work or construct utility facilities in a public way or public utility easement shall contact JULIE and ascertain the presence and location of existing utilities or utility facilities in the area. The village will make its records available to the applicant. When notified of an excavation or when requested by the village or by JULIE, a utility provider shall locate and physically mark its underground utility facilities within forty eight (48) hours, excluding weekends and holidays, in accordance with the Illinois underground facilities damage prevention act[1].

Any person who damages any utility or utility facility through negligence or without having called for a location of the utility or utility facility shall be charged for the repair or reinstallation of the utility or utility facility. (Ord. G-637, 7-13-1999; Ord. G-846, 11-13-2007)

8-1-7: REMOVAL, RELOCATION OR MODIFICATION OF FACILITIES:

A. Notice: Within ninety (90) days following written notice from the village, a utility provider shall, at its own expense, temporarily or permanently remove, relocate, change or alter the position of any utility facility within public ways or public utility easements whenever the village has determined that such removal, relocation, change or alteration is reasonably necessary for the construction, repair, maintenance, or installation of any village improvement in or upon public ways or public utility easements.

The village retains the right and privilege to cut or move any utility facility located within public ways or public utility easements as the village may determine to be necessary, appropriate or useful in response to any public health or safety emergency. If circumstances permit, thevillage

shall attempt to notify the utility provider, if known, prior to cutting or removing a utility facility and shall notify the utility provider, if known, after cutting or removing such utility facility.

B. Removal Of Unauthorized Facilities: Within thirty (30) days following written notice from the village, any utility provider that owns, controls, or maintains any unauthorized utility facility or related appurtenances within public ways shall, at its own expense, remove all or any part of such utility facility or appurtenances from the public ways. A utility facility is unauthorized and subject to removal in the following circumstances:

1. Upon expiration or termination of the permittee's license or franchise, unless otherwise permitted by applicable law; or

2. If the utility facility was constructed or installed without the prior grant of a license or franchise, if required; or

3. If the utility facility was constructed or installed without prior issuance of a required permit in violation of this title; or

4. If the utility facility was constructed or installed at a location not permitted by the permittee's license or franchise or permit.

C. Abandonment Of Facilities: Upon abandonment of a utility facility within public ways, the utility provider shall notify the village within ninety (90) days. Following receipt of such notice, the village may direct the utility provider to remove all or any portion of the utility facility if the village engineer determines that such removal will be in the best interest of the public health, safety and welfare. In the event that the village does not direct the utility provider that abandoned the utility facility to remove it, by giving notice of abandonment to the village, the abandoning utility provider shall be deemed to consent to the alteration or removal of all or any portion of the utility facility by the village, another utility provider or person. (Ord. G-637, 7-13-1999; Ord. G-846, 11-13-2007)

8-1-8: CHANGE OF UTILITY PROVIDER OWNERSHIP, OWNER'S IDENTITY OR LEGAL STATUS:

A. Notification Of Change: A utility provider shall notify the village no less than thirty (30) days prior to the transfer of ownership of any utility facility in public ways or public utility easements or change in identity of the utility provider. The new owner of the utility provider or the utility facility shall have all the obligations, duties and privileges enjoyed by the former owner under any permit, if any, and shall comply with all applicable laws, ordinances, rules and regulations, including this title, with respect to the work and utility facilities in public ways.

B. Amended Permit: A new utility provider or utility facility owner shall request that any current permit be amended to show current ownership. If the new owner fails to have a new or amended permit issued in its name, the new owner shall be presumed to have accepted, and agreed to be bound

by, the terms and conditions of the permit if the new owner uses the utility facility or allows it to remain on public ways.

C. Insurance And Bonding: All required insurance coverage or bonding must be changed to reflect the name of the new utility provider owner upon transfer. (Ord. G-637, 7-13-1999; Ord. G-846, 11-13-2007)

8-1-9: MAINTENANCE, CLEANUP AND RESTORATION OF FACILITIES:

A. Maintenance Of Facilities And Emergency Maintenance: Facilities on, over, above, along, upon, under, across or within public ways or public utility easements are to be maintained by or for the utility or owner in a manner satisfactory to the village and at the utility's or owner's sole expense.

B. Emergency Situations: Emergencies may justify noncompliance with normal procedures for securing a permit:

1. If an emergency creates a hazard on the traveled portion of the public way, the utility or owner shall take immediate steps to provide all necessary protection for traffic on the public way including the use of signs, lights, barricades or flaggers. If a hazard does not exist on the traveled way, but the nature of the emergency is such as to require the parking on the shoulder of equipment required in repair operations, adequate signs and lights shall be provided. Parking on the shoulder in such an emergency will only be permitted when no other means of access to the facility is available.

2. In an emergency, the utility or owner shall, as soon as possible, notify the Village Engineer of the emergency, informing him as to what steps have been taken for protection of the traveling public and what will be required to make the necessary repairs. If the nature of the emergency is such as to interfere with the free movement of traffic, the Village police shall be notified immediately.

3. In an emergency, the utility or owner shall use all means at hand to complete repairs as rapidly as practicable and with the least inconvenience to the traveling public.

   The utility or owner must apply for a permit for the emergency work with the Village within five (5) days after such emergency.

C. Cleanup And Restoration: Upon completion of all construction or maintenance of facilities, the permittee or utility shall remove all excess material and restore all disturbed areas in a timely manner to a condition substantially equivalent to thatwhich existed prior to the commencement of work and to the satisfaction of the Village. This work shall be accomplished in accordance with any permit conditions.

D. Restoration Of Street By Village: When any permit has been revoked and the work authorized by the permit has not been completed, the Village may do such work as is necessary to restore the area to a condition acceptable to the Village. All expenses incurred by the Village for such restoration shall be paid by the permittee and may be recovered from the performance security or other bonds posted. (Ord. G-637, 7-13-1999)

8-1-10: LIABILITY OF VILLAGE:

In no case shall any excavation or opening made by a permittee be considered the responsibility of the Village or any of its officers or employees; and no officer or employee shall assume any responsibility over any such opening except in the exercise of the police power, and then only when necessary to protect life and property. (Ord. G-637, 7-13-1999)

8-1-11: STOP WORK ORDER:

The Village Engineer is authorized to issue an order requiring the suspension of any work within a public way or public utility easement upon the discovery of any of the following:

A. Work is proceeding in a manner which creates imminent hazard or severe harm to persons or property on or off the site; or

B. A notice of violation has been given and the period of time deemed by the Village to be necessary for the completion of such work has elapsed; or

C. Work for which a permit is required has started, or is proceeding, without issuance of such a permit.

Such stop work order shall be in writing, shall indicate the reason for its issuance, and shall order the action, if any, necessary to resolve the circumstances requiring the stop work order. One copy of the stop work order shall be posted on the property in a conspicuous place and one copy shall be either given by personal delivery thereof to the agent engaged in the work, mailed by certified or registered United States mail addressed to the person to be notified, or by telefax and regular mail. It shall be unlawful to proceed with any work for which a stop work order has been given. (Ord. G-637, 7-13-1999)

8-1-12: USE OF PUBLIC WAYS:

A. Depositing, Storing, Processing Material In Public Ways: It shall be unlawful for any person to deposit, process or produce any material in or on any public way or to store the same, eithertemporarily or permanently thereon; except that building materials may be temporarily stored, processed or produced on public ways and except that construction debris may be temporarily stored on public ways in a container provided by a scavenger for removal by such scavenger if a permit therefor has been obtained.

B. Drainage Onto Public Ways: It shall be unlawful for any person to cause, permit or maintain the existence of the discharge of sump pumps or roof drains in any of the following manners or locations:

1. In a location which does not provide at least five feet (5') of pervious surface between the point of discharge and any property line, unless such discharge is:

   a. Into any open drainage ditch located within the site or on public ways; or

   b. Into a storm sewer, provided that adequate capacity exists in the system and that the hydraulic grade of the system will not cause a backup into buildings on the premises or other premises.

2. Notwithstanding subsection B1a of this section, in any manner and in any location that results in standing water of a depth of three inches (3") or more or formation of ice of any thickness on the paved portion of the public way or a sidewalk or a pathway.

   When the owner or person in control of any property causes, permits or maintains any such discharge, notice to remove such nuisance shall be given in writing by the village engineer by either personal delivery or certified or registered United States mail addressed to the person to whom was sent the tax bill for general taxes for the last preceding year on the property, or by telefax and regular mail. In addition to any fine or penalty which may be imposed, if said recipient nevertheless fails to abate such discharge within ten (10) days of receipt of such notice, the village engineer may cause the removal of such discharge and any reasonable expense incurred by the village in so doing shall be a charge against the owner so failing, which may be recovered in an appropriate action at law. For the purposes of enforcing this chapter, the village engineer may, at all reasonable times, enter in and upon any property within the village.

   In addition to all other remedies provided by law, the village shall have a lien on the lot or plot of real estate on which said discharge was found for the reasonable cost of the abatement of such discharge. Within sixty (60) days after such cost is incurred, the village shall cause to be filed a notice of lien in the office of the recorder of deeds. Such notice shall consist of a sworn statement setting out: a) a description of the real estate sufficient for identification thereof; b) the amount of money representing the cost and expense incurred or payable foreach service; and c) the date or dates when said cost and expense were incurred by the village. For each year after the date of filing of such notice, if such cost and expense are not paid by the owner or persons interested in said real estate in that year, the village shall file an additional notice in the office of the recorder of deeds imposing an interest charge of ten percent (10%) of the total cost and expenses. Upon payment of the cost and expense by the owner of, or persons interested in, said real estate, after the notice of lien has been filed, the village shall issue a release of such lien, which may be filed of record in said recorder's office.

C. Prohibited Discharges Into Storm Sewers And Other Drainage Structures: It shall be unlawful for any person to discharge or empty, or cause to be discharged or emptied, any type of sewage,

including the effluent from septic tanks or other sewage treatment devices, or any other domestic, commercial, or industrial waste, or any putrescible liquids, into any drain tile or sewer or other drainage structure installed for the purpose of conveying or discharging surface water within the village.

It shall be unlawful for any person to discharge or permit or cause to be discharged sanitary and industrial wastewater into any storm sewers constructed as part of the improvements of 22nd Street (FAU 9877) known as state section 1975-145-N, FAUS M-5003 (53), village section 75-00008-00-PW.

It shall be unlawful for any person to connect or cause to be connected, any drain carrying, or to carry any toilet, sink, basement, septic tank, cesspool, industrial waste, or any fixture or device discharging polluting substances, to any storm water drainage system constructed as part of 16th Street (FAU 1448) and Spring Road (FAU 2671); an improvement known as state section 1976-109-N, FAUS project M-5003(91).

It shall be unlawful for any person, firm or corporation to discharge, or permit, or cause to be discharged sanitary sewage and industrial wastewater into any storm sewers constructed as part of the improvement of Butterfield Road (FAU Route 3545) (Illinois Route 56), known as state section 54WRS-7. (Ord. G-637, 7-13-1999; Ord. G-773, 1-25-2005)

8-1-13: DAMAGING FACILITIES:

A. Sewers, Etc.: It shall be unlawful for any person to break, damage, deface or destroy any sewer, culvert, catch basin, manhole, water pipe or hydrant laid or placed in, upon, or under any public way or public utility easement.

B. Markers: It shall be unlawful for any person to break, damage, change, remove, deface or otherwise injure any sign, stake, post, or stone, placed or set to designate the corner or line of any lot, block, land, street, or public way or to show the grade ofany street or sidewalk in the village. (Ord. G-637, 7-13-1999)

8-1-14: NOTICE OF VIOLATION:

A. Statement; Delivery: Whenever the village determines that a default or violation has occurred in the performance of any term or condition of a permit or of any provision of this chapter, written notice thereof shall be given to the permittee or his agent engaged in the work. Such notice shall contain a statement of the default or violation, state the work to be done to cure the default or violation, the period of time deemed by the village to be necessary for the completion of such work (such time shall not be less than 2 days unless the default or violation is deemed by the village engineer to be an emergency in which case the work shall be accomplished immediately), that the permit will be revoked if the permittee fails to perform, and that the performance security will be forfeited if the permit is revoked. Such notice shall be given either by personal delivery thereof to the permittee or

his agent engaged in the work, by certified or registered United States mail addressed to the person to be notified, or by telefax and regular mail. Thereafter, the permittee shall, within the time therein specified, cause the required work to be performed. If the permittee fails to perform within the allotted time, the village will take whatever action it deems necessary including revoking the permit.

B. Permittee Alternatives Upon Receipt Of Notice Of Violation: Upon receipt of a written notice of violation from the village, as provided in subsection A of this section, the permittee shall have the following options:

1. Immediately provide the village with evidence that no cause exists for the notice of violation; or

2. Immediately correct, to the satisfaction of the village, the deficiencies stated in the written notice, providing written proof of such correction to the village within five (5) working days after receipt of the written notice of violation; or

3. Immediately remove the work or facilities located on, over, above, along, upon, under, across, or within the public ways and restore the public ways to the satisfaction of the village providing written proof of such removal to the village within ten (10) days after receipt of the written notice of violation. (Ord. G-637, 7-13-1999; Ord. G-789, 1-10-2006; Ord. G-846, 11-13-2007)

8-1-15: REVOCATION OF PERMIT:

Any permit may be revoked by the village after prior written notice in accordance with section 8-1-14 of this chapter to the permittee for:

A. When the application, plans or other supporting documents of apermit reflect a false statement or misrepresentation as to material fact; or

B. Violation of any provision of this title; or

C. Violation of any provision or condition of the permit; or

D. Violation of any applicable provision of this code or any other ordinance or law relating to the work or violation of any relevant county, state, or federal requirement; or

E. Existence of any condition or the doing of any act constituting or creating a nuisance or endangering the lives or property of others; or

F. Permittee's physical presence or presence of permittee's facilities or utility facilities on, over, above, along, upon, under, across, or within the public way presents a direct or imminent threat to the public health, safety, or welfare.

If the permittee fails to perform as required, the permit shall be revoked and written notice thereof shall be given to the permittee or his agent engaged in the work. Such notice shall be given either by personal delivery thereof to the permittee or his agent engaged in the work, by certified or registered United States mail addressed to the person to be notified, or by telefax and regular mail. (Ord. G-637, 7-13-1999; Ord. G-846, 11-13-2007)

8-1-16: REIMBURSEMENT OF COST:

There may be times when the village incurs costs, including third party claims and costs related to delay, because the permittee does not perform as required by its permit and this title. If so, the permittee shall bear the village's costs and damages including costs of installing, maintaining, modifying, relocating or removing the facility that was constructed under the permit. The village engineer may require that such costs, if they can be determined, be paid at the time of application for permit, or if they are unable to be determined at that time, the village engineer may require a bond or letter of credit in an amount determined by him, to assure payment of these costs at the time they are incurred by the village. (Ord. G-637, 7-13-1999; Ord. G-789, 1-10-2006)

8-1-17: VARIATIONS OR WAIVERS:

The president and village board may approve variations or waivers of the provisions of this chapter when, in its opinion, such variations or waivers are in harmony with the spirit of the requirements of this title and when deemed appropriate. (Ord. G-637, 7-13-1999)

8-1-18: FRANCHISES, LICENSES, OR SIMILAR AGREEMENTS:

The village, in its discretion and as limited by law, may require utility providers to enter into a franchise, license or similar agreement for the privilege of locating their facilities on, over, above, along, upon, under, across, or within the public way. Utility providers that are not required by law to enter into such an agreement may request that the village enter into such an agreement. In such an agreement, the village may provide for terms and conditions inconsistent with this title. (Ord. G-846, 11-13-2007)

8-1-19: EFFECT OF FRANCHISES, LICENSES, OR SIMILAR AGREEMENTS:

In the event of any conflict with, or inconsistency between, the provisions of this title and the

provisions of any franchise, license or similar agreement between the village and any utility provider, the provisions of such franchise, license or similar agreement shall govern and control during the term of such agreement and any lawful renewal or extension thereof. (Ord. G-846, 11-13-2007)

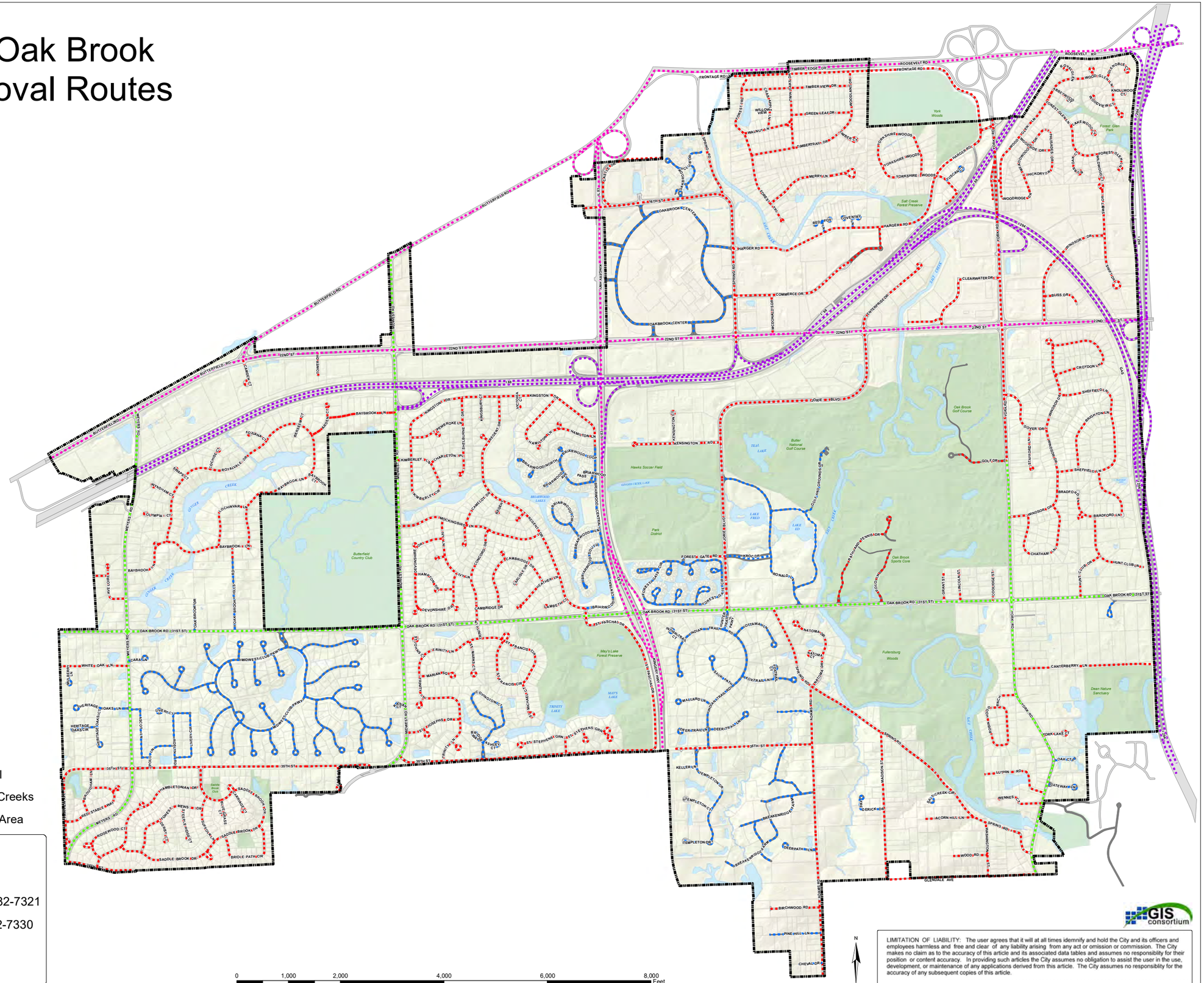
8-1-20: CONFLICTS WITH STATE AND FEDERAL LAWS:

In the event that applicable federal or state laws or regulations conflict with the requirements of this title, the utility provider shall comply with the requirements of this title to the maximum extent possible without violating federal or state laws or regulations. (Ord. G-846, 11-13-2007)

APPENDIX 28

Compliance Documentation
Pollution Prevention/Good Housekeeping

Village of Oak Brook
Snow Removal Routes



Map Legend

- Oak Brook Corporate Limit
- Land Parcel
- Road
- Lakes and Creeks
- Private Road
- Recreation Area

Snow Removal Routes

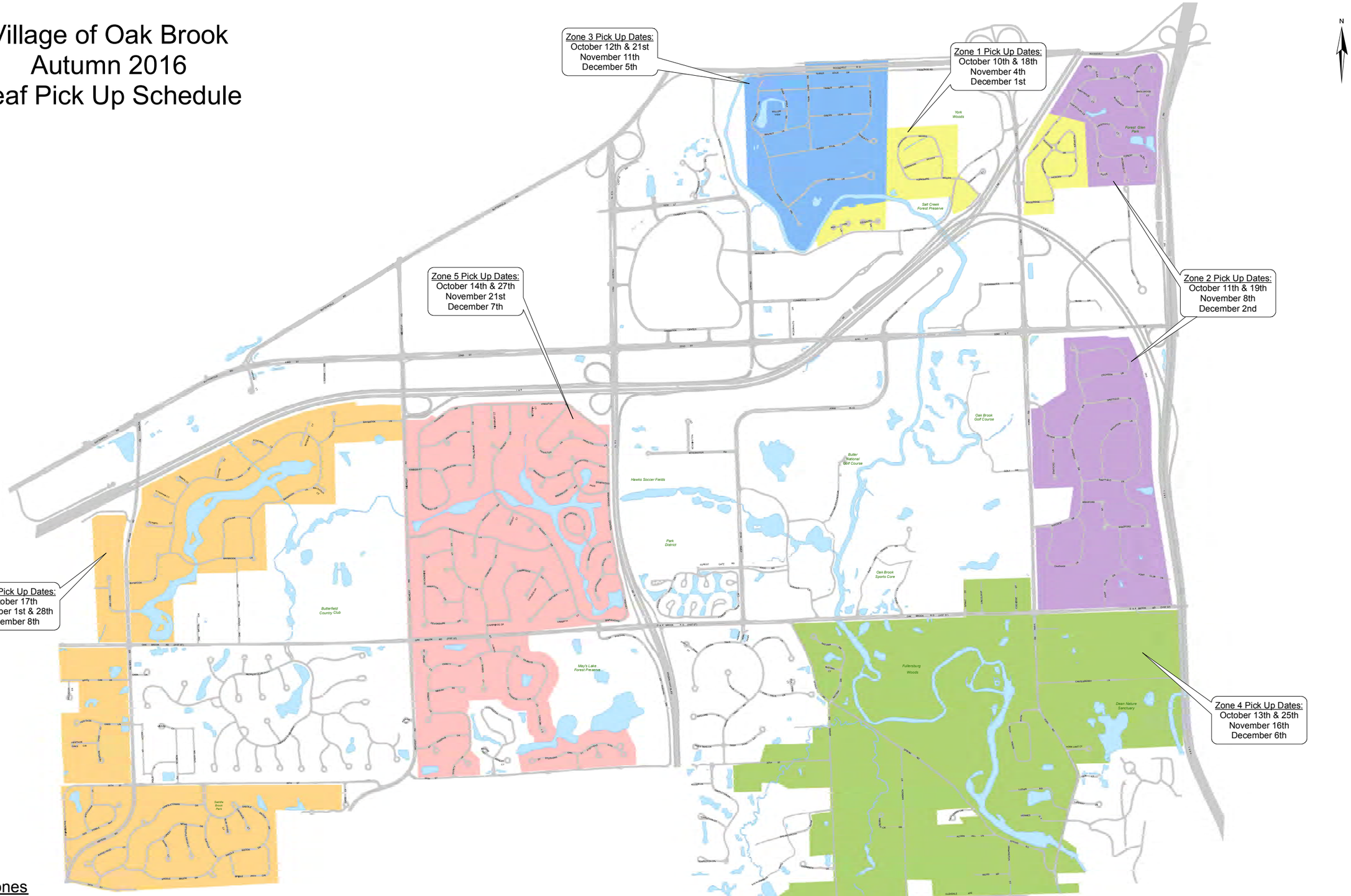
- Village of Oak Brook, 630-368-5270
- DuPage County Highway Department, 630-682-7321
- Illinois Department of Transportation, 630-832-7330
- Illinois Tollway, 630-241-6900
- Private Roadway

GIS consortium

LIMITATION OF LIABILITY: The user agrees that it will at all times idemnify and hold the City and its officers and employees harmless and free and clear of any liability arising from any act or omission or commission. The City makes no claim as to the accuracy of this article and its associated data tables and assumes no responsibility for their position or content accuracy. In providing such articles the City assumes no obligation to assist the user in the use, development, or maintenance of any applications derived from this article. The City assumes no responsibility for the accuracy of any subsequent copies of this article.

Data Sources: Village of Oak Brook, GISC, DuPage & Cook Counties
20131126 SnowRemoval Map - JPK

Village of Oak Brook
Autumn 2016
Leaf Pick Up Schedule



Pick Up Zones

- Zone 1
- Zone 2
- Zone 3
- Zone 4
- Zone 5
- Zone 6

0 500 1,000 2,000 3,000 4,000 Feet

GIS consortium

LIMITATION OF LIABILITY: The user agrees that it will at all times idemnify and hold the City and its officers and employees harmless and free and clear of any liability arising from any act or omission or commission. The City makes no claim as to the accuracy of this article and its associated data tables and assumes no responsibility for their position or content accuracy. In providing such articles the City assumes no obligation to assist the user in the use, development, or maintenance of any applications derived from this article. The City assumes no responsibility for the accuracy of any subsequent copies of this article.

Data Sources: Village of Oak Brook, GISC DuPage and Cook Counties
2012/2013_AutumnLeaf_PickUp_24x36 - JPK

OAK BROOK PUBLIC WORKS
STANDARD OPERATING GUIDELINE

FOR

SPILL PREVENTION AND CONTROL
Spill Prevention Control and Countermeasure Plan

DATE: 04/15/2003
Revised: 11/01/2006, 06/24/2008, 04/29/2011, 5/12/2014

The following is the standard operating guideline for Spill Prevention and Control of any oil product release within the Public Works Parking Lot, Yard, or Garage. The Spill Prevention Control and Countermeasure Plan is designed to address the prevention and control measures that the Village of Oak Brook will take to prevent any oil release that could impact the environment, land or water. This procedure should be followed whenever the potential for an oil release is present or occurs at the Public Works Garage. A release is either a spill or leak of oil, or when an oil clean up contractor is required.

Waste Oil Storage Tank

The waste oil storage tank is a 1000- gallon double wall steel tank located outside of the garage north wall on a concrete pad that is protected on three sides by concrete walls.

Waste Oil Tank Inventory

Waste oil is drained from vehicles and equipment during maintenance into a portable 25-gallon double wall steel waste oil drum. Periodically, the waste oil is pumped from the oil drum inside the garage and into a waste oil storage tank located outside of the garage. The oil transfer is accomplished by the use of air pressure to discharge the oil from the waste oil drum via a rigid steel pipe into the top of the waste oil storage tank.

Waste Oil Disposal

Waste oil is removed from the waste oil storage tank by Safety –Kleen. The waste oil is pumped into a tanker truck and hauled away for recycling or disposal.

Spill Precaution

The waste oil tank is locked so that the waste oil truck driver can not pump out the waste oil without the lock being removed by the Head Mechanic, Mechanic, or General Foreman. After the lock is removed and before the waste oil is pumped out from the tank, the two storm sewer yard drains located southwest of the salt dome shall be covered with the two Drainblocker drain covers which are located in the garage next to the bulk oil storage tank; this will prevent any waste oil from entering into the storm sewers. During waste oil removal, the Village Head Mechanic, Mechanic, or General Foreman shall stand by and observe the operation. They shall also have one of the approved spill kits available for any accidental spill. If at any time a leak or

spill occurs, the employee will immediately stop the pumping operation. Using the spill kit, the employee will contain the oil release from migrating into the storm sewers by using booms and/or sandbags to dyke and contain the spill. The oil shall then be cleaned up using absorbing pads from the spill kit. Used booms and absorbing pads shall be placed into a recycling storage barrel, (a 35- gallon yellow steel barrel with an attaching lid) that is located next to the bulk oil storage tank. When the recycling storage barrel is filled, the employee shall contact Safety-Kleen for removal and recycling.

Parking Lot Yard Drain Storm Sewer System

All Public Works parking lot and yard drains are tied into a storm sewer drain system. The storm sewer system drains into a manhole to the north where it combines with storm sewers from the East and West that in turn discharges into a pond located on the McDonalds property to the north of the Public Works Yard.

Bulk Oil Storage Tank

The bulk oil storage tank is located inside the Public Works garage. It is a 1,350 gallon double wall steel tank that is divided into 7 separate compartments. The double wall tank is Underwriters Laboratory Standard UL-142, and N.F.P.A. 30 approved.

Bulk Oil Storage Tank Inventory

2- 300- gallon compartments containing
1-15/40 oil and 1-5/30 oil
5- 150- gallon compartments containing
1-Hydraulic oil, 1-Dexron oil, 1-Mercon oil, 1-Anti-freeze, and 1-spare

Miscellaneous oils

55- gallon steel drums, and miscellaneous 5 gallon pales of oil
3- 55 gallon steel drums sit on top of a spill scooter (containment drum dolly), which can be rolled around for vehicle service. Bulk oil storage in the 55 gallon drum and miscellaneous 5 gallon pales are stored on a Spill Deck Pallet which, in the event of a drum leak, will hold up to 66 gallons of free product.

Bulk Oil Deliveries

All oil and antifreeze inventory deliveries into the 300- gallon and 150- gallon bulk oil storage tanks are pumped into a drop fill opening in the top of the oil tank.

Spill Precaution

Before inventory deliveries, the Village Head Mechanic, Mechanic, or General Foreman shall first cover the floor drain located in front of the bulk oil tank with one of the Drainblocker drain covers which are located in the garage next to the bulk oil storage tank; this will prevent any oil from entering into the sanitary sewer. During the delivery, the Village Head Mechanic, Mechanic, or General Foreman shall stand by and observe the operation. They shall also have

one of the approved spill kits available for any accidental spill. If at any time a leak or spill occurs, the employee will immediately

stop the pumping operation. Using the spill kit, the employee will contain the oil release from migrating into the sanitary sewer by using booms and/or sandbags to dyke and contain the spill. The oil shall then be cleaned up using absorbing pads from the spill kit. Used booms and absorbing pads shall be placed into a recycling storage barrel, (a 35- gallon yellow steel barrel with an attaching lid) that is located next to the bulk oil storage tank. When the recycling storage barrel is filled, the employee shall contact Safety-Kleen for removal and recycling.

Bulk Oil Transfer

Bulk oil and antifreeze are pumped by pneumatic pumps from the storage tanks, through rigid steel pipes, to overhead oil reels that are located between the vehicle maintenance bays. From there, the oil is dispensed to vehicles and equipment. The pneumatic pumps are operated by air pressure from an air compressor fitted with a ball valve that regulates the air to the pumps. During non-working hours, the ball valve is physically closed to prevent the oil pumps from operating.

Garage Floor Drain System

All floor drains inside the garage are tied into a central sanitary sewer drain system. The floor drain system drains into a triple trap basin before exiting the building to the west, and discharging into a sanitary sewer system.

Leaks or Spills

Any oil leak or spills shall be cleaned up immediately using absorbing pads and booms. Small amounts of oil shall be wiped or soaked up with absorbing pads, after which, the absorbing pads shall be placed into the recycling storage barrel.
For flowing leaks or spills, the spill will first be contained from migrating off site or into any sewer drains using the Drainblocker drain covers and booms or sandbags. The oil shall be wiped up or soaked up using absorbing pads from the spill kit. The used booms and absorbing pads shall be placed into the recycling storage barrel. In the event oil has entered the garage drain system, the Village shall contact Safety-Kleen and secure, a high-pressure sewer cleaner and vacuum truck, to pump out the triple trap basins and remove all free product from the sewer system. The Village will then contract with Safety-Kleen to have all of the product removed off site and disposed of properly. All used booms and absorbing pads shall be placed into the recycling storage barrel. When the recycling storage barrel is filled, the employee shall contact Safety-Kleen for removal and recycling.

Inspection

All tanks, pumps, and associated piping shall be inspected annually. The inspection shall note any indication of leaks or potential system problems. The inspection and any corrective action must be documented and placed on file at the Public Works Office.

Training

All Village employees who handle oil or who are instructed to observe waste oil removals or bulk oil deliveries shall be trained annually. Training shall be documented utilizing an employee signature sheet and shall consist of the following:

1. Visual tank inspections noting what to look for including indications of a leak or spill around the oil tanks and in the oil storage area.
2. Location of Drainblockers, oil spill kits and clean up supplies.
3. How too properly clean up oil spills and leaks and how to contain oil in the event of a larger release.
4. A discussion on what could happen during a large spill or leak and the locations where employees should check for free product and how to contain the release from migrating off site?
5. Notification of the appropriate Federal, State, and Local agencies in the event of a release and where their telephone numbers are located.
6. How to properly dispose of oil and waste products after clean up.
7. What contractor to call for 24 hour a day assistance for clean up and disposal of the oil and waste products.
8. Where to purchase supplies and equipment for oil containment and clean up.

This SPCC plan must be reviewed every five years. If changes are required, the plan must be amended to keep current with new requirements or technology. If the plan is amended, the new amended plan must be reviewed and approved in accordance with good engineering practices by a licensed engineer who must then sign and date at the bottom of the procedure.

Spill Prevention Control and Countermeasure Plan

Emergency Phone Numbers

Oak Brook Fire Department	**911**
Safety - Kleen	
Emergency after hours 24/7	**1 (800) 834-2735**
Normal office hours	**1 (847) 468-6773**
Illinois Emergency Management Agency	**1 (800) 782-7860**

Call the Illinois Emergency Management Agency (IEMA) for an oil release that could potentially impact land or water, or when a cleanup contractor is required. IEMA will issue the Village an incident number, and will also advise the EPA of the release.

Reviewed By: _____ Date: _____

Revised:

_11/01/2006_ _06/24/2008_ __04/29/2011_ _05/12/2014_

Spill Prevention Control and Countermeasure Plan

Annual Inspection and Training

Date: _____ Training Conducted By: _____

In Attendance:

_____ _____

_____ _____

_____ _____

_____ _____

Inspection Conducted by: _____

Inspection:	No problems	Notes: (potential problems)
1,000 gal waste oil tank:	_____	_____
Waste oil piping:	_____	_____
1,350 gal Bulk Storage:	_____	_____
Oil Pumps, Piping:	_____	_____
Overhead Reels:	_____	_____
Spill Deck &Drum dolly:	_____	_____

Spill Kit and clean up supplies inventory:	OK:	Needed:
Yellow 35 gallon steel barrel:	____	_____
Two (2) Spill kits in plastic over pack barrels:	____	_____
Two (2) Drainblocker drain covers:	____	_____

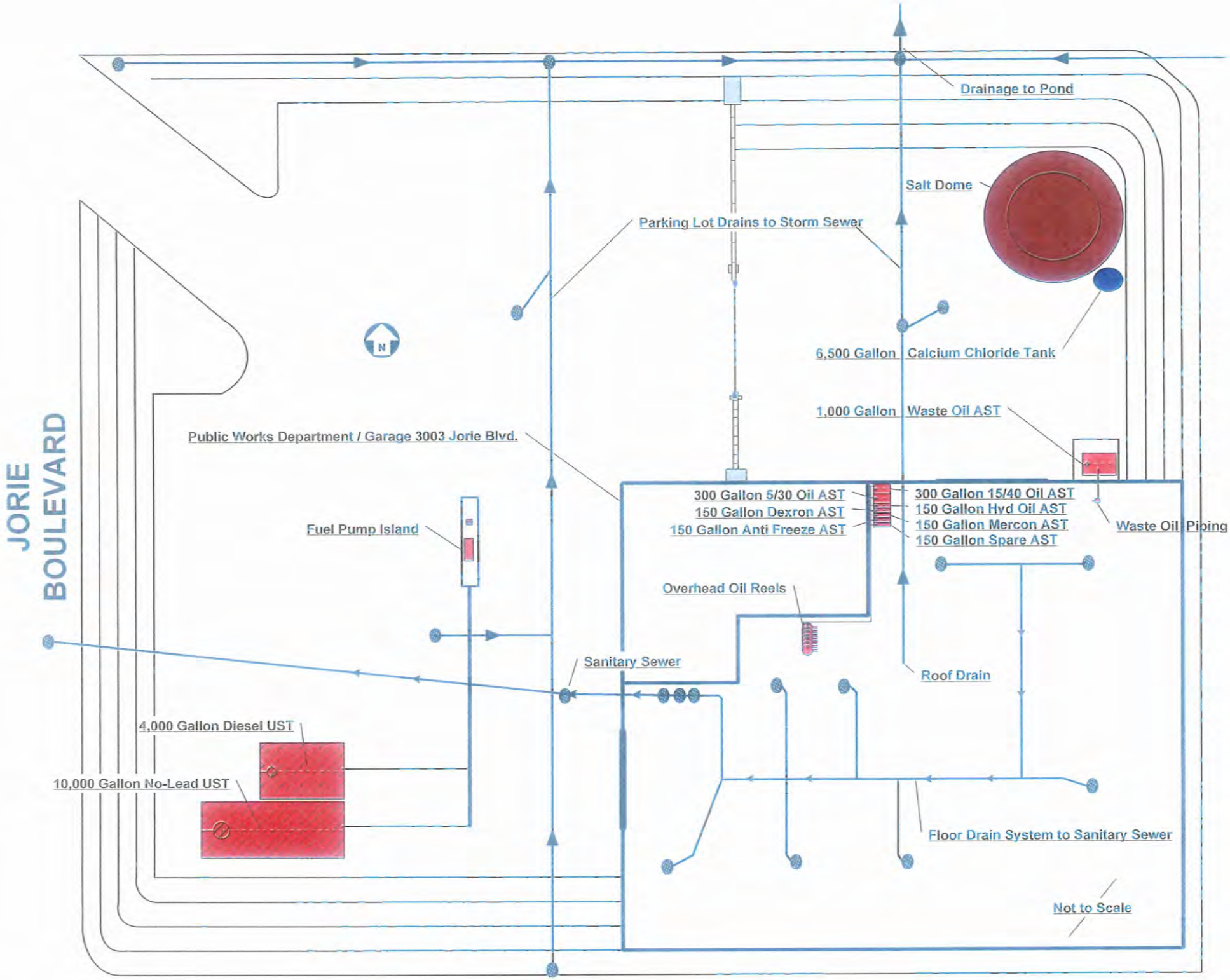
Review and discussion of the SPCC plan and potential problems, also 24 hour Emergency phone numbers and contacts for spills, clean up and spill supplies.

Notes: _____

_____

_____

Upon completion this form shall be filed in the Public Works Office Official files in the storage tank section under Spill Prevention Control and Countermeasure Plan.


JORIE BOULEVARD
Drainage to Pond
Salt Dome
Parking Lot Drains to Storm Sewer
N
6,500 Gallon Calcium Chloride Tank
1,000 Gallon Waste Oil AST
Public Works Department / Garage 3003 Jorie Blvd.
300 Gallon 5/30 Oil AST
150 Gallon Dexron AST
150 Gallon Anti Freeze AST
300 Gallon 15/40 Oil AST
150 Gallon Hyd Oil AST
150 Gallon Mercon AST
150 Gallon Spare AST
Waste Oil Piping
Fuel Pump Island
Overhead Oil Reels
Sanitary Sewer
Roof Drain
4,000 Gallon Diesel UST
10,000 Gallon No-Lead UST
Floor Drain System to Sanitary Sewer
Not to Scale

NPDES Permit No. ILG870410

Illinois Environmental Protection Agency
Division of Water Pollution Control
1021 North Grand Avenue East
P.O. Box 19276
Springfield, Illinois 62794-9276
www.epa.state.il.us

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

General NPDES Permit
For
Pesticide Application Point Source Discharges

Expiration Date: October 30, 2016

Issue Date: October 31, 2011

Effective Date: October 31, 2011

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

This permit is available to operators who discharge to waters of the State from the application of biological pesticides or chemical pesticides that leave a residue, when the pesticide application is for one of the following pesticide use patterns:

1. Mosquito and Other Insect Pest Control
2. Weed and Algae Pest Control
3. Animal Pest Control
4. Forested Areas Pest Control
5. Other Pest Control Activities

Discharges may be authorized to any surface water of the State excluding waters identified as impaired by that pesticide or its degradates. This permit does not authorize discharges, to any waters of the State which are designated as a outstanding resource water by the Agency in accordance with 35 Ill. Adm. Code 302.105(b).

To receive authorization to discharge under this general permit, an operator must submit the proper application form to the Illinois Environmental Protection Agency. Authorization, if granted, will be by letter and include a copy of this permit.

Alan Keller

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

SAK:LRL:ILG87permit.docx

Table of Contents

1.0	Coverage under this Permit	3
2.0	Technology-Based Effluent Limitations	8
3.0	Water Quality-Based Effluent Limitations	14
4.0	Monitoring	14
5.0	Pesticide Discharge Management Plan	14
6.0	Corrective Action	17
7.0	Recordkeeping and Annual Reporting	20
8.0	Contact Information and Mailing Addresses	23
Appendix A	Definitions and Acronyms	25
Appendix B	Standard Permit Conditions – Attachment H	31

0 Coverage under this Permit

This permit covers any operator that meets the eligibility requirements identified in Part 1.1 and if so required, submits a Notice of Intent (NOI) in accordance with Part 1.2.

For the purpose of this permit, all operators are defined in Appendix A to be:

a. The person(s) with control over the hiring of a contract applicator, or making the decision to perform pesticide applications, including the ability to modify those decisions, that results in a discharge to waters of the State, and/or

b. The person(s) who performs the application of pesticides or who has day-to-day control of the pesticide application, that results in a discharge to waters of the State.

If the operator under part "a" of the definition is different than the operator actually performing the application of pesticides, only one of the two is required to obtain coverage under this permit.

This permit is not applicable for general use or restricted use pesticides that under Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), are not registered for application to or use in waters of the State.

Pursuant to section 12(f) of the Illinois Environmental Protection Act, no permit shall be required for any discharge for which a permit is not required under the Federal Water Pollution Control Act.

1.1 Eligibility

1.1.1 Activities Covered

This permit is available to operators who discharge to waters of the State from the application of (1) biological pesticides or (2) chemical pesticides that leave a residue (collectively called pesticides), when the pesticide application is for one of the following pesticide use patterns:

1. **Mosquito and Other Insect Pest Control** – to control public health/nuisance and other insect pests that develop or are present during a portion of their life cycle in or above standing or flowing water. Public health/nuisance and other insect pests in this use category include but are not limited to mosquitoes and black flies.

2. **Weed and Algae Pest Control** – to control weeds, algae, and pathogens that are pests in water and at water's edge, include but are not limited to ditches and/or canals.

3. **Animal Pest Control** – to control animal pests in water and at water's edge. Animal pests in this use category include, but are not limited to fish, lampreys, insects, mollusks, and pathogens.

4. **Forested Areas Pest Control** – application of a pesticide to a forested area to control the population of a pest species, (e.g., insect or pathogen) where, to target the pests effectively, a portion of the pesticide unavoidably will be applied over and deposited to water.

5. **Other Pest Control Activities** – any application of pesticides not identified above, which leave a residue, to waters of the State or at the water's edge.

A portion of every application of a pesticide over a water of the State will fall directly into the water of the State thereby requiring coverage under an NPDES permit. Any person who wishes to contest this determination must submit scientific data to prove that no quantity of the pesticide falls into a water of the State. A permit may not be necessary if IEPA receives scientific information which convinces the Agency that no portion of a chemical pesticide applied over a water of the State will fall into the water of the State.

A portion of every application of a pesticide into a water of the State will leave a residue in the water of the State thereby requiring coverage under an NPDES permit. Any person who wishes to dispute this determination must submit scientific data to prove that no quantity of the pesticide will remain as a residue in a water of the State. This information should include data to show what level of the pesticide can be detected in water, and at what level in

water the pesticide provides a pesticidal benefit. Such data should address the properties of the chemical pesticide under different water conditions (e.g., different pH, organic content, temperature, depth, etc.) that might affect the pesticide's properties. A permit may not be necessary if IEPA receives scientific information that convinces the Agency that a chemical pesticide applied into a water of the State will not remain as a residue in the water of the State.

1.1.2 Limitations on Coverage

1.1.2.1 Discharges to Water Quality Impaired Waters

Operators are not eligible for coverage under this permit for any discharges from a pesticide application to waters of the State if the water is identified as impaired by a substance which either is an active ingredient in that pesticide or is a degradate of such an active ingredient. For purposes of this permit, impaired waters are those that have been identified by the State pursuant to Section 303(d) of the Clean Water Act (CWA) as not meeting applicable State water quality standards or not meeting the intended use of the water body. Impaired waters for the purposes of this permit may include both waters with USEPA-approved or USEPA-established Total Maximum Daily Loads (TMDLs) and waters for which USEPA has not yet approved or established a TMDL. A list of the 303(d) waters is available on the Internet at www.epa.state.il.us/water/permits/pesticide/303d.html. If a discharge from a pesticide application would not be eligible under this permit because the water is listed as impaired for that specific pesticide, but there is evidence that shows the water is no longer impaired, operators may submit this information to IEPA and request that coverage be allowed under this permit.

1.1.2.2 Discharges to Waters Designated as Outstanding Resource Waters for Antidegradation Purposes

Operators are not eligible for coverage under this permit for discharges from a pesticide application to waters designated by the State as Outstanding Resource Waters for anti-degradation purposes under 35 Ill. Adm. Code 302.105(b).

1.2.3 Discharges Currently or Previously Covered by another Permit

Pesticide discharges are not eligible for coverage under this permit if any of the following circumstances apply:

a. The discharge is covered by another NPDES permit, or

b. The discharge was included in a permit that in the past 5 years has been or is in the process of being denied, terminated, or revoked by IEPA (this does not apply to the routine reissuance of permits every 5 years).

1.2 Authorization to Discharge under This Permit

1.2.1 How to Obtain Authorization

To obtain authorization under this permit, an operator must:

a. Meet the eligibility requirements identified in Part 1.1, and

b. Submit a complete and accurate Notice of Intent (NOI) consistent with the requirements of Parts 1.2.2 and 1.2.3.

1.2.2 Operators Required to Submit a Notice of Intent

The following operators are required to submit a Notice of Intent to obtain coverage under this general permit for discharges to waters of the State resulting from the application of pesticides:

a. Person(s), group, or entity with control over the hiring of a contract applicator, or making the decision to perform pesticide application, that will result in a discharge to waters of the State; or

b. Person(s), group, or entity performing the application of pesticides, that will result in a discharge to waters of the State.

Operators must submit an NOI to IEPA electronically. Operators should refer to www.epa.state.il.us/water/permits/pesticide/index.html for instruction on submitting the NOI. IEPA will post on the Internet, at www.epa.state.il.us/water/permits/pesticide/notices.html, all NOIs received. Late NOIs will be accepted, but authorization to discharge will not be retroactive. NOI submissions must be in accordance with the deadlines in Part 1.2.3.

Coverage will be available for the duration of the permit for operators who file an NOI, including the operator's employees, contractors, subcontractors, and other agents, for all activities identified on the NOI unless coverage is terminated pursuant to Parts 1.2.5 or 1.3. If a submitted NOI is not timely, accurate, or complete, then any employee, contractor, subcontractor or other entity that discharges without the required NOI is not covered by this permit.

The NOI form is available on the Internet at www.epa.state.il.us/water/permits/pesticide/forms.html.

1.2.3 Discharge Authorization Date

Unless modified, exempted, or stayed by legislative action or court order, discharges to waters of the State as a result of pesticide applications must be authorized under an NPDES permit. Operators that are eligible for coverage under Part 1.1 are authorized to discharge under this permit consistent with the NOI submission and the Table 1 below.

Table 1. Original NOI Submittal Deadlines and Discharge Authorization Date

Category	NOI Submittal Deadline	Discharge Authorization Date
Operators are required to submit an NOI prior to commencement of discharge.	At least 14 days prior to commencement of discharge.	No earlier than 14 days after IEPA posts on the Internet the receipt of the complete and accurate NOI.
Operators commencing discharge in response to a declared pest emergency situation as defined in Appendix A.	No later than 30 days after commencement of discharge.[1]	Immediately, for activities conducted in response to declared pest emergency situation.

To remain authorized, all operators must submit NOI changes, as necessary, consistent with Table 2 below.

Table 2. NOI Change of Information Submittal Deadlines and Discharge Authorization Date

Category	NOI Submittal Deadline	Discharge Authorization Date
Operators requiring permit coverage for a new use pattern or for a treatment area not within the pest management area, previously identified on a NOI submitted to IEPA.	At least 14 days prior to commencement of discharge in that newly identified treatment area.	No earlier than 14 days after IEPA posts on the Internet the receipt of the complete and accurate NOI.
Operators requiring permit coverage for a new use pattern or for a treatment area in response to a declared pest emergency situation not within the pest management area, previously identified on a NOI submitted to IEPA.	No later than 30 days after commencement of discharge.[1]	Immediately, for activities conducted in response to declared pest emergency situation.

[1] In the event that a discharge occurs prior to submitting an NOI, the operator must comply with all other requirements of this permit immediately.

Based on a review of the NOI or other information, IEPA may determine that additional technology-based and/or water quality-based effluent limitations are necessary, or deny coverage under this permit and require submission of an application for an individual NPDES permit, as detailed in Part 1.3.

Unless notified by the Agency to submit additional information, operators who submit an NOI in accordance with the requirements of this permit are authorized to discharge under the terms and conditions of this permit 30 days after the date the NOI is received by the Agency.

2.4 Continuation of this Permit

If this permit is not reissued or replaced prior to the expiration date, it will be administratively continued in accordance with 40 CFR 122.6 and 35 Ill. Adm. Code, Subtitle C, Chapter I and remain in force and effect. If a permittee was authorized to discharge under this permit prior to the expiration date, any discharges authorized under this permit will automatically remain covered by this permit until the earliest of the following:

a. A permittee is authorized for coverage under a reissued permit or a replacement of this permit, following the timely and appropriate submittal of a complete NOI requesting authorization to discharge under the new permit and in compliance with the requirements of the NOI;

b. The permittee submits a Notice of Termination (NOT) and that notice is processed consistent with Part 1.2.5.1;

c. An individual NPDES permit for a discharge resulting from application of a pesticide that would otherwise be covered under this permit is issued or denied;

d. IEPA issues a formal permit decision not to reissue this general permit, at which time IEPA will identify a reasonable time period for covered dischargers to seek coverage under an alternative general permit or an individual permit. Coverage under this permit will cease when coverage under another permit is granted/authorized; or

e. IEPA has informed the permittee that the discharge is no longer covered under this permit.

1.2.5 Terminating Coverage

1.2.5.1 Submitting a Notice of Termination

To terminate permit coverage, a permittee must submit a complete and accurate Notice of Termination. Permittees must submit the Notice of Termination electronically. Permittees should refer to www.epa.state.il.us/water/permits/pesticide/index.html for instruction on submitting the NOT. The authorization to discharge under this permit is terminated the day that a complete Notice of Termination is processed. If a permittee submits a Notice of Termination without meeting one or more of the conditions identified in Part 1.2.5.2, the Notice of Termination is not valid. Permittees are responsible for complying with the terms of this permit until authorization is terminated. If required to submit annual reports pursuant to Part 7, the permittee must file an annual report for the portion of the year up through the date of termination. The annual report shall be submitted with the completed Notice of Termination.

Permittees may not terminate coverage under this permit and reapply in order to remain below the annual treatment area thresholds.

The NOT form is available on the Internet at www.epa.state.il.us/water/permits/pesticide/forms.html.

1.2.5.2 When to Submit a Notice of Termination

A permittee must submit a Notice of Termination within 30 days after one or more of the following conditions have been met:

a. The permittee has ceased all discharges from the application of pesticides for which permit coverage was obtained and the permittee does not expect to discharge during the remainder of the permit term for any of the use patterns as identified in Part 1.1.1; or

b. The permittee has obtained coverage under an individual NPDES permit or an alternative NPDES general permit for all discharges required to be covered by an NPDES permit, unless the permittee obtained coverage consistent with Part 1.3, in which case coverage under this permit will terminate automatically.

1.2.6 Transfer of Permit Coverage

If a new operator takes over responsibility of pest control activities covered under an existing NOI, the new operator must submit the following:

a. A new NOI for the new operator; and

b. A letter from the existing permittee referencing the existing NPDES permit number, date of coverage, and requesting transfer of the permit.

1.3 Alternative Permits

1.3.1 Requiring Coverage under an Alternative Permit

In accordance with 40 CFR 122.64, 40 CFR 124.5, and 35 Ill. Adm. Code, Subtitle C, Chapter I, IEPA may require operators to apply for and/or obtain authorization to discharge under either an individual NPDES permit or an alternative NPDES general permit.

If IEPA requires an operator to apply for an individual NPDES permit, IEPA will notify the operator in writing that a permit application is required. This notification will include a brief statement of the reasons for the decision and will provide application information. In addition, for permittees whose discharges are authorized under this permit, any notice will set a deadline to file the permit application and will include a statement that on the effective date of the individual NPDES permit, coverage under this general permit will terminate. IEPA may grant additional time to submit the application if the operator submits a request setting forth reasonable grounds for additional time. If covered under this permit and the permittee fails to submit an individual NPDES permit application as required by IEPA, the applicability of this permit to such permittee is terminated at the end of the day specified by IEPA as the deadline for application submittal. IEPA may take enforcement action for any unpermitted discharge or violation of any permit requirement.

1.3.2 Operator Requesting Coverage under an Alternative Permit

If an operator does not want to be covered by this general permit, but needs permit coverage, the operator can apply for an individual NPDES permit. In such a case, the operator must submit an individual permit application in accordance with the requirements of 40 CFR 122.26(c)(1)(ii), with reasons supporting the request, to IEPA. The request may be granted by issuance of an individual NPDES permit or authorization of coverage under an alternative NPDES general permit.

When an individual NPDES permit is issued, or the operator is authorized under an alternative NPDES general permit to discharge a pollutant to waters of the State as a result of a pesticide application, authorization to discharge under this permit is terminated on the effective date of the individual NPDES permit or the date of authorization of coverage under the alternative NPDES general permit.

1.4 Severability

Invalidation of a portion of this permit does not render the whole permit invalid. IEPA's intent is that the permit will remain in effect to the extent possible; if any part of this permit is invalidated, the remaining parts of the permit will remain in effect unless IEPA issues a written statement stating otherwise.

1.5 Other Federal and State Laws

Permittees must comply with all other applicable federal and state laws and regulations that pertain to application of pesticides. For example, this permit does not relieve the permittee of the responsibility of complying with the requirements or provisions of the Federal Insecticide, Fungicide, and Rodenticide Act and its implementing regulations to use registered pesticides consistent with the product's labeling. In fact, applications in violation of certain FIFRA requirements could also be a violation of this permit and therefore a violation of the CWA (e.g. exceeding label application rates). Additionally, other laws and regulations might apply to certain activities that are also covered under this permit (e.g., United States Coast Guard regulations).

1.6 Endangered Species Compliance

The location of the treatment areas must be submitted to the Illinois Department of Natural Resources (IDNR) EcoCAT website to determine if protected natural resources are in the vicinity, www.dnrecocat.state.il.us/ecopublic. Consultation with the Department is required under the Illinois Endangered Species Protection Act, 520 ILCS

10/11(b) and the Illinois Natural Areas Preservation Act, 525 ILCS 30/17, for all permittees covered by this permit unless exempted below.

The following applications are exempt from consultation unless there will be an adverse impact to a listed species or its essential habitat or to a Natural Area:

1. Per consultation regulations (17 Ill. Adm. Code, Part 1075) – annual, routine cultivation of existing agricultural lands; and maintenance of existing lawns, yards and ornamental plantings.

2. Per a Memorandum of Understanding between IEPA and IDNR – microbial larvicide applied to catch basins and storm sewers.

1.7 Reopener Clause

If there is evidence indicating potential or realized adverse impacts on water quality due to any pesticide discharge covered by this permit, the permittee may be required to obtain an individual permit or an alternative general permit in accordance with Section 1.3.1 of this permit or the permit may be modified to include different limitations and/or requirements.

Permit modification or revocation will be conducted according to provisions of 35 Ill. Adm. Code, Subtitle C, Chapter I and the provisions of 40 CFR 122.62, 122.63, 122.64, and 124.5 and any other applicable public participations procedures.

The Agency will reopen and modify this permit under the following circumstances:

a. The USEPA amends its regulations concerning public participation;

b. A court of competent jurisdiction binding in the State of Illinois or the 7th Circuit issues an order necessitating a modification of public participation for general permits; or

c. To incorporate federally required modifications to the substantive requirements of this permit.

2.0 Technology-Based Effluent Limitations

This part includes technology-based effluent limitations applicable to all permittees for any discharge authorized under this permit, with compliance required upon beginning such discharge. If the permittee is not the applicator, the technology-based effluent limitations are also applicable to the contract applicator.

If a permittee's discharge of pollutants results from the application of pesticides that is being used solely for the purpose of "pesticide research and development," as defined in Appendix A, the permittee must use such pesticide consistent with any applicable research plan and experimental use permit.

As stated in Part 1.5, this permit required all permittees to comply with other applicable federal or state laws and regulations that pertain to application of pesticides by the permittee.

2.1 Level 1: Technology- Based Effluent Limitations

All permittees must meet Level 1 of the technology-based effluent limitations in Part 2.1 to minimize the discharge of pesticides to waters of the State from the application of pesticides, through the use of Pest Management Measures, as defined in Appendix A. If the permittee is not the applicator, the Level 1 technology-based effluent limitations are also applicable to the contract applicator.

2.1.1 Use only the amount of pesticide and frequency of pesticide application necessary to control the target pest, using equipment and application procedures appropriate for this task.

2.1.2 Maintain pesticide application equipment in proper operating condition, including the requirement to calibrate, clean, and repair such equipment and prevent leaks, spills, or other unintended discharges.

1.3 Assess weather conditions (e.g. temperature, precipitation and wind speed) in the treatment area to ensure application is consistent with all applicable federal and state requirements.

2.2 Level 2: Technology-Based Effluent Limitations

Level 2 of the technology-based effluent limitations applies to permittees which exceed one or more of the annual (i.e. calendar year) treatment area threshold(s) listed in Table 3 below, as defined in Appendix A. If the permittee is not the applicator, the Level 2 technology-based effluent limitations are also applicable to the contract applicator.

Table 3. Annual Treatment Area Threshold

Section	Pesticide Use	Annual Threshold
2.2.1	Mosquitoes and Other Insect Pest Control	
	- Adult Mosquitoes and Other Insect Pests	6,400 acres of treatment area
	- Mosquito and Other Insect Aquatic Larviciding	80 acres of treatment area (i.e. surface area)
2.2.2	Weed and Algae Pest Control	
	- In Water	80 acres of treatment area (i.e. surface area)
	- At Water's Edge	20 linear miles of treatment area
2.2.3	Animal Pest Control	
	- In Water	80 acres of treatment area (i.e. surface area)
	- At Water's Edge	20 linear miles of treatment area
2.2.4	Forested Area Pest Control	6,400 acres of treatment area
2.2.5	Other Pest Control Activities	
	- Ground or Aerial	6,400 acres of treatment area
	- In Water	80 acres of treatment area (i.e. surface area)
	- At Water's Edge	20 linear miles of treatment area

For calculating the annual treatment area, count each treatment area only once, regardless of the number of pesticide application activities when applying with the same pesticide product. For example, applying pesticides 3 times a year to the same 3,000 acre site using the same pesticide product, the annual treatment area should be counted as 3,000 acres. If a different pesticide product is applied to the same treatment area, these activities would be counted as separate treatment areas for each different pesticide product. For example, applying pesticides 3 times a year to the same 3,000 acre site using a different pesticide product each time the annual treatment area should be counted as 9,000 acres.

For linear features (e.g., a canal or ditch) use the length of the linear feature whether treating in or adjacent to the feature. For example, when treating the bank on one side of a 10 mile long ditch, banks on both sides of the ditch, and/or water in the ditch, the total treatment area is 10 miles.

2.2.1 Mosquito and Other Insect Pest Control

This part applies to discharges from the application of pesticides for mosquito and other insect pest control as defined in Part 1.1.1.

a. Identify the Problem

Prior to the first pesticide application covered under this permit that will result in a discharge to waters of the State, and at least once each calendar year thereafter prior to the first pesticide application for that calendar year, the permittee must do the following for each pest management area, as defined in Appendix A:

1. Establish densities for larval and adult mosquitoes or other insect pest populations or identify environmental condition(s), either current or based on historical data, to serve as action threshold(s) for implementing Pest Management Measures;

2. Identify target pest(s) to develop Pest Management Measures based on developmental and behavioral considerations for each pest;

3. Identify known breeding sites for source reduction, larval control program, and habitat management;

4. Analyze existing surveillance data to identify new or unidentified sources of mosquito or other insect pest problems as well as sites that have recurring pest problems; and

5. In the event there is no data for the pest management area in the past calendar year, use other available data as appropriate to meet the permit conditions of Part 2.2.1.a.

b. Pest Management Options

Prior to the first pesticide application covered under this permit that will result in a discharge to waters of the State, and at least once each calendar year thereafter prior to the first pesticide application for that calendar year, the permittee must select and implement efficient and effective means of Pest Management Measures that minimize discharges resulting from application of pesticides to control mosquitoes or other insect pests. In developing the Pest Management Measures for each pest management area, the permittee must evaluate the following management options, including a combination of these management options, considering impacts to water quality, impacts to non-target organisms, feasibility, and cost effectiveness:

1. No action
2. Prevention
3. Mechanical or physical methods
4. Cultural methods
5. Biological control agents
6. Pesticides

c. Pesticide Use

If a pesticide is selected to manage mosquitoes or other insect pests and application of the pesticide will result in a discharge to waters of the State, the permittee must:

1. Conduct larval and/or adult surveillance in an area that is representative of the pest problem or evaluate existing larval surveillance data, environmental conditions, or data from adjacent areas prior to each pesticide application to assess the pest management area and to determine when action threshold(s) is met;

2. Reduce the impact on the environment and on non-target organisms by applying the pesticide only when the action threshold(s) has been met;

3. In situations or locations where practicable and feasible for effective control, use larvicides as a preferred pesticide for mosquito or other insect pest control when the larval action threshold(s) has been met; and

4. In situations or locations where larvicide use is not practicable or feasible for efficacious control, use adulticides for mosquito or other insect pest control when the adult action threshold(s) has been met.

2.2.2 Weed and Algae Pest Control

This part applies to discharges from the application of pesticides for weed, algae, and pathogens as defined in Part 1.1.1.

a. Identify the Problem

Prior to the first pesticide application covered under this permit that will result in a discharge to waters of the State, and at least once each calendar year thereafter prior to the first pesticide application for that calendar year, the permittee must do the following for each pest management area, as defined in Appendix A:

1. Identify areas with pest problems and characterize the extent of the problems, including, for example, water use goals not attained (e.g. wildlife habitat, fisheries, vegetation, and recreation);

2. Identify target pest(s);

3. Identify possible factors causing or contributing to pest problem (e.g., nutrients, invasive species, etc);

4. Establish any pest-specific and site-specific action threshold(s), as defined in Appendix A , for implementing Part 2.2.2.b; and

5. In the event there is no data for the pest management area in the past calendar year, use other available data as appropriate to meet the permit conditions of Part 2.2.2.a.

b. Pest Management Options

Prior to the first pesticide application covered under this permit that will result in a discharge to waters of the State, and at least once each calendar year thereafter prior to the first pesticide application for that calendar year, the permittee must select and implement efficient and effective means of Pest Management Measures that minimize discharges resulting from application of pesticides to control pests. In developing the Pest Management Measures for each pest management area, the permittee must evaluate the following management options, including a combination of these management options, considering impacts to water quality, impacts to non-target organisms, feasibility, and cost effectiveness:

1. No action
2. Prevention
3. Mechanical or physical methods
4. Cultural methods
5. Biological control agents
6. Pesticides

c. Pesticide Use

If a pesticide is selected to manage pests and application of the pesticide will result in a discharge to waters of the State, the permittee must:

1. Conduct surveillance in an area that is representative of the pest problem prior to each pesticide application to assess the pest management area and to determine when the action threshold(s) is met; and

2. Reduce the impact on the environment and non-target organisms by applying the pesticide only when the action threshold(s) has been met.

2.2.3 Animal Pest Control

This part applies to discharges from the application of pesticides for control of animal pests as defined in Part 1.1.1.

a. Identify the Problem

Prior to the first pesticide application covered under this permit that will result in a discharge to waters of the State, and at least once each calendar year thereafter prior to the first pesticide application for that calendar year, the permittee must do the following for each pest management area, as defined in Appendix A:

1. Identify areas with pest problems and characterize the extent of the problems, including, for example, water use goals not attained (e.g. wildlife habitat, fisheries, vegetation, and recreation);

2. Identify target pest(s);

3. Identify possible factors causing or contributing to the problem (e.g., nutrients, invasive species);

4. Establish any pest-specific and site-specific action threshold(s), as defined in Appendix A, for implementing Part 2.2.3.b; and

5. In the event there is no data for the pest management area in the past calendar year, use other available data as appropriate to meet the permit conditions of Part 2.2.3.a.

b. Pest Management Options

Prior to the first pesticide application covered under this permit that will result in a discharge to waters of the State, and at least once each year thereafter prior to the first pesticide application during that calendar year, the permittee must select and implement efficient and effective means of Pest Management Measures that minimize discharges resulting from application of pesticides to control pests. In developing the Pest Management Measures for each pest management area, the permittee must evaluate the following management options, including a combination of these management options, considering impacts to water quality, impacts to non-target organisms, feasibility, and cost effectiveness:

1. No action
2. Prevention
3. Mechanical or physical methods
4. Biological control agents
5. Pesticides

c. Pesticide Use

If a pesticide is selected to manage pests and application of the pesticide will result in a discharge to waters of the State, the permittee must:

1. Conduct surveillance in an area that is representative of pest problem prior to each application to assess the pest management area and to determine when the action threshold(s) is met:; and

2. Reduce the impact on the environment and non-target organisms by evaluating site restrictions, application timing, and application method in addition to applying the pesticide only when the action threshold(s) has been met.

2.4 Forested Area Pest Control

This part applies to discharges from the application of pesticides for forested area pest control as defined in Part 1.1.1.

a. Identify the Problem

Prior to the first pesticide application covered under this permit that will result in a discharge to waters of the State, and at least once each calendar year thereafter prior to the first pesticide application in that calendar year, the permittee must do the following for each pest management area, as defined in Appendix A:

1. Establish any pest-specific and site-specific action threshold(s), as defined in Appendix A, for implementing Part 2.2.4.b;

2. Identify target pest(s) to develop a Pest Management Measures based on developmental and behavioral considerations for each pest;

3. Identify current distribution of the target pest and assess potential distribution in the absence of Pest Management Measures; and

4. In the event there is no data for the pest management area in the past calendar year, use other available data as appropriate to meet the permit conditions of Part 2.2.4.a.

b. Pest Management Options

Prior to the first pesticide application covered under this permit that will result in a discharge to waters of the State, and at least once each calendar year thereafter prior to the first pesticide application for that calendar year, the permittee must select and implement efficient and effective means of Pest Management Measures that minimize discharges resulting from application of pesticides to control pests. In developing the Pest Management Measures for each pest management area, the permittee must evaluate the following management options, including a

combination of these management options, considering impacts to water quality, impacts to non-target organisms, feasibility, and cost effectiveness:

1. No action
2. Prevention
3. Mechanical/physical methods
4. Cultural methods
5. Biological control agents
6. Pesticides

c. Pesticide Use

If a pesticide is selected to manage forestry pests and application of the pesticide will result in a discharge to waters of the State, the permittee must:

1. Conduct surveillance in an area that is representative of the pest problem prior to each application to assess the pest management area and to determine when the pest action threshold(s) is met;

2. Reduce the impact on the environment and non-target organisms by evaluating the restrictions, application timing, and application methods in addition to applying the pesticide only when the action threshold(s) have been met; and

3. Evaluate using pesticides against the most susceptible developmental stage.

2.2.5 Other Pest Control Activities

This part applies to discharges from the application of pesticides not identified in Parts 2.2.1, 2.2.2, 2.2.3, or 2.2.4.

a. Identify the Problem

Prior to the first pesticide application covered under this permit that will result in a discharge to waters of the State, and at least once each calendar year thereafter prior to the first pesticide application in that calendar year, the permittee must do the following for each pest management area, as defined in Appendix A:

1. Establish any pest-specific and site-specific action threshold(s), as defined in Appendix A, for implementing Part 2.2.5.b;

2. Identify target pest(s) to develop Pest Management Measures based on developmental and behavioral considerations for each pest;

3. Identify current distribution of the target pest and assess potential distribution in the absence of Pest Management Measures; and

4. In the event there is no data for the pest management area in the past calendar year, use other available data as appropriate to meet the permit conditions of Part 2.2.5.a.

b. Pest Management Options

Prior to the first pesticide application covered under this permit that will result in a discharge to waters of the State, and at least once each calendar year thereafter prior to the first pesticide application for that calendar year, the permittee must select and implement efficient and effective means of Pest Management Measures that minimize discharges resulting from application of pesticides to control pests. In developing the Pest Management Measures for each pest management area, the permittee must evaluate the following management options, including a combination of these management options, considering impacts to water quality, impacts to non-target organisms, feasibility, and cost effectiveness:

1. No action
2. Prevention
3. Mechanical/physical methods

4. Cultural methods
5. Biological control agents
6. Pesticides

c. Pesticide Use

If a pesticide is selected to manage other activities not covered under the other four use patterns and application of the pesticide will result in a discharge to waters of the State, the permittee must:

1. Conduct surveillance in an area that is representative of the pest problem prior to each application to assess the pest management area and to determine when the pest action threshold(s) is met;

2. Reduce the impact on the environment and non-target organisms by evaluating the restrictions, application timing, and application methods in addition to applying the pesticide only when the action threshold(s) have been met; and

3. Evaluate using pesticides against the most susceptible developmental stage.

3.0 Water Quality-Based Effluent Limitations

All permittees must control discharges as necessary to meet applicable numeric and narrative State water quality standards, for any discharge authorized under this permit, with compliance required upon the beginning of such discharge. Discharges covered by this permit, alone or in combination with other sources, shall not cause a violation of any applicable water quality standards outlined in 35 Ill. Adm. Code 302, in light of the provisions of 35 Ill. Adm. Code 302.210(g).

If at any time a permittee becomes aware (e.g., through self-monitoring or by notification from the State), or IEPA determines, that the discharge causes or contributes to an excursion of applicable water quality standards, the permittee must take corrective action as required in Part 6, up to and including the ceasing of the discharge, if necessary.

4.0 Monitoring

4.1 Visual Monitoring Requirements

During any pesticide application or post-application surveillance of any pesticide application with discharges authorized under this permit, all permittees must, when considerations for safety and feasibility allow and while observing reentry periods for pesticides application, visually assess the area to and around where pesticides are applied for possible and observable adverse incidents, as defined in Appendix A, caused by application of pesticides, including the unanticipated death or distress of non-target organisms and disruption of wildlife habitat, recreational or municipal water use.

If the permittee is not the applicator, this section is also applicable to the contract applicator.

5.0 Pesticide Discharge Management Plan

Permittees which exceed one or more of the annual treatment area thresholds listed in Table 3 must prepare and submit a Pesticide Discharge Management Plan (PDMP). This section does not apply to the following:

1. Any application made in response to a declared pest emergency situation, as defined in Appendix A.

2. Permittees who meet the definition of a small entity, as defined in Appendix A.

3. Permittees conducting pesticide application activities pursuant to the Vector Control Act (410 ILCS 95) which are funded by, conducted in accordance with, or under the supervision of the Illinois Department of Public Health or an associated municipal, county or regional department of public health or public health district.

For the first year of the permit the PDMP must be submitted 90-days after the date of coverage under this permit. After October 31, 2012, the PDMP and all supporting documents must be submitted with the NOI. The PDMP must be submitted electronically in Adobe Acrobat format to epa.ILG87pestPDMP@illinois.gov.

The plan must be kept up-to-date thereafter for the duration of coverage under this general permit, even if the discharges subsequently fall below the applicable treatment area thresholds listed in Table 3.

The PDMP does not contain effluent limitations as the effluent limitations are specified in Parts 2 and 3 of the permit. The PDMP documents how the permittee will implement the effluent limitations in Parts 2 and 3 of the permit, including the evaluation and selection of Pest Management Measures to meet those effluent limitations in order to minimize discharges. In the PDMP, the permittee may incorporate by reference any procedures or plans in other documents that meet the requirements of this permit. If the permittee relies upon other documents to comply with the effluent limitations in this permit, such as a pre-existing pest management plan, the permittee must attach to the PDMP a copy of any portions of any documents that are used to document the implementation of the effluent limitations.

5.1 Contents of the Pesticide Discharge Management Plan

The PDMP must include the following elements:

a. Pesticide Discharge Management Plan Team
b. Problem Identification
c. Pest Management Options Evaluation
d. Response Procedures
   1. Spill Response Procedures
   2. Adverse Incident Response Procedures
e. Signature Requirements

5.1.1 PDMP Team

Permittees must identify all persons (by name and contact information) that compose the team as well as each person's individual responsibilities, including:

a. Person(s) responsible for managing pests in relation to the pest management area;

b. Person(s) responsible for developing and revising the PDMP; and

c. Person(s) responsible for developing, revising, and implementing corrective actions and other effluent limitation requirements.

5.1.2 Problem Identification

Permittees must document the following:

a. Pest problem description. Document a description of the pest problem at the pest management area, including identification of the target pest(s), source(s) of the pest problem, and source of data used to identify the problem in Parts 2.2.1, 2.2.2, 2.2.3, 2.2.4, and 2.2.5.

b. Action Threshold(s). Describe the action threshold(s) for the pest management area, including the data used in developing the action threshold(s) and method(s) to determine when the action threshold(s) has been met.

c. General location map. In the plan, include a general location map (e.g., USGS quadrangle map, a portion of a city or county map, or other map) that identifies the geographic boundaries of the area to which the plan applies and location of the waters of the State.

d. Water quality standards. Document any water(s) identified as impaired by a substance which either is an active ingredient or a degradate of such an active ingredient.

˙.1.3 Pest Management Options Evaluation

Permittees must document the evaluation of the pest management options, including combination of the pest management options, to control the target pest(s). Pest management options include the following: No action, prevention, mechanical/physical methods, cultural methods, biological control agent, and pesticides. In the evaluation, permittees must consider the impact to water quality, impact to non-target organisms, feasibility, cost effectiveness, and any relevant previous Pest Management Measures.

5.1.4 Response Procedures

Permittees must document the following procedures in the PDMP:

a. Spill Response Procedures – At a minimum, the permittees must have:

   1. Procedures for expeditiously stopping, containing, and cleaning up leaks, spills, and other releases to waters of the State. Employees who may cause, detect, or respond to a spill or leak must be trained in these procedures and have necessary spill response equipment available. If possible, one of these individuals should be a member of the PDMP team.

   2. Procedures for notification of appropriate facility personnel, emergency response agencies, and regulatory agencies.

b. Adverse Incident Response Procedures – At a minimum, the permittees must have:

   1. Procedures for responding to any adverse incident resulting from pesticide applications.

   2. Procedures for notification of the adverse incident, both internal to the permittee agency/organization and external. Contact information for State permitting agency, nearest emergency medical facility, and nearest hazardous chemical responder must be in locations that are readily accessible and available.

5.1.5 Signature Requirements

Permittees must sign, date and certify the PDMP in accordance with Appendix B.

5.2 Pesticide Discharge Management Plan Modifications

Permittees must modify the PDMP whenever necessary to address any of the conditions for corrective action in Part 6.1 or when a change in pest control activities significantly changes the type or quantity of pollutants discharged. Changes to the PDMP must be made before the next pesticide application that results in a discharge, if practicable, or if not, no later than 90 days after any change in pesticide application activities. The revised PDMP must be signed and dated in accordance with Appendix B. Permittees must submit the modified PDMP electronically to epa.ILG87pestPDMP@illinois.gov.

5.3 Pesticide Discharge Management Plan Availability

Permittees must retain a copy of the current PDMP, along with all supporting maps and documents, at the address provided on the NOI. The PDMP and all supporting documents must be readily available and copies of any of these documents provided, upon request, to IEPA or to any local agency governing discharges or pesticide applications within their respective jurisdictions; and to representatives of any federal or state agencies. IEPA may provide copies of the PDMP or other information related to this permit that is in its possession to members of the public. Any Confidential Business Information (CBI), as defined in 40 CFR Part 2, may be withheld from the public provided that a claim of confidentiality is properly asserted and documented in accordance with 40 CFR Part 2; however, CBI must be submitted to IEPA, if requested, and may not be withheld from those staff within IEPA, or any other state or federal agency cleared for CBI review.

6.0 Corrective Action

All permittees must comply with the provisions of Part 6 for any discharges authorized under this permit, with compliance required upon the beginning of such discharge. If the permittee is not the applicator, this section is also applicable to the contract applicator.

6.1 Situations Requiring Revision of Pest Management Measures

Permittees must review and, as necessary, revise the evaluation and selection of Pest Management Measures consistent with Parts 2.1 and 2.2 for the following situations:

a. An unauthorized release or discharge associated with the application of pesticides (e.g., spill, leak, or discharge not authorized by this or another NPDES permit) occurs.

b. Permittee becomes aware, or IEPA concludes, that Pest Management Measures are not adequate/sufficient for the discharge to meet applicable State water quality standards;

c. Any monitoring activities indicate failure to meet applicable technology-based effluent limitations in Part 2.

d. An inspection or evaluation of activities by IEPA reveals that modifications to the Pest Management Measures are necessary to meet the effluent limitations in this permit.

e. Any permittee observes or is otherwise made aware of an adverse incident, as defined in Appendix A.

6.2 Corrective Action Deadlines

If a permittee determines that changes to the Pest Management Measures are necessary to eliminate any situation identified in Part 6.1, such changes must be made before or, if not practicable, as soon as possible after the next pesticide application that results in a discharge.

6.3 Effect of Corrective Action

The occurrence of a situation identified in Part 6.1 may constitute a violation of the permit. Correcting any situation identified in Part 6.1 does not absolve permittees of liability for any original violation. However, failure to comply with Part 6.2 constitutes an additional permit violation. IEPA will consider the appropriateness and promptness of corrective action in determining enforcement responses to permit violations.

IEPA may impose additional requirements and schedules of compliance, including requirements to submit additional information concerning the condition(s) requiring corrective action or schedules and requirements more stringent than specified in this permit. Those requirements and schedules will supersede those of Parts 6.1 and 6.2 if such requirements conflict.

6.4 Adverse Incident Documentation and Reporting

6.4.1 Twenty-Four Hour Adverse Incident Notification

6.4.1.1 Adverse Incident Notification Required

If a permittee observes or is otherwise made aware of an adverse incident, as defined in Appendix A, which may have resulted from a discharge from a pesticide application, made by the permittee or a contract applicator, the permittee must immediately notify the Illinois Emergency Management Agency (IEMA) and USEPA, Region 5, Pesticide Program. This notification must be made by telephone within 24 hours of the permittee becoming aware of the adverse incident and must include at least the following information:

a. The caller's name and telephone number;

b. Permittees name and mailing address;

c. NPDES permit number;

d. The name and telephone number of a contact person, if different than the person providing the 24-hour notice;

e. How and when the permittee became aware of the adverse incident;

f. Description of the location of the adverse incident;

g. Description of the adverse incident identified and the pesticide product, including USEPA pesticide registration number, for each product applied in the area of the adverse incident; and

h. Description of any steps the permittee has taken or will take to correct, repair, remedy, clean-up, or otherwise address any adverse effects.

If a permittee is unable to notify IEMA within 24 hours, the permittee must do so as soon as possible and also provide an appropriate rationale why the permittee was unable to provide such notification within 24 hours.

The adverse incident notification and reporting requirements are in addition to what the registrant is required to submit under FIFRA section 6(a)(2) and its implementing regulations at 40 CFR Part 159.

6.4.1.2 Adverse Incident Notification Not Required

Reporting of adverse incidents is not required under this permit in the following situations:

a. A permittee is aware of facts that indicate that the adverse incident was not related to toxic effects or exposure from the pesticide application;

b. A permittee has been notified by IEMA and retains such notification, that the reporting requirement has been waived for this incident or category of incidents;

c. A permittee receives information of an adverse incident, but that information is clearly erroneous; or

d. An adverse incident occurs to pests that are similar in kind to potential target pests identified on the FIFRA label.

6.4.2 Fifteen Day Adverse Incident Written Report

Within fifteen (15) business days of a reportable adverse incident pursuant to Part 6.4.1, permittees must provide a written report of the adverse incident to the IEPA Compliance Assurance Section. Permittees must submit the 15-day adverse incident report electronically to epa.ILG87pest5day@illinois.gov. The adverse incident report must include at least the following information:

a. Information required to be provided in Part 6.4.1;

b. Date and time the permittee contacted IEMA notifying the Agency of the adverse incident, who the permittee spoke with at IEMA, and any instructions received from IEMA;

c. Location of incident, including the names of any waters affected and appearance of those waters (sheen, color, clarity, etc);

d. A description of the circumstances of the adverse incident including species affected, estimated number of individual and approximate size of dead or distressed organisms;

e. Magnitude and scope of the affected area (e.g. estimate aquatic surface area or total stream distance affected);

f. Pesticide application rate; intended use site (e.g., on the bank, above waters, or directly to water), method of application; and name of pesticide product and USEPA pesticide registration number;

g. Description of the habitat and the circumstances under which the adverse incident occurred (including any available ambient water data for pesticides applied);

h. If laboratory tests were performed, an indication of what test(s) were performed, and when; additionally, a summary of the test results within 5 days after they become available if not available at the time of submission of the 15-day adverse incident report;

i. Description of actions to be taken to prevent recurrence of adverse incidents; and

j. Signature, date, and certification in accordance with Appendix B.

The Adverse Incident Report form is available on the Internet at www.epa.state.il.us/water/permits/pesticide/forms.html.

6.4.3 Adverse Incident to Federally Threatened or Endangered Species or Critical Habitat

Notwithstanding any of the other adverse incident notification requirements of this section, if a permittee or contract applicator becomes aware of an adverse incident affecting a federally listed threatened or endangered species or its federally designated critical habitat which may have resulted from a discharge from the permittee's pesticide application, the permittee must immediately notify the United States Fish and Wildlife Service (FWS). This information must be made by telephone, to the contacts listed on USFWS's website at www.fws.gov/offices, immediately upon the permittee becoming aware of the adverse incident, and must include at least the following information:

a. The caller's name and telephone number;

b. Permittee name and mailing address;

c. The name of the affected species;

d. How and when the permittee became aware of the adverse incident;

e. Description of the location of the adverse incident;

f. Description of the adverse incident and the pesticide product, including the USEPA pesticide registration number, for each product applied in the area of the adverse incident, and;

g. Description of any steps the permittee has taken or will take to alleviate the adverse impact to the species.

Additional information on federally listed threatened or endangered species and federally designated critical habitat is available from FWS (www.fws.gov) for terrestrial or freshwater species.

6.5 Reportable Spills and Leaks

6.5.1 Spill, Leak, or Other Unpermitted Discharge Notification

Where a leak, spill, or other release into waters of the State containing a hazardous substance or oil in an amount equal to or in excess of a reportable quantity established under either 40 CFR Part 110, 40 CFR Part 117, or 40 CFR Part 302 occurs in any 24-hour period, the permittee or contract applicator must notify the National Response Center (NRC) at (800) 424-8802 in accordance with the requirements of 40 CFR Part 110, 40 CFR Part 117, and 40 CFR Part 302. The permittee must also notify IEMA at (800) 782-7860. Both of these Agencies shall be notified immediately and as soon as the permittee has knowledge of the release. Contact information must be in locations that are readily accessible and available in the area where the spill, leak, or other unpermitted discharge may occur.

Local requirements may necessitate also reporting spills or leaks to local emergency response, public health, or drinking water supply agencies.

6.5.2 Fifteen-Day Spill, Leak, or Other Unpermitted Discharge Documentation

If a permittee becomes aware of a spill, leak, or other unpermitted discharge which initiates the notification requirements in Part 6.5.1 and results in an adverse incident, then the permittee must report the incident per the requirements in Parts 6.4.1 and 6.4.2. If the spill, leak, or other unpermitted discharges initiates the notification

requirements in Part 6.5.1, but does not result in an adverse incident, then permittee must document and retain the following information within 15 business days of becoming aware of the situation:

a. Information required to be provided in Part 6.5.1

b. Summary of corrective action taken or to be taken including date initiated and date completed or expected to be completed; and

c. Any measures to prevent recurrence of such a spill or leak or other discharge, including notice of whether PDMP modifications are required as a result of the spill or leak.

6.6 Other Corrective Action Documentation

For situations identified in Part 6.1, other than for adverse incidents (addressed in Part 6.4), or reportable spills or leaks (addressed in Part 6.5), permittees must document the situation requiring corrective action and the planned corrective action within fifteen (15) business days of becoming aware of that situation and retain a copy of this documentation. This documentation must include the following information:

a. Identification of the condition requiring the need for corrective action review, including any ambient water quality monitoring that assisted in determining that discharges did not meet water quality standards;

b. Brief description of the situation;

c. Date the problem was identified.

d. Brief description of how the problem was identified, how the permittee learned of the situation, and date the permittee learned of the situation;

e. Summary of corrective action taken or to be taken, including date initiated and date completed or expected to be completed; and

f. Any measures to prevent reoccurrence of such an incident, including notice of whether PDMP modifications are required as a result of the incident.

7.0 Recordkeeping and Annual Reporting

The recordkeeping and annual reporting requirements vary depending on whether a permittee meets the definition of a small entity, as defined in Appendix A, and/or exceeds one or more of the annual treatment area thresholds listed in Table 3.

Permittees must keep written records as required in this permit for all discharges covered under this permit. These records must be accurate and complete to demonstrate the permittees compliance with the conditions of this permit. Permittees may rely on records and documents developed for other obligations, such as requirements under FIFRA, and state or local pesticide programs, provided all requirements of this permit are satisfied.

IEPA recommends that all permittees covered under this permit keep records of acres or linear miles treated for all applicable use patterns covered under this general permit. The records shall be kept up-to-date to help the permittee determine if the annual treatment area thresholds, as identified in Part 2.2, are met during any calendar year.

7.1 Level 1: Recordkeeping

Level 1 recordkeeping applied to all permittees which must keep the following records:

a. A copy of the NOI submitted to IEPA, any correspondence exchanged between the permittee and IEPA specific to coverage under this permit, and a copy of the IEPA acknowledgment letter assigning the permit number;

b. A copy of this permit;

c. A copy of any Adverse Incident Reports (Part 6.4.2);

d. Rationale for any determination that reporting of an identified adverse incident is not required consistent with allowances identified in Part 6.4.1.2;

e. A copy of any corrective action documentation (Part 6.6);

f. A copy of any spill, leak, or other unpermitted discharge documentation (Part 6.5.2); and

g. Endangered Species Compliance Documentation

Permittees conducting pesticide application activities pursuant to the Vector Control Act (410 ILCS 95) which are funded by, conducted in accordance with, or under the supervision of the Illinois Department of Public Health or an associated municipal, county or regional department of public health or public health district are only required to perform Level 1 recordkeeping.

7.2 Level 2: Recordkeeping

Level 2 recordkeeping applies to permittees which exceed one or more of the annual treatment area thresholds listed in Table 3 and meet the definition of a small entity, as defined in Appendix A, must retain the following records at the address provided on the NOI. If the permittee is not the applicator, some of the records listed below shall be kept by the contract applicator.

a. Documentation of equipment calibration; and

b. Information on each treatment area to which pesticides are discharged, including:

1. Description of treatment area, by name and/or location including the size (acres or linear feet) of treatment area, as well as the closest named waters of the State to which pesticide(s) discharged are tributary;

2. Pesticide use pattern(s) (i.e., mosquito or other insect pest control, etc.)

3. Target pest(s) and explanation of need for pest control;

4. Description of pest management measures(s) implemented prior to the first pesticide application;

5. If different from the permittee, company name and contact information for contract applicator;

6. Name of each pesticide product used including the USEPA pesticide registration number;

7. Quantity of each pesticide product applied to each treatment area;

8. Pesticide application start and end date(s);

9. Whether or not visual monitoring was conducted during pesticide application and/or post-application and if not; why not and whether monitoring identified any possible or observable adverse incidents caused by application of pesticides; and

10. Name of any waters of the State in the treatment area currently listed as impaired for pesticides on the 303(d) list. This should include the name of the pesticide for which it is impaired.

An evaluation worksheet for documenting this information for each treatment area is available on the Internet at www.epa.state.il.us/water/permits/pesticide/forms.html.

7.3. Level 3: Recordkeeping

Level 3 recordkeeping applies to permittees which exceed one or more of the annual treatment area thresholds listed in Table 3 and do not meet the definition of a small entity, as defined in Appendix A, must retain the following

records at the address provided on the NOI. If the permittee is not the applicator, some of the records listed below shall be kept by the contract applicator.

a. A copy of the PDMP, including any modifications made to the PDMP during the term of this permit;

b. A copy of the annual reports submitted to IEPA;

c. Documentation of equipment calibration; and

d. Information on each treatment area to which pesticides are discharged, including:

1. Description of treatment area, by name and/or location including the size (acres or linear feet) of treatment area, as well as the closest named waters of the State to which pesticide(s) discharged are tributary;

2. Pesticide use pattern(s) (i.e., mosquito or other insect pest control, etc.)

3. Target pest(s) and explanation of need for pest control;

4. Action threshold(s);

5. Method and/or data used to determine that action threshold(s) has been met;

6. Description of pest management measures(s) implemented prior to the first pesticide application;

7. If different from the permittee, company name and contact information for contract applicator;

8. Name of each pesticide product used including the USEPA pesticide registration number;

9. Quantity of each pesticide product applied to each treatment area;

10. Pesticide application start and end date(s);

11. Whether or not visual monitoring was conducted during pesticide application and/or post-application and if not; why not and whether monitoring identified any possible or observable adverse incidents caused by application of pesticides; and

12. Name of any waters of the State in the treatment area currently listed as impaired for pesticides on the 303(d) list. This should include the name of the pesticide for which it is impaired.

7.4 Additional Recordkeeping Requirements for All Permittees

All required records must be documented as soon as possible but no later than 15 business days following completion each pesticide application. Permittees must retain any records required under this permit for at least 3 years from the date that coverage under this permit expires or is terminated. Permittees must make available to IEPA, including an authorized representative of IEPA, all records kept under this permit upon request and provide copies of such records, upon request.

7.5 Annual Reporting

Permittees which exceed one or more of the annual treatment area thresholds listed in Table 3 and do not meet the definition of a small entity, as defined in Appendix A, must submit an annual report to IEPA. Once the permittee meets the obligation to submit an annual report, the permittee must submit an annual report each calendar year thereafter for the duration of coverage under this general permit, whether or not the permittee has discharges from the application of pesticides in any subsequent calendar year. Permittees must submit the annual report electronically to epa.ILG87pestAnnRep@illinois.gov. The annual report must be submitted to IEPA no later than February 15th of the following year for all pesticide activities covered under this permit occurring during the previous calendar year. Annual reports are to be submitted beginning in 2012 for discharges from pesticide applications beginning prior to January 1, 2012.

Permittees conducting pesticide application activities pursuant to the Vector Control Act (410 ILCS 95) which are funded by, conducted in accordance with, or under the supervision of the Illinois Department of Public Health or an associated municipal, county or regional department of public health or public health district are not required to submit an annual report.

The annual report must include information for the calendar year, with the first annual report required to include activities for the portion of the calendar year after the effective date of the NOI. If the effective date is after December 1, the permittee is not required to submit an annual report for that first partial year but must submit annual reports thereafter, with the first annual report submitted also including information from the first partial year.

When permittees terminate permit coverage, as specified in Part 1.2.5, an annual report must be submitted for the portion of the year up through the date of termination. The annual report is due no later than 45-days after the termination date, or February 15th of the following year, whichever is earlier.

The annual report must contain the following information:

a. Permittee's name and contact information;

b. NPDES permit number;

c. Contact person name, title, e-mail address (if any), and phone number; and

d. For each treatment area, report the following information:

   1. Description of treatment area, by name and/or location including the size (acres or linear feet) of treatment area, as well as the closest named waters of the State to which pesticide(s) discharge are tributary;

   2. Pesticide use pattern(s) (i.e., mosquito and other insects, etc.) and target pest(s);

   3. Company name(s) and contact information for the pesticide applicator(s), if different from the permittee;

   4. Total amount of each pesticide product applied for the reporting year by the USEPA pesticide registration number(s) and by application method (e.g., aerially by fixed-wing or rotary aircraft, broadcast spray, etc.);

   5. Whether this pest control activity was addressed in the PDMP prior to pesticide application;

   6. If applicable, an annual report of any adverse incidents as a result of these treatment(s), for incidents, as described in Part 6.4.1; and

   7. If applicable, description of any corrective action(s), including spill responses, resulting from pesticide application activities and the rationale for such action(s).

The Annual Report form is available on the Internet at www.epa.state.il.us/water/permits/pesticide/forms.html.

8.0 Contact Information and Mailing Addresses

Permittees must submit the following documents to the email addresses listed below.

a. PDMP to epa.ILG87pestPDMP@illinois.gov

b. Annual Reports to epa.ILG87pestAnnRep@illinois.gov

c. Within 15 business days of becoming aware of an adverse incident, permittees must send all incident reports under Part 6.4 to epa.ILG87pest5day@illinois.gov

All other written correspondence concerning discharges covered under this permit and directed to the IEPA, including individual NPDES permit applications, must be sent to the IEPA Headquarters address listed below.

Note: If IEPA notifies dischargers (either directly, by public notice, or by making information available on the Internet) of other reporting options that become available at a later date (e.g., electronic submission), permittees may take advantage of those options, in accordance with the instructions provided by IEPA, to satisfy the reporting requirements of this permit.

8.1 IEPA Headquarters Address

Illinois Environmental Protection Agency
Division of Water Pollution Control, Mail Code #15
Attention: Permit Section
1021 North Grand Avenue East
P.O. Box 19276
Springfield, Illinois 62794-9276
www.epa.state.il.us./water/permits/pesticide/index.html

8.2 USEPA, Region 5 Address

United States Environmental Protection Agency
Region 5
Attention: Pesticide Program
77 W. Jackson Blvd.
Chicago, IL 60604

Appendix A
Definitions, Abbreviations, and Acronyms

A.1. DEFINITIONS

Action Threshold – the point at which pest populations or environmental conditions cannot be tolerated necessitating that pest control action be taken based on economic, human health, aesthetic, or other effects. An action threshold may be based on current and/or past environmental factors that are or have been demonstrated to be conducive to pest emergence and/or growth, as well as past and/or current pest presence. Action thresholds are those conditions that indicate both the need for control actions and the proper timing of such actions.

Active Ingredient – any substance (or group of structurally similar substances if specified by the Agency) that will prevent, destroy, repel or mitigate any pest, or that functions as a plant regulator, desiccant, or defoliant within the meaning of FIFRA sec. 2(a). [40 CFR 152.3] Active ingredient also means a pesticidal substance that is intended to be produced and used in a living plant, or in the produce thereof, and the genetic material necessary for the production of such a pesticidal substance. [40 CFR 174.3]

Adverse Incident – means an unusual or unexpected incident that a permittee or contract applicator has observed upon inspection or of which the permittee otherwise become aware, in which:

1. There is evidence that a person or non-target organism has likely been exposed to a pesticide residue, and

2. The person or non-target organism suffered a toxic or adverse effect.

The phrase toxic or adverse effects includes effects that occur within waters of the State on non-target plants, fish or wildlife that are unusual or unexpected (e.g., effects are to organisms not otherwise described on the pesticide product label or otherwise not expected to be present) as a result of exposure to a pesticide residue, and may include:

- Distressed or dead juvenile and small fishes
- Washed up or floating fish
- Fish swimming abnormally or erratically
- Fish lying lethargically at water surface or in shallow water
- Fish that are listless or nonresponsive to disturbance
- Stunting, wilting, or desiccation of non-target submerged or emergent aquatic plants
- Other dead or visibly distressed non-target aquatic organisms (amphibians, turtles, invertebrates, etc.)

The phrase, toxic or adverse effects, also includes any adverse effects to humans (e.g., skin rashes) or domesticated animals that occur either from direct contact with or as a secondary effect from a discharge (e.g., sickness from consumption of plants or animals containing pesticides) to waters of the State that are temporally and spatially related to exposure to a pesticide residue (e.g., vomiting, lethargy).

Annual Treatment Area Threshold – an area (in acres) or in linear distance (in miles) in a calendar year to which a permittee is authorizing and/or performing pesticide applications in that area for activities covered under this permit.

Applicator – any person(s) who performs the application of a pesticide or who has day-to-day control of the application (i.e., they are authorized to direct workers to carry out those activities) that results in a discharge to waters of the State.

Biological Control Agents – these agents are organisms that can be introduced to operator sites, such as herbivores, predators, parasites, and hyperparasites. [Source: USFWS IPM Guidance, 2004]

Biological Pesticides (also called biopesticides) – include microbial pesticides, biochemical pesticides and plant-incorporated protectants (PIP). Microbial pesticide means a microbial agent intended for preventing, destroying, repelling, or mitigating any pest, or intended for use as a plant regulator, defoliant, or dessicant, that (1) is a eucaryotic microorganism including, but not limited to, protozoa, algae, and fungi; (2) is a procaryotic microorganism, including, but not limited to, Eubacteria and Archaebacteria; or (3) is a parasitically replicating microscopic element, including but not limited viruses. [40 CFR 158.2100(b)] Biochemical pesticide mean a pesticide that (1) is a naturally-occurring substance or ucturally-similar and functionally identical to a naturally-occurring substance; (2) has a history of exposure to humans and the environment demonstrating minimal toxicity, or in the case of a synthetically-derived biochemical pesticides, is equivalent to a naturally-occurring substance that has such a history; and (3) has a non-toxic mode of action to the target

pest(s). [40 CFR 158.2000(a)(1)] Plant-incorporated protectant means a pesticidal substance that is intended to be produced and used in a living plant, or in the produce thereof, and the genetic material necessary for production of such a pesticidal substance. It also includes any inert ingredient contained in the plant, or produce thereof. [40 CFR 174.3]

Chemical Pesticides – all pesticides not otherwise classified as biological pesticides.

Contract Applicator – any person(s) who make contractual pesticide applications for which they or their employer receives compensation (e.g., pest control companies).

Cultural Methods – manipulation of the habitat to increase pest mortality by making the habitat less suitable to the pest.

Declared Pest Emergency Situation – an event defined by a public declaration by a federal, state, or local governmental body or agency of a pest problem determined to require control through application of a pesticide beginning less than ten days after identification of the need for pest control. This public declaration may be based on:

1. Significant risk to human health;
2. Significant economic loss; or
3. Significant risk to:
   i. Endangered species,
   ii. Threatened species,
   iii. Beneficial organisms, or
   iv. The environment.

Director – means the Director of the Illinois Environmental Protection Agency or an authorized representative.

Discharge – when used without qualification, means the "discharge of a pollutant." [40 CFR 122.2]

Discharge of a pollutant – any addition of any "pollutant" or combination of pollutants to "waters of the State" from any point source," or any addition of any pollutant or combination of pollutants to the water of the "contiguous zone" or the ocean from any point source other than a vessel or other floating craft that is being used as a means of transportation. This includes additions of pollutants into waters of the State from: surface runoff that is collected or channeled by man; discharges through pipes, sewers, or other conveyances, leading into privately owned treatment works. [Excerpted from 40 CFR 122.2]

USEPA Approved or Established Total Maximum Daily Loads (TMDLs) – "USEPA Approved TMDLs" are those that are developed by the State and approved by USEPA. "USEPA Established TMDLs" are those that are issued by USEPA.

Facility or Activity – any NPDES "point source" (including land or appurtenances thereto) that is subject to regulation under the NPDES program. [40 CFR 122.2]

Impaired Water (or "Water Quality Impaired Water" or "Water Quality Limited Segment") – a water is impaired for purposes of this permit if it has been identified by the State pursuant to Section 303(d) of the Clean Water Act as not meeting applicable State water quality standards (these waters are called "water quality limited segments" under 40 CFR 130.2(j)). Impaired waters include both waters with approved or established TMDLs, and those for which a TMDL has not yet been approved or established.

Inert Ingredient – any substance (or group of structurally similar substances if designated by the Agency), other than an active ingredient, that is intentionally included in a pesticide product. [40 CFR 152.3] Inert ingredient also means any substance, such as a selectable marker, other than the active ingredient, where the substance is used to confirm or ensure the presence of the active ingredient, and includes the genetic material necessary for the production of the substance, provided that genetic material is intentionally introduced into a living plant in addition to the active ingredient. [40 CFR 174.3]

Mechanical/Physical Methods – mechanical tools or physical alterations of the environment, for pest prevention or removal.

Minimize – to reduce and/or eliminate pesticide discharges to waters of the State through the use of Pest Management Measures to the extent technologically available and economically practicable and achievable.

Non-target Organisms – includes the plant and animal hosts of the target species, the natural enemies of the target species living in the community, and other plants and animals, including vertebrates, living in or near the community that are not the target of the pesticide.

Operator – for the purpose of this permit, means any person(s) associated with the application of a pesticide that results in a discharge to waters of the State that meets either or both of the following two criteria:

a. The person(s) with control over the hiring of a contract applicator, or making the decision to perform pesticide applications, including the ability to modify those decisions, that results in a discharge to waters of the State, or

b. The person(s) who performs the application of pesticides or who has day-to-day control of the pesticide application, that results in a discharge to waters of the State.

Outstanding Resource Water – is a surface water body or water body segment that is of exceptional ecological or recreational significance and must be designated by the Illinois Pollution Control Board pursuant to 35 Ill. Adm. Code 102.Subpart H.

Permittee – an operator that has obtained coverage under this general permit.

Person – any individual, partnership, co-partnership, firm, company, limited liability company, corporation, association, joint stock company, trust, estate, political subdivision, state agency, or any other legal entity, or their legal representative, agent or assigns.

Pest – consistent with 40 CFR 152.5, any organism under circumstances that make it deleterious to man or the environment, if it is:

a. Any vertebrate animal other than man;

b. Any invertebrate animal, including but not limited to, any insect, other arthropod, nematode, or mollusk such as a slug and snail, but excluding any internal parasite of living man or other living animals;

c. Any plant growing where not wanted, including any moss, alga, liverwort, or other plant of any higher order, and any plant part such as a root; or

d. Any fungus, bacterium, virus, or other microorganism, except for those on or in living man or other living animals and those on or in processed food or processed animal feed, beverages, drugs (as defined in FFDCA sec. 201(g)(1)) and cosmetics (as defined in FFDCA sec. 201(i)).

Pest Management Area – the area of land, including any water, for which the permittee has responsibility for and is authorized to conduct pest management activities as covered by this permit (e.g., for a permittee who is a mosquito control district, the pest management area is the total area of the district).

Pest Management Measure – any practice used to meet the effluent limitations that comply with manufacturer specifications, industry standards and recommended industry practices related to the application of pesticides, relevant legal requirements and other provisions that a prudent permittee would implement to reduce and/or eliminate pesticide discharges to waters of the State.

Pesticide – means (1) any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest, (2) any substance or mixture of substances intended for use as a plant regulator, defoliant, or desiccant, and (3) any nitrogen stabilizer, except that the term "pesticide" shall not include any article that is a "new animal drug" within the meaning of section 201(w) of the Federal Food, Drug, and Cosmetic Act (21 U.S.C. 321(w)), that has been determined by the Secretary of Health and Human Services not to be a new animal drug by a regulation establishing conditions of use for the article, or that is an animal feed within the meaning of section 201(x) of such Act (21 U.S.C. 321(x)) bearing or containing a new animal drug. The term "pesticide" does not include liquid chemical sterilant products (including any sterilant or subordinate disinfectant claims on such products) for use on a critical or semi-critical device, as defined in section 201 of the Federal Food, Drug, and Cosmetic Act (21 U.S.C. 321). For purposes of the preceding sentence, the term "critical device" includes any device that introduced directly into the human body, either into or in contact with the bloodstream or normally sterile areas of the body and the term "semi-critical device" includes any device that contacts intact mucous membranes but

which does not ordinarily penetrate the blood barrier or otherwise enter normally sterile areas of the body. [FIFRA Section 2(u)]

The term "pesticide" applies to insecticides, herbicides, fungicides, rodenticides, and various other substances used to control pests. The definition encompasses all uses of pesticides authorized under FIFRA including uses authorized under sections 3 (registration), 5 (experimental use permits), 18 (emergency exemptions), 24(c) (special local needs registrations), and 25(b) (exemptions from FIFRA).

Note: Drugs used to control diseases of humans or animals (such as livestock and pets) are not considered pesticides; such drugs are regulated by the Food and Drug Administration. Fertilizers, nutrients, and other substances used to promote plant survival and health are not considered plant growth regulators and thus are not pesticides. Biological control agents, except for certain microorganisms, are exempted from regulation under FIFRA. (Biological control agents include beneficial predators such as birds or ladybugs that eat insect pests, parasitic wasps, fish, etc).

This permit uses the term "pesticide" when referring to the "pesticide, as applied." When referring to the chemical in the pesticide product with pesticidal qualities, the permit uses the term "active ingredient."

Pesticide Product – a pesticide in the particular form (including composition, packaging, and labeling) in which the pesticide is, or is intended to be, distributed or sold. The term includes any physical apparatus used to deliver or apply the pesticide if distributed or sold with the pesticide.

Pesticide Research and Development – activities undertaken on a systematic basis to gain new knowledge (research) and/or the application of research findings or other scientific knowledge for the creation of new or significantly improved products or processes (experimental development).

Pesticide Residue – includes that portion of a pesticide application that is discharged from a point source to waters of the State and no longer provides pesticidal benefits. It also includes any degradates of the pesticide.

Point Source – any discernible, 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 stormwater runoff. [40 CFR 122.2]

Pollutant – dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt, and industrial, municipal, and agricultural waste discharged into water. [Excerpted from 35 Ill. Adm. Code 301.340] For purposes of this definition, a "biological pesticide" is considered a "biological material," and any "pesticide residue" resulting from use of a "chemical pesticide" is considered a "chemical waste." [Excerpted from 40 CFR 122.2]

Small Entity – any (1) public entity that serves a population of 10,000 or less, (2) a person(s) applying pesticides on private property where they or any member of their immediate family reside or property that they own or lease, or (3) a private enterprise that does not exceed the Small Business Administration size standard as identified at 13 CFR 121.201.

Target Pest – the organism(s) toward which pest management measures are being directed.

Total Maximum Daily Loads (TMDLs) – a TMDL is a calculation of the maximum amount of a pollutant that a water body can receive and still meet water quality standards, and an allocation of that amount of the pollutant's sources. A TMDL includes wasteload allocations (WLAs) for point source discharges, load allocations (LAs) for nonpoint sources and/or natural background, and must include a margin of safety (MOS) and account for seasonal variations. [See section 303(d) of the Clean Water Act and 40 CFR 130.2 and 130.7]

Treatment Area – the entire area, whether over land or water, where a pesticide application is intended to provide pesticidal benefits within the pest management area. In some instances, the treatment area will be larger than the area where pesticides are actually applied. For example, the treatment area for a stationary drip treatment into a canal includes the entire width and length of the canal over which the pesticide is intended to control weeds. Similarly, the treatment area for a lake or marine area is the water surface area where the application is intended to provide pesticidal benefits.

Waters – 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 this state.

Water Quality Impaired – see 'Impaired Water'.

Water Quality Standards – a water quality standard defines the water quality goals of a water body, or portion thereof, by designating the use or uses to be made of the water and by setting criteria necessary to protect the uses. Water quality standards also include an antidegradation policy and implementation procedures. See 35 Ill. Adm. Code 302.

Wetlands - means those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. [40 CFR 122.2]

.2. ABBREVIATIONS AND ACRONYMS

CFR	Code of Federal Regulations
CWA	Clean Water Act (or the Federal Water Pollution Control Act, 33 U.S.C. §1251 *et seq*)
FFDCA	Federal Food, Drug, and Cosmetic Act
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act, 7 U.S.C. §136 *et seq*
FWS	United States Fish and Wildlife Service
IDNR	Illinois Department of Natural Resources
IEPA	Illinois Environmental Protection Agency
IEMA	Illinois Emergency Management Agency
IPM	Integrated Pest Management
NOI	Notice of Intent
NOT	Notice of Termination
NPDES	National Pollutant Discharge Elimination System
NRC	National Response Center
ORW	Outstanding Resource Water
PDMP	Pesticide Discharge Management Plan
TMDL	Total Maximum Daily Load
U.S.C.	United States Code
USEPA	United States Environmental Protection Agency
WQS	Water Quality Standard

Appendix B
Standard Permit Conditions – Attachment H

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.

3) **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.

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.

7-9-2010 bah)

APPENDIX 29

Total Maximum Daily Loads Report
East Branch of the DuPage River

Final Report

Total Maximum Daily Loads for the East Branch of the DuPage River, Illinois

Submitted to

Illinois Environmental Protection Agency

P.O. Box 19276
1021 North Grand Avenue East
Springfield, IL 62794-9276

October 2004

Prepared by

CH2MHILL
CH2M HILL Inc.
727 North First Street
Suite 400
St. Louis, Mo 63102-2542

In association with

Applied Environmental Engineering, LLC and
AQUA TERRA Consultants

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF
WW-16J

20 SEP 2004

RECEIVED
OCT - 4 2004
BUREAU OF WATER
BUREAU CHIEF'S OFF

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) and ammonia-N, including supporting documentation, for three segments of the East Branch DuPage River, located in DuPage and Will Counties, Illinois. Based on this review, U.S. EPA has determined that Illinois' 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 8 TMDLs for the East Branch DuPage River. 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 the East Branch of the DuPage River ("East Branch") in DuPage and Will Counties, Illinois. The East Branch flows together with the Des Plains River in urban Chicago, Illinois. The 1998 303(d) List identified the East Branch as impaired for nutrients, siltation, salinity/TDS/chlorides, suspended solids, low dissolved oxygen, habitat alterations 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, 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). This document describes and presents the methods and procedures used to develop a chloride and DO TMDLfor the East Branch. The East Branch watershed covers about 79.3 square miles of northeastern Illinois. The watershed is located in the Des Plains hydrologic unit code (HUC 07120004). Approximately 40 percent of the land use in the watershed is residential. Approximately 16 percent of the total watershed area is impervious surfaces. There are eight wastewater treatment plants in the watershed.

The U.S. Environmental Protection Agency's (USEPA's) Hydrologic Simulation Program Fortran (HSPF) watershed model, the Better Assessment Science Integrating Point and Nonpoint Sources (BASINS) analysis system, and the 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), 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 two U.S. Geological Survey (USGS) gauges, one at Downers Grove (USGS Gauge ID 05540160) and one at Bolingbrook (USGS Gauge ID 05540250), which were located inside the watershed.

TMDLs are sums of the individual waste 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 developed for the East Branch watershed was developed to achieve full compliance with Illinois water quality standards for each pollutant.

The chloride TMDL will require a 33 percent reduction in overall chloride application to the East Branch watershed. Table E-1 summarizes the chloride TMDL.

TABLE E-1
Chloride TMDL for the Mouth of East Branch DuPage River

	WLA[a]	MS4 WLA[b]	MOS	TMDL
Chloride (lb/yr)	6.83E+07	1.05E+07	Implicit	7.88E+07

[a]*WLA based on permitted design flow and concentration of 400 mg/L*
[b]*Represents a 33% Reduction in NPS Load*

Three allocation scenarios were developed for the DO TMDL. In the first scenario, point sources will have to reduce their permitted load of $CBOD_5$ and ammonia nitrogen. The scenario is based on achieving $CBOD_5$ limits of 8 mg/L and ammonia limits of 1 mg/L. In the second allocation scenario, point sources remain at their current monthly average permit limits, but either the dam in Reach 3 must be removed or the water behind the dam in Reach 3 must be artificially reaerated in order to achieve the water quality target. Table E-2 summarizes the DO TMDL.

TABLE E-2
Summary of East Branch DO TMDL

Pollutant	Load Allocation (lb/day)	Wasteload Allocation (lb/day)	Margin of Safety	TMDL (lb/day)	Observed Load (lb/day)[a]	Percent Reduction Needed from Observed Load
Allocation Scenario 1						
5-day carbon. biochemical oxygen demand	NA	2384	Implicit	2384	268	0
Ammonia nitrogen	NA	298	Implicit	298	273	0
Allocation Scenario 2						
5-day carbon. biochemical oxygen demand	NA	2980	Implicit	2980	268	0
Ammonia nitrogen	NA	447	Implicit	447	273	0

[a] *Current observed loads based on effluent data from June 24-25, 1997 IEPA dataset*
WLA based only on Bloomingdale, Glendale Heights, Glenbard, and Downers Grove facilities as remaining facilities discharge downstream of the impaired segment

There were no Confined Animal Feeding Operations (CAFOs) identified in this watershed. CAFOs were not identified as contributors of chloride or low dissolved oxygen, the pollutants for which this TMDL was developed, and will not be addressed in this TMDL.

Contents

Executive Summary ..... **ii**

Acronyms and Abbreviations ..... **viii**

1 Introduction **1-1**
1.1 Background 1-1
1.2 Organization of the Report 1-1

2 Target Identification/Determination of TMDL Endpoints **2-1**
2.1 Impaired East Branch Segments 2-2
2.2 Applicable Water Quality Standards and Total Maximum Daily Load Endpoints 2-2

3 Watershed Characterization and Source Assessment **3-1**
3.1 Watershed Description and Background Information 3-1
3.2 Land Use 3-3
3.3 Hydrographic Data 3-3
3.4 Meteorological Data 3-5
3.5 Streamflow Data 3-9
3.6 Point Sources 3-9
3.7 Nonpoint Sources 3-13
3.7.1 Sewered and Unsewered Areas 3-13
3.7.2 Best Management Practices 3-13
3.8 Water Quality Data 3-14

4 Assessment of Water Quality Data and TMDL Approach **4-1**
4.1 Period of Assessment for Water Quality Data 4-1
4.2 Total Dissolved Solids/Conductivity 4-1
4.3 Chloride 4-4
4.3.1 Historic Data and Causes for Listing 4-4
4.3.2 TMDL Approach 4-6
4.4 Dissolved Oxygen 4-6
4.4.1 Historic Data/Causes for Listing 4-6
4.5 Summary 4-8

5 Modeling Approach and Assumptions **5-1**
5.1 Selection of Models and Tools 5-1
5.2 Modeling Chloride Using HSPF 5-1
5.2.1 Hydrologic Calibration for HSPF General Background Information 5-1
5.2.2 Land Use Data for Hydrologic Calibration 5-2
5.2.3 Meteorological Data for Hydrologic Calibration 5-2
5.2.4 Point Source Data for Hydrologic Calibration 5-3
5.2.5 Initial Parameters for Hydrologic Calibration 5-4
5.2.6 General Comments about the Hydrologic Calibration 5-4
5.2.7 East Branch Validation Summary 5-6

5.2.8 Water Quality Calibration for Chloride 5-7
5.3 Modeling Dissolved Oxygen Using QUAL2E 5-8

6 TMDL Allocation 6-1
6.1 Approach and Methodology 6-1
6.2 Future Growth 6-1
6.3 Conductivity/Total Dissolved Solids and Chloride 6-2
6.3.1 Critical Condition 6-2
6.3.2 Margin of Safety 6-2
6.3.3 Chloride Exceedences 6-3
6.3.4 Chloride Allocations 6-4
6.3.5 Implementation Considerations 6-6
6.4 Dissolved Oxygen 6-7
6.4.1 Critical Condition 6-7
6.4.2 Margin of Safety 6-8
6.4.3 Load Allocation and Waste Load Allocation 6-8
6.4.4 Implementation Considerations 6-14

7 References 7-1

Tables

2-1 All Segments and Impairment Causes of the East Branch of the DuPage River 2-2
2-2 Pollutants, Water Quality Standards, Available Data, and Potential Sources 2-2

3-1 NIPC and IDNR Land Use Distribution in the East Branch of the DuPage River 3-5
3-2 Weather Data Provided in NIPC WDM Files 3-6
3-3 Point Source Dischargers in East Branch DuPage River Watershed 3-13

4-1 Causes for Low Dissolved Oxygen 4-7
4-2 Summary of Available Data, Water Quality Standards, and Potential Sources 4-9

5-1 Land Use Summary for Each Flow Gauges 5-2
5-2 Hydrologic Calibration Summary 5-5
5-3 Summary of Hydrologic Calibration and Validation—Annual Flow and Correlation Coefficients 5-6
5-4 Summary of Water Quality Sampling Stations, Wastewater Treatment Plans, and Flow Gauges in the East Branch of the DuPage River 5-9
5-5 Segmentation of East Branch DuPage River as Represented in QUAL2E 5-10
5-6 Current CBOD5 and Ammonia-N Permit Limits of the Wastewater Treatment Plants 5-12
5-7 Observed Concentrations of DO, CBOD5 and Ammonia Nitrogen in Point Source Effluents on June 24–25, 1997 5-14

6-1 Chloride Concentration in Selected WWTP Effluents 6-4
6-2 Chloride TMDL for the East Branch of the DuPage River 6-4
6-3 Point Source Flows and Concentrations Used in TMDL WLA 6-6
6-4 Chloride TMDL for the Mouth of East Branch DuPage River 6-6
6-5 Description of Various Modeling Scenarios 6-9

6-6 Point Source Allocations 6-12
6-7 Summary of East Branch DO TMDL 6-13

Figures

2-1 Impaired Segments in the East Branch of the DuPage River 2-3

3-1 Subwatersheds in the East Branch of the DuPage River 3-2
3-2 Land Use in the East Branch of the DuPage River 3-4
3-3 Weather Stations with Precipitation Data 3-7
3-4 Annual Precipitation 3-8
3-5 Location of USGS Gauges in the East Branch of the DuPage River Watershed 3-10
3-6 Location of USGS Gauges Used for Hydrologic Calibration 3-11
3-7 Point source Dischargers in the East Branch of the DuPage River 3-12
3-8 Location of Water Quality Stations in the East Branch of the DuPage River 3-15

4-1 Plot of the East Branch of the DuPage River (Lisle station 055402100) Conductivity Data by Date 4-2
4-2 Observed Conductivity at the East Branch of the DuPage River by Month 4-3
4-3 Relationship between Conductivity and Chloride in the East Branch of the DuPage River 4-4
4-4 East Branch DuPage River (Lisle station 05540210) Chloride Concentrations by Sample Date and Water Quality Standard 4-5
4-5 Chloride Concentrations in East Branch DuPage River by Sample Month and the Water Quality Standard 4-5
4-6 Monthly DO Data at the Lisle Water Quality Station (05531500) by Sample Date and the Water Quality Standards for DO 4-7
4-7 Diel Data Collected at Many East Branch of the DuPage River Sites on June 24–25, 1997, and the Water Quality Standards for DO 4-8

5-1 Water Quality Calibration of Chloride at the East Branch of the DuPage River Site (Lisle station 05540210) 5-8
5-2 Segmentation of the East Branch of the DuPage River as Represented in QUAL2E 5-11
5-3 Modeled and observed flows at East Branch DuPage River on June 24, 1997 5-13
5-4 Modeled and Observed Ammonia Concentrations at the East Branch of the DuPage River on June 24-25 1997 5-15
5-5 Modeled and Observed CBOD5 Concentrations at the East Branch of the DuPage River on June 24–25, 1997 5-15
5-6 Modeled and Observed East Branch DO concentrations on June 24–25, 1997 5-17
5-7 Components of the DO Mass Balance Based on the Model Results for June 24–25, 1997 5-17

6-1 Modeled Chloride Concentrations at the East Branch of the DuPage River Segment GBL 05 for the TMDL Allocation Scenarios 6-3
6-2 Modeled Dissolved Oxygen Concentrations for Scenarios 1, 2, 3, and 4 6-10
6-3 Allocation Scenario Results 6-11
6-4 A 1998 Aerial Photograph of the East Branch of the DuPage River and Adjacent Detention Ponds near Roosevelt Road. 6-15

Appendices

A RF3 Summary Table
B Hydrologic Calibration Data
C DMR Data
D Diel Data
E QUAL2E Input Files
F Modeled DO, CBOD, and Ammonia Concentrations (QUAL2E Output)
G MS4 Facilities in East Branch of the DuPage River Watershed
H Responsiveness Summary

Acronyms and Abbreviations

AGWRC	basic groundwater recession (HSPF model parameter)
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
mg/L	milligram 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 temperature below which evapotranspiration is reduced
PETMIN	air temperature below which evapotranspiration is set to 0

PRISM	parameter-elevation regressions on independent slopes model
QUAL2E	a stream water quality model
R^2	coefficient of determination
RF3	Reach File version 3
SOD	sediment oxygen demand
SSO	sanitary sewer overflow
STP	sewage treatment plant
TCU	transportation land use (NIPC classification)
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
WTC	wastewater treatment plant
WRF	water reclamation facility
WWTP	wastewater treatment plant

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 in-stream 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 Will Counties, Illinois, the East Branch of the DuPage River ("East Branch") and its tributaries were placed on the Illinois 303(d) list (1998) of impaired waters for several pollutants, including conductivity, chloride, and dissolved oxygen (DO). TMDLs for all pollutants causing applicable WQS violation 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 East Branch 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 has been submitted throughout the East Branch TMDL development process. Comments on the technical memoranda have been incorporated into this report.

2 Target Identification/Determination of TMDL Endpoints

The 1998 Illinois Section 303(d) List identified the East Branch of the DuPage River as impaired for nutrients, siltation, salinity/TDS/chlorides, suspended solids, low dissolved oxygen, habitat alterations 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, 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 accounts for severity of pollution and the uses to be made of such waters. Prioritization was done on a watershed basis. For a detailed explanation 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, emphasis is given to those parameters with numeric WQS. These are identified in Table 2-1 and Figure 2-1. As a result of prioritization, this study focused on chloride and dissolved oxygen, which have a numeric WQS.

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, TMDLs were developed for chloride and DO and were designed to meet applicable WQSs.

The first part of this section outlines the different segments and the pollutants of concern for East Branch. The second part outlines the TMDL endpoints selected for each pollutant listed for East Branch under the Illinois 303(d) list.

2.1 Impaired East Branch Segments

Three segments of East Branch 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 East Branch DuPage River.

TABLE 2-1
Segments of the East Branch of the DuPage River That This TMDL Report Addresses and Identified Potential Causes of Impairment

Segment	TDS/ Conductivity	Chloride	DO
GBL 05	X	X	X
GBL 10		X	X
GBL 08			X

TDS, total dissolved solids.

2.2 Applicable Water Quality Standards and Total Maximum Daily Load Endpoints

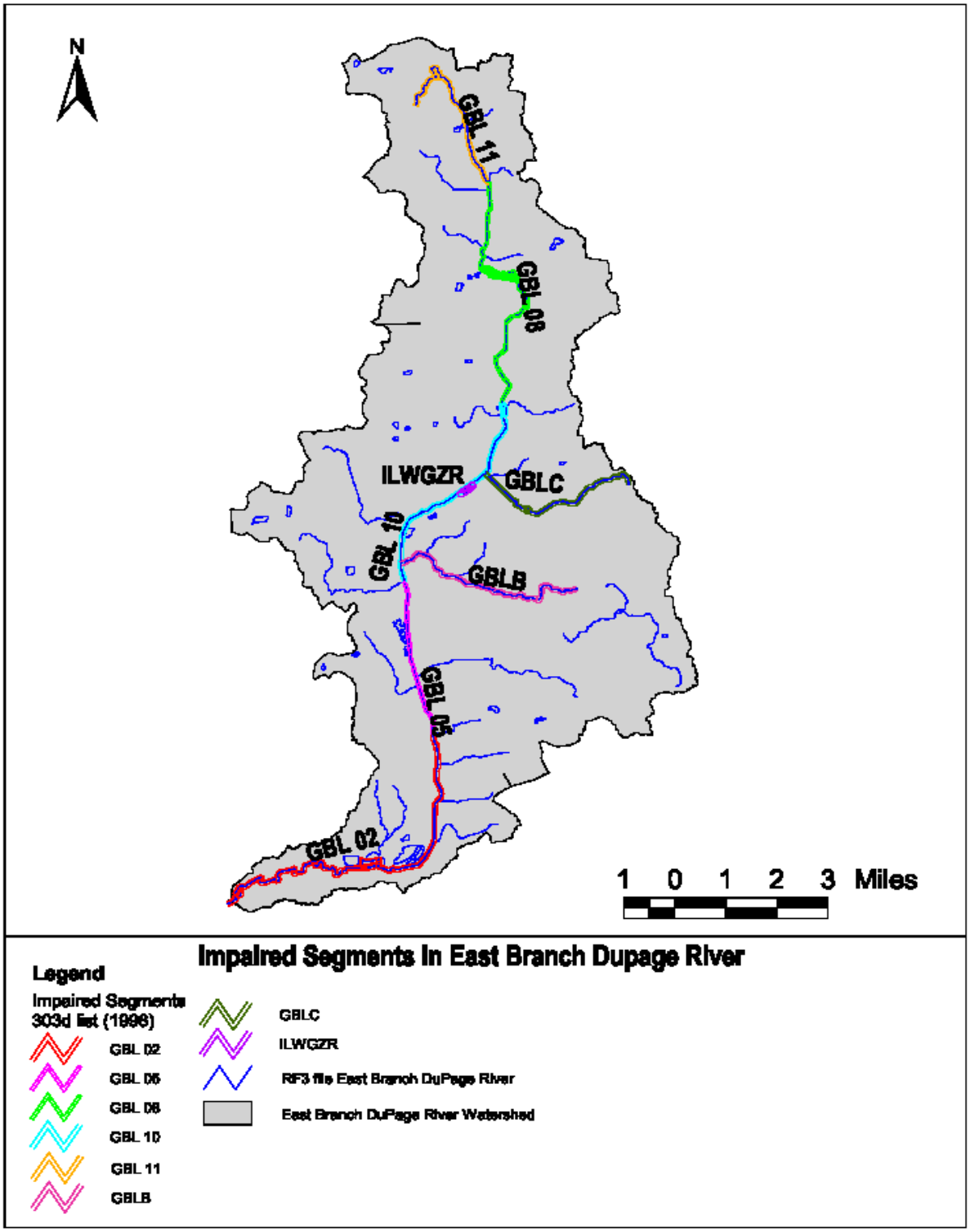
The applicable WQS was the chosen endpoint for the TMDL. Table 2-2 shows a list of pollutants, WQS, and potential endpoints addressed in this report.

TABLE 2-2
Pollutants, Water Quality Standards, and TMDL Endpoints

Parameter	Water Quality Standard	Total Maximum Daily Load Endpoints
Conductivity	TDS—1,000 mg/L, equivalent to 1,667 µmho/cm of conductivity	General-use standard for chloride of 500 mg/L
Chloride	500 mg/L	Water quality standard
Dissolved oxygen	Not less than 5 mg/L at any time or not less than 6 mg/L for 16 of 24 consecutive hours	Not less than 5 mg/L at any time or not less than 6 mg/L for 16 of 24 consecutive hours

mg/L, milligrams per liter
TDS, total dissolved solids

FIGURE 2-1
Impaired Segments in the East Branch of the DuPage River



3 Watershed Characterization and Source Assessment

This section describes the data acquired and the watershed characterization conducted to develop the East Branch 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.

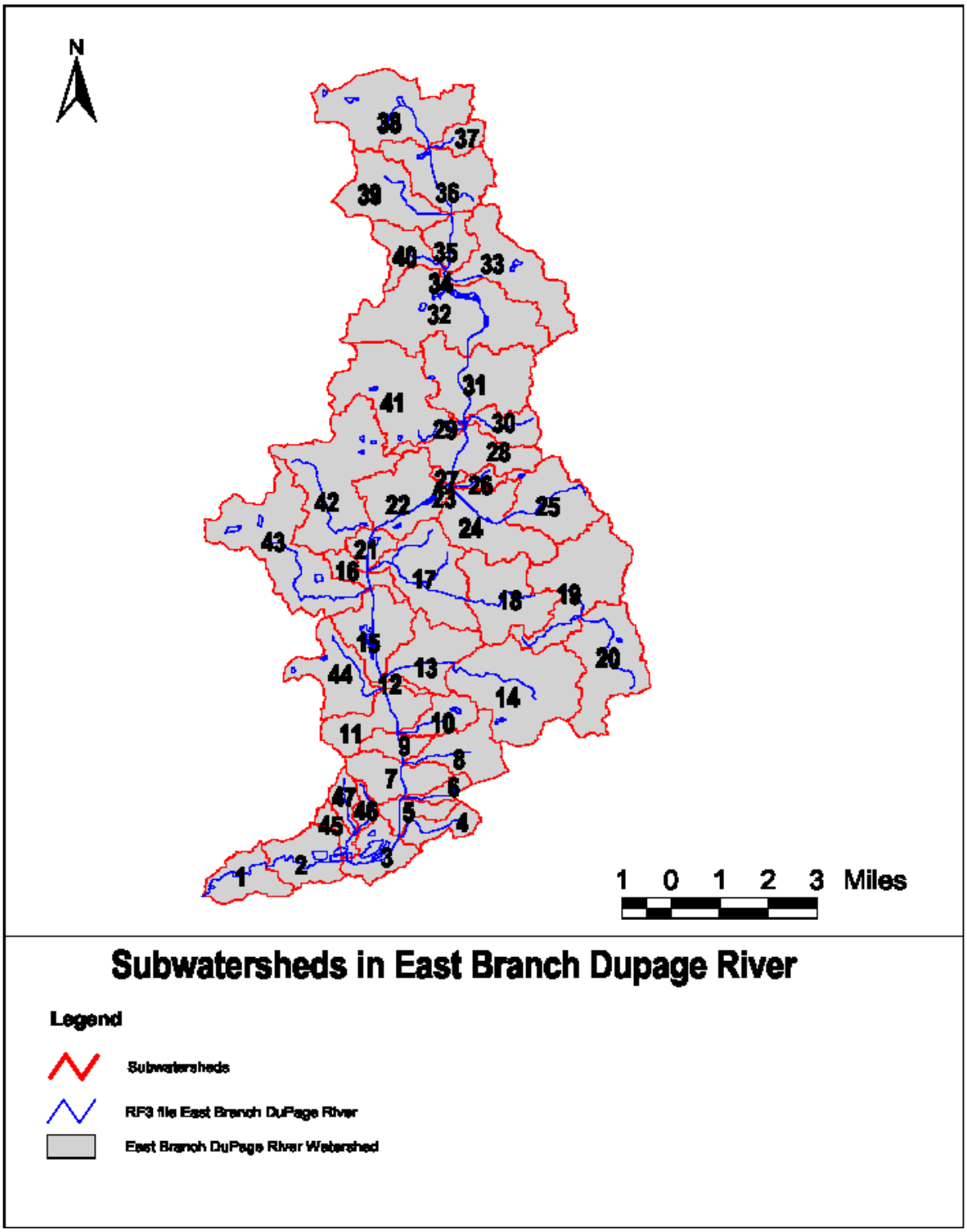
3.1 Watershed Description and Background Information

The East Branch watershed encompasses about 79.3 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 East Branch watershed.

The Illinois Environmental Protection Agency (IEPA) also provided 14-digit Hydrologic Unit Code (HUC) watershed boundaries for the entire East Branch 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) 1:240,000-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 and is identical to the National Hydrography Data (NHD) for the East Branch of the DuPage River. The HUC watershed boundaries were not detailed enough to use for East Branch subwatershed data in this report, but they were investigated and compared with the other data sources.

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 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 and subwatershed delineation.

FIGURE 3-1
Subwatersheds in the East Branch of the DuPage River



3.2 Land Use

Land use data were obtained from the DCDS, the Northeastern Illinois Planning Commission (NIPC), and BASINS.

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 East Branch watershed land use. The watershed consists primarily of developed areas. According to the land use data obtained from NIPC, only 3 percent of the East Branch watershed is agricultural; approximately 40.3 percent 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 source pollution sources in the watershed and to complete the load allocation (LA) portion of the TMDL. The East Branch watershed was listed for several pollutants that are transported by stormwater runoff. These include total dissolved solids (TDS)/conductivity, chloride, and oxygen-demanding materials that affect DO. During modeling, these pollutants were linked to contributing types of land use (see Section 6).

3.3 Hydrographic Data

To model the 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 DuPage County and BASINS data sets.

The DCDS provided hydrographic data that were compared with RF3 data in USEPA's BASINS 2.1 model. 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.

FIGURE 3-2
Land Use in the East Branch of the DuPage River

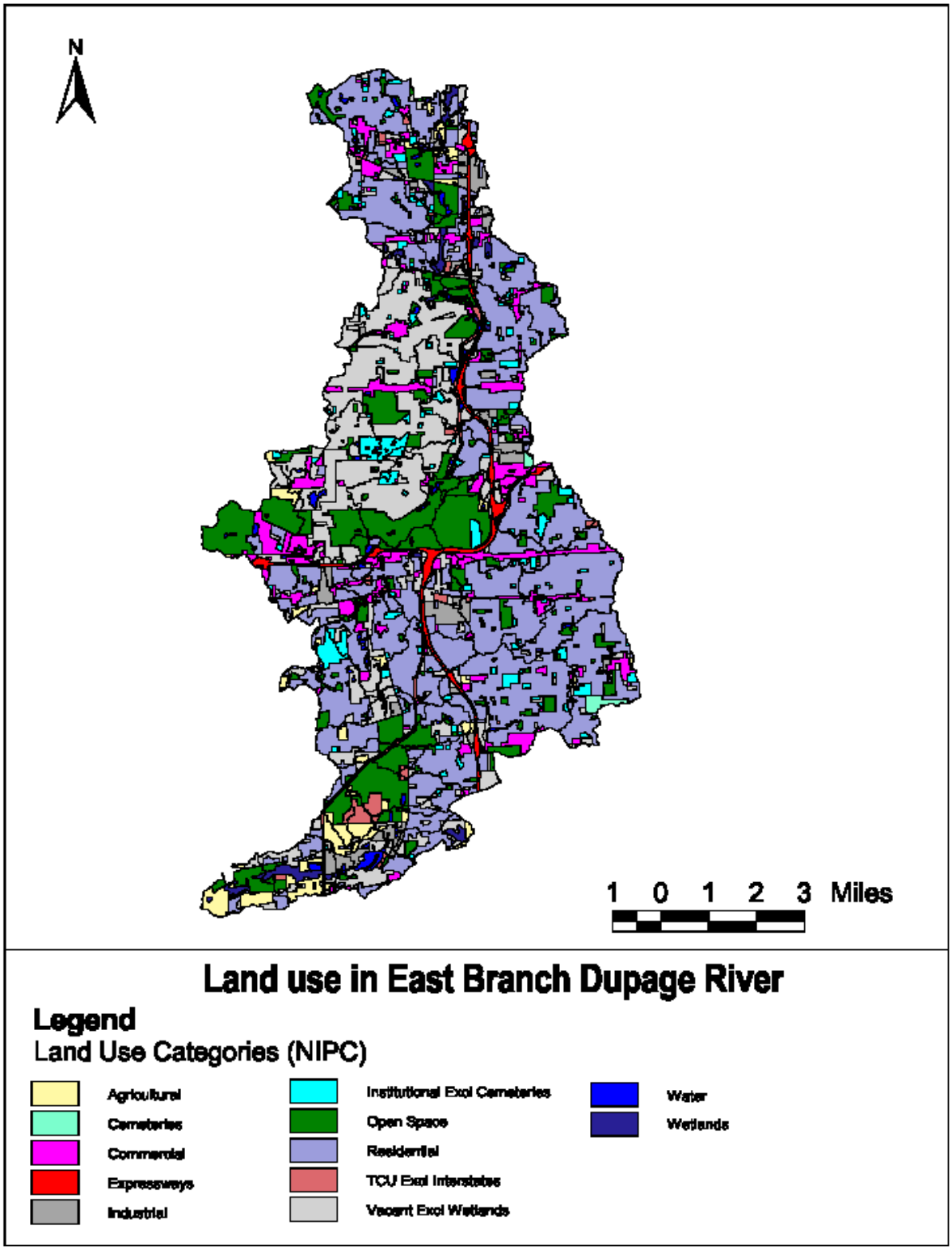


TABLE 3-1
NIPC and IDNR Land Use Distribution in the East Branch of the DuPage River

Land Use	ID	Area (Acres)		
		Impervious	Pervious	Total
Cemeteries and vacant land	1		10,715.34	10,715.34
Commercial	2	3,113.35	549.42	3,662.77
Forest	3		2,389.19	2,389.19
Industrial	4	1,303.18	229.99	1,533.17
Institutional	5	572.97	1,339.27	1,912.24
Open space	6		5,461.34	5,461.34
Residential	7	1,615.07	18,573.45	20,188.52
TCU excluding Interstates	8	541.17	360.80	901.97
Expressways	9	606.39	404.25	1,010.64
Wetlands	10		686.54	686.54
Agricultural	11		1,520.81	1,520.81

TCU, transportation land use.

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 East Branch watershed (see Section 3.5). 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 a 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. The Wheaton weather station, located in the East Branch watershed, was used to obtain necessary weather data for TMDL development because it had the most long-term hourly data. Figure 3-3 shows the location of each station from which precipitation data were collected for East Branch.

In addition to precipitation data, NIPC provided potential evapotranspiration (PET), cloud cover, solar radiation, air temperature, dew point, temperature, and wind movement data in a WDM format. Most of these data came from the NCDC.

The spatial variability of rainfall throughout the study area was verified using annual rainfall data found at Oregon State University's software system Website (http://www.ocs.orst.edu/prism/). The Parameter-Elevation Regressions on Independent Slopes Model (PRISM) on the Website 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 3-4 indicated that there were no significant spatial variations in rainfall patterns across the study area that would require special consideration. The average annual precipitation value at Wheaton (36.5 in.) for the 30-year period used for developing the PRISM data (1961–1990), corresponds to the average annual value from PRISM.

TABLE 3-2
Weather Data Provided in NIPC WDM Files

Start Date	End Date	Station ID	Source of Data	Data Type and Interval
01/01/1948	07/31/1996	Chicago O'Hare WSE ARP R	NCDC	Hourly precipitation
01/01/1948	09/30/1999	Chicago Midway AP 3 SW	NCDC	Hourly precipitation
06/30/1948	09/30/1988	McHenry WG Stratton L&D	NCDC	Hourly precipitation
09/30/1948	07/31/1996	Aurora	NCDC	Daily data distributed to hourly using Argonne data
01/01/1948	12/31/1999	Wheaton 3 SE	NCDC	Daily data distributed to hourly using Argonne data
09/30/1948	07/31/1996	Elgin	NCDC	Daily data distributed to hourly using Argonne data
12/04/1996	12/31/2000	Elmhurst	USGS	5-minute precipitation data aggregated to hourly
01/01/1948	07/31/1996	Argonne	NCDC	Adjusted Argonne precipitation

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.

Hourly data from Wheaton were used for meteorological data such as solar radiation, wind speed, cloud cover, temperature, and dew point temperatures for the entire East Branch watershed.

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 these to East Branch watershed conditions, the NOAA pan-evaporation charts were used to calculate a ratio of annual pan-evaporation from Urbana to East Branch. The data from Urbana were multiplied by this ratio to obtain a pan-evaporation time series for the East Branch 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.

FIGURE 3-3
Weather Stations with Precipitation Data

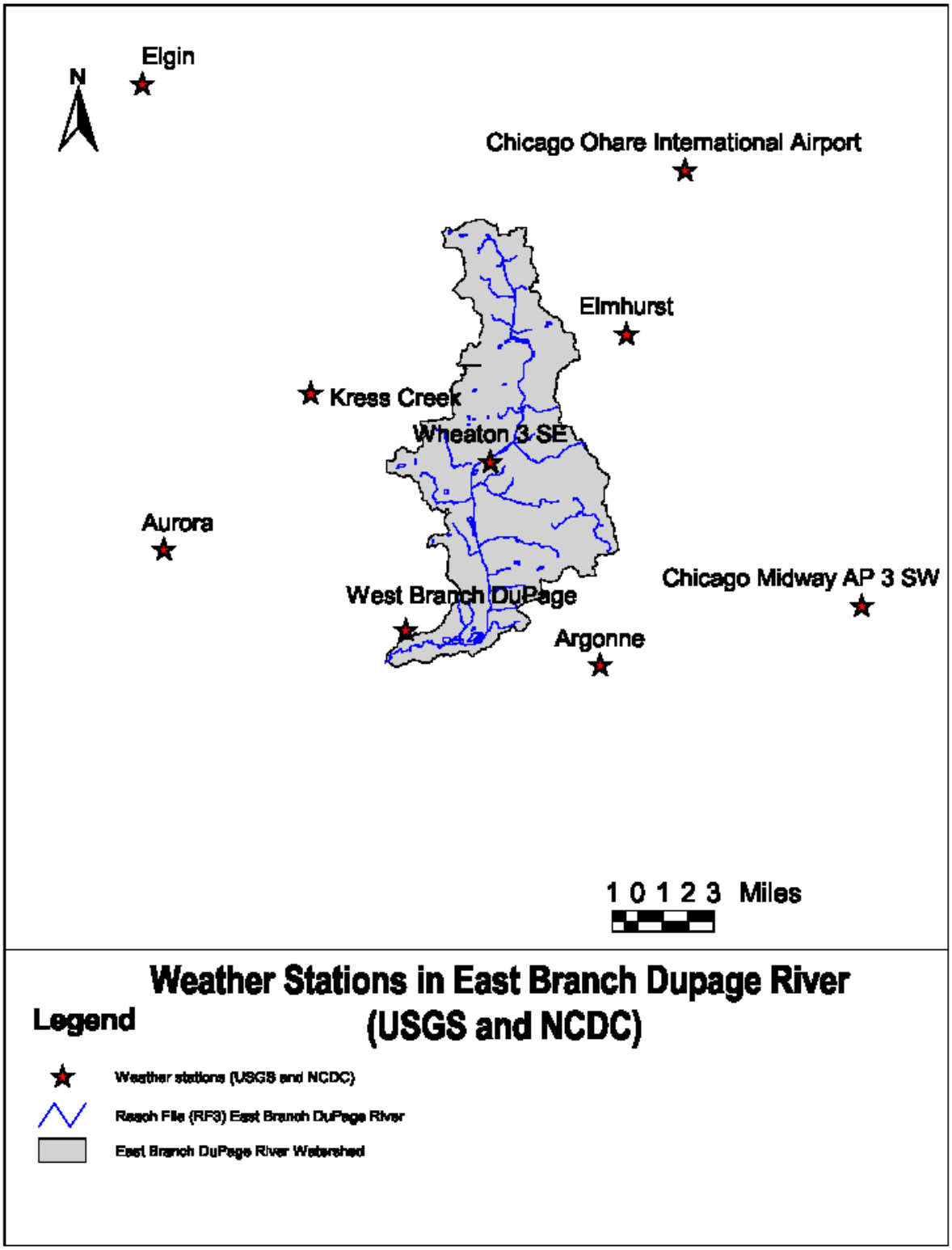
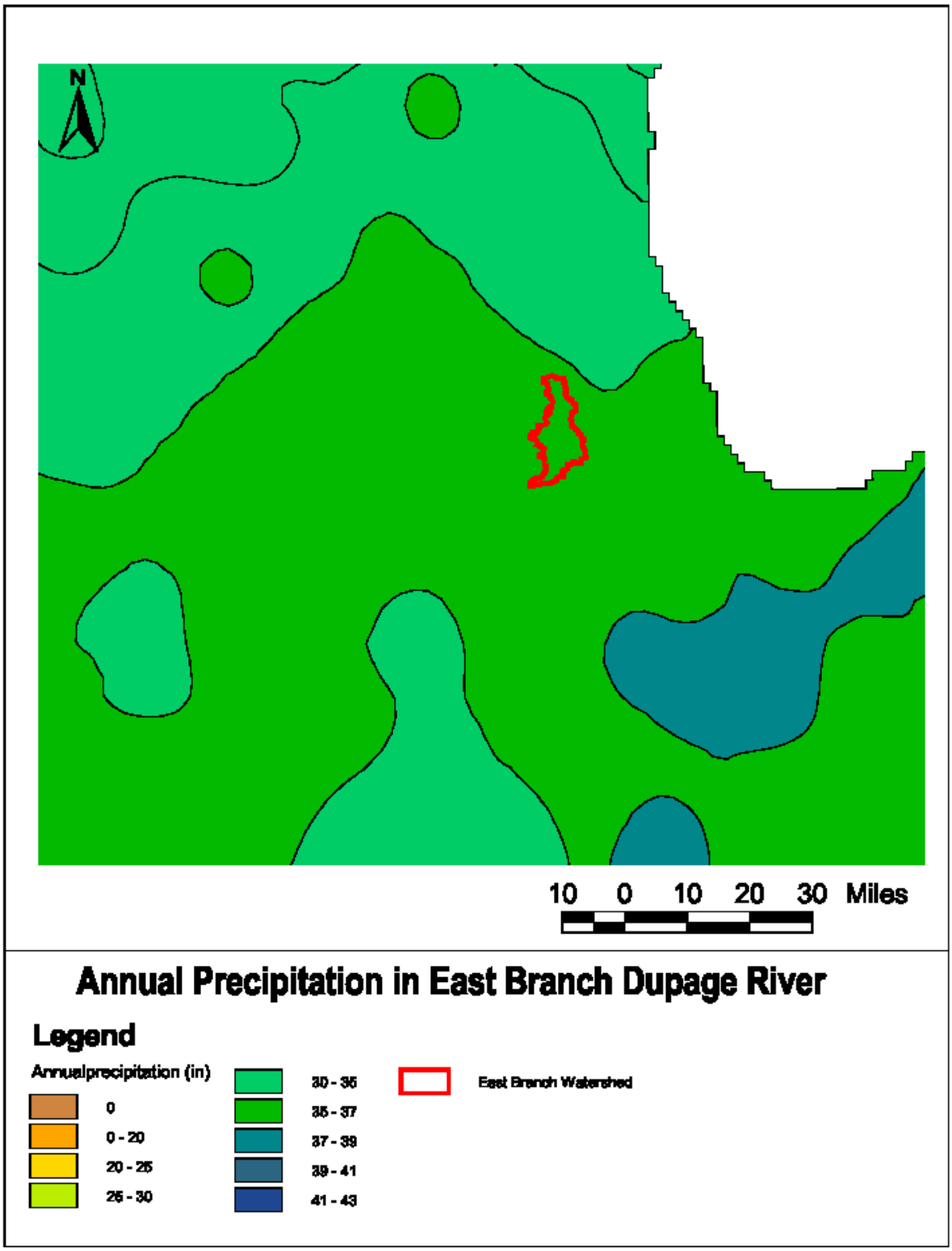


FIGURE 3-4
Annual Precipitation



3.5 Streamflow Data

Streamflow data are needed to calibrate hydrologic and water quality models. As mentioned earlier, first the weather data 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 East Branch watershed. The USGS gauge station cover provided in EPA's BASINS 2.1 model was used to determine the location of gauges. Figure 3-5 shows the location of all USGS gauge stations in East Branch.

From all the USGS flow gauges in East Branch, only two contained the long-term data needed for model calibration: Downers Grove (USGS Gauge ID 05540160), in the upper portion of the watershed, and Bolingbrook (USGS Gauge ID 05540250), in the lower portion of the watershed. Therefore, these two stations were used for model calibration. Figure 3-6 shows the location of the two gauges in the East Branch watershed.

3.6 Point Sources

Point source discharge data are needed to complete the waste load allocation (WLA) portion of the TMDL. All point source data were obtained from the IEPA and the Permit Compliance System (PCS) database of EPA.

The IEPA provided effluent concentrations, flow rates, and permit limits for NPDES permitted point sources from the discharge monitoring report (DMR) system. In addition, IEPA provided locations of point sources. The geographic information provided by IEPA and the BASINS 2.1 permit compliance system (PCS) GIS data were used to locate point sources in the East Branch watershed; Figure 3-7 shows the point source locations. Only point sources with a significant flow rate were considered in the modeling efforts; this included all WWTP and other major point sources. Table 3-3 lists the point sources and notes which ones were included in the modeling analyses.

Glenbard-Lombard is a wet weather discharge. Including it in the HSPF model would have double-counted the stormwater - the model would have accounted for it in both the discharge and in the nonpoint source runoff. Stone Barber is a quarry, and its flow is accounted for through groundwater runoff; its discharge will not contain high amounts of chlorides.

For the QUAL2E model, Glenbard-Lombard was not discharging during the calibration study. Since it is a wet weather discharge, it is unlikely that it would discharge during low flow conditions, the conditions upon which the DO TMDL is based. Stone Barber does not contain oxygen-consuming waste, and its flow is accounted for in the incremental inflow rates.

FIGURE 3-5
Location of USGS Gauges in the East Branch of the DuPage River Watershed

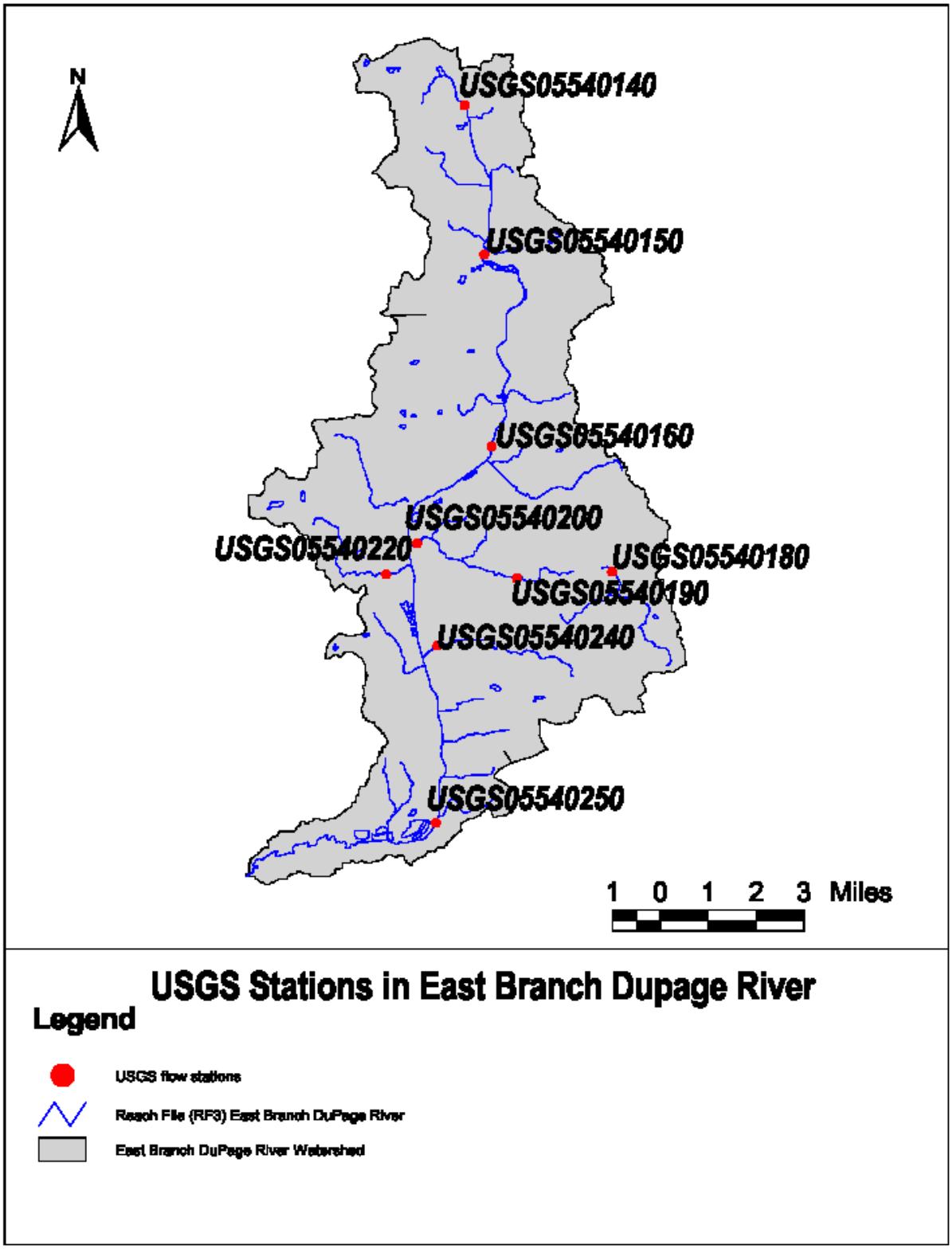


FIGURE 3-6
Location of USGS Gauges Used for Hydrologic Calibration

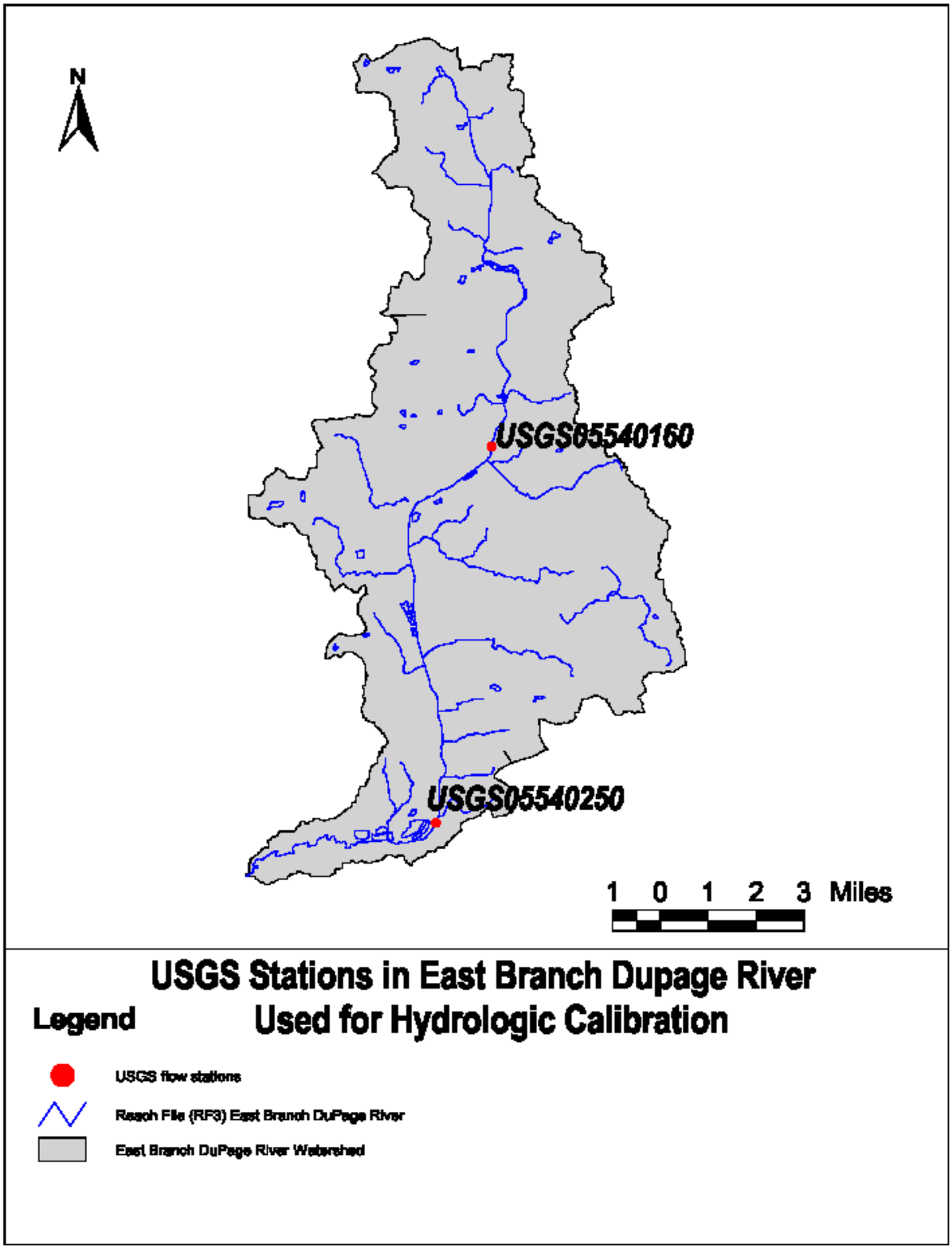
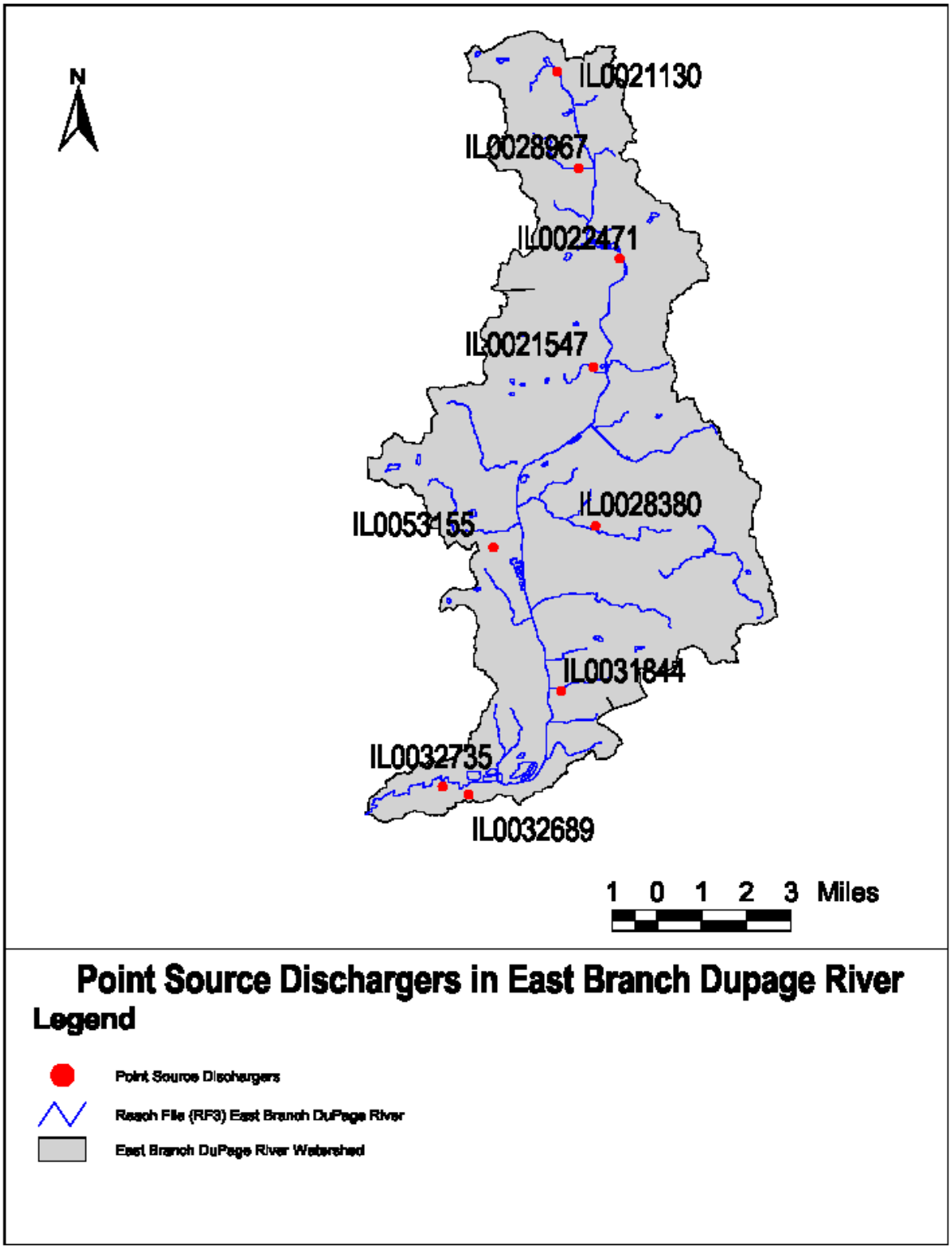


FIGURE 3-7
Point source Dischargers in the East Branch of the DuPage River



3.7 Nonpoint Sources

3.7.1 Sewered and Unsewered Areas

Three impaired segments of East Branch were listed for not meeting DO water quality standards. No combined sewer or sanitary sewer data were available to suggest that significant biochemical oxygen demand (BOD) load to the East Branch reaches originates from combined sewers or leaky sanitary sewers. The sewer network data obtained from DCDS show that several sewer (possibly storm sewer) pipes terminate at East Branch. Storm sewer outfalls at these locations may transport nonpoint source BOD load associated with urban runoff.

TABLE 3-3
Point Source Dischargers in East Branch DuPage River Watershed

Name	NPDES	County	Subwatershed ID[a]	Included in the Models?[b]
Elmhurst Chicago Stone-Barber	IL0053155	Will	15	No
Glenbard WW Auth-Lombard	IL0022471	DuPage	32	No
Citizens Utility Company #2 STP	IL0032735	Will	2	Yes
DuPage County Woodridge STP	IL0031844	DuPage	8	Yes
Bolingbrook STP #1	IL0032689	Will	2	Yes
Downers Grove SD WTC	IL0028380	DuPage	17	Yes
Glendale Heights STP	IL0028967	DuPage	39	Yes
Glenbard WW Auth-Glenbard	IL0021547	DuPage	41	Yes
Bloomingdale-Reeves WRF	IL0021130	DuPage	38	Yes

[a]Indicates which subwatershed in East Branch the point source is located.
[b]"Yes" indicates that the point source is being considered in the watershed modeling for TMDL development.

STP, sewage treatment plant.

3.7.2 Best Management Practices

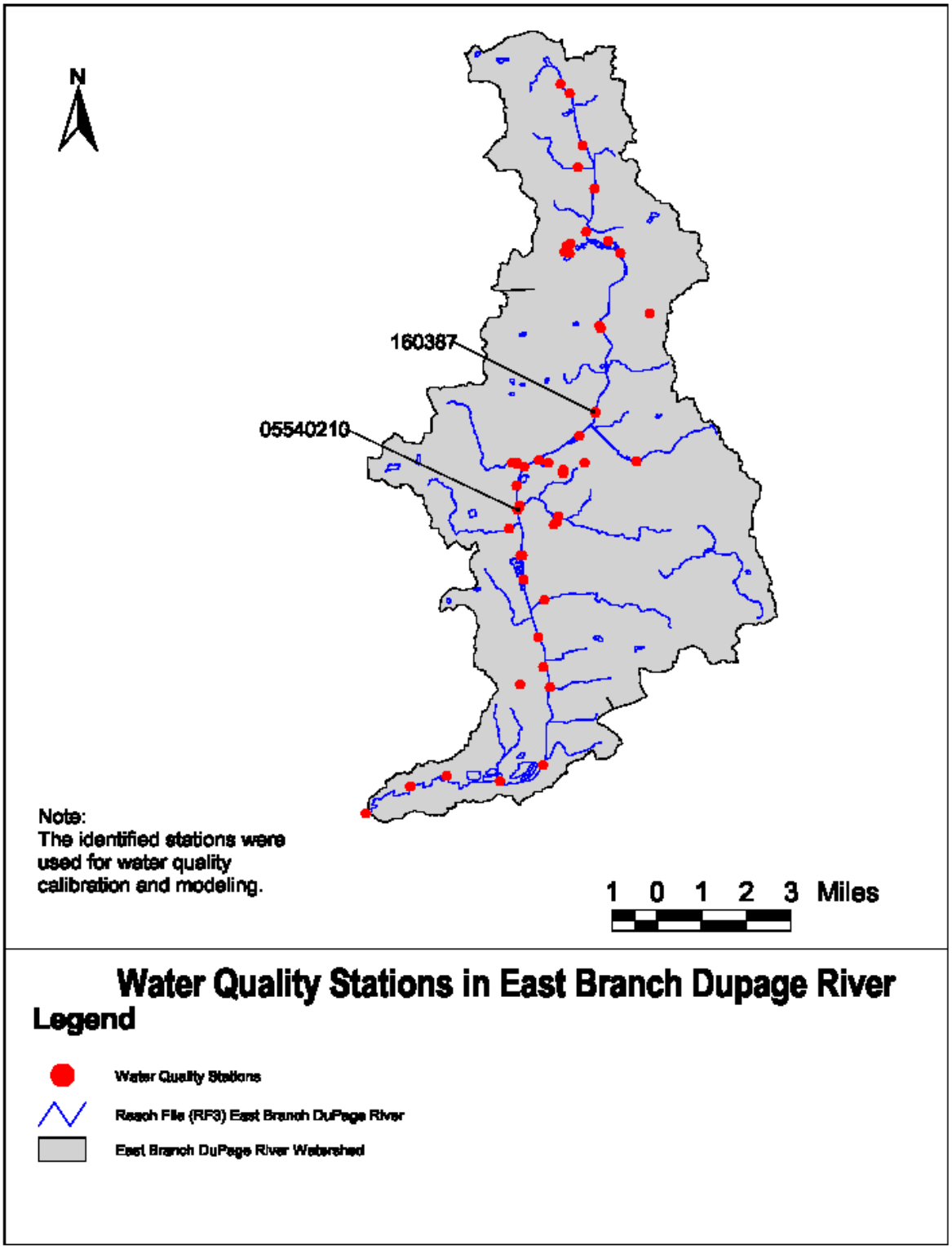
Existing best management practices (BMP) data were requested from the DCDS and NIPC. Although no detailed information for these facilities was available from either agency, review of the DuPage County Countywide Stormwater and Floodplain Ordinance (September 1994) revealed that the ordinance promotes the application of BMPs to new development through riparian buffer zones, erosion control plans, detention basins, etc.

No BMPs were included specifically in the modeling because no detailed information could be obtained about BMP locations.

3.8 Water Quality Data

Water quality data were obtained from two sources. Water quality data through December 1998 were available from STORET (http://www.epa.gov/storet), a national database maintained and operated by USEPA. The IEPA provided in-stream water quality data for 1997 intensive sampling events and monitoring data from 1999. The data from both sources were carefully reviewed to determine the basis for development of the 1998 303(d) list, to select appropriate modeling approaches, and to identify water quality stations for model calibration. Figure 3-8 shows the location of all water quality stations in the East Branch watershed.

FIGURE 3-8
Location of Water Quality Stations in the East Branch of the DuPage River



4 Assessment of Water Quality Data and TMDL Approach

This section summarizes each pollutant on the East Branch watershed list of impairments and assesses the length of record and frequency of observations. Selected modeling approaches were affected by the availability of data regarding frequency, and the amount of data varied for the different pollutants. For each pollutant, the following is provided: a cause for listing, an assessment of the potential sources, and a selected TMDL approach based on the cause and assessment. Details of the TMDL modeling are provided in Section 5.

4.1 Period of Assessment for Water Quality Data

Water quality in a water body may be impaired by pollutants from point and nonpoint sources. Generally, it is during dry weather periods when direct discharge (i.e., 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 violate WQSs 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. Water quality data for East Branch were available to the end of 1999; therefore data collected between 1995 and 1999 were used to develop the TMDLs for East Branch and its tributaries.

4.2 Total Dissolved Solids/Conductivity

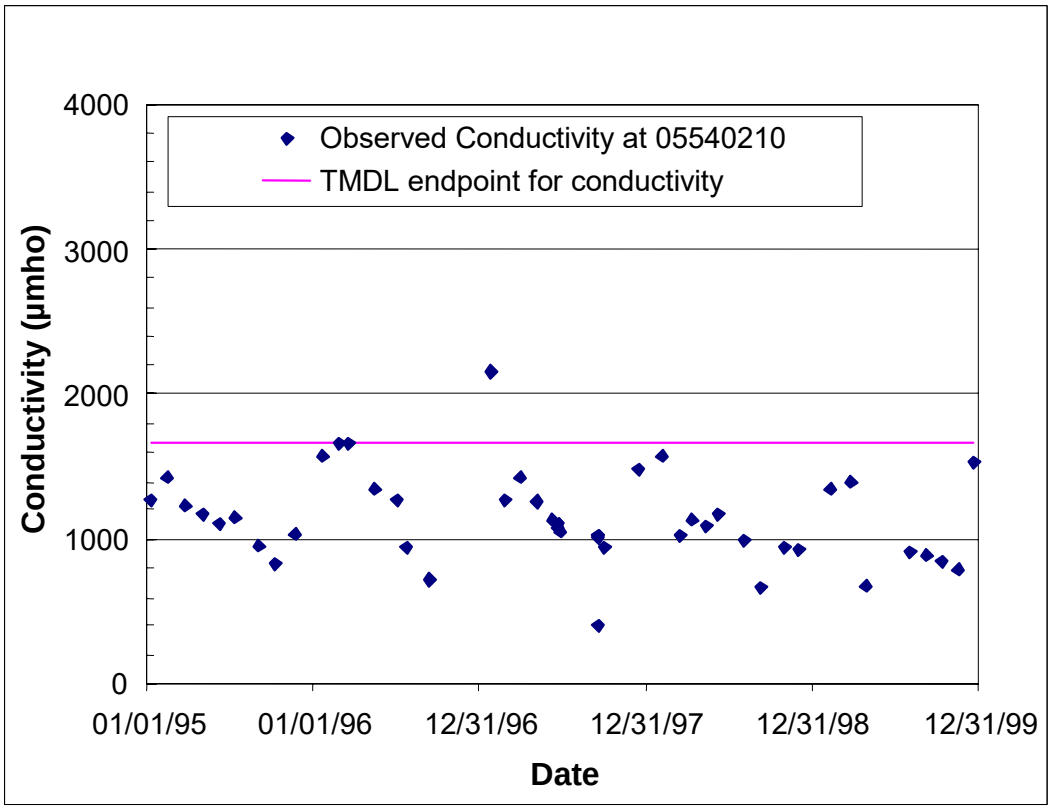
East Branch segment GBL 05 is listed for TDS/conductivity impairments. Long-term TDS and conductivity data are available at the Illinois ambient water quality station at the Route 34 Bridge at Lisle ("Lisle"; station ID 05540210). Another Illinois water quality station, near Route 56 at Downers Groove (station ID 160387), recorded eight conductivity data in summer 1997. Due to lack of sufficient data, this station was not included in the development of the conductivity TMDL.

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 µS/cm corresponds to 1,000 mg/L of TDS (305(b) guideline). Therefore, an exceedance of 1,667 µS/cm of conductivity is considered indicative of potential exceedance of the 1,000-mg/L TDS standard.

Only conductivity data were analyzed to investigate TDS/conductivity impairments because substantially more data were available for conductivity than for TDS.

A plot (Figures 4-1) of water quality data collected at the Lisle station shows that conductivity exceeded the 1,667-µS/cm endpoint once during the 1995–1999 period. Conductivity generally follows an annual cycle, with elevated values in winter and lower values in late summer or early fall. Figure 4-1 shows conductivity data collected between 1995 and 1999 and the annual cycles.

FIGURE 4-1
Plot of the East Branch of the DuPage River (Lisle station 05540210) Conductivity Data by Date

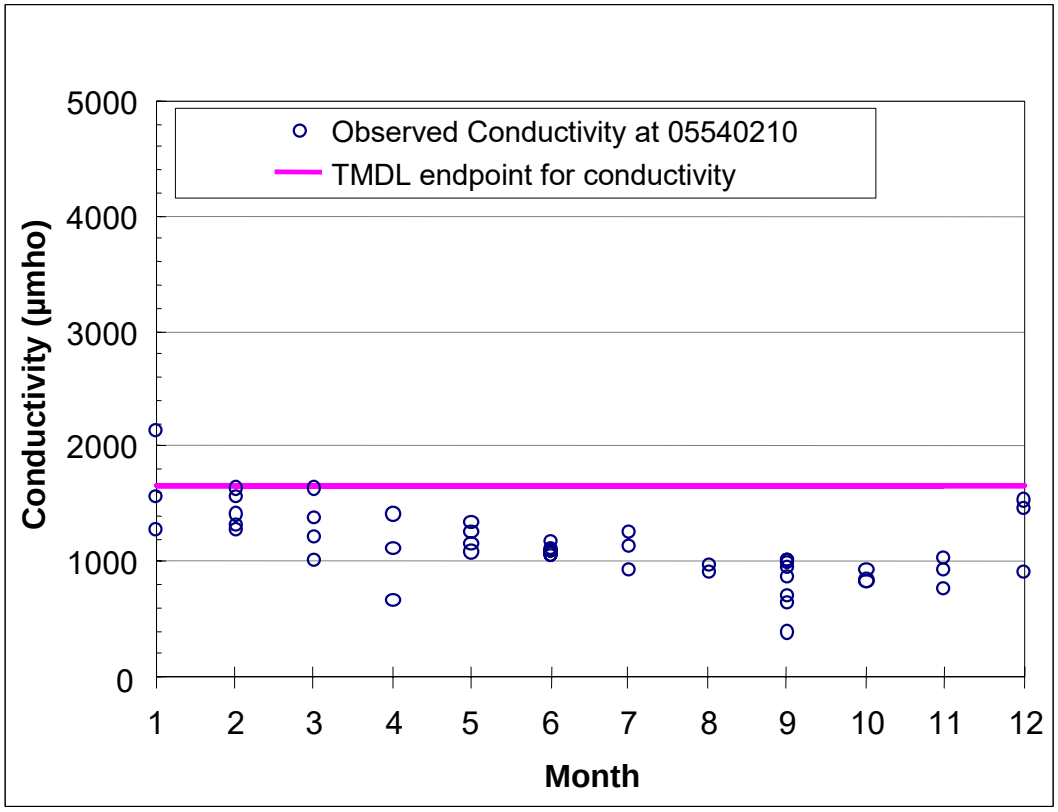


Generally, many dissolved anions and cations contribute to TDS/conductivity in surface water. Most anions and cations are naturally occurring substances. Dissolution of minerals as water flows in contact with soil and precipitation containing atmospheric constituents contribute to naturally occurring TDS/conductivity. Anthropogenic sources such as road salt application and fertilizer application and point sources may increase the concentration of TDS/conductivity.

An investigation of seasonal patterns and of the correlation between chloride and conductivity showed that conductivity is generally higher from December through April (the time of year subject to conductivity impairment) than from May through November (Figure 4-2). Chloride is the major TDS component in winter months; snowmelt runoff in the winter includes chloride from roadway deicing activities, and high TDS/conductivity is caused by road salt application and is directly proportional to chloride concentration. In East Branch, conductivity is closely correlated to observed chloride concentration. To verify

that chloride is a major component of TDS/conductivity, a regression analysis of the two constituents was performed.

FIGURE 4-2
Observed Conductivity at the East Branch of the DuPage River by Month



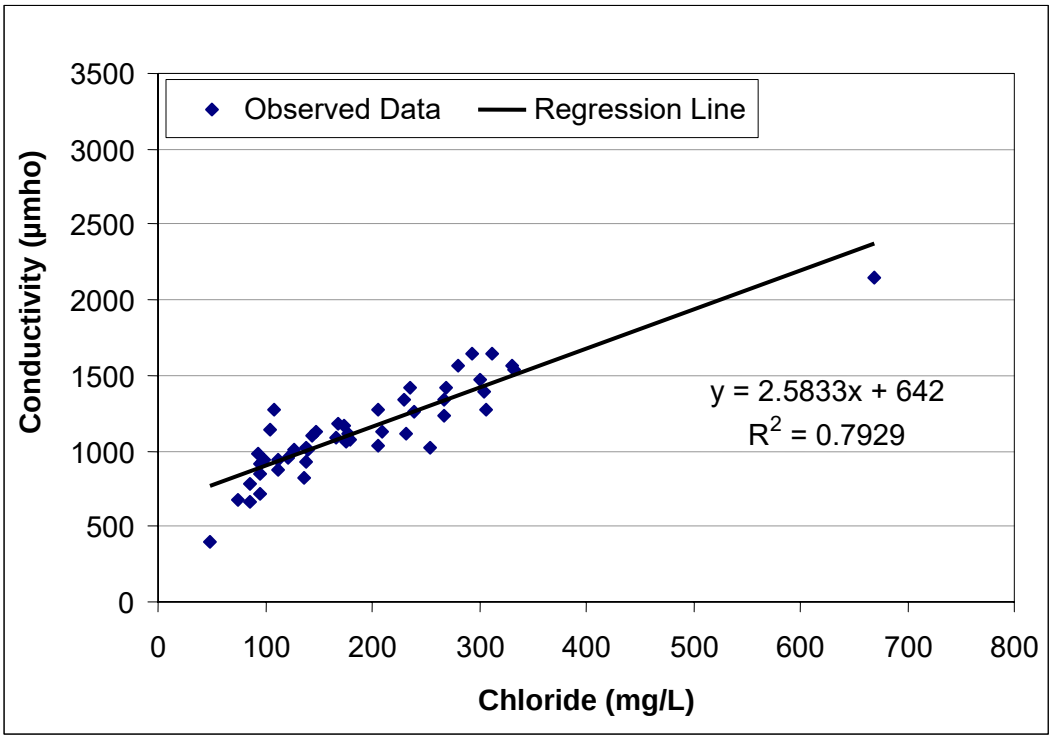
The relationship between conductivity and chloride in East Branch is given by:

$$\text{Conductivity } (\mu\text{mho}) = 642 + 2.58 \times \text{Chloride (mg/L)}$$
$$R^2 = 0.79$$

Figure 4-3 shows this relationship graphically. The 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, suggesting that chloride from roadway deicing activities is the major component of TDS. Additionally, depending on the composition of road salt, other dissolved constituents such as sodium and calcium can be present in water as part of the TDS.

Based on the analysis presented in this section, the TDS/conductivity considerations should be addressed through the evaluation and development of chloride TMDLs.

FIGURE 4-3
Relationship between Conductivity and Chloride in the East Branch of the DuPage River



4.3 Chloride

4.3.1 Historic Data and Causes for Listing

Segments GBL 05 and GBL 10 of East Branch DuPage River are listed for chloride impairment. Long-term total chloride data are available at the ambient water quality station (station id 05540210) at route 34 Bridge at Lisle. According to the Illinois GU WQS, chloride concentration (STORET parameter code 00940) shall not exceed 500 mg/L.

Segment GBL 05 is listed for TDS/conductivity impairment and has been 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, which would result in use impairment.

Water quality data collected between 1995 and 1999 at the Lisle water quality station show that there was one exceedance (Figure 4-4) of the chloride standard, on January 22, 1997. The observed chloride concentration was 669 mg/L. In addition to Figure 4-4, a plot of observed chloride concentration by month in Figure 4-5 shows higher chloride concentrations during winter months. Therefore, elevated chloride concentrations are believed to be associated with road salt application.

FIGURE 4-4
East Branch DuPage River (Lisle station 05540210) Chloride Concentrations by Sample Date and Water Quality Standard

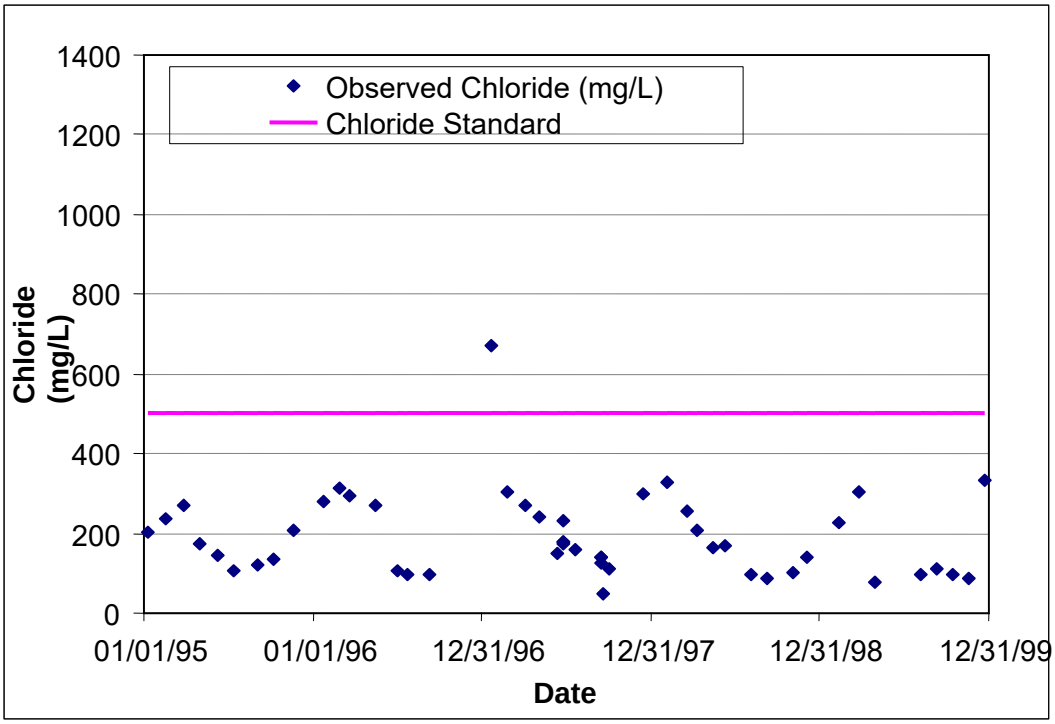
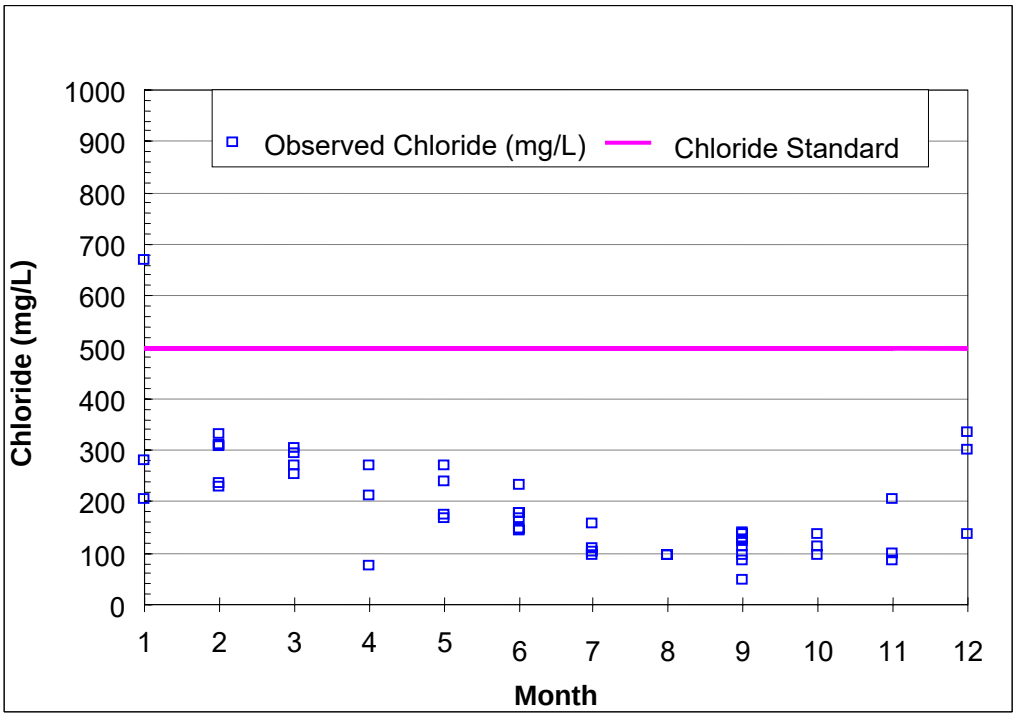


FIGURE 4-5
Chloride Concentrations in East Branch DuPage River by Sample Month and the Water Quality Standard



4.3.2 TMDL Approach

Chloride was modeled for the East Branch segments using HSPF. Road salt application information was incorporated in the model for calibration. Model calibration and validation were performed using chloride data collected at the Lisle station.

4.4 Dissolved Oxygen

4.4.1 Historic Data/Causes for Listing

East Branch segments GBL 05, GBL 10, and GBL 08 are listed for DO impairment. Long-term in-stream DO data are available at the East Branch water quality station at Lisle (station 05540210). Also, intensive diel sampling data from summer 1997 are available at many sites along the main-stem segments.

Illinois WQSs state 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, and not less than 5.0 mg/L at any time. Two STORET parameters (00300 and 00299) represent DO (in milligrams per liter). Parameter 00299 specifically designates measurements of DO by probe in the field. Available data show that the number of DO measurements by probe is significantly larger than the number of DO measurements in laboratory (parameter 00300). All DO data, both parameters 00299 and 00300, were included in analysis and the TMDL development.

DO data collected at various East Branch locations can be divided into one of two groups for analyzing the problem. The first group includes six weekly samples collected from the East Branch DuPage River monitoring site at Lisle (station 05540210). The second group includes data from two extensive diel data-collection efforts: on June 24 and 25, 1997, and September 16 and 17, 1997. All of the above data were collected by IEPA. DO and other water quality data were collected at 6-hour intervals from many sites along the main stem, including point source effluents. These data provide information about the extent of diurnal variation of DO along the river during the warm and dry summer period. Generally, the DO problem is critical under warm and dry summer conditions.

Except for one sample (collected during the diel survey on June 24, 1997, at 2:00 p.m.), six weekly samples collected at the Lisle water quality station for the period 1995–1999 do not exhibit any excursion below the 5-mg/L standard. Also, except for one sample, all DO measurements, including the diel survey data collected on June 24 and 25 and September 16 and 17, 1997, were consistently above the 16-hour average standard (6 mg/L) at the same location. Long-term DO data from the Lisle station are presented in Figure 4-6. Diel data collected on June 24 and 25, 1997, from all East Branch sites are presented in Figure 4-7. Generally, low DO concentrations were observed during summer months. Therefore, the summer low-flow condition was used for TMDL development.

High benthic oxygen demand, point source discharge, and eutrophication that occur because of excessive nutrients are possible causes of the DO problem in the East Branch watershed. Eutrophication leads to high concentrations of algae, which in turn deplete nighttime oxygen levels via respiration. Urban stormwater runoff is a potential source of BOD that settles as bottom deposit and depletes DO in the water column above. Discharge at the storm sewer outfalls during small storms may contribute to low DO concentrations by

transporting oxygen-demanding materials and low-DO water. Stormwater runoff includes pet and other animal waste with high nutrient concentrations as well as other organic deposits (e.g., leaf litter). Also, WWTP effluents can deplete DO through BOD and ammonia loads. However, according to the DMR data and the IEPA monitoring data from 1997, WWTPs in the East Branch watershed generally discharged CBOD concentrations well below their permit limits. Also, ammonia concentrations from Bloomingdale STP and Glendale Heights STP were significantly lower than the permit limits. Potential sources contributing to the DO excursions are listed in Table 4-1.

FIGURE 4-6
Monthly DO Data at the Lisle Water Quality Station (05540210) by Sample Date and the Water Quality Standards for DO

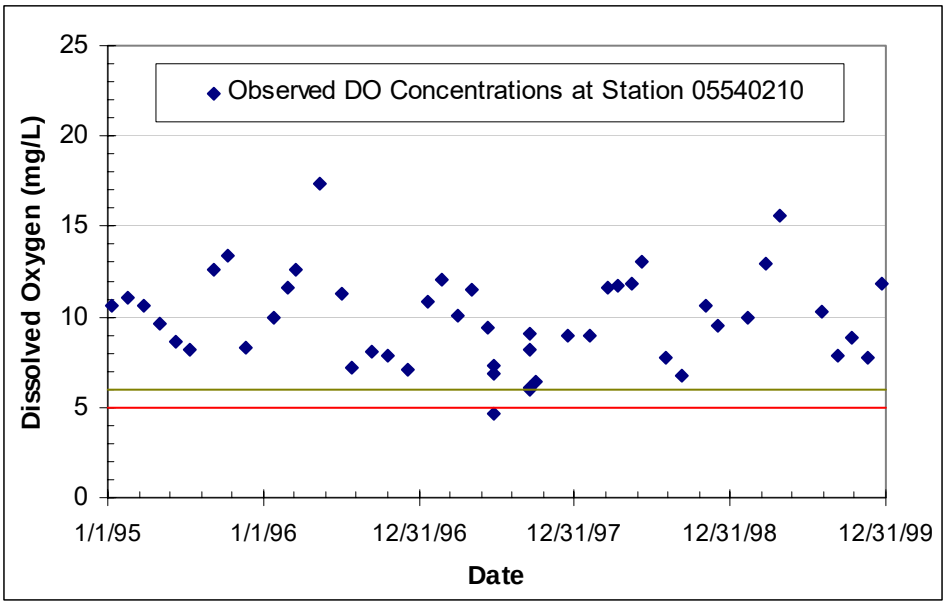
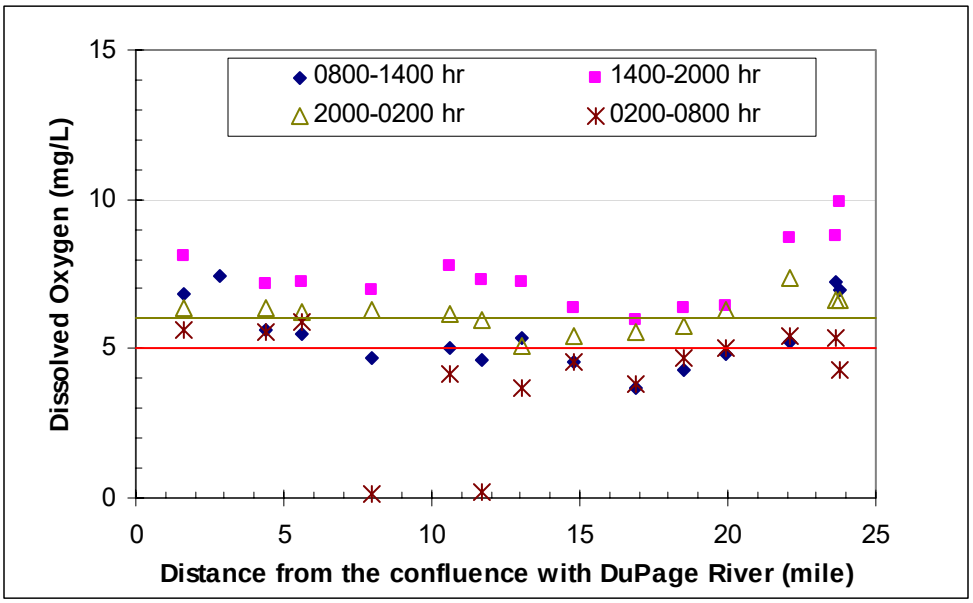


TABLE 4-1
Causes for Low Dissolved Oxygen

Water Body Segment	Source
GBL 05	Municipal point sources—Downer's Grove SD WTC Urban runoff/ storm sewer
GBL 08	Municipal point sources—Bloomingdale Reeves WRF and Glendale Heights STP Upstream impoundments—Churchill Woods Forest Preserve Lake Urban runoff / storm sewer
GBL 10	Municipal point sources—Glenbard WW Authority, Glenbard STP Urban runoff/ storm sewers

FIGURE 4-7
Diel Data Collected at Many East Branch of the DuPage River Sites on June 24–25, 1997, and the Water Quality Standards for DO



The analysis of East Branch DO and its potential sources provided key information necessary to identify the modeling needs and selecting an appropriate model. DO TMDL evaluations for East Branch will be developed using the QUAL2E model. The DO problem has been characterized as one associated with low- to medium-flow conditions in the summer months. The QUAL2E model can adequately simulate DO and other water quality constituents (e.g., BOD, nutrient) contributing to DO problems under a given flow condition. After being calibrated using diel sampling data, the model will be used to develop the DO TMDL using a critical low-flow condition.

4.5 Summary

Table 4-2 summarizes all the pollutants listed on the 303(d) list for East Branch. Also listed are any WQS/TMDL endpoints, other supporting data, and potential sources.

TABLE 4-2
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	Will be addressed by the chloride TMDL
Chloride	500 mg/L	Exceedances warrant further evaluation and potential TMDL development	Road deicing applications	
Dissolved oxygen	Not less than 5 mg/L at any time or not less than 6 mg/L for 16 hours out of 24	Yes	Urban runoff/storm sewers, contaminated sediments, waterfowl, municipal point sources	

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 East Branch 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, whereas QUAL2E is a steady-state stream water quality model.

HSPF can model a wide variety of water quality constituents, including conservative substances (e.g., chloride), 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 (it 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 steady-state model best suited to simulate specific flow conditions, such as low-flow periods.

The HSPF model was used to develop the conductivity and chloride TMDLs, and the QUAL2E model was used to develop the DO TMDL after the data presented in the previous chapter was analyzed.

5.2 Modeling Chloride Using HSPF

5.2.1 Hydrologic Calibration for HSPF General Background Information

There are two long-term USGS flow gauges in the watershed. The upstream gauge, at Downers Grove (USGS gauge ID 05540160), has a drainage area of 26.6 square miles, according to the USGS. The downstream gauge, at Bolingbrook (USGS gauge ID 05540250), has a drainage area of 75.8 square miles, according to the USGS.

The delineated subbasins for East Branch as described in Section 3.1 were used to calculate contributing areas for each flow gauge. These subbasins indicate about 2 percent more area at the top gauge than that reported by the USGS, and about 2.5 percent less area at the bottom gauge than that reported by the USGS. These differences are within a range deemed acceptable for modeling.

The following sections detail the various data coverage processed for use in hydrologic calibration of HSPF. For details on any of the calibration outputs and plots of simulated and observed flow, refer to Appendix B.

5.2.2 Land Use Data for Hydrologic Calibration

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 two 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 Gauges

Land Use	Area above Downers Grove, %	Area above Bolingbrook, %	Effective Impervious Area, %
Cemeteries and vacant	28.8	21.6	0.0
Commercial	8.2	7.8	85.0
Forest	2.9	4.8	0.0
Industrial	4.0	2.8	85.0
Institutional	4.3	4.1	30.0
Open space	9.0	10.9	0.0
Residential	35.9	42.2	10.0
TCU, excluding interstates	1.7	1.5	60.0
Expressways	2.2	2.2	60.0
Wetlands	2.2	1.0	0.0
Agricultural	1.0	1.4	0.0

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 the 1996 report *Application Guide for Hydrologic Modeling in DuPage County Using Hydrologic Simulation Program – FORTRAN (HSPF)* (Price, 1996).

5.2.3 Meteorological Data for Hydrologic Calibration

From the meteorological data discussed in Section 3.4, one time series, the Wheaton time series, was created to use for model simulation, with data from 1991 to 1999. The time series was divided into two sets, one for model calibration and one for model validation. Since the two East Branch USGS gauges (Downers Grove and Bolingbrook) began recording in 1989, it follows that the calibration period must have been within the span of 1989 to 1999. The

first 5 years of the weather data set, 1991–1995, were chosen for hydrologic calibration. The following years, 1996–1999, were used for model validation.

5.2.4 Point Source Data for Hydrologic Calibration

Point source discharges from wastewater treatment plants make up a significant portion of the flow in the East Branch during low-flow periods. This point is illustrated by examining a long-term flow gauge operated by DuPage County on the DuPage River at Maple Avenue (the period of record of the USGS gauges in the East Branch is not long enough to illustrate this point). During the 10-year period from 1959 to 1968, the mean of the 10-percent lowest flows is about 5 cubic feet per second (cfs). At the same location during the 10-year period 1979 to 1988, the mean of the 10-percent lowest flows is about 17.5 cfs. This increase can be attributed to point sources that began discharging into the river during this period.

Point sources contribute heavily to flow at both USGS gauges. According to the point source data as discussed in Section 3.6, there are nine point source discharges in this watershed, and the combined average monthly point source discharge above the USGS gauge at Bolingbrook is about 68 cfs. However, during the 10-year period 1990 to 1999, the average of the 10-percent lowest flows at the USGS gauge at Bolingbrook is only about 33 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 explanation for this discrepancy is related to stormwater infiltrating the sanitary sewer system, where runoff enters the sanitary sewer system through manholes and through joints in the sewer pipe.

This study on the DuPage River assumes that the average discharge during the driest month of that study period was wastewater only and did not include any runoff. The study concludes that 30.8 cfs is the average point source discharge into the DuPage River at the outlet of that study area at Maple Avenue (compared with 56 cfs reflected in the discharge data). That comes to roughly 55 percent of the discharge that actually is the wastewater component.

Using the assumption in that report, 55 percent of the 68 cfs at the Bolingbrook gauge, or about 37.4 cfs, is assumed to be the wastewater component of the point source discharges. But at the Bolingbrook gauge, the average of the 10-percent lowest flows during the 10-year period 1990 to 1999 is only about 32.8 cfs. It is possible that the wastewater component of the treatment plant discharges is lower than 55 percent below the Maple Avenue gauge.

There is no long-term USGS gauge in the East Branch watershed that shows what flows might have been before the area was developed, but in the neighboring Salt Creek watershed, at a USGS gauge at Western Springs, the 10-percent lowest flows during the 10-year period from 1945 to 1954 (the earliest records at that gauge) average about 3.2 cfs. Assuming that these watersheds are hydrologically similar and factoring the predevelopment flow proportionally by respective areas, about 2.1 cfs would have been the 10-percent low flow during the same period. Thus it could be assumed that the difference between the 10-year flows between the 1940s and the 1990s, about 30.7 cfs, is the actual point source contribution at the Bolingbrook gauge.

The 30.7-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 data are obtained at the two USGS gauges on the East Branch DuPage River. Obviously, this point source contribution is subject to significant uncertainty, and better data would represent these contributions more precisely.

5.2.5 Initial Parameters for 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 land. 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 variation in land uses 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. Whereas Price (1994) uses the same LZSN value for all land uses, LZSN was changed to be higher for forest than for urban land uses.

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 Website. Stream cross-sectional information was estimated at different locations during a field reconnaissance in April 2000. Drainage areas were calculated based on GIS data.

A spreadsheet was set up to combine all this information and calculate different F-table components. 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 discrepancies in the F-tables were eliminated.

5.2.6 General Comments about the Hydrologic Calibration

Snow was calibrated based upon 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 B-1, 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 the use of the HSPEXP, an expert system for hydrologic calibration specifically designed for use with HSPF and developed under contract for the USGS (Lumb, McCammon, and Kittle, 1994). This package gives calibration advice such as which model parameters to adjust and/or inputs to check, based on predetermined rules, and allows the user to 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 errors in total runoff volume, in the 50-percent lowest flows, in the 10-percent highest flows, in the storm peaks, in seasonal volume, and in summer storm volume. 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 UZSN, lowered PETMIN and PETMAX, lowered interception storage, and adjusted LZETP.

The total runoff volume errors at the two calibration locations are 5 percent or less, which indicates very good agreement. Table 5-2 compares observed and simulated annual flows with correlation coefficients.

TABLE 5-2
Hydrologic Calibration Summary

Station	Mean Observed Annual Flow (in.)	Mean Simulated Annual Flow (in.)	R Daily	R Monthly
Downers Grove	24.3	23.7	0.77	0.89
Bolingbrook	20.7	21.1	0.85	0.90

Most of the calibration statistics computed by HSPEXP indicate a very good calibration. The exceptions are related to the storm events at the upper gauge, and seasonal volume error at the lower gauge, but even these errors are nearly within the ranges deemed acceptable according to the criteria defined in HSPEXP. These errors may be explained by the highly localized nature of summer thunderstorms in this region (see Tables B-1 and B-2 in Appendix B).

The flow duration curves show very good agreement overall. However, the low-flow ends of the plots show some oversimulation (see Figures B-2 through B-5 in Appendix B). This error may be explained by the nature of the point source input data. These data were provided as monthly averages, whereas the observed streamflow data are mean daily. These monthly point source data do not reflect short-term reductions in treatment plant discharges, such as those that might be associated with treatment plant cleaning or maintenance, yet these short-term reductions in flow are seen in the observed data. More-refined point source discharge data would be needed to model these low-flow conditions more adequately.

Scatter plots of observed versus simulated flow at the two calibration locations show correlation coefficients of 0.77 to 0.85 for the daily data and 0.89 to 0.90 for the monthly flows (see Figures B-6 and B-7 in Appendix B).

5.2.7 East Branch Validation Summary

To validate the results of the hydrology calibration, HSPF was run for East Branch for the period 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

	Calibration Period (1991–1995)					Validation Period (Jan. 1996 through Sept. 1999)				
Station	Mean Observed Annual Flow (in.)	Mean Simulated Annual Flow (in.)	% Diff	R-Squared Daily	R-Squared Monthly	Mean Observed Annual Flow (in.)	Mean Simulated Annual Flow (in.)	% Diff	R-Squared Daily	R-Squared Monthly
Downers Grove	24.3	23.7	-2.5	0.59	0.890 0.79	27.7	24.7	-10.8	0.50	0.890 0.50
Bolingbrook	20.7	21.1	1.9	0.72	0.81	23.4	22.2	-5.1	0.66	0.67

For a hydrology calibration, the percent difference between simulated and observed flows often is used as a measure of the accuracy of the calibration. A difference of less than 10 percent is considered a very good calibration, whereas a difference of 10 to 15 percent is considered good. Differences between 15 and 25 percent are 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, with the exception of the Downer's Grove station, which shows a good calibration.

R^2, the coefficient of determination, is sometimes used as a statistical measure of the quality of a calibration. When analyzing daily values, an R^2 value of 0.8 to 0.9 is considered to be 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^2 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^2 values indicate a range from fair to good, whereas the monthly values indicate a range from fair to very good. For the validation, the daily R^2 values indicate a range from poor to fair, whereas 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 July 1996 rainfall event of over 9 inches. Such extreme events may be affecting the quality of the validation results. The fact that the validation period was shorter than the calibration period 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.

5.2.8 Water Quality Calibration for Chloride

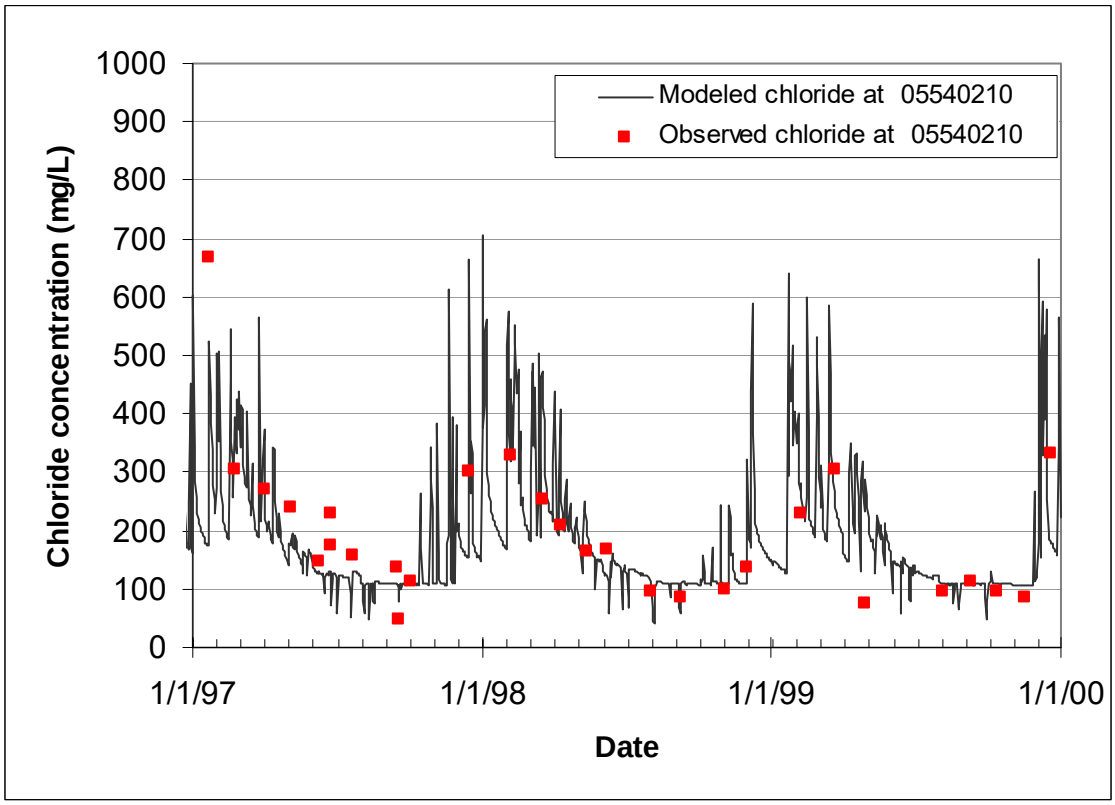
The Lisle water quality–monitoring station (05540210) on the East Branch was selected as a good source (see the water quality data discussion in Section 4.3) of long-term water quality data (Figure 3-9).

The primary source of chloride is road salt applications during winter months. HSPF was selected as the model for simulating snow accumulation, snowmelt, 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 buildup (or accumulation) and wash-off functions. A thorough analysis was performed to determine the chloride buildup 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 of road salt applied to each subwatershed. The average number of snowfalls 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 were treated as one event). It was assumed that 5.6 tons of salt were applied to every mile (3.5 tons/km) of road lane. This rate is consistent with road salt application rates found in the 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 East Branch watershed was 106 mg/L. Six groundwater quality samples collected between 1993 and 1998 included chloride measurements. The average groundwater concentration was incorporated in the model to account for the background concentration.

Model calibration results at the Lisle water quality station are shown in Figure 5-1. The model successfully simulated chloride concentrations over a 3-year period (1997–1999) and captured the variability of chloride concentration in different seasons of the year. Figure 5-1 shows observed data and model results from January 1, 1997, to December 31, 1999. The model is considered adequately calibrated for developing TMDL allocations for chloride.

FIGURE 5-1
Water Quality Calibration of Chloride at the East Branch of the DuPage River Site (Lisle station 05540210)



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 East Branch watershed. The QUAL2E model was used to simulate DO, BOD, and nutrients under steady-state conditions.

East Branch, as represented in the model, begins at the Glen Ellyn Road bridge immediately upstream of the Bloomingdale-Reeves WRF discharge location and ends at the confluence with the West Branch of the DuPage River. The river is 23.8 miles long, with 17.3 miles located in DuPage County and 6.5 miles in Will County, Illinois. Tributaries to the East Branch include Lacey Creek, Armitage Ditch, St. Joseph Creek, and Prentiss Creek. None of the tributaries were included in the reach network of the model. East Branch drains a 79.3-square-mile watershed and receives effluents discharged from seven wastewater treatment plants.

Two sets of extensive monitoring data were collected on June 24–25 and September 16–17, 1997 (Appendix D). Water quality–sampling stations included in-stream locations as well as point source effluents. Two flow gauges located on the main stem of East Branch provided the flow data for the model. These gauges are Downers Grove (05540160), in the upper portion of the watershed, and Bolingbrook (05540250), in the lower portion of the

watershed. Locations and descriptions of East Branch water quality–sampling stations, wastewater treatment plants, and flow gauges are listed in Table 5-4.

TABLE 5-4
Summary of Water Quality Sampling Stations during 1997 Diel Study, Wastewater Treatment Plants, and Flow Gauges in the East Branchof the DuPage River

Station ID	River Mile	Description
GBL 14	23.80	Upstream of Bloomingdale STP at Glen Ellyn Road
GBL-B-E	23.70	Bloomingdale STP
GBL 11	23.67	Downstream of Bloomingdale STP at Army Trail Road
GBL 15	22.07	Fullerton Ave. in Glendale Heights
GBLG 01	21.50	Armitage Ditch upstream of Glendale HTS. STP
GBLG-GH-E	21.50	Glendale Heights STP
GBL 16	19.95	St. Charles Rd. in Glen Ellyn
GBL 17	18.50	Hill Ave. in Lombard
GBL 08	16.92	Roosevelt Rd. (RT. 36) in Glen Ellyn
GBL-GB-E	15.90	Glenbard STP - Glenbard
05540160	14.90	USGS flow gauge near Downers Grove
GBL 09	14.78	Butterfield Rd. (Rt. 56)
GBL 13	13.06	Rt. 53 in Lisle Morton Arboretum
GBLB 01	11.90	Ogden Ave. (Rt. 34) in Lisle St. Joseph Creek
GBL 10	11.66	Ogden Ave (Rt. 34) in Lisle
GBL-DG-E	11.50	Downers Grove SD STP
GBL 05	10.64	Maple Ave. in Lisle
GBL 12	7.99	75th Street near Woodridge
GBLD-W-E	7.39	Woodridge STP
05540250	5.70	USGS flow gauge near Bolingbrook
GBL 19	5.59	Royce Rd. in Bolingbrook
GBL-BB-E	5.50	Bolingbrook #1 STP
GBL 13	4.39	Hidden Lakes off Boughton Road
GBL-HL-E	4.37	Hidden Lakes fishing pond discharge

TABLE 5-4
Summary of Water Quality Sampling Stations during 1997 Diel Study, Wastewater Treatment Plants, and Flow Gauges in the East Branchof the DuPage River

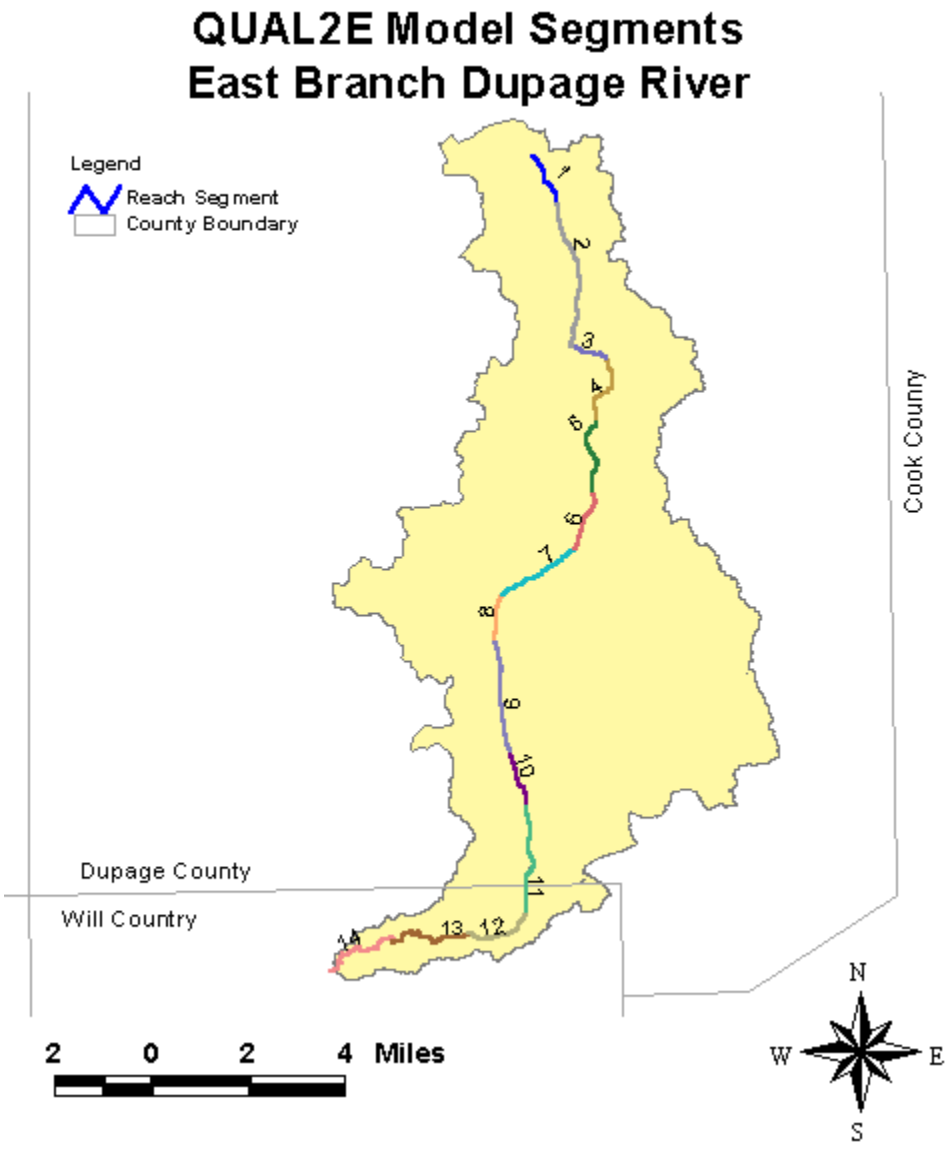
Station ID	River Mile	Description
GBL-EC-E	4.35	Quarry discharge downstream Hidden Lake
GBL 20	2.85	Upstream of Citizen's Utilities W.S. #2 STP
GBL-CU-E	2.40	Citizen's W.S. #2 STP
GBL 02	1.60	Washington Street near Naperville

The East Branch was segmented into 14 reaches in the model as shown in Figure 5-2 and listed in Table 5-5. Changes in the stream's physical characteristics (e.g., wide reach) were the primary basis of segmentation. Each reach was divided into smaller computational elements. Each computational element was 0.2 mile long. The model assumes that each computational element is completely mixed and generates output for each computational element. Thus the model provides output that varies within a reach as well as among reaches. However, model input and kinetic coefficients can vary by reach only. Locations of point sources are specified in the model by reach number and element number.

TABLE 5-5
Segmentation of East Branch DuPage River as Represented in QUAL2E

Reach ID	Length (miles)	Upstream River Mile	Downstream River Mile
1	0.6	24.0	23.4
2	2.2	23.4	21.2
3	1.4	21.2	19.8
4	2.2	19.8	17.6
5	1.4	17.6	16.2
6	2.4	16.2	13.8
7	0.8	13.8	13.0
8	2.0	13.0	11.0
9	1.4	11.0	9.6
10	1.8	9.6	7.8
11	2.6	7.8	5.2
12	1.2	5.2	4.0
13	1.8	4.0	2.2
14	2.2	2.2	0.0

FIGURE 5-2
Segmentation of the East Branch of the DuPage River as Represented in QUAL2E



There are two East Branch hydraulic structures. The upstream structure is located at the Crescent Boulevard bridge (River mile 19.4) and maintains the pool of water in the lake in Churchill Woods Forest Preserve. The downstream dam is located at the Seven Bridges Golf Course upstream of Prentiss Creek confluence with East Branch (river mile 9.5).

Seven wastewater treatment plants discharge to East Branch. Bloomingdale and Glendale Heights STPs are located upstream of the lake at Churchill Woods Forest Preserve. Glenbard STP at Glenbard is located downstream of the lake and upstream of the USGS flow gauge near Downers Grove (05540160). Downers Grove SD and Woodridge STPs discharge between the USGS flow gauges near Downers Grove and Bolingbrook (05540250). Bolingbrook #1 STP and Citizen #2 STP discharge downstream of the Bolingbrook gauge. Woodridge, Bolingbrook, and Citizen #2 STPs all discharge to Segment GBL 02 which is not listed for DO impairment. Current permit limits of all wastewater treatment plants for CBOD5 and ammonia are listed in Table 5-6.

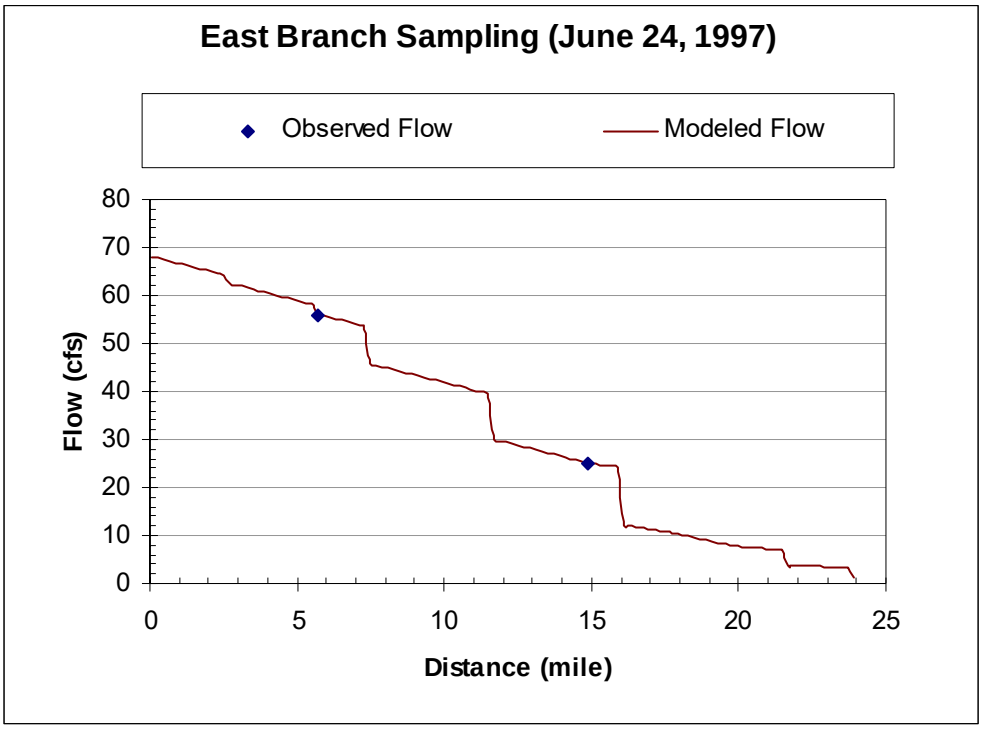
TABLE 5-6
Current CBOD5 and Ammonia-N Permit Limits of the Wastewater Treatment Plants

Point Source	Daily Max CBOD5 (mg/L)	Monthly Avg CBOD5 (mg/L)	Daily Max Ammonia-N (mg/L)	Monthly Avg Ammonia-N (mg/L)
Bloomingdale-Reeves WRF	20	10	3.0	1.5
Glenbard WW Auth-Glenbard	20	10	3.0	1.5
Downers Grove SD WTC	20	10	3.0	1.5
Glendale Heights STP	20	10	3.0	1.5
DuPage County Woodridge STP	20	10	3.0	1.5
Bolingbrook STP #1	40	20	3.0	1.5
Citizens Utility Company #2 STP	40	20	3.0	1.5

The modeling for TMDL development involved a two-step process. First, the model was set up and calibrated using June 24–25, 1997 diel survey data. Second, the calibrated model was used to develop TMDL allocation scenarios.

QUAL2E was set up to simulate flow, CBOD5, ammonia nitrogen, nitrite nitrogen, nitrate nitrogen, and DO. The stream cross-section was assumed to be trapezoidal, and hydraulic input data were estimated based on Reach File version 1 data in BASINS, field reconnaissance, and drainage areas. The slope of each reach was estimated using contour lines in USGS 7.5-min quadrangle maps. Literature values (Chow, 1959) and other studies in the surrounding areas (e.g., USGS, 1996) were used to estimate Manning's roughness coefficients. Monthly average discharges of point sources were obtained from June 1997 DMR data and incorporated in the model. Incremental flows were estimated using observed flow data at the gauges and discharge monitoring data (DMR) for point sources. Model and observed flows at USGS gauges are shown in Figure 5-3.

FIGURE 5-3
Modeled and observed flows at East Branch DuPage River on June 24, 1997



Water quality calibration of QUAL2E included comparing observed and simulated ammonia nitrogen, CBOD5, and DO data in order to adjust model parameters. Concentrations of ammonia, CBOD5, and DO in point source effluents were obtained from samples collected on June 24 and 25, 1997, and incorporated in the model. Table 5-7 lists measured effluent concentrations. Ammonia concentrations in effluents of Bloomingdale STP and Glendale Heights STP were low and well below the permit limits, but monitoring data suggested that there was a gradual increase in ammonia concentration upstream of Glenbard STP. No monitoring data were available for organic nitrogen. The model was set up using 0.9 mg/L of organic nitrogen and 1.5 mg/L of ammonia nitrogen concentrations in incremental flow for model segments (reaches) 2 through 5. Organic nitrogen and ammonia nitrogen concentrations of 0.3 mg/L and 0.15 mg/L were used for incremental flows in reaches 6 through 14. The in-stream ammonia concentration in East Branch increased significantly at river mile 15.9 by the Glenbard STP discharge. Ammonia concentrations in the Glenbard's effluent varied between 2.4 and 3.5 mg/L, with all samples exceeding the monthly average permit limit and two of four samples exceeding the daily maximum permit limit. In-stream concentration decreased steadily downstream of Glenbard STP. Also the fluctuation of ammonia load from the Glenbard STP caused a significant variation of in-stream ammonia concentrations between river miles 10 and 16.9 with time.

Model calibration for ammonia resulted in ammonia oxidation rates of 1.0 day^{-1} for reaches 6 through 14 and 0.3 day^{-1} for reaches 1 through 5. The values are within the range found in the literature. EPA (1985, Rates, Constants, and Kinetics Formulations in Surface Water Quality Modeling, EPA/600/3-85/040) reported that average ammonia oxidation rates

varied between 0.1 day^{-1} and 5.7 day^{-1} in streams and rivers. Observed and modeled ammonia concentrations on June 24–25, 1997 are presented in Figure 5-4. Model results matched the average ammonia concentration very well.

TABLE 5-7
Observed Concentrations of DO, CBOD5 and Ammonia Nitrogen in Point Source Effluents on June 24–25, 1997

Point Sources	Sampling Station	Dissolved Oxygen (mg/L)				CBOD5 (mg/L)				Ammonia (mg/L)			
		A	B	C	D	A	B	C	D	A	B	C	D
Bloomingdale STP	GBL-B-E	7.40	6.76	6.4	6.04	1	1	1	2	0.67	0.27	0.39	0.46
Glendale Heights STP	GBLG-GH-E	7.54	7.93	6.8	6.36	1	1	1	1	0.18	0.15	0.19	0.19
Glenbard STP	GBL-GB-E	7.04	7.37	7.2	6.48	1	<1	1	1	2.40	2.50	3.50	3.50
Downers Grove SD STP	GBL-DG-E	7.28	7.41	7.0	7.66	<1	<1	1	1	1.70	0.94	0.94	1.40
Woodridge STP	GBLD-W-E	8.33	8.52	8.1	7.22	2	2	3	3	0.19	0.32	0.18	0.18
Bolingbrook #1 STP	GBL-BB-E	7.83	8.25	8.0	12.41	<1	<1	1	1	0.17	0.13	0.17	0.16
Citizen's W.S. #2 STP	GBL-CU-E	6.7	7.53	7.3	7.31	<1	2	2	2	0.15	0.24	0.28	0.18

Column headings:

A, morning
B, afternoon
C, evening/night
D, late night/dawn

Observed data collected from water quality stations located upstream of river mile 16.9 showed CBOD5 concentrations generally ranging from 2 to 3 mg/L. However, CBOD5 in Bloomingdale STP and Glendale Heights STP effluents and at the water quality monitoring station immediately downstream of Glendale Heights STP was 1 mg/L or less. An increase in CBOD5 between river miles 16.9 and 20 indicated a high nonpoint source contribution. An average CBOD5 concentration of 6 mg/L in incremental flow of reaches 2 through 5 was determined through model calibration. A BOD decay rate of 0.14 day^{-1} was used in all reaches. This rate is consistent with the range of BOD decay rates (0.113 to 0.156 day^{-1}) found in the Salt Creek model (USGS, 1996). Figure 5-5 shows modeled and observed CBOD5 concentrations at East Branch on June 24 and 25 1997.

FIGURE 5-4
Modeled and Observed Ammonia Concentrations at the East Branch of the DuPage River on June 24-25 1997

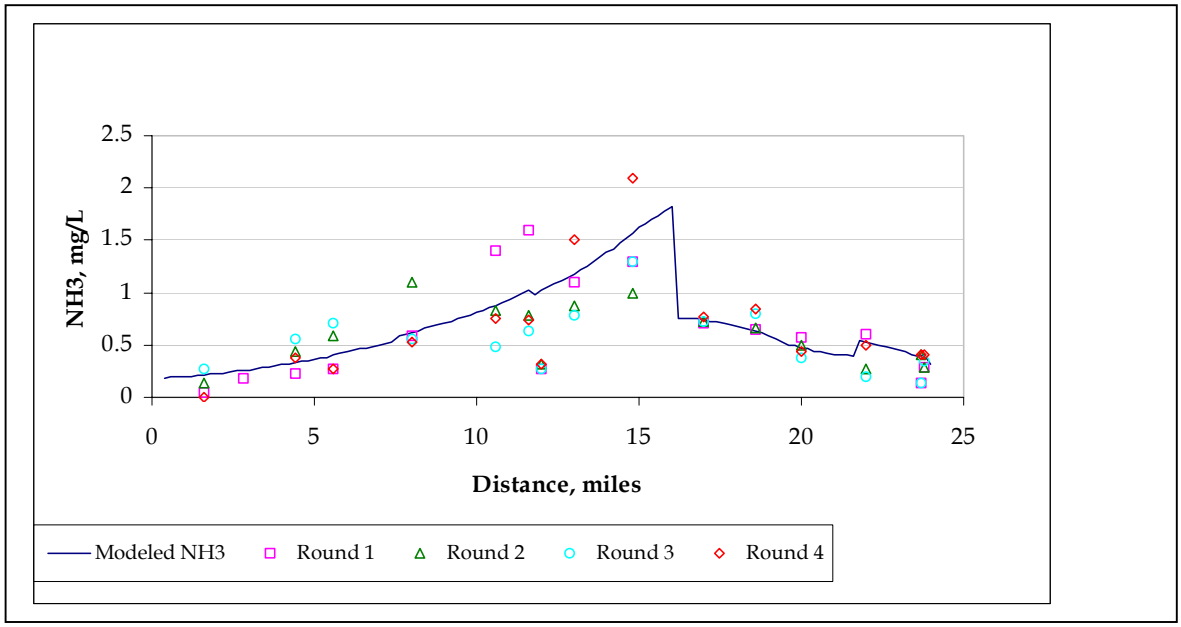
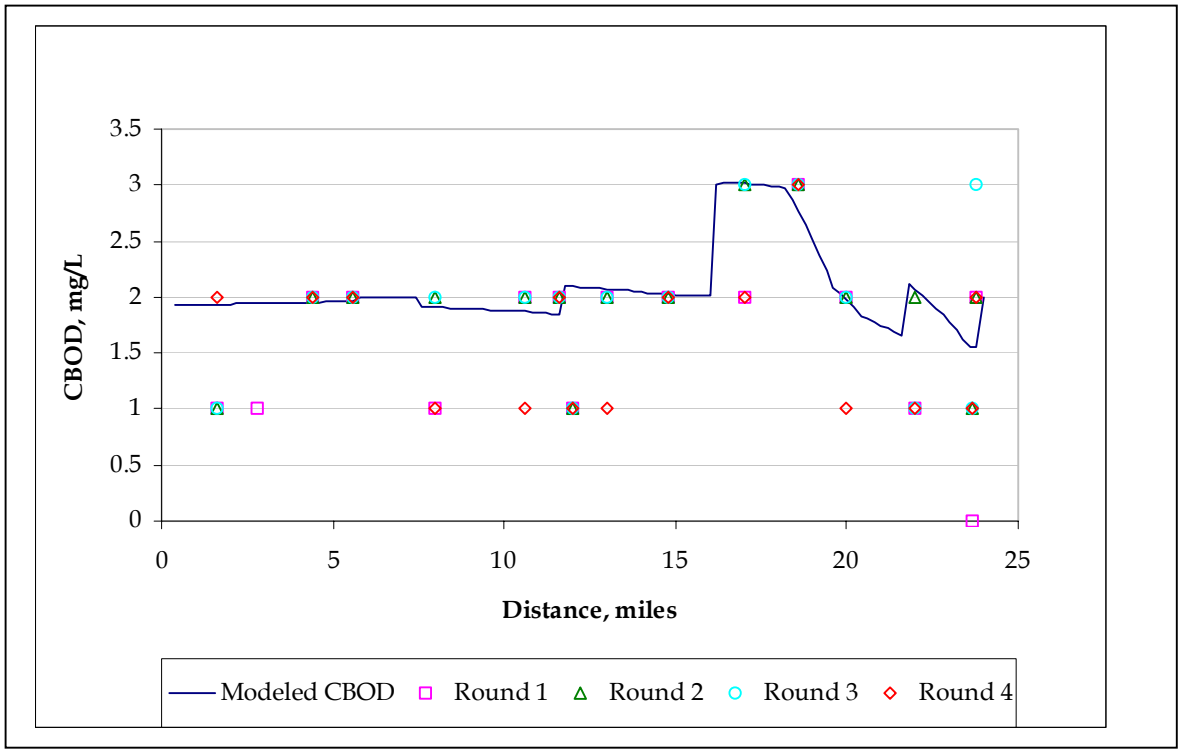


FIGURE 5-5
Modeled and Observed CBOD5 Concentrations at the East Branch of the DuPage River on June 24–25, 1997



Dissolved oxygen in East Branch DuPage River was simulated as a function of biological oxidation of CBOD, exertion of sediment oxygen demand (SOD), oxidation of ammonia, atmospheric reaeration and direct input (e.g., DO concentrations in effluents). Algae were not simulated. The rate constants for processes related to oxidation of ammonia and CBOD were determined through the calibration of the model for ammonia and CBOD, and discussed earlier. SOD is caused by the oxidation of organic and other particulate material deposited in the streambed. Discharge of high BOD and solids from point and nonpoint sources may result in high SOD. Unlike the Salt Creek model, there were no measured SOD values available in East Branch DuPage River. Measured and calibrated SOD values in the Salt Creek model ranged from 0.115 to 0.228 g/ft^2-day and from 0.04 to 0.45 g/ft^2-day, respectively. Except for reach 3 (representing the lake in Churchill Woods Forest Preserve), SOD values ranged from 0.05 to 0.2 g/ft^2-day. SOD in reach 3 was 0.025 g/ft^2-day. There was no measurement of atmospheric reaeration rates available in East Branch DuPage River. Reaeration rates were initially estimated based on the Salt Creek model and updated through model calibration. The calibrated East Branch DuPage River model used 2 day^{-1} and 3 day^{-1} as reaeration rate coefficients in reaches 1 through 5 and reaches 6 through 14, respectively.

Figure 5-6 shows the observed DO concentrations at approximately 6-hour intervals. The horizontal axis in the plot shows the distance upstream from the confluence of the East Branch DuPage River with the West Branch DuPage River. A set of circles at a given distance represents the observed concentrations at different times of the day. Generally predawn and morning DO concentrations at all sampling locations upstream of river mile 7.5 were less than 5 mg/L. On the contrary, all afternoon samples were above 6 mg/L. Algal production of DO through photosynthesis reaches the maximum in the afternoon and elevates in-stream DO concentrations. Two predawn samples recorded 0.23 mg/L and 0.12 mg/L of DO at Ogden Avenue in Lisle and 75th Street near Woodridge, respectively. These observations were not consistent with DO concentrations measured upstream and downstream of these water quality–monitoring stations. Average DO concentration was less than 5 mg/L between river miles 16 and 17.4, and less than 6 mg/L between river miles 9.6 and 19.8. Model results matched average observed DO concentrations very well.

Various components of the DO mass balance (i.e., CBOD decay, exertion of sediment oxygen demand (SOD), and reaeration) were analyzed using the model results. Relative contributions and magnitudes of DO mass balance components were plotted in Figure 5-7 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 SOD at the critical sections upstream of Glebard STP outfall. SOD (on a mg/L-day basis) was relatively high in the lake in Churchill Woods Forest Preserve, perhaps due to low velocity that causes high settling rates of organic debris from nonpoint source and BOD-rich suspended solids from point sources. The ammonia oxidation rate was also important which indicates that ammonia is an important parameter to control.

FIGURE 5-6
Modeled and Observed East Branch DO concentrations on June 24–25, 1997

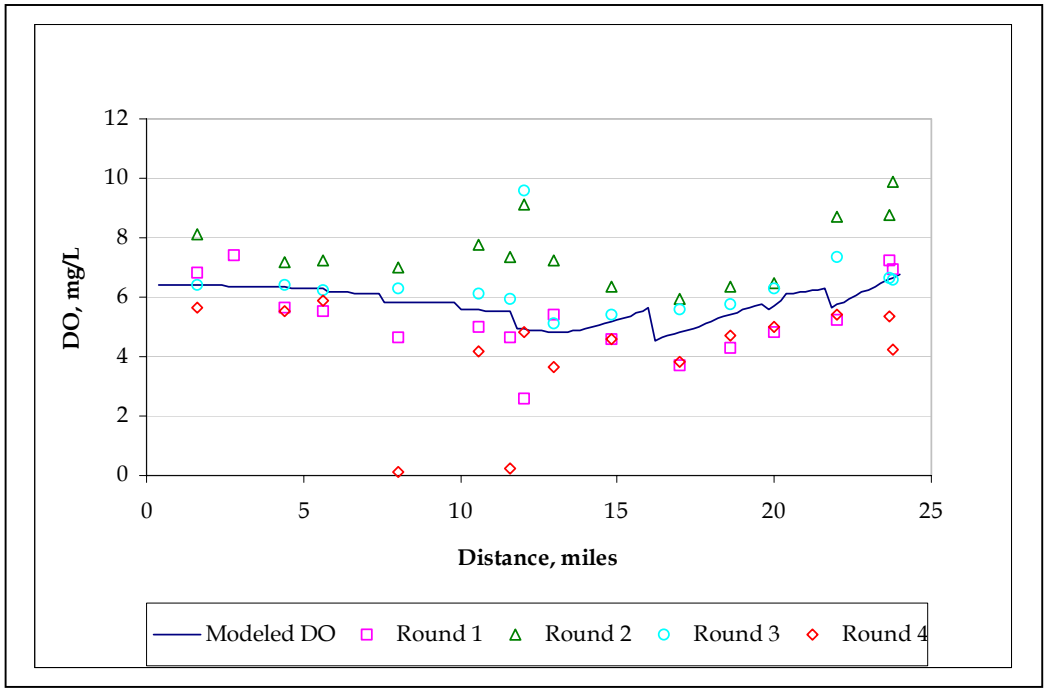
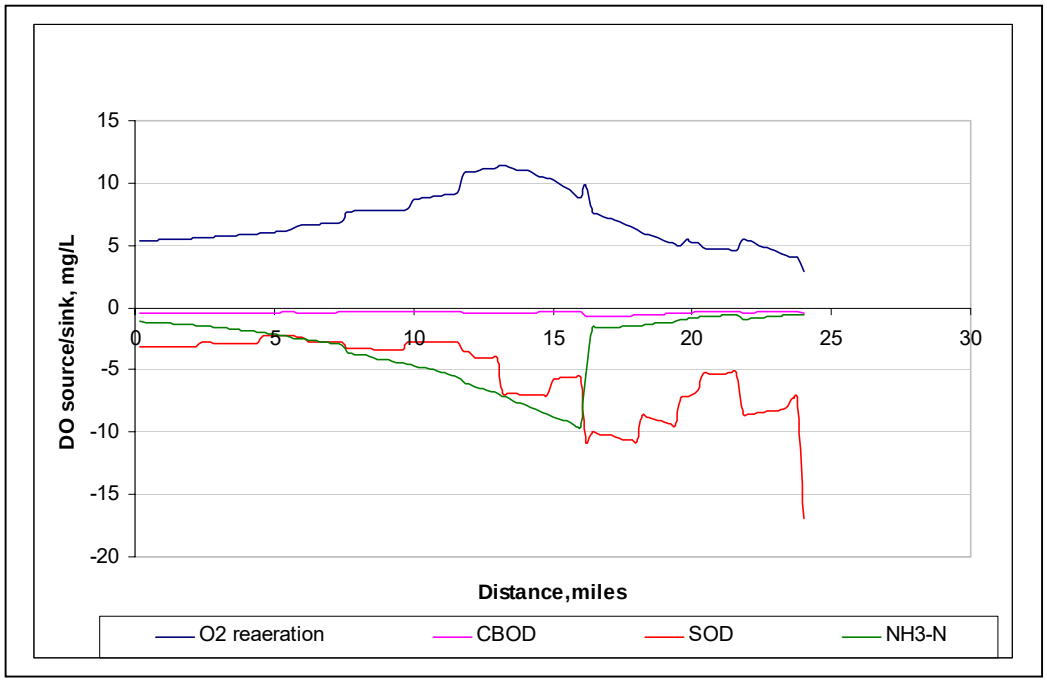


FIGURE 5-7
Components of the DO Mass Balance Based on the Model Results for June 24–25, 1997



6 TMDL Allocation

6.1 Approach and Methodology

TMDLs are the sum of the individual WLAs for point sources, LAs for both nonpoint sources and natural background, and a margin of safety (MOS). This definition is denoted by the following equation:

$$TMDL = \Sigma\ WLAs + \Sigma\ LAs + MOS$$

Developing a TMDL is an iterative process that involves modeling and generating allocation scenarios that meet water quality targets. East Branch 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 determining critical conditions, as discussed in Section 5. 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.

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. Change of population served by the point sources will affect the point source discharge. An analysis of projected population data (NIPC, 2002) shows that the population of DuPage County will have increased by 26 percent from 1990 to 2020. Accordingly, all point source discharges under the summer low-flow condition were increased by 26 percent and the DO was simulated using the QUAL2E model. A comparison

of the model result for increased point source discharge with that of existing point source discharge shows slightly improved in-stream DO concentration.

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 15 miles of new roads might be constructed in the process of land use change. The new land use data was incorporated in developing TMDL allocations 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 East Branch watershed. A strong correlation was found between conductivity and chloride (Section 4.2). Road salt application for deicing contributes chloride loads to surface waters. All the simulated chloride standard exceedances as well as the one observed violation 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. The calibrated model was used to estimate the annual chloride load under existing conditions.

6.3.1 Critical Condition

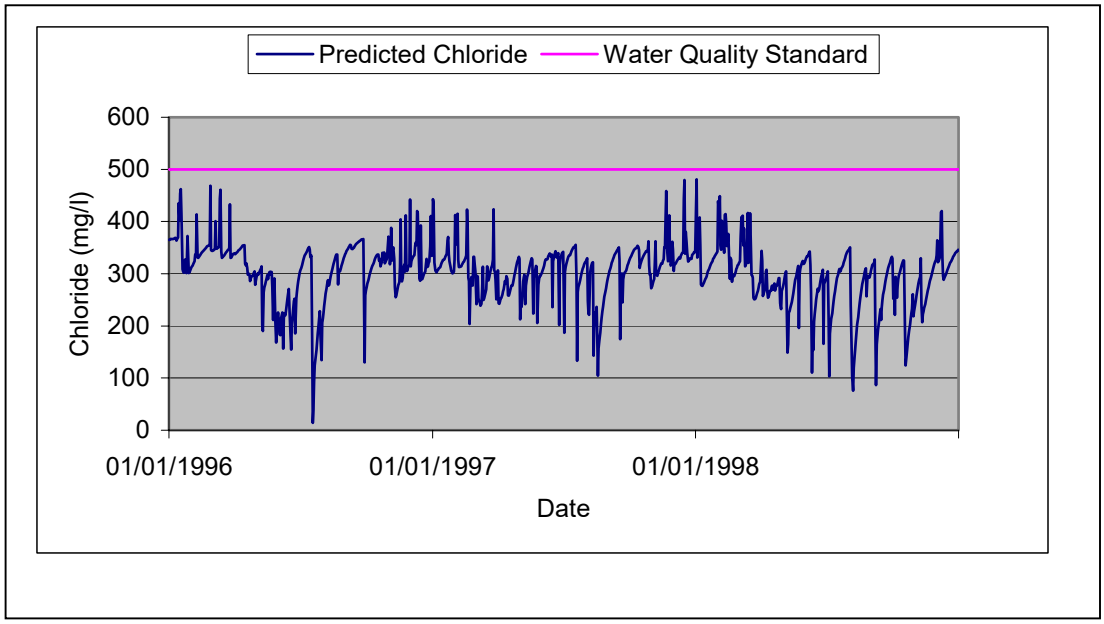
Section 303(d) of the CWA and the USEPA's regulations at 40 CFR 130.7 require the consideration of seasonal variation of conditions affecting the constituent of concern and the inclusion of a MOS in the development of a TMDL. For the East Branch chloride TMDL, long-term-monitoring data and continuous-modeling results were used to determine seasonal variation of chloride concentration. The TMDL was developed based on the critical conditions in the winter months. 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 using an average year (neither a dry nor a wet year) for modeling. Annual streamflow data from between 1991 and 1998 were compared to determine an average flow year to avoid using an extremely wet or dry year. Streamflows in 1996 and 1997 were representative of average weather conditions. The 3-year period between January 1, 1996, and December 31, 1998, which includes average weather 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 shows 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. Using 5 years of chloride data and 5 years of model output for model calibration and 3 years of model output for the TMDL allocation 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 suggests that a smaller reduction in chloride may be needed to meet the water quality standard. Additionally, a background chloride concentration (106 mg/L) was incorporated in the model by specifying shallow groundwater concentrations based on observed data from groundwater wells in the surrounding areas. Finally, the allocation approach in which loads were reduced to allow no exceedances of the standard over the three year period was very conservative.

FIGURE 6-1
Modeled Chloride Concentrations at the East Branch of the DuPage River at 05540210 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 annual load and daily average concentration of chloride. The model was run iteratively, reducing the overall winter season chloride load from salt application to determine percentage reductions in nonpoint source chloride contribution that would result in reasonable point source allocations. A 33 percent reduction in nonpoint source chloride was selected. 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 33 Percent Reduction in NPS Loads; Point sources Input at Permitted Design Flows

	100 mg/L	300 mg/L	400 mg/L	500 mg/L
No. Predicted Model Exceedances at 05540210 (Segment 16)	0	0	0	9
Percent Exceedances at 05540210 (Segment 16)	0	0	0	0.27%

Point source loads of chloride were incorporated in the model as direct input. Table 6-2 summarizes the chloride data collected at the WWTPs during the September 1997 diel survey. The concentrations ranged from 90 mg/L to 555 mg/L. Based on the results in Table 6-1, and the effluent data summarized in Table 6-2, an effluent chloride concentration of 400 mg/L was applied for the TMDL. Further information is provided in the Point Source Load section (6.3.4.2).

TABLE 6-2
Chloride Concentration in Selected WWTP Effluents

Point Source	Observed Chloride Concentration (mg/L) on September 16, 1997
Woodridge STP	159
Downers Grove SD STP	135
Bloomingdale STP	113
Glendale Heights STP	90
Glenbard STP	122
Bolingbrook #1 STP	555
Citizen's W.S. #2 STP	432

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. Figure 6-1 shows the allocation results for station 05540210. 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 that was used in the HSPF model calibration (5.6 tons/lane-mile - year). TIGER data obtained from NIPC were used to estimate the miles of road in the East Branch watershed; the number of lanes on each road was estimated by road type, and lane miles were then calculated. An additional 15 miles of roadway was added to account for the future growth described in Section 6.2. The current chloride application (lb/yr) was estimated based on the lane miles and current salt application rates. A 33 percent reduction results in an application rate of 10,500,000 pounds of chloride per year (equivalent to 17,400,000 pounds of road salt per year).

The MS4 waste load allocation was based upon an analysis of road lane-miles within the watershed and is represented as a reduction in salt applied for deicing purposes since that is the most direct measurement of chloride applied to the watershed. A combination of measuring chloride applied and instream chloride concentrations should provide a strong gauge for meeting water quality standards.

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. In addition, Elmhurst Stone Barber and Glenbard-Lombard were assigned an allocation based on flows outlined in Table 6-3. Table 6-3 summarizes the NPDES facilities and flow rates assumed for the TMDL.

TABLE 6-3
Point Source Flows and Concentrations Used in TMDL WLA

Point Source	Flow (MGD)	Chloride Conc (mg/L)	WLA (lb/yr)
Bloomingdale	3.45	400	4,200,858
Glendale Heights	5.26	400	6,404,786
Glenbard	16.02	400	19,506,593
Downers Grove	11	400	13,394,040
Dupage County - Woodridge	12	400	14,611,680
Bolingbrook	2.04	400	2,483,986
Citizens Utility #2	3	400	3,652,920
Elmhurst	1.03	400	1,257,076
Lombard	2.28	400	2,771,506
Total			68,283,444

Including the point sources at the permitted design flow results in a reasonable WLA for the point sources as it allows for additional growth. Basing the WLA on a concentration of 400 mg/L protects the water quality standard for chloride.

6.3.4.4 TMDL

Based on the load calculations described above, a TMDL was calculated for East Branch. In order to account for all point and nonpoint sources, the TMDL was calculated at the mouth of the creek.

The WLA value in Table 6-4 represents a lumped WLA for all point source discharges and a separate WLA is calculated for MS4 permittees.. The WLA could be broken down in WLAs specific to each point source based on the information presented in Table 6-3. 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 compliant with the TMDL. This will allow greater flexibility which is appropriate given that there is limited point source data, and the concentration used to calculate the TMDL is lower than the standard. The TMDL allocation requires a 33 percent reduction in nonpoint source loading based on road salt application.

TABLE 6-4
Chloride TMDL for the Mouth of East Branch DuPage River

	WLA[a]	MS4 WLA[b]	MOS	TMDL
Chloride (lb/yr)	6.83E+07	1.05E+07	Implicit	7.88E+07

[a]*WLA based on permitted design flow and concentration of 400 mg/L*
[b]*Represents a 33% Reduction in NPS Load*

6.3.5 Implementation Considerations

As discussed above, the allocation scenario for chloride assumes that the WQS must be met at all times and would be accomplished by reduction in the overall annual road salt application mass to achieve that end. This is a very conservative approach and should be further evaluated before the TMDL is finalized or implemented. The exceedances, both monitored and modeled, are infrequent (less than 10 percent of the time). For example, USEPA guidance recommends that water bodies should be considered impaired only if exceedances occur more than a given percent of time, depending on pollutant type, data distribution, etc. (see USEPA July 2002 Consolidated Assessment and Listing Methodology guidance). In addition, it may be possible to identify though additional monitoring and/or modeling what specific hydrologic and salt application conditions lead to elevated in-stream chloride concentrations. It may be possible to target control actions specific to these conditions that would not necessitate an overall annual salt application reduction of the magnitude indicated above.

It should also be noted that the TMDL is based on a reduction of road salt application from current rates. The current application rates were estimated based on literature and used in the HSPF calibration model. Actual road salt application rates should be monitored by those entities which apply road salt in the East Branch watershed to ensure the baseline application rate used in the TMDL approximates current loads.

6.4 Dissolved Oxygen

This section presents the TMDL allocations for pollutants causing the DO excursions in East Branch. The USEPA's QUAL2E model was used to determine the pollutant loads from point and nonpoint sources that ensured the WQS would be met. Analysis of DO data in Section 4.4 showed that the DO standard was not met under low-flow conditions in the summer months. The QUAL2E model was set up and calibrated using field data collected in summer 1997. Model setup and calibration results were presented in Section 5.3. Finally, the streamflow in the calibrated model was replaced with the 7Q5 low flow (the minimum of 7-day/5-year running averages) to develop the TMDL allocations.

6.4.1 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 an MOS in the development of a TMDL. The critical condition for DO was determined on the basis of common knowledge of DO problems in surface water, long-term monitoring data, and two sets of extensive 24-hour sampling data from summer 1997. Summer low flow represented the critical condition for DO. The 7Q10 low flow as shown on the IEPA low flow map was used in developing TMDL allocations. The low flow map indicates that point sources make up almost the entire flow during low flow conditions. Thus, for the allocation scenario, it was assumed that there was no nonpoint source contribution (or incremental flow) to the stream. In other words point source discharges constituted the entire streamflow at the Bolingbrook and Downers Grove gauges. The model was run iteratively for various scenarios until the water quality target was met.

In the absence of algae data, the steady-state QUAL2E model (as opposed to diurnal algae simulation) was used for developing the DO TMDL.

6.4.2 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 simultaneously.
- The 7Q10 flow occurs under extended drought conditions and is lower than normal summer flows. Therefore, the allocations based on 7Q10 flow are stringent and would provide an implicit MOS under normal summer flow conditions.
- High summer temperatures, based on the historical 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, field measurements of DO (STORET number 299) and laboratory measurements of DO (STORET number 300) were used. The number of DO measurements in the field well exceeded the number of laboratory samples. Using both types of data led to a comprehensive analysis and reduced the uncertainty in the TMDL analysis. Additionally, a DO concentration of 6 mg/L, the more stringent of the two DO criterion, was used as the water quality target for the TMDL allocation development using the steady-state model. Thus, up to 1 mg/L (the difference between the 16-hour average and the instantaneous standards) of nighttime DO reduction by algae can be accommodated under the worst conditions without violating the WQS.

6.4.3 Load Allocation and Waste Load Allocation

Various pollutant-reduction scenarios were analyzed to evaluate the importance of SOD and the point source loads and to determine the pollutant load reduction necessary to achieve a minimum DO concentration of 6 mg/L. This TMDL endpoint was selected based on the Illinois WQS.

The DO concentrations for existing conditions, four scenarios and three allocation scenarios were modeled. Descriptions of these scenarios are presented in Table 6-5. Figure 6-2 shows the modeled DO concentrations for four scenarios and the WQS. Figure 6-3 shows that the model DO concentrations for the TMDL allocation scenarios meet the water quality target. Except for the existing condition, all scenarios and the TMDL allocation considered 7Q10 flow and no nonpoint source flow. The point sources were included in the model at their permitted design flows.

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 6-6, included the monthly average permit limits for point source effluent concentrations. But the SOD values in all stream segments were set to 0. This scenario shows that if all the SOD is eliminated, the WQS is met under existing point source effluent limits for most model elements. However, this scenario is not realistic. Scenario 2 was similar to Scenario 1 except that existing SOD values were used in all stream segments and the

pollutant (CBOD and ammonia) concentrations in the point source effluents were set to 0. This scenario demonstrates that the WQS of 6 mg/L cannot be fully achieved even in the absence of the point source loads. Scenario 3 shows that the WQS can be met when the observed point source effluent concentrations are used instead of the monthly average permit limits and the SOD is set to 0. Since SOD cannot be realistically reduced to 0.0 g/ft^2-day by controlling point and nonpoint sources, background SOD of 0.02 g/ft^2-day in reaches 1, 2, 4, and 5, and 0.06 g/ft^2-day in reaches 6–8 were used in Scenario 4. Additionally, DO was increased to 7 mg/L in the lake in Churchill Woods Forest Preserve. DO in the lake can be increased through artificial reaeration. Existing monthly average permit limits for CBOD5 and ammonia nitrogen were used in this scenario. Model results for Scenario 4 shows that the DO target of 6 mg/L is not achieved under existing permit limits near the mouth of East Branch.

TABLE 6-5
Description of Various Modeling Scenarios

Scenario	Flow	Point Source Effluent Concentrations	SOD	Other Changes	Comment
Existing	Observed flow	Observed concentrations	Existing condition		Existing condition violated the WQS for DO
1	7Q10	Monthly average permit limits for CBOD5 and ammonia-N	0.0 in all reaches	None	Modeled DO is slightly lower than 6 mg/L at one model point
2	7Q10	Observed DO, CBOD5 = 0.0 mg/L and Ammonia-N = 0.0 mg/L	Existing condition	None	DO is less than 6 mg/L between 15.4 and 20.0 and between 21.8 and 22.8 miles. Also DO reaches below 5.0 mg/L between 16.0 and 18.6 miles.
3	7Q10	Observed concentrations	0.0 in all reaches	None	The water quality target (6 mg/L) is met at all locations.
4	7Q10	Monthly average permit limits for CBOD5 and ammonia-N	Reduced to 0.02 g/ft^2-day in reaches 1-2 and 4-5, and to 0.06 g/ft^2-day in reaches 6- 8.	Increased DO in the lake (just upstream of Crescent Blvd) to 7 mg/L through artificial reaeration	Modeled DO is less than 6 mg/L near mouth
Allocation 1	7Q10	CBOD = 8 mg/L Ammonia N = 1.00 mg/L	Reduced to 0.02 g/ft^2-day in reaches 1-2 and 4-5, and to 0.06 g/ft^2-day in reaches 6-8.	None	The water quality target (6 mg/L) is met at all locations.
Allocation 2	7Q10	Monthly average permit limits for CBOD5 and ammonia-N	Reduced to 0.02 g/ft^2-day in reaches 1-2 and 4-5, and to 0.06 g/ft^2-day in reaches 6-8.	Removed dam	The water quality target (6 mg/L) is met at all locations.
Allocation 3	7Q10	Monthly average permit limits for CBOD5 and ammonia-N	Reduced to 0.02 g/ft^2-day in reaches 1-2 and 4-5, and to 0.06 g/ft^2-day in reaches 6-8.	Increased DO in the lake (just upstream of Crescent Blvd) to 7 mg/L through artificial reaeration	The water quality target (6 mg/L) is met at all locations.

FIGURE 6-2
Modeled Dissolved Oxygen Concentrations for Scenarios 1, 2, 3, and 4

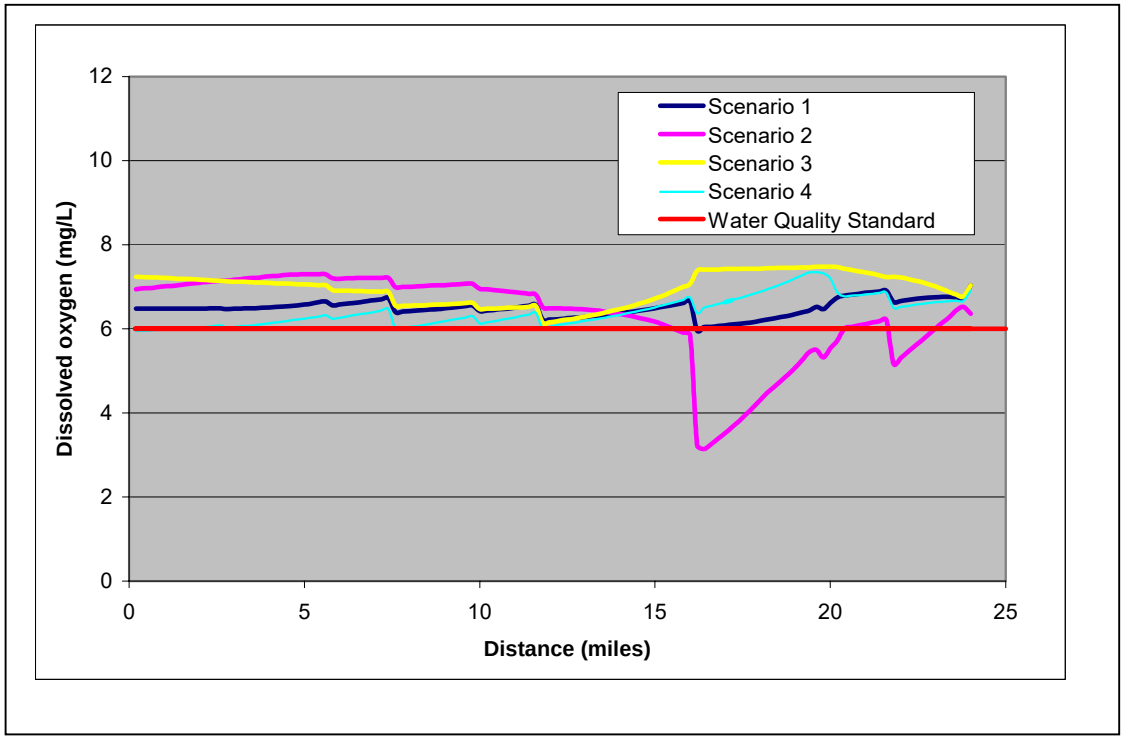
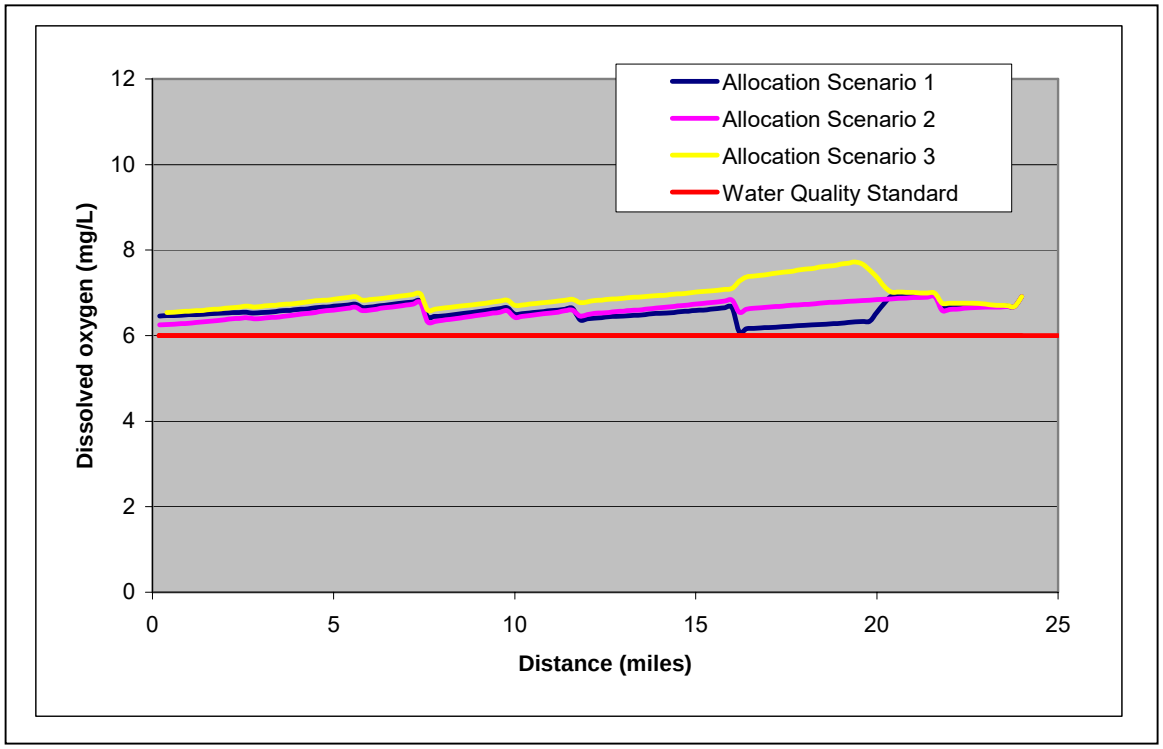


FIGURE 6-3
Allocation Scenario Results



For the allocation scenarios, a combination of point source load reduction, SOD reduction, increased DO through artificial reaeration, and dam removal were used to meet the water quality target. Figure 6-3 illustrates the allocation scenario results. For Allocation Scenario 1, a background SOD of 0.02 g/ft^2-day in reaches 1, 2, 4, and 5 and of 0.06 g/ft^2-day in reaches 6–8 was used. Additionally, CBOD5 and ammonia nitrogen concentrations in point source effluents were reduced to 8 mg/L and 1 mg/L, respectively. The final allocation scenario achieves water quality target at all locations of the East Branch. The modeled allocation scenarios from the first draft TMDL (August 2003) used current flow (as recorded in the 1997 diel survey) for WWTPs in the watershed. This revised draft TMDL uses permitted design average flow for the WWTPs. For this reason the original proposed reduction for CBOD5 of 5mg/L has been revised to 8 mg/L. The proposed reduction of 1 mg/l for ammonia nitrogen remains the same.

For Allocation Scenario 2, a background SOD of 0.02 g/ft^2-day in reaches 1, 2, 4, and 5 and of 0.06 g/ft^2-day in reaches 6–8 was used. Point sources were included in the model at their current design flows and current permitted concentrations for CBOD5 and ammonia nitrogen. The dam in Reach 3 was removed, and hydraulic characteristics similar to Reaches 2 and 4 were included. This allocation scenario achieves the water quality target at all locations on East Branch.

For Allocation Scenario 3, a background SOD of 0.02 g/ft^2-day in reaches 1, 2, 4, and 5 and of 0.06 g/ft^2-day in reaches 6–8 was used. Point sources were included in the model at their current design flows and current permitted concentrations for CBOD5 and ammonia nitrogen. DO was artificially increased to 7 mg/L in Reach 3 in the impoundment. This allocation scenario achieves the water quality target at all locations on East Branch. Under the conditions in the first Draft TMDL (August 2003), WQS for DO would not be reached through removal of the dam in reach 3 (at Churchhill Woods). However, for this revised report, using permitted design average flow for the WWTPs, the WQS for DO was achieved through removal of the dam.

The TMDL allocations of CBOD and ammonia nitrogen are provided in Table 6-6. The loads are expressed as pounds per day for the critical 7Q10 low-flow conditions. As discussed in section 6.4.1, East Branch flow under 7Q10 low-flow condition consists of point source discharge only. The CBOD and ammonia loads for the TMDL are calculated using the point source discharge from Bloomingdale, Glendale Heights, Glenbard, and Downers Grove SD STPs at their permitted design flows. Discharge for these point sources affect the water quality in the East Branch segments (GBL 05, GBL 08, and GBL 10) listed for DO impairment. Table 6-7 also includes the point source loads included in the model for Dupage County (Woodridge), Bolingbrook, and Citizens Utility for information purposes. Since these point sources discharge below the impaired segment, they are not included in the TMDL allocation. No nonpoint source flow is expected under critical summer low-flow conditions. Therefore, nonpoint source contributions or load allocations of CBOD and ammonia nitrogen are not applicable for the TMDL. Modeled effluent CBOD and ammonia nitrogen concentrations from the TMDL allocation run were multiplied by the permitted design flows (see Table 6-6) for the point sources to calculate the WLA. Modeled DO, CBOD, and ammonia nitrogen values for all reaches are listed in Appendix F.

TABLE 6-6
Point Source Allocations

		Allocation Scenario 1				Allocation Scenarios 2 and 3			
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)**
Blooming-dale	3.45	8	1	230.2	28.8	10.0	1.5	287.7	43.2
Glendale Heights	5.26	8	1	350.9	43.9	10.0	1.5	438.7	65.8
Glenbard	16.02	8	1	1068.9	133.6	10.0	1.5	1336.1	200.4
Downers Grove	11	8	1	733.9	91.7	10.0	1.5	917.4	137.6
**Subtotal*				2383.9	298.0			2979.9	447.0
Dupage County - Woodridge	12	8	1	800.6	100.1	10.0	1.5	1000.8	150.1
Bolingbrook	2.04	8	1	136.1	17.0	20.0	1.5	340.3	25.5
Citizens Utility	3	8	1	200.2	25.0	20.0	1.5	500.4	37.5
**Total*				3520.8	440.1			4821.4	660.2

* This subtotal is overall WLA in table 6-7.

**Woodridge, Bolingbrook and Citizens Utility are not included in Final TMDL allocation (table 6-7) since they are located out of the area of impairment.

To achieve the water quality target, SOD in reaches 1, 2, 4, and 5 needs to be reduced to 0.02 g/ft^2-day and SOD in reaches 6,7, and 8 needs to be reduced to 0.06 g/ft^2-day. SOD is caused by the oxidation of organic matter deposited in the streambed. Sources of such organic matter include leaf litter and other particulate BOD from point and nonpoint sources. Literature values suggest that the desired SOD of 0.02 g/ft^2-day in some reaches is rarely found in natural streams. Nonpoint source contribution of particulate BOD (e.g., leaf litter and road runoff) must be controlled in order to achieve low SOD in East Branch. Figure 6-4, a 1998 aerial photograph, shows an example of a potential nonpoint source that may exacerbate the DO problem: two of a series of large detention ponds next to East Branch. One detention pond located between the North-South Tollway (I-355) and East Branch has eroded banks, marked by circles. Such breaches may lead to short-circuiting between the pond and the stream and cause serious water quality problems including increased SOD. Proper control of these sources may lower SOD significantly. One method to determine if organic loading is being reduced is through the measurement of VSS. IEPA may wish to consider adding this parameter to its ambient monitoring program for East Branch.

TABLE 6-7
Summary of East Branch DO TMDL

Pollutant	Load Allocation (lb/day)	Wasteload Allocation (lb/day)	Margin of Safety	TMDL (lb/day)	Observed Load (lb/day)[a]	Percent Reduction Needed from Observed Load
Allocation Scenario 1						
5-day carbon. biochemical oxygen demand	NA	2384	Implicit	2384	268	0
Ammonia nitrogen	NA	298	Implicit	298	273	0
Allocation Scenario 2 and 3						
5-day carbon. biochemical oxygen demand	NA	2980	Implicit	2980	268	0
Ammonia nitrogen	NA	447	Implicit	447	273	0

[a] *Current observed loads based on effluent data from June 24-25, 1997 IEPA dataset*
WLA based only on Bloomingdale, Glendale Heights, Glenbard, and Downers Grove facilities as remaining facilities discharge downstream of the impaired segment

6.4.4 Implementation Considerations

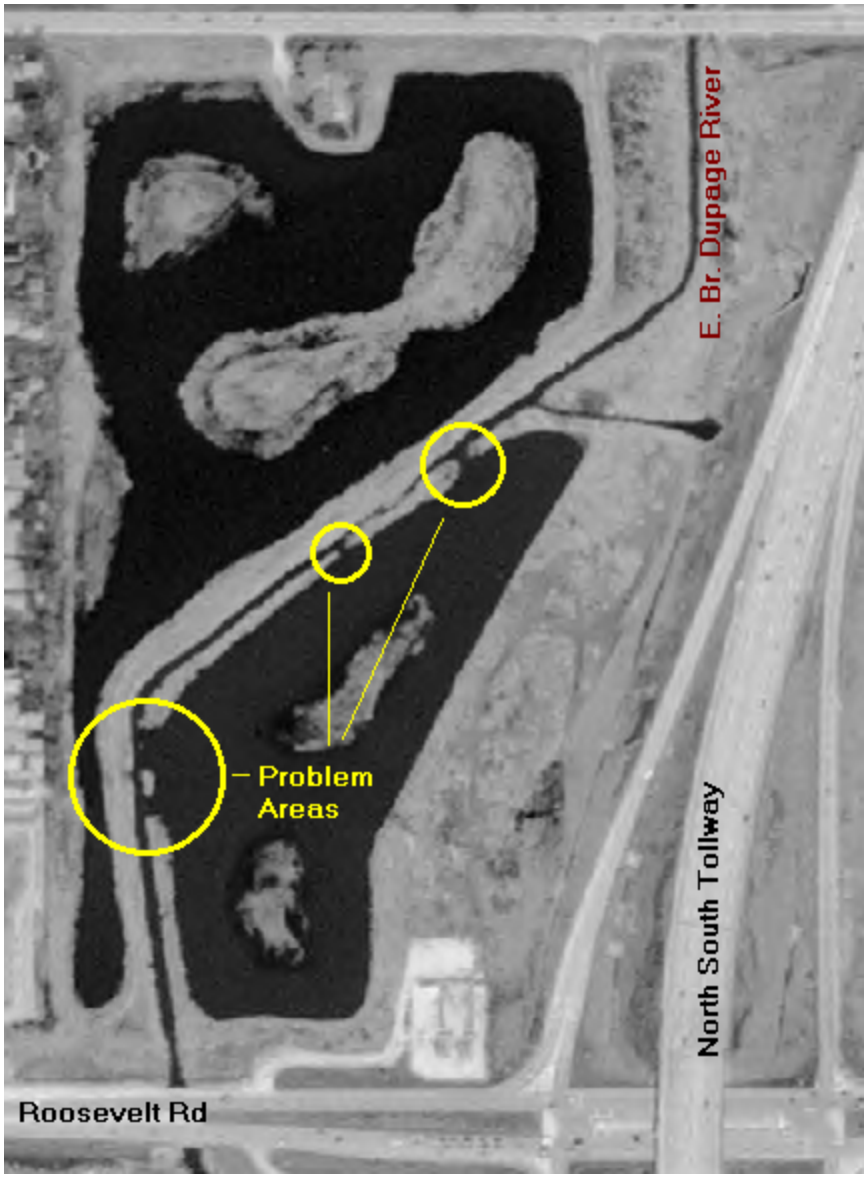
Table 6-7 indicates that point source discharges would not be required to reduce CBOD and ammonia loads to meet the waste load allocations for these pollutants based on observed effluent loads. This is because the observed effluent loads from point sources based on a 1997 IEPA sampling of these discharges are well below current permitted monthly limitations. In order to protect water quality, the point sources need to either accept a reduction in their permitted concentrations (Allocation Scenario 1) to CBOD and ammonia limits of 8 and 1 mg/L respectively. Alternatively, the point sources can remain at their current permitted concentrations, but the impoundment in reach 3 would need to be removed (Allocation Scenario 2).

The implementation impacts on these dischargers, therefore, 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. 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 East Branch. Water quality trading may also be an option.

Finally, for Allocation Scenario 1, the point source flows can be increased above design average flows and still maintain water quality standards. Thus, the TMDL can be implemented as concentration-based limits if a given NPDES facility needs to request an expansion to its NPDES facility.

FIGURE 6-4
A 1998 Aerial Photograph of the East Branch of the DuPage River and Adjacent Detention Ponds near Roosevelt Road.



7 References

AQUA TERRA Consultants and HydroQual, Inc. *Modeling Nutrient Loads to Long Island Sound from Connecticut Watersheds, and Impacts of Future Buildout and Management Scenarios*. Prepared for CT Department of Environmental Protection. Hartford, Connecticut. 2000.

Bicknell, B.R., et al. *Hydological Simulation Program - FORTRAN, User's Manual for Version 11*. EPA/600/R-97/080. U.S. EPA, National Exposure Research Laboratory. Athens, Georgia. 1997.

Bicknell, B.R., et al. (Draft) *Hydological Simulation Program - FORTRAN, User's Manual for Version 12*. U.S. EPA, National Exposure Research Laboratory. Athens, Georgia. 2000.

Chow, V.T. 1959. Open Channel Hydraulics. McGraw-Hill. New York.

Donigian, Jr., A.S., *HSPF Training Workshop Handbook and CD*. Lecture #19. Calibration and Verification Issues, Slide #L19-22. USEPA Headquarters, Washington Information Center, 10-14 January, 2000. Presented and prepared for USEPA, Office of Water, Office of Science and Technology. Washington, D.C. 2000.

Donigian, A. Personal communication. 2001.

Environmental Systems Research Institute, Inc.
http://www.esri.com/data/online/tiger/index.html.

Illinois Department of Natural Resources (DNR) Illinois, Geographic Information System (IGIS) Digital Datasets of Illinois CD-ROM. Forest coverage.

Illinois General Use Water Quality Standards.

Lumb, A.M., et al. *Users Manual for an Expert System (HSPEXP) for Calibration of the Hydrological Simulation Program - FORTRAN*. Water-Resources Investigations Report 94-4168, U.S. Geological Survey. Reston, Virginia. 1994.

Melching, C. S. and T. J. Chang. *Simulation of Water Quality for East Branch DuPage River in Northeastern Illinois*. U.S. Geological Survey Open-File Report 96-318, Urbana, Illinois. 1996.

National Weather Service. *Evaporation Atlas for the Contiguous 48 United States*. NOAA Technical Report NWS 33. U. S. Department of Commerce, NOAA. Washington, D.C. 1982a.

National Weather Service. *Mean Monthly, Seasonal, and Annual Pan Evaporation for the United States*. NOAA Technical Report NWS 34. U. S. Department of Commerce, NOAA. Washington, D.C. 1982b.

National Weather Service. *Mean Monthly, Seasonal, and Annual Pan Evaporation for the United States*. NOAA Technical Report NWS 34. U. S. Department of Commerce, NOAA. Washington, D.C. Map 4/4 "Pan Coefficients". 1982c.

NIPC (Northeastern Illinois Planning Commission). Projected future population data. http://www.nipc.cog.il.us/. November, 2002.

Novotny and Olem. 1994.

Novotny, V., et al. *Urban and Highway Snowmelt: Minimizing the Impact on Receiving Water.* Final Report. Project 94-IRM-2. Water Environment Research Federation. 1999.

Oregon State University. Software system Website. http://www.ocs.orst.edu/prism.

Price, Thomas H. *Application Guide for the Hydrologic Modeling in DuPage County Using Hydrologic Simulation Program - Fortran (HSPF): Model Organization and Use, Data Collection and Processing, Calibration*. Northeastern Illinois Planning Commission. Prepared for Stormwater Management Division, Environmental Concerns. DuPage County, Illinois. May 1996.

Price, Thomas H. *Hydrologic Calibration of HSPF Model for DuPage County*. Prepared for Stormwater Management Division, Environmental Concerns. DuPage County, Illinois. 1994.

Singh, K.P., and Ramamurthy, G.S. *Seven-day, Ten-year Low Flows of Streams in Northeastern Illinois*. Illinois State Water Survey Contract Report 545. Champaign, Illinois. 1993.

STORET. http://www.epa.gov/storet.

Thackston, Edward L. and Young, Katherine D. "Housing Density and Bacterial Loading in Urban Streams." *Journal Environmental Engineering*. December, 1999.

USEPA. *Guidance for Water Quality-based Decisions: The TMDL process*. EPA 440-4-19-001, Office of Water (WH-553), Washington, DC. 1991.

USGS. *Simulation of Water Quality for East Branch DuPage River in Northeastern Illinois*. Prepared in cooperation with the Illinois Environmental Protection Agency. Urbana, Illinois. 1996.

APPENDIX 30

Total Maximum Daily Loads Report
Salt Creek

Final Report

Total Maximum Daily Loads for Salt Creek, Illinois

Submitted to

Illinois Environmental Protection Agency

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

30 SEP 2004

RECEIVED
OCT - 4 2004
BUREAU OF WATER
BUREAU CHIEF'S OFF

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.

Contents

Executive Summary ..... **ii**

Acronyms and Abbreviations ..... **ix**

Introduction **1-1**
1.1 Background 1-1
1.2 Organization of the Report 1-1

Target Identification/Determination of TMDL Endpoints **2-1**
2.1 Impaired Salt Creek Segments 2-1
2.2 Applicable Water Quality Standards and Total Maximum Daily Load Endpoints 2-2

Watershed Characterization and Source Assessment **3-1**
3.1 Watershed Description and Background Information 3-1
3.2 Land Use 3-3
3.3 Hydrographic Data 3-4
3.4 Meteorological Data 3-4
3.5 Streamflow Data 3-9
3.6 Point Sources 3-9
3.7 Sewered and Unsewered Areas 3-13
3.8 Nonpoint Sources 3-13
3.8.1 Wildlife and Pets 3-13
3.8.2 Best Management Practices 3-13
3.9 Water Quality Data 3-16

Assessment of Water Quality Data and TMDL Approach **4-1**
4.1 Period of Assessment for Water Quality Data 4-1
4.2 Copper 4-1
4.2.1 Historic Data/Causes for Listing 4-1
4.3 Total Dissolved Solids/Conductivity 4-4
4.4 Chloride 4-8
4.4.1 Historic Data and Causes for Listing 4-8
4.4.2 TMDL Approach 4-11
4.5 Total Phosphorus 4-11
4.5.1 Historic Data/Causes for Listing 4-11
4.6 Dissolved Oxygen 4-13
4.6.1 Historic Data/Causes for Listing 4-13
4.7 Summary 4-17

Modeling Approach and Assumptions **5-1**
5.1 Selection of Models and Tools 5-1
5.2 Modeling Chloride Using HSPF 5-1
5.2.1 Hydrologic Calibration for HSPF General Background Information 5-1
5.2.2 Land-Use Data 5-2

5.2.3 Meteorological Data 5-3
5.2.4 Point Sources Data 5-3
5.2.5 Hydrologic Calibration 5-4
5.2.6 Salt Creek Hydrologic Validation Summary 5-6
5.2.7 Water Quality Calibration for Chloride 5-7
5.3 Modeling Dissolved Oxygen Using QUAL2E 5-9
5.3.1 Diurnal Variation of Dissolved Oxygen Due to Algal Respiration and Photosynthesis 5-15

TMDL Allocation 6-1
6.1 Approach and Methodology 6-1
6.2 Future Growth 6-1
6.3 Conductivity/Total Dissolved Solids and Chloride 6-2
6.3.1 Critical Condition 6-2
6.3.2 Margin of Safety 6-3
6.3.3 Chloride Exceedances 6-4
6.3.4 Chloride Allocations 6-5
6.4 Dissolved Oxygen 6-7
6.4.1 Margin of Safety 6-8
6.4.2 Load Allocation and Waste Load Allocation 6-8
6.4.3 Implementation Considerations 6-16

References 7-1

Tables

ES-1 Chloride TMDLs developed for Salt Creek Watershed ii
ES-2 TMDL Allocations for CBOD and Ammonia and VSS for Salt Creek ii

2-1 Segments and Causes of Impairment Addressed in This TMDL 2-2
2-2 Pollutants, Water Quality Standards, and TMDL Endpoints 2-2
3-1 NIPC and IDNR Land-Use Distribution in Salt Creek* 3-3
3-2 Weather Data Provided in NIPC WDM Files 3-6
3-3 Point-Source Dischargers in Salt Creek Watershed 3-14
4-1 Observed Copper Concentrations, Hardness, and Acute and Chronic Copper Standards in Addison Creek by Sample Date 4-3
4-2 Exceedances of the Chloride Standard in Salt Creek and Addison Creek 4-9
4-3 Summary of Phosphorus Data from Busse Woods Lake 4-12
4-4 Sources of Low Dissolved Oxygen (from the State 1998 303(d) List) 4-17
4-5 Summary of Available Data, Water Quality Standards, and Potential Sources 4-17
5-1 Land-Use Summary for Each Flow Gauge 5-2
5-2 Hydrologic Calibration Summary 5-5
5-3 Summary of Hydrologic Calibration and Validation—Annual Flow and Correlation Coefficients 5-6
5-4 Distribution of Snowfall Events per Month 5-8
5-5 Location of STP Outfalls, CSO Outfalls, and Dams in the Salt Creek Watershed 5-11
6-1 Conductivity and Chloride TMDLs for the Salt Creek and the Addison Creek Segments 6-4

6-2 Description of Various Modeling Scenarios 6-96
6-3 TMDL Allocations for CBOD and Ammonia and VSS for Salt Creek 6-167
6-4 Description of Various Modeling Scenarios 6-8
6-5 Point Source Allocations for CBOD and Ammonia 6-12
6-6 TMDL Allocations for CBOD and Ammonia and VSS for Salt Creek 6-15

Figures

2-1 Impaired Segments in Salt Creek 2-4
3-1 Subwatersheds in Salt Creek....3-2
3-2 Land Use in Salt Creek....3-5
3-3 Wheaton Stations with Precipitation Data....3-7
3-4 Subwatersheds Divided by Weather Stations 3-8
3-5 Annual Precipitation....3-10
3-6 Location of USGS Gauges in Salt Creek Watershed 3-11
3-7 Location of USGS Gauges Used for Hydrologic Calibration 3-12
3-8 Point-Source Dischargers in Salt Creek....3-15
3-9 Location of CSO Outfalls in the Salt Creek Watershed....3-16
3-10 Location of Water Quality Stations in Salt Creek 3-17
4-1 Observed Total Copper Concentrations at Addison Creek (station 05532000) and Corresponding Acute Standard and Numeric Chronic Standard by Sample Date 4-2
4-2 Four-Day Average of Observed Total Copper Concentrations at Addison Creek (Station 05532000) and Corresponding Chronic Standard by Sample Date 4-4
4-3 Plot of Salt Creek (station 05531500) Conductivity Data by Date 4-5
4-4 Plot of Addison Creek (station 05532000) Conductivity Data by Date....4-5
4-5 Observed Conductivity at Salt Creek and Addison Creek by Month 1995-1999 4-6
4-6 Relationship Between Conductivity and Chloride in Salt Creek 4-7
4-7 Relationship Between Conductivity and Chloride in Addison Creek....4-8
4-8 Salt Creek (station 05531500) Chloride Concentrations by Sample Date and Water Quality Standard 4-9
4-9 Addison Creek (station 05532000) Chloride Concentrations by Sample Date and Water Quality Standard....4-10
4-10 Chloride Concentrations in Salt Creek and Addison Creek by Sample Month, 1995 to 1999, and the Water Quality Standard....4-10
4-11 Total Phosphorus Concentrations in Busse Woods Lake by Sample Date and the Water Quality Standard....4-12
4-12 Monthly DO Data at the Salt Creek Site (station 05531500) by Sample Date and the Water Quality Standards for DO 4-14
4-13 Monthly DO Data at the Addison Creek Site (station 05532000) by Sample Date and the Water Quality Standards for DO 4-15
4-14 Diel DO Data Collected at Many Salt Creek Sites on June 27 and 28, 1995, and the Water Quality Standards for DO 4-15
4-15 .....Continuous monitoring data at the Salt Creek monitoring site, Western Springs (station 05531500) 4-16
5-1 Water Quality Calibration of Chloride at the Salt Creek Site (station 05531500) 5-8

5-2 Water Quality Calibration of Chloride at the Addison Creek Site (station 05532000) 5-8
5-3 Location of Point Source Discharges in the Salt Creek Watershed 5-10
5-4 Location of CSO Outfalls in the Salt Creek Watershed 5-12
5-5 Observed and Modeled Dissolved Oxygen Concentrations at Different Locations in Salt Creek (June 27 and 28, 1995) 5-13
5-6 Components of the DO Mass Balance Based on the Model Results for June 27 and 28, 1995 5-15
5-7 Observed and Simulated Chlorophyll *a* Concentrations in Salt Creek 5-16
5-8 The Observed and the Modeled Diurnal Variation of Dissolved Oxygen 5-18
6-1 Modeled Chloride Concentrations at the Salt Creek Station GL 09 for the TMDL Allocation Scenario 6-3
6-2 Modeled Chloride Concentrations at the Addison Creek Station GLA 02 for the TMDL Allocation Scenario 6-4
6-3 Modeled Dissolved Oxygen Concentrations for Scenarios 1, 2, 3, and 4 6-11
6-4 Modeled Dissolved Oxygen Concentrations for the TMDL Allocation Scenario 6-12
6-5 The Relationship Between Volatile Suspended Solid and Flow Using the Salt Creek (station 05531500) Monitoring Data 6-14
6-6 The Monthly Maximum, Minimum and Average VSS Concentrations Using the 1990-1998 Monitoring Data from the Salt Creek Site (05531500) 6-15

Appendixes

A RF3 Summary Table
B Hydrologic Calibration Data
C DMR Data
D Diel Survey Data
E QUAL2E Input Files
F QUAL2E Model Results
G MS4s in Salt Creek Watershed
H Responsiveness Summary

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.

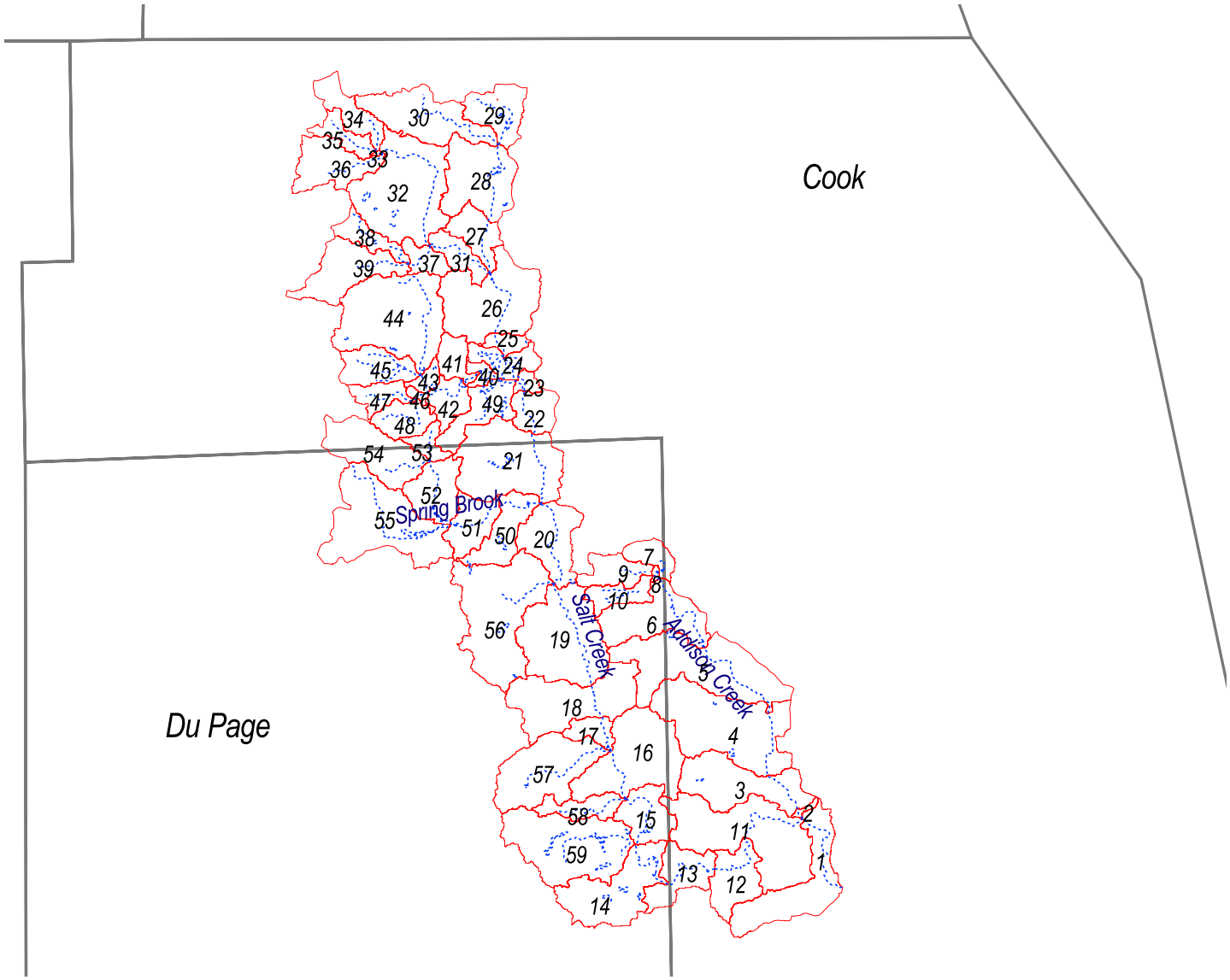


Figure 3-1

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*

		Area			
Land Use	**ID**	**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.

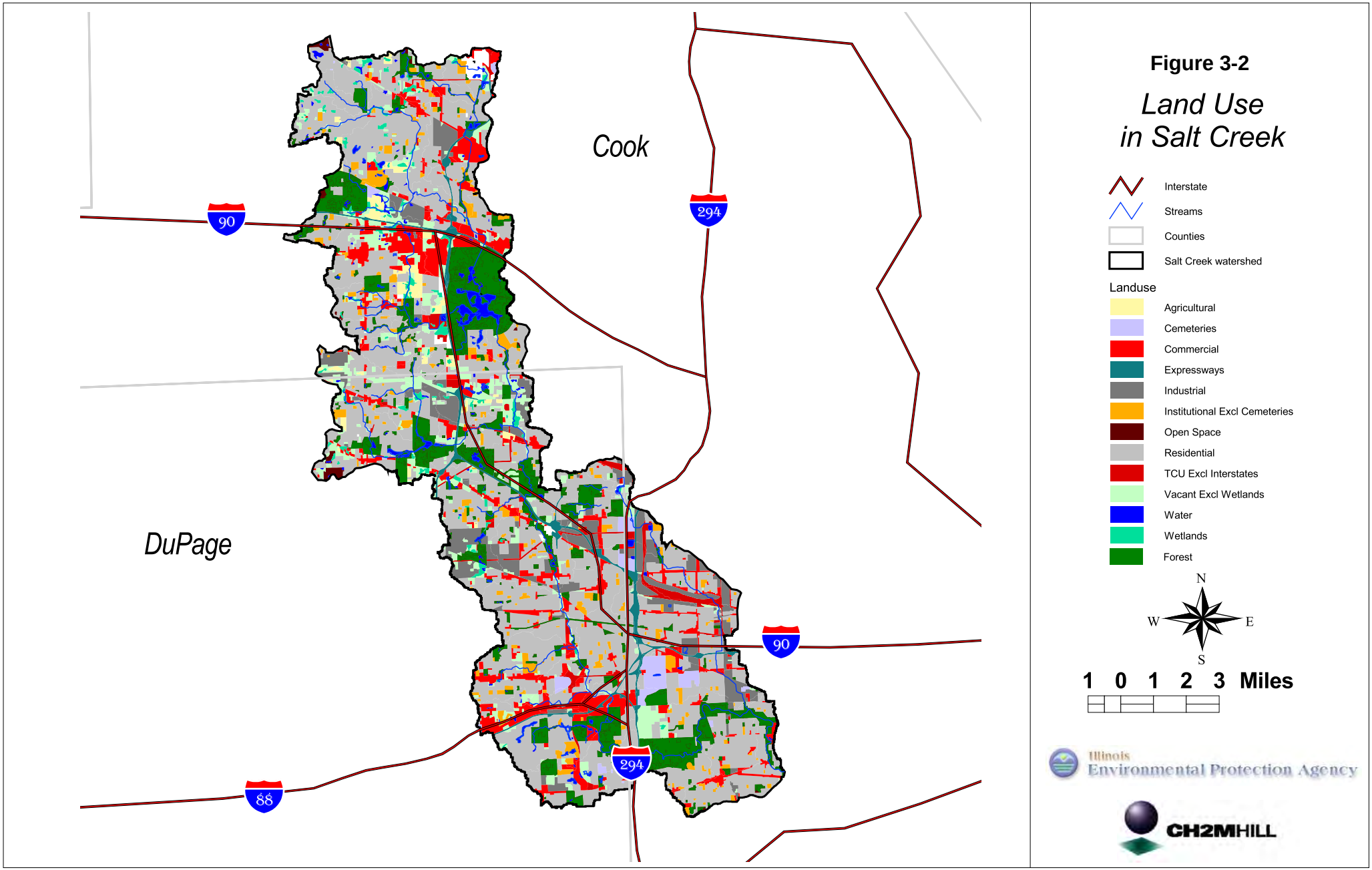
The DCDS provided hydrographic data that were compared with RF3 data in USEPA’s BASINS 2.1. Both data sets had identical basic reach information. The DCDS data included smaller and isolated water bodies, but the stream network connectivity was poor. The RF3 data included all the connected streams in 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
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
N
W
E
S
1 0 1 2 3 Miles
Illinois
Environmental Protection Agency
CH2MHILL

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

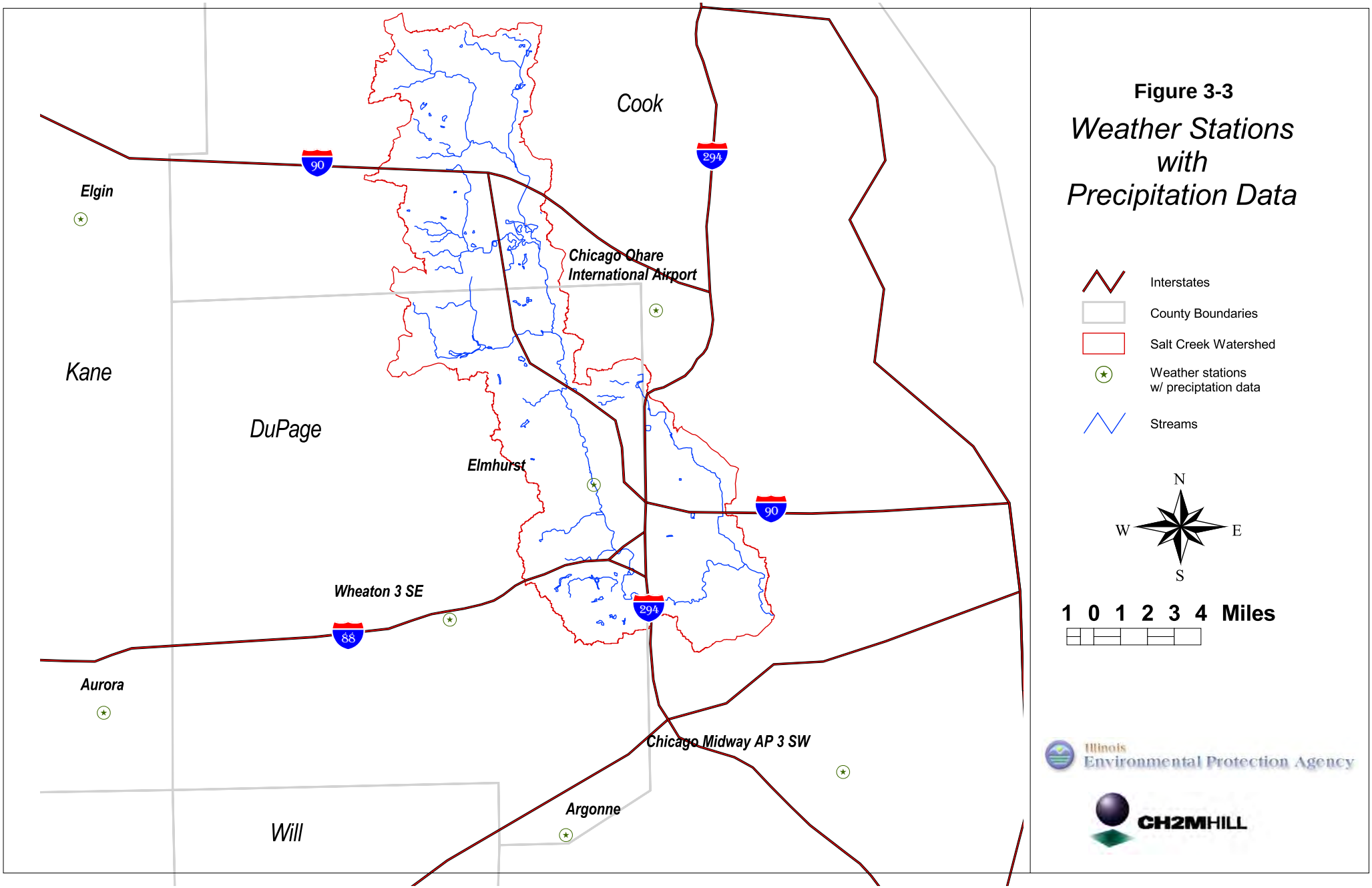


Figure 3-3

Weather Stations with Precipitation Data

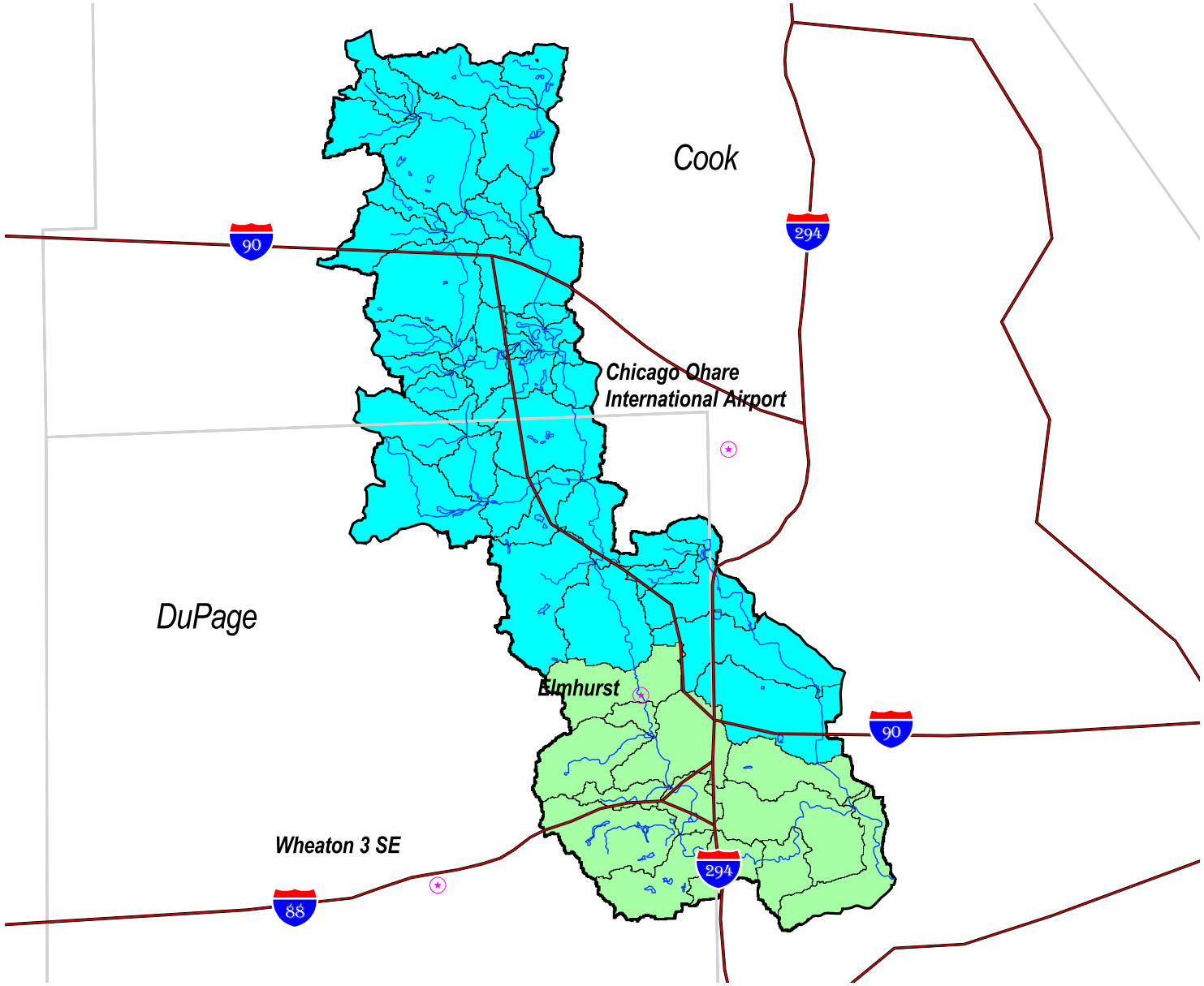


Figure 3-4

Subwatersheds Divided by Weather Stations

Weather stations
Interstates
Streams
Counties

Subwatersheds by weather station
Chicago O'Hare
Wheaton 3 SE

N
W E
S

2 0 2 4 Miles

Illinois Environmental Protection Agency

CH2MHILL

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).

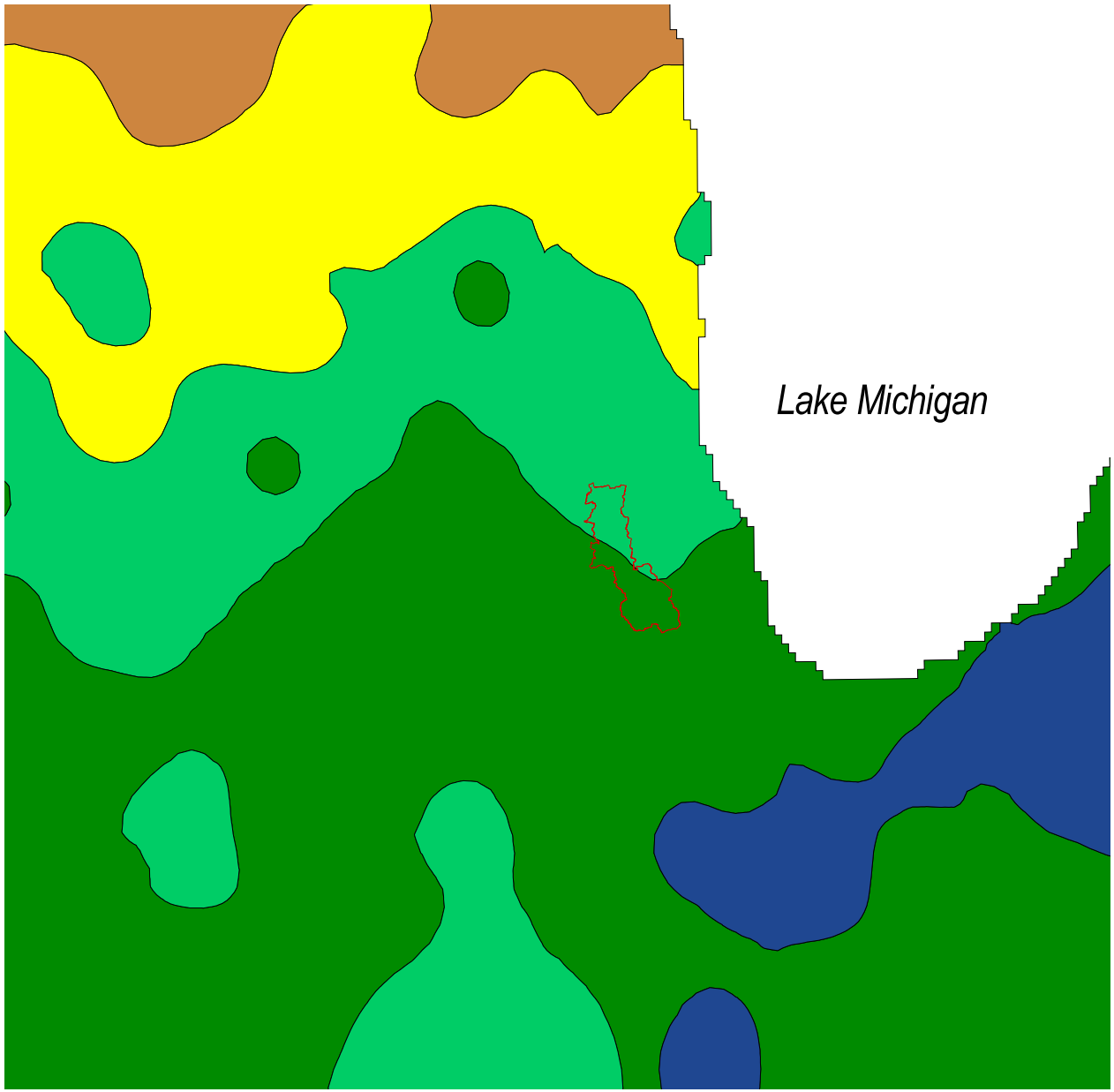


Figure 3-5

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

Illinois Environmental Protection Agency

CH2MHILL

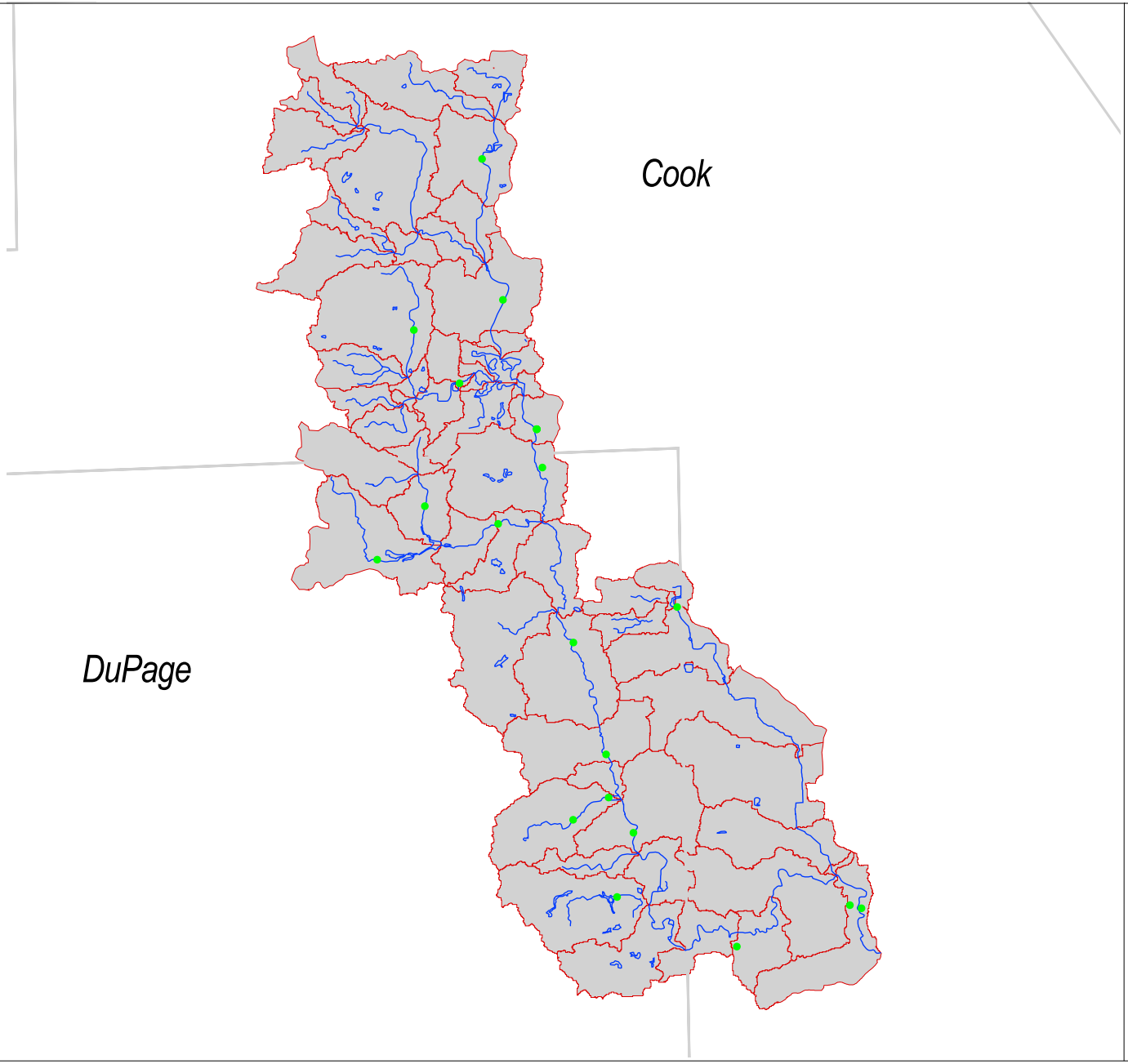


Figure 3-6

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

Illinois Environmental Protection Agency

CH2MHILL

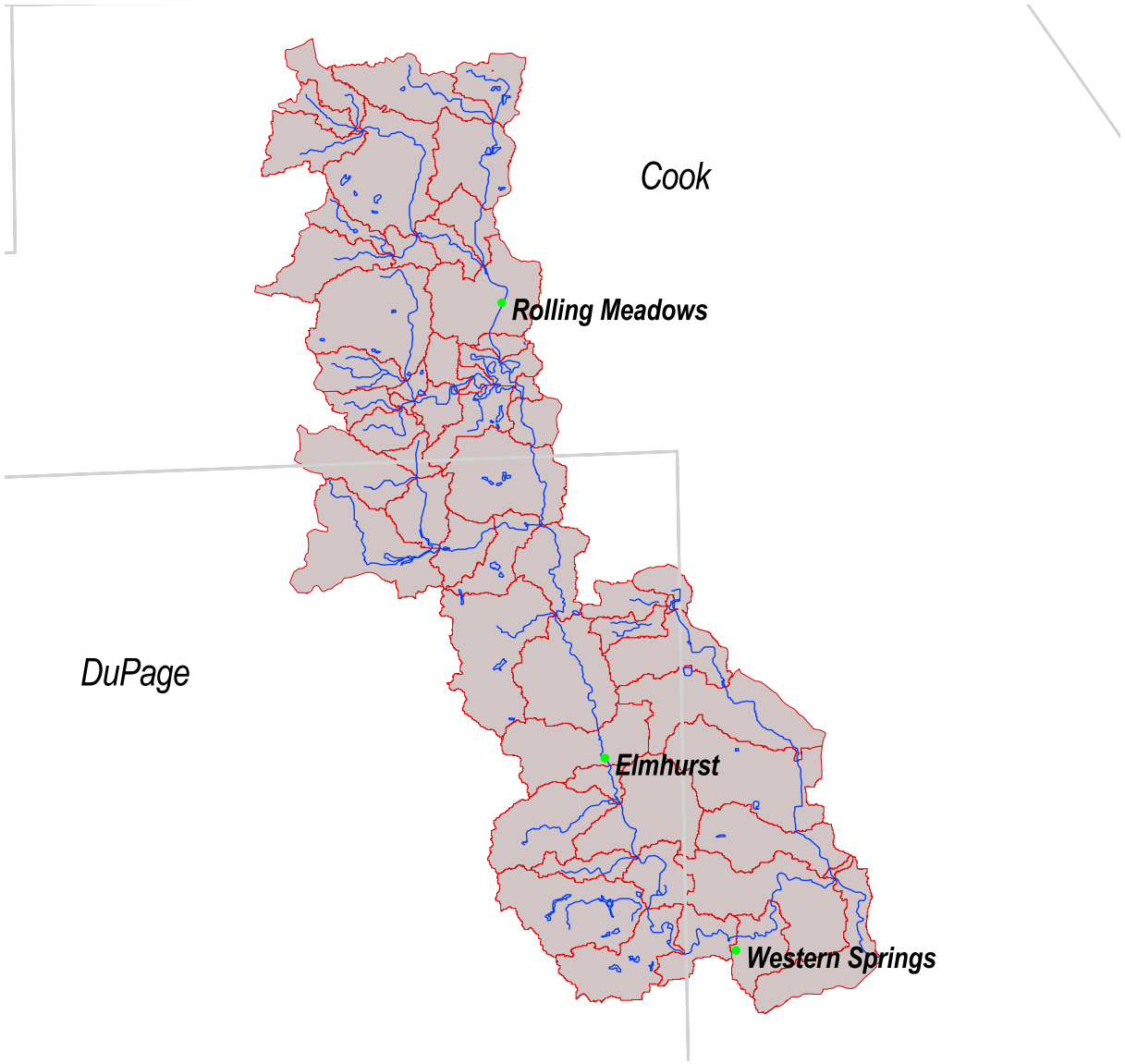


Figure 3-7

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

Illinois Environmental Protection Agency

CH2MHILL

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.

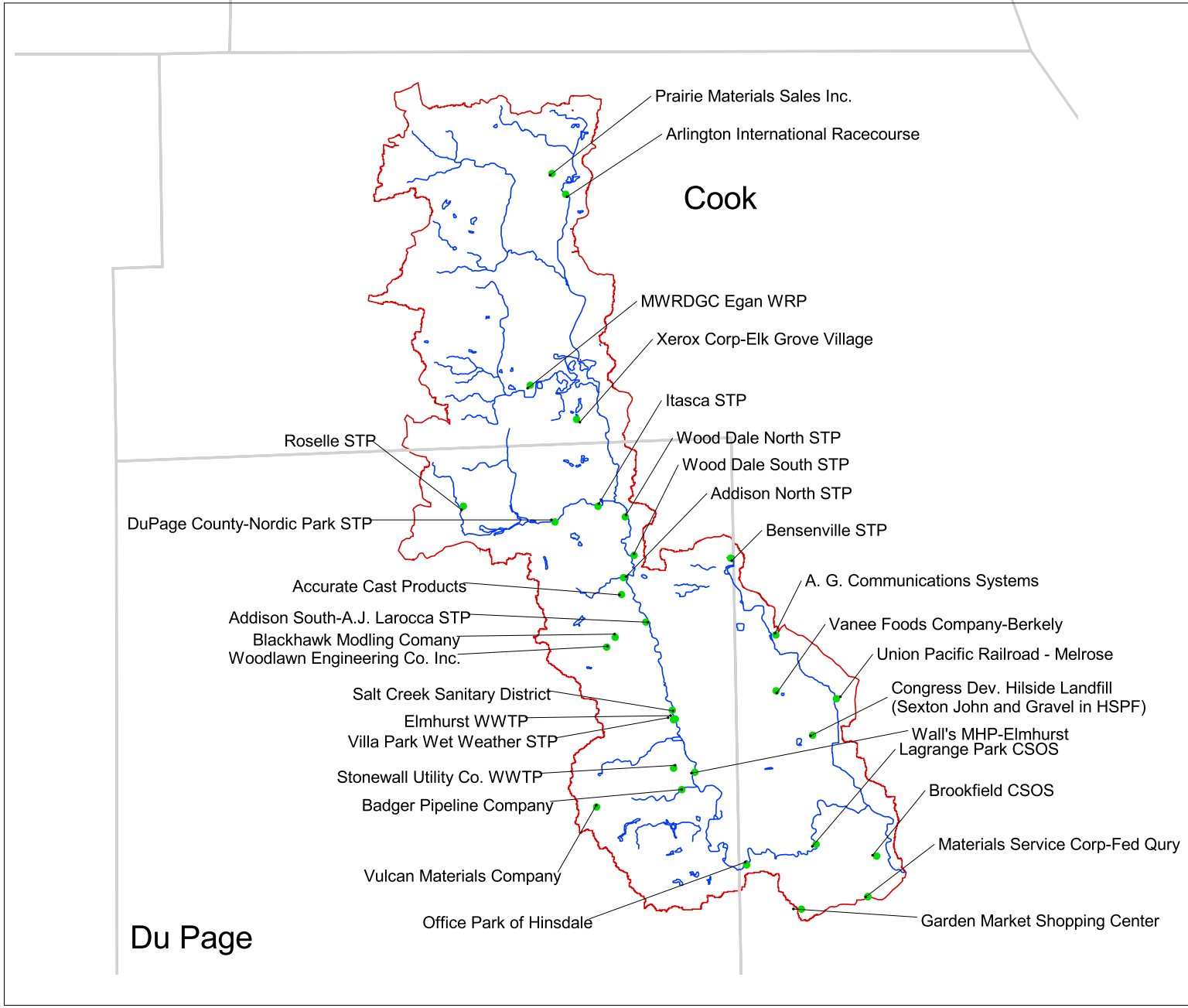


Figure 3-8

Point Source Dischargers in Salt Creek

Streams

Salt Creek subwatersheds

Point Souces

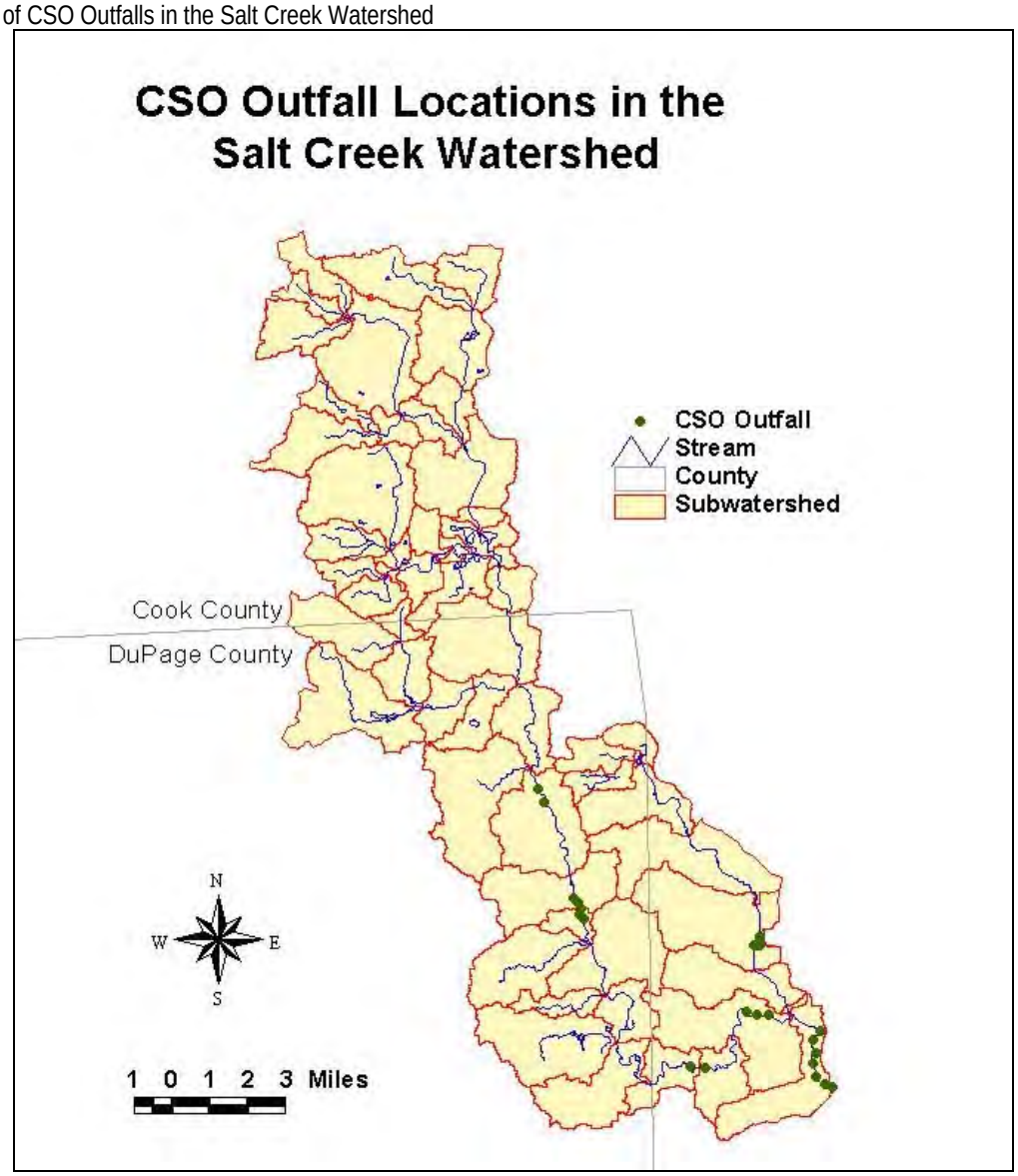
N
W E
S

2 0 2 Miles

Illinois Environmental Protection Agency

CH2MHILL

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.

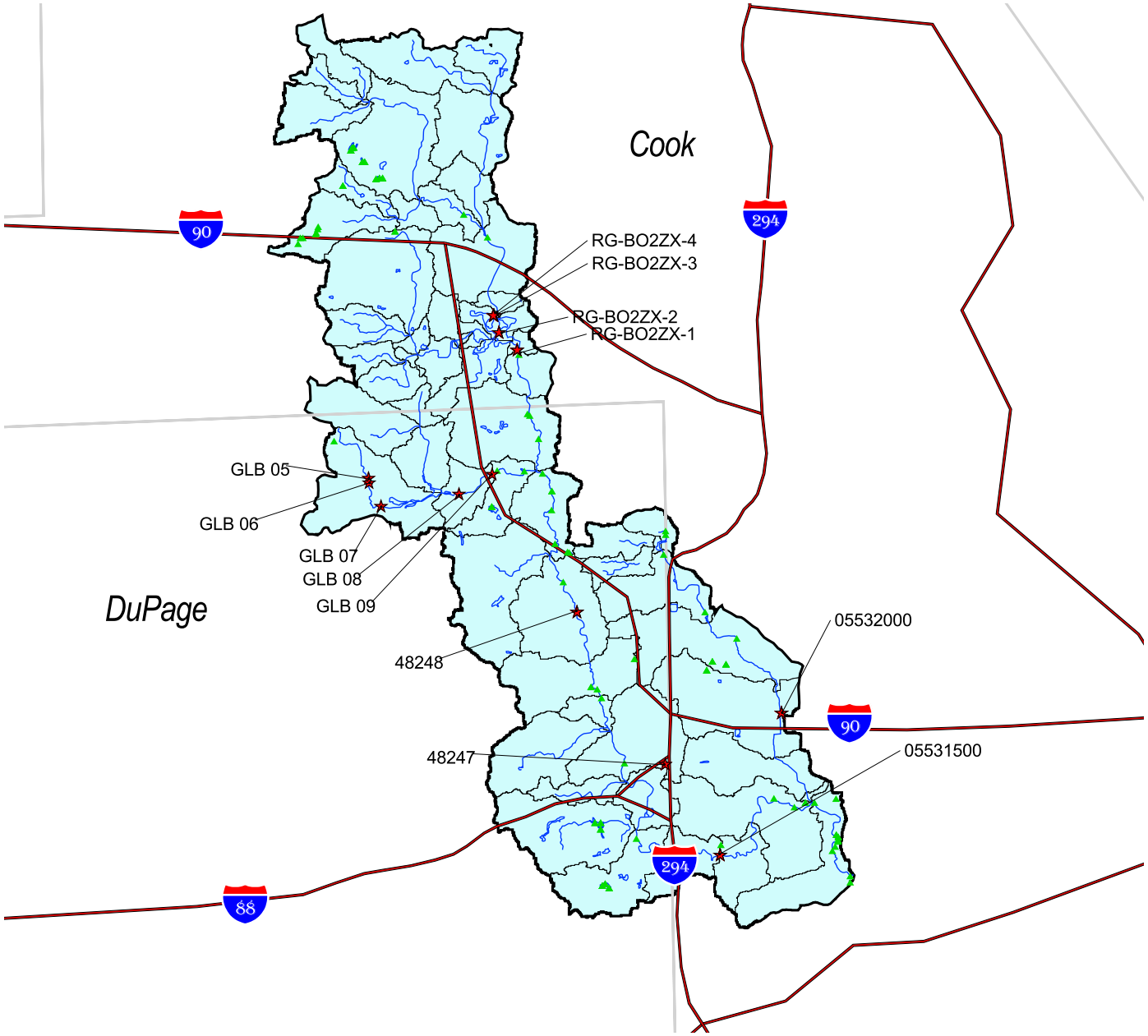


Figure 3-10

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

Illinois Environmental Protection Agency

CH2MHILL

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

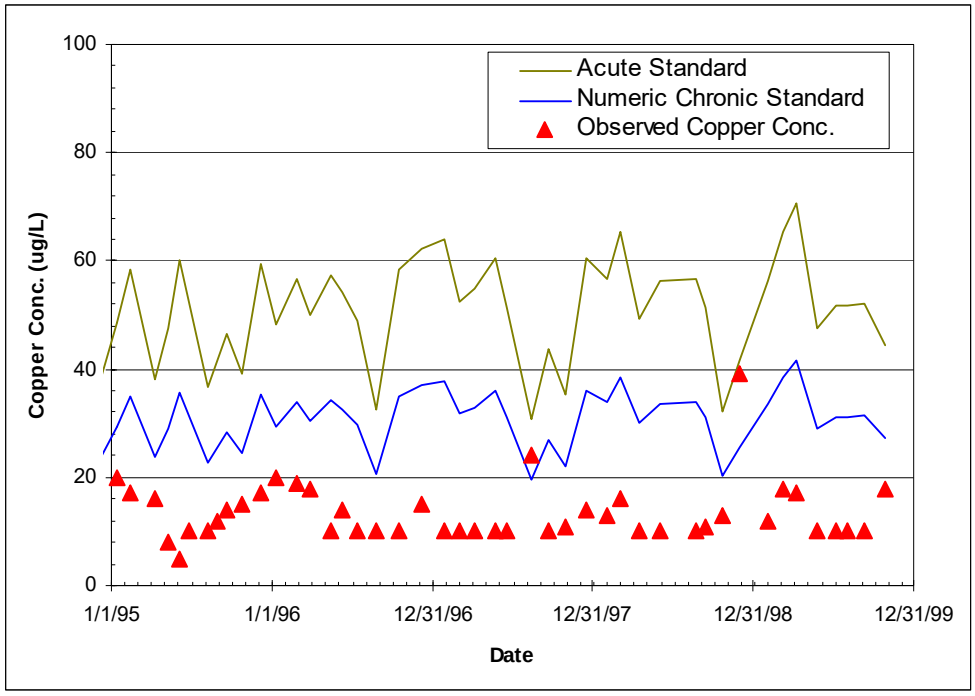
compliance with a CS must be collected in a manner that assures an average representative of the sampling period.

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

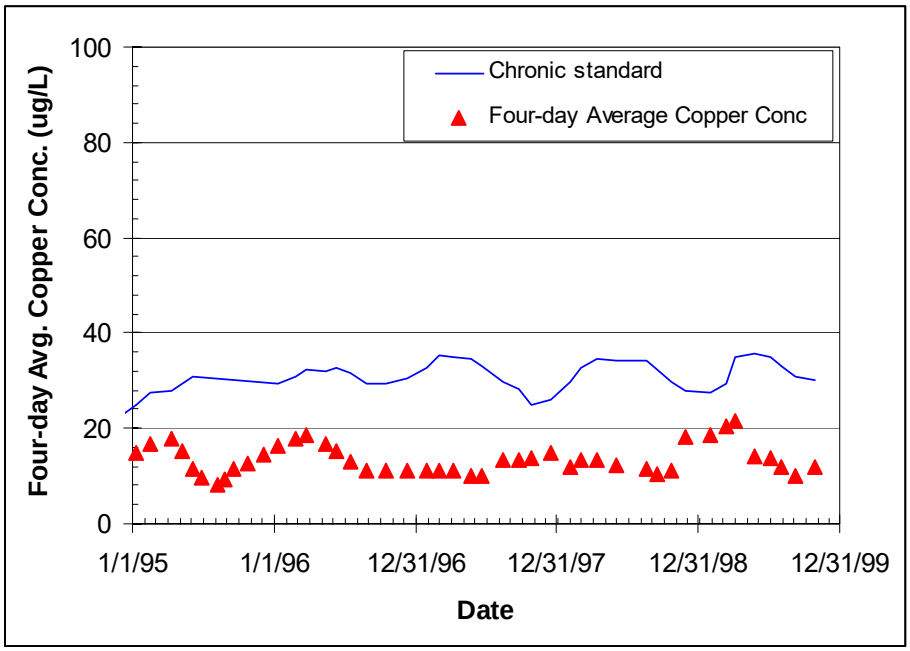
Date	Time	Observed Copper Conc. (µg/L)	Hardness (mg/L as $CaCO_3$)	Acute Standard (µg/L)	Numeric Chronic Standard (µg/L)	4-day Average of Observed Copper Conc. (µg/L)	4-day Average of the Numeric Chronic Standard (µg/L)
4/7/97	1130	10.0	332	54.90	32.97		
5/23/97	1145	10.0	368	60.50	36.00		
6/19/97	1100	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

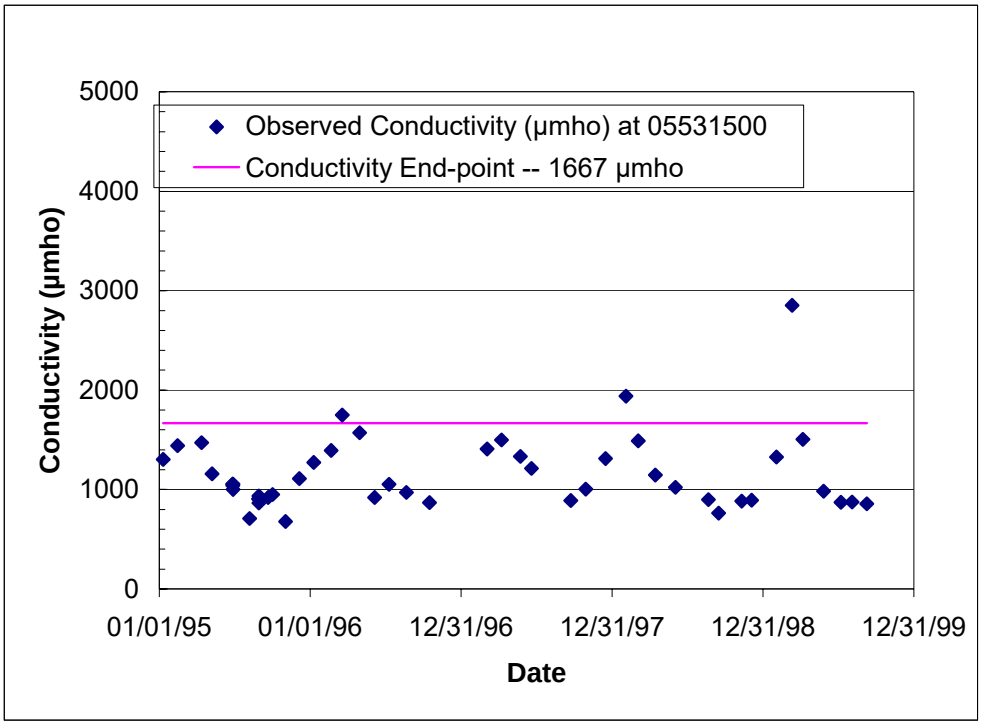


FIGURE 4-4
Plot of Addison Creek (station 05532000) Conductivity Data by Date

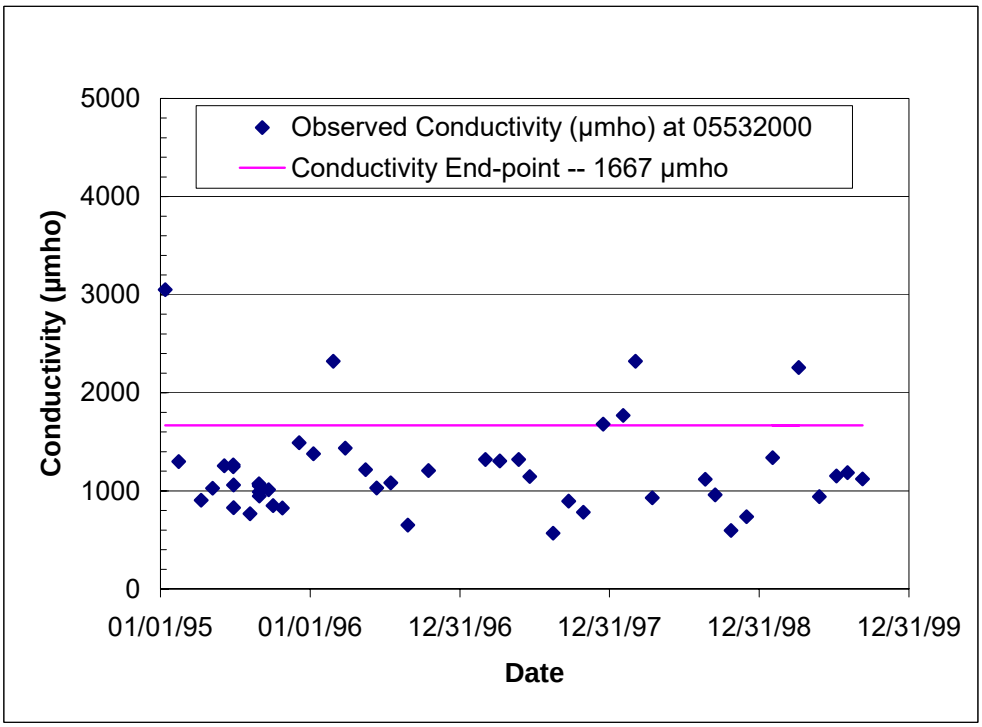
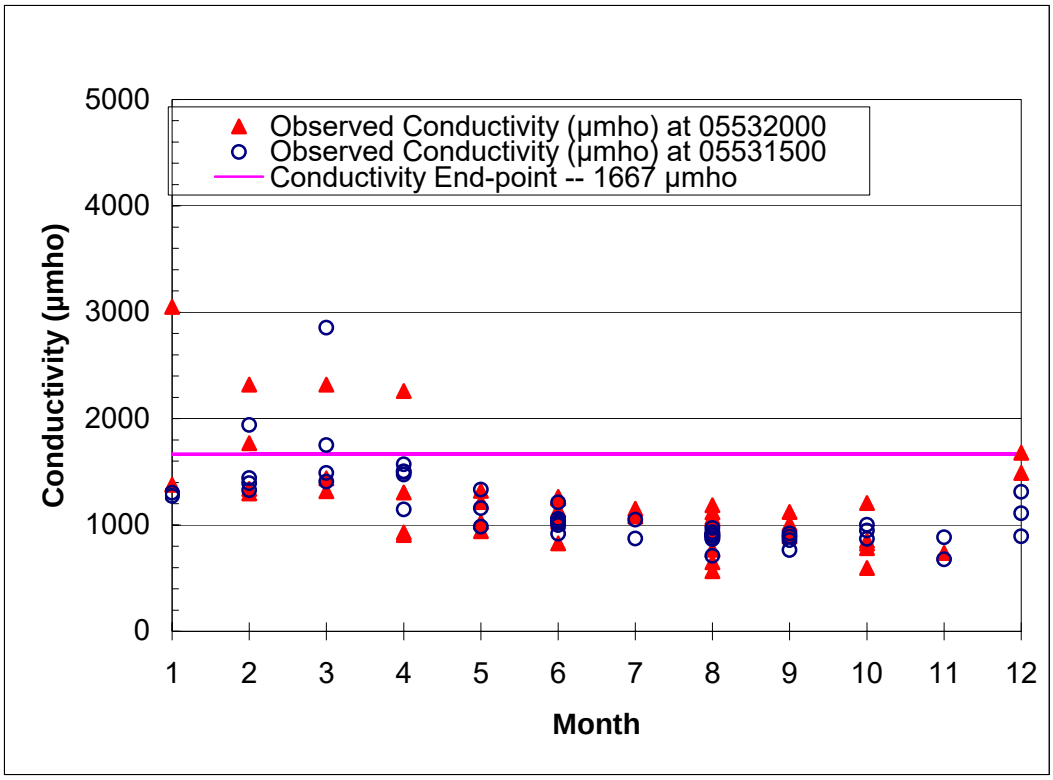


FIGURE 4-5
Observed Conductivity at Salt Creek and Addison Creek by Month 1995-1999



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:

$$\text{Conductivity } (\mu\text{mho}) = 600 + 2.76 \times \text{Chloride (mg/L)}$$
$$r^2 = 0.86$$

Similarly, the relationship between conductivity and chloride in Addison Creek is given by

$$\text{Conductivity } (\mu\text{mho}) = 600 + 3.00 \times \text{Chloride (mg/L)}$$
$$r^2 = 0.91$$

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

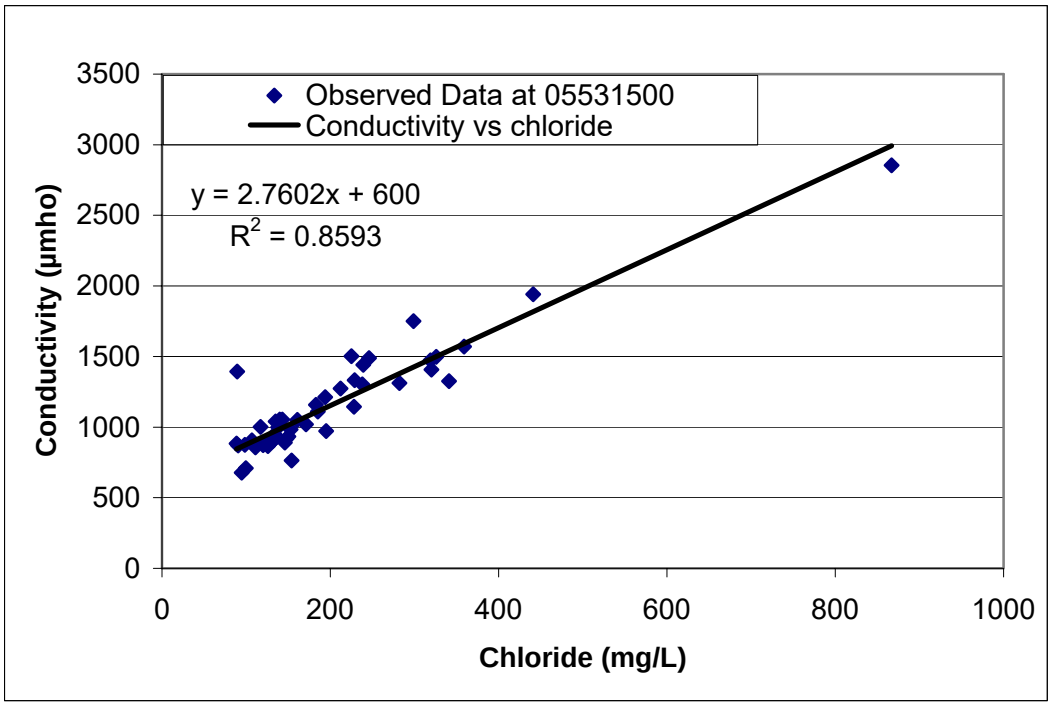
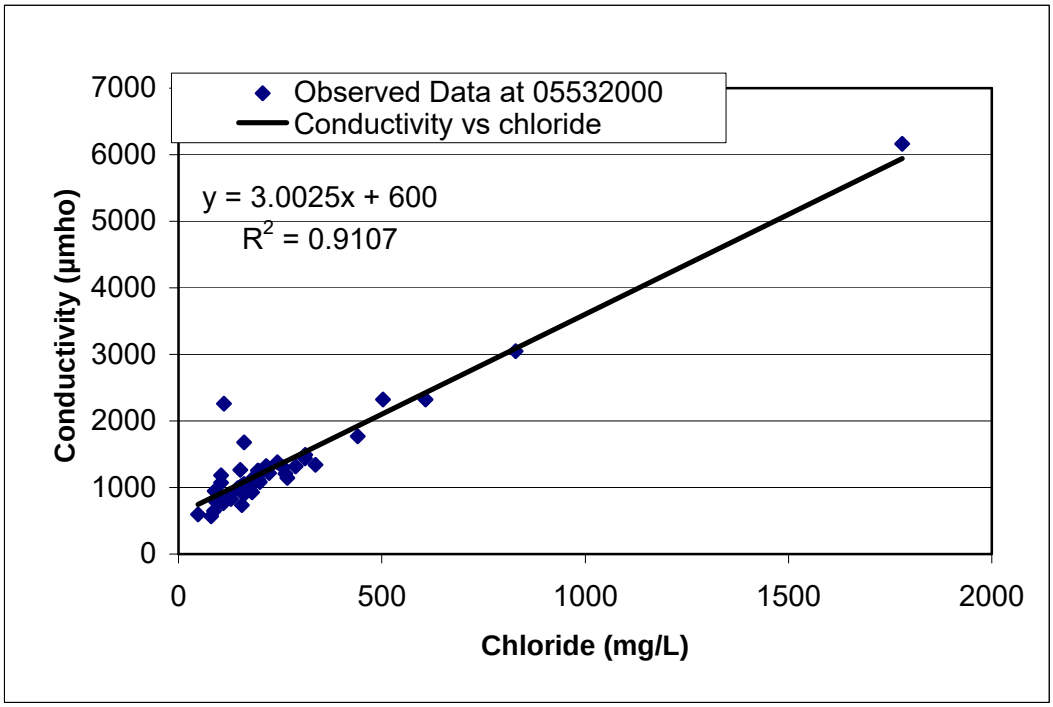


FIGURE 4-7
Relationship between Conductivity and Chloride in Addison Creek



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

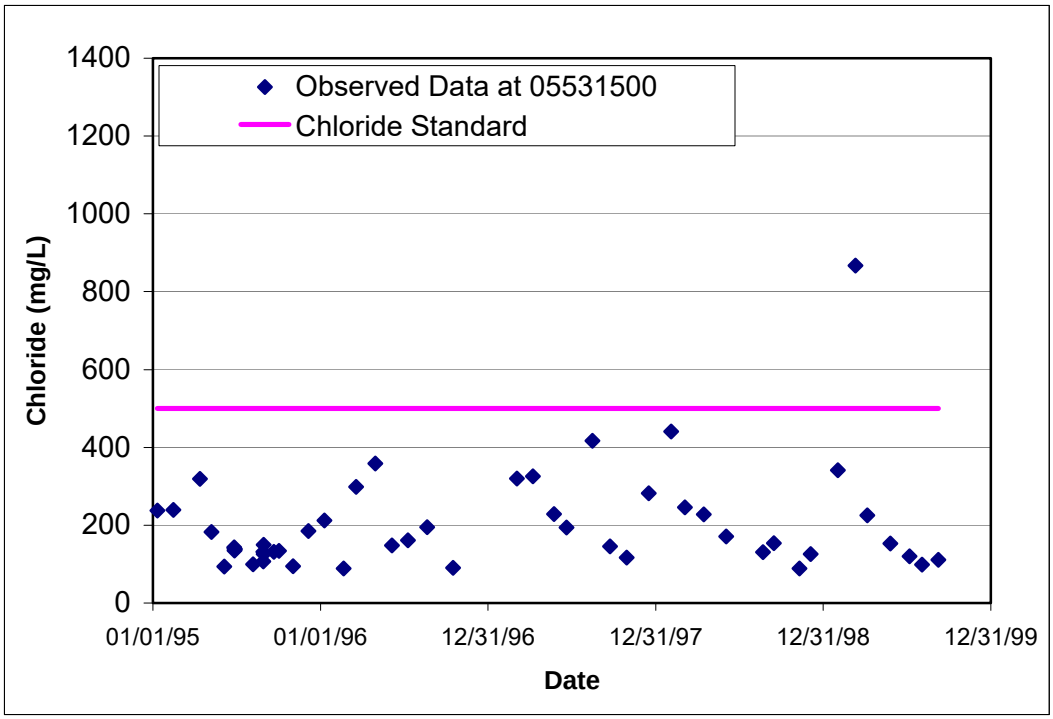


TABLE 4-2
Exceedances of the Chloride Standard in Salt Creek and Addison Creek

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

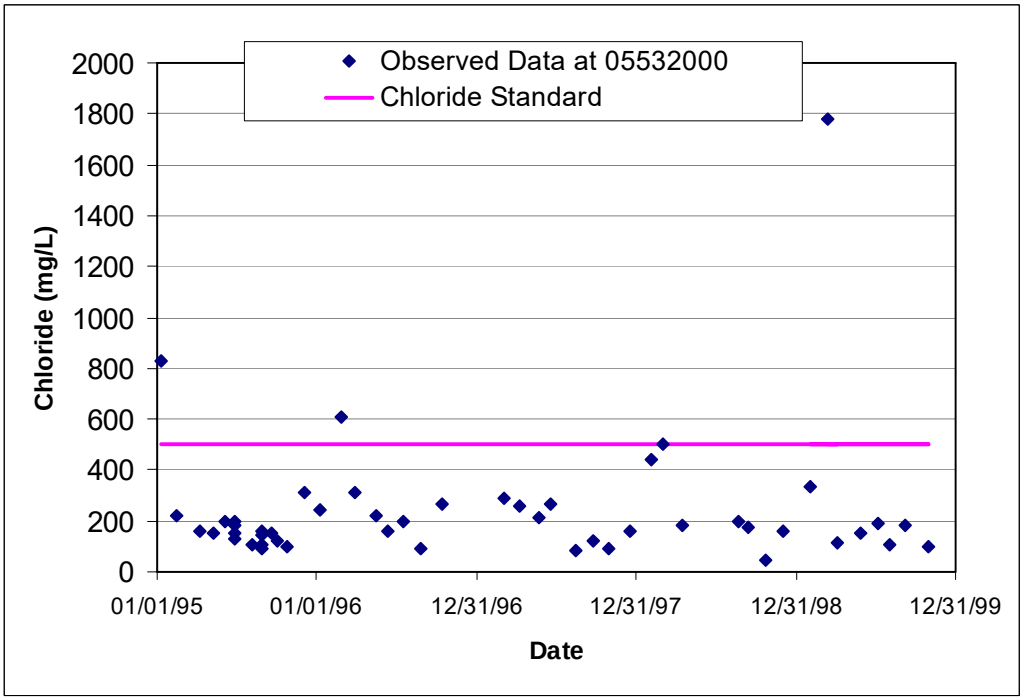
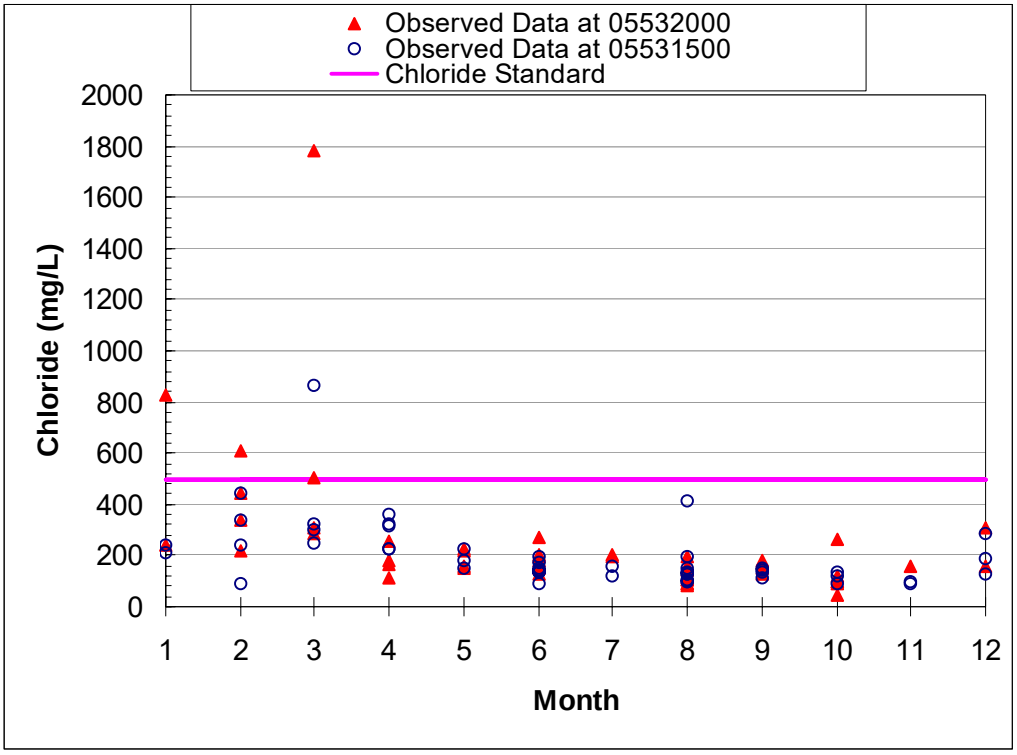


FIGURE 4-10
Chloride Concentrations in Salt Creek and Addison Creek by Sample Month, 1995 to 1999, and the Water Quality Standard



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. .

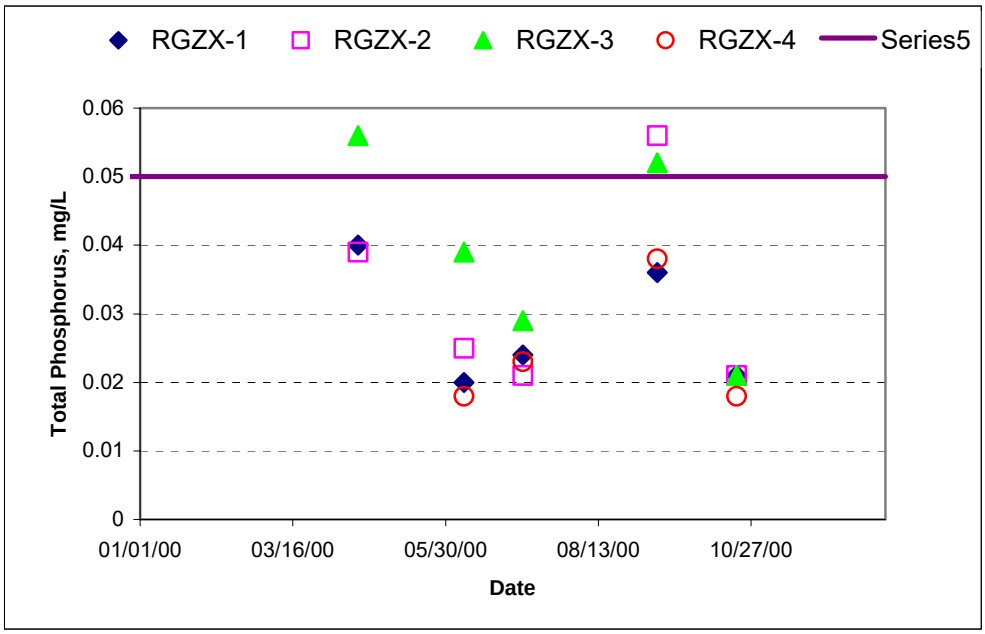
A summary of phosphorus data is presented in Table 4-3. One sample, collected on June 8, 1997, from station RG-B02ZX-4, was excluded from the analysis because of an apparent data error. DP concentration (0.055 mg/L) was recorded as higher than the TP concentration (0.028 mg/L).

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.

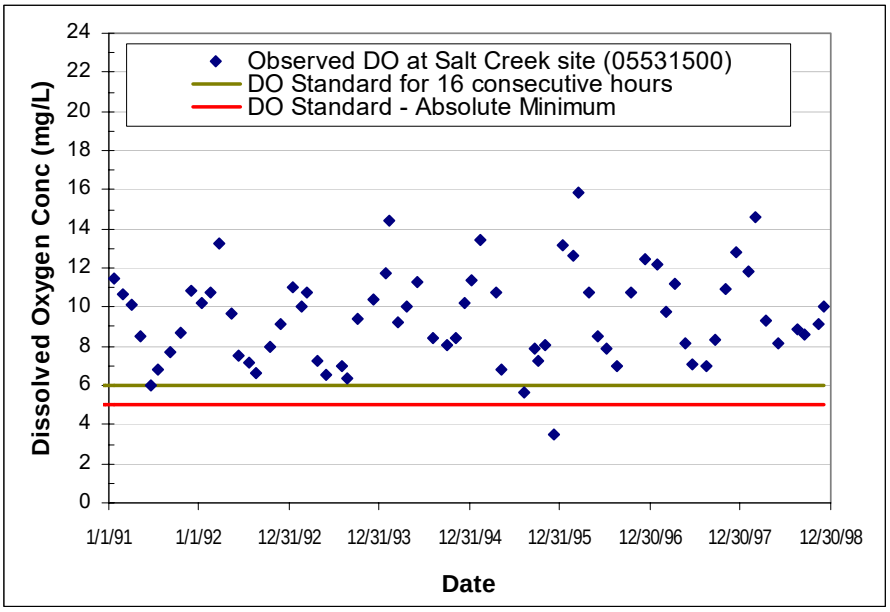


FIGURE 4-13
Monthly DO Data at the Addison Creek Site (station 05532000) by Sample Date and the Water Quality Standards for DO
Data collected during daytime hours.

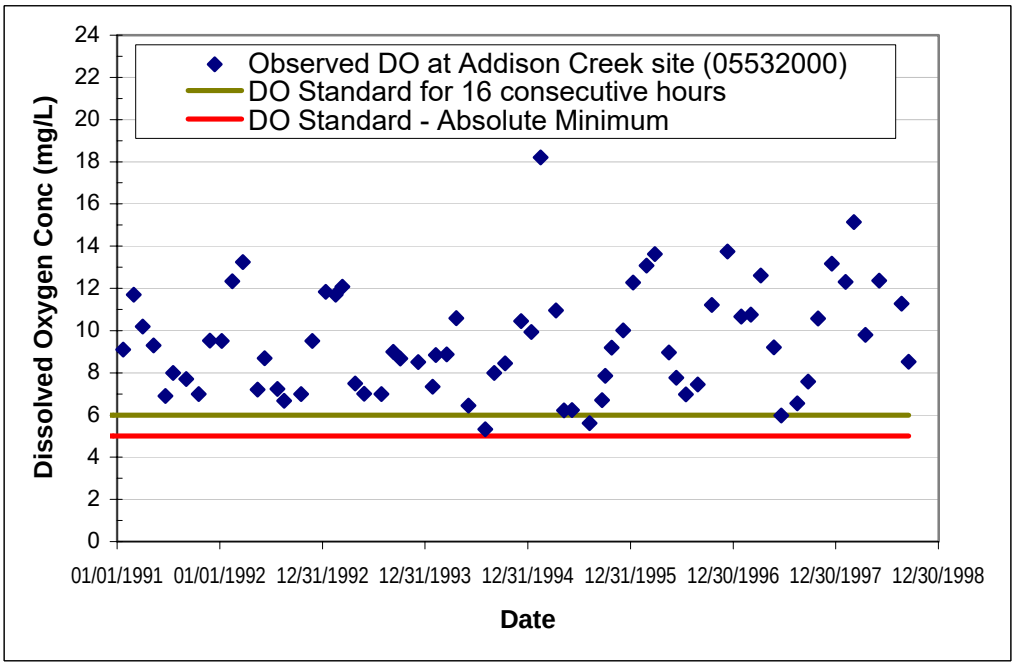


FIGURE 4-14
Diel DO Data Collected at 16 Salt Creek Sites on June 27 and 28, 1995, and the Water Quality Standards for DO

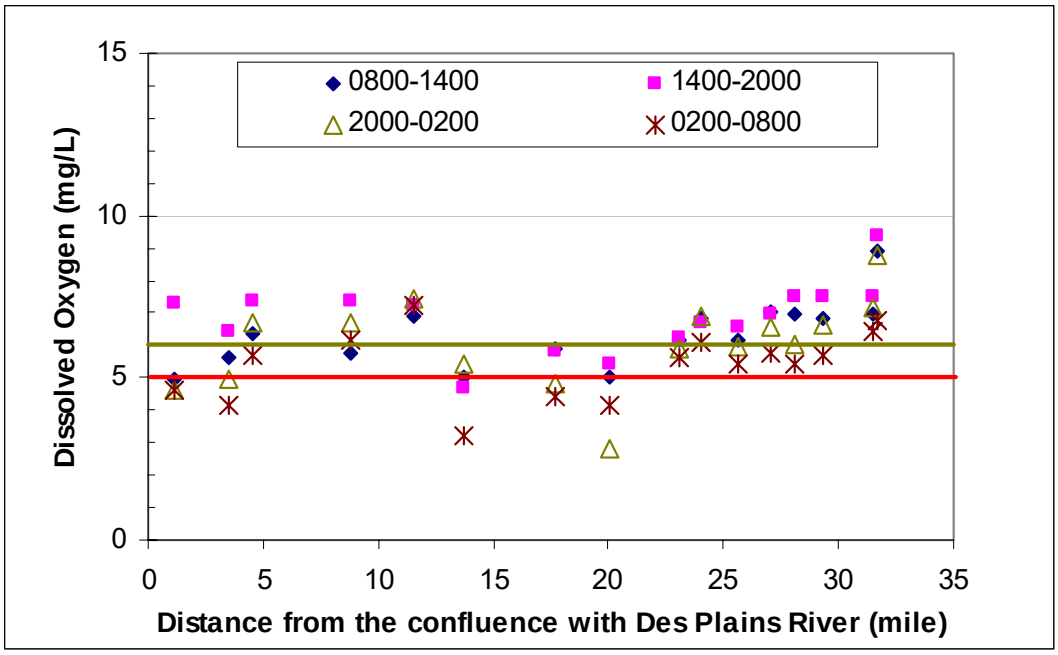
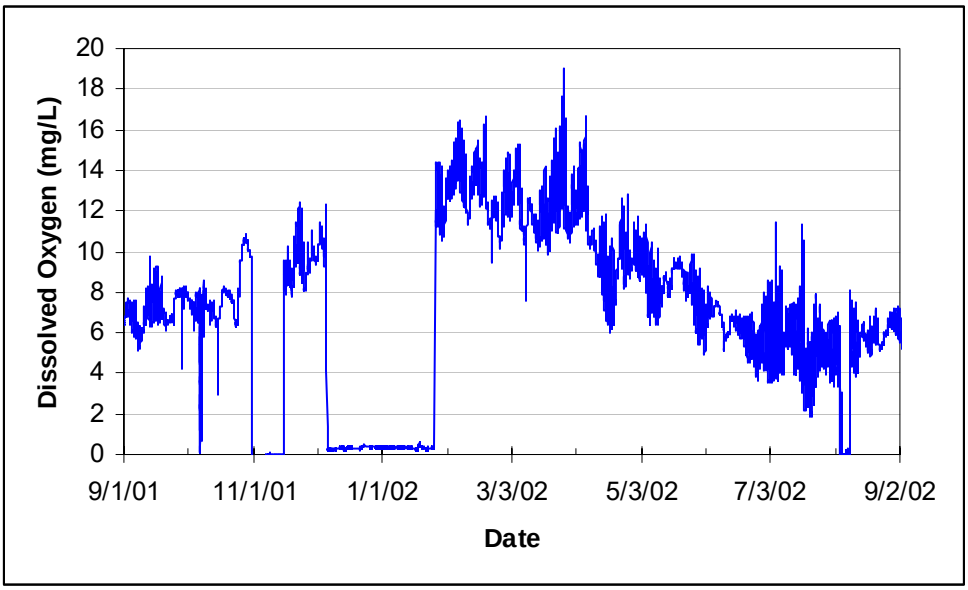


FIGURE 4-15
Continuous Monitoring Data at the Salt Creek Monitoring Site, Western Springs (station 05531500)



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)

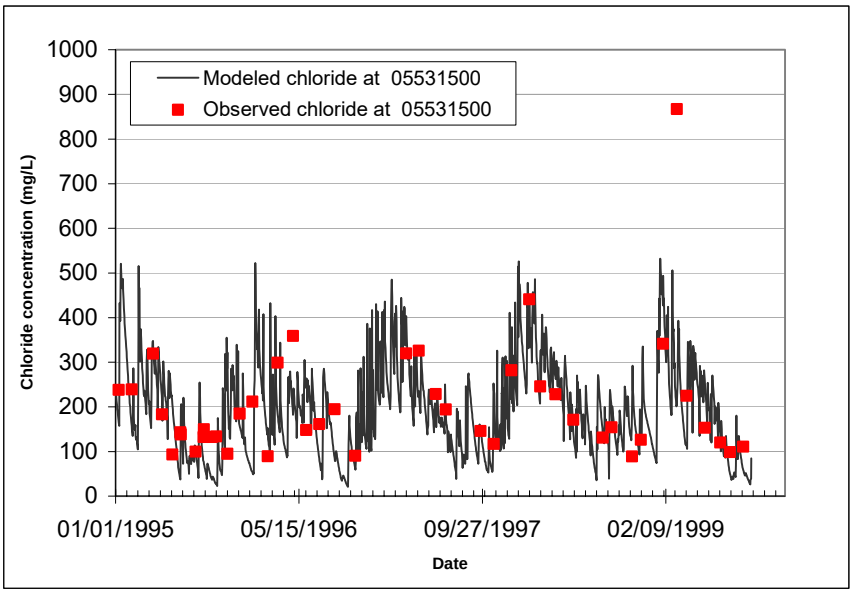
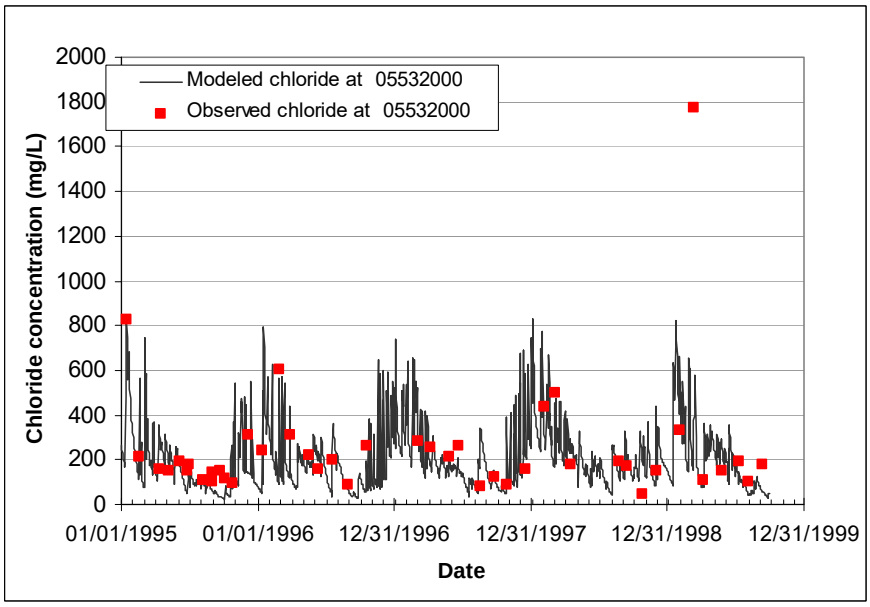


FIGURE 5-2
Water Quality Calibration of Chloride at the Addison Creek Site (station 05532000)



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

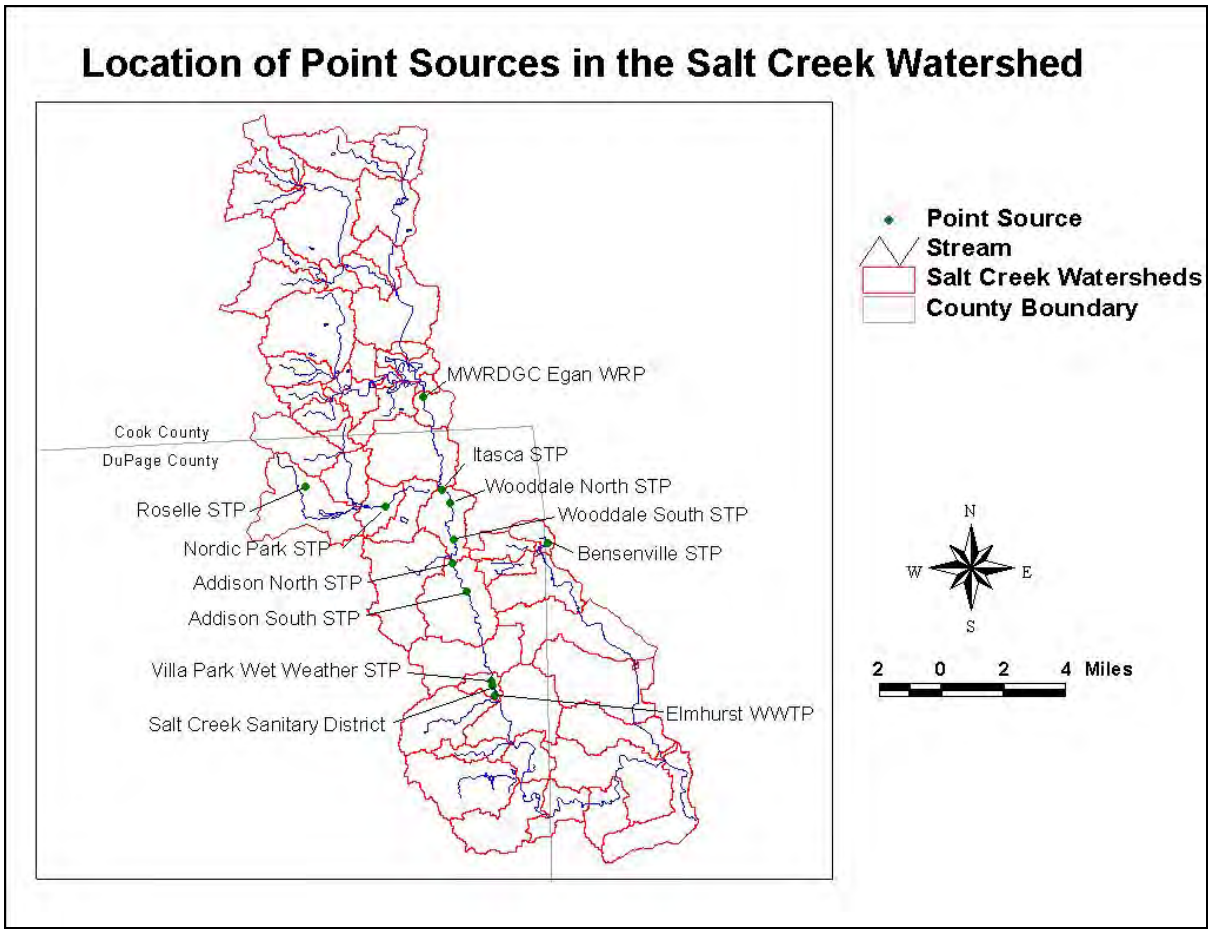


TABLE 5-5
Location of STP Outfalls, CSO Outfalls, and Dams in the Salt Creek Watershed

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

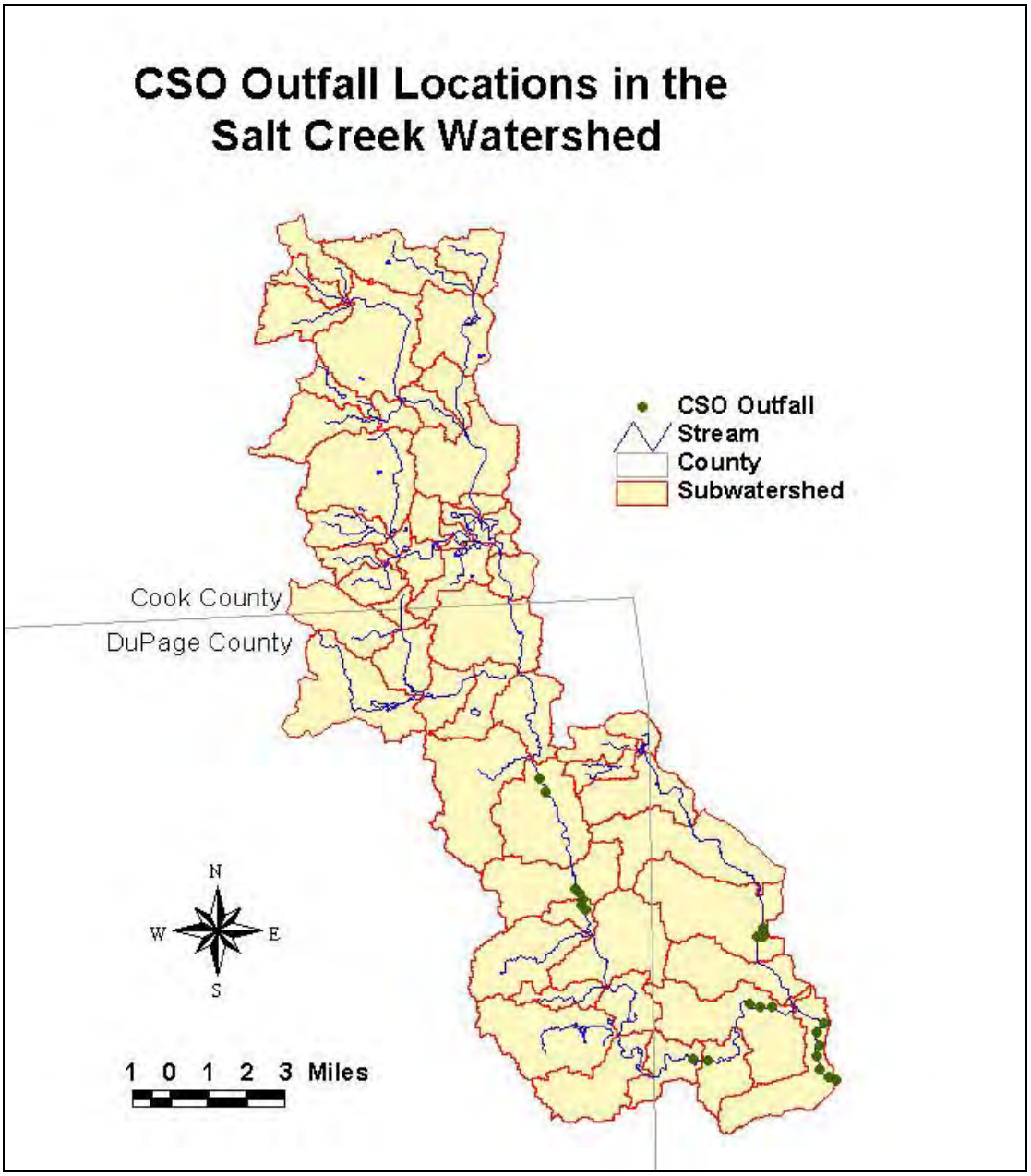


FIGURE 5-5
Observed and Modeled Dissolved Oxygen Concentrations at Different Locations in Salt Creek (June 27 and 28, 1995)

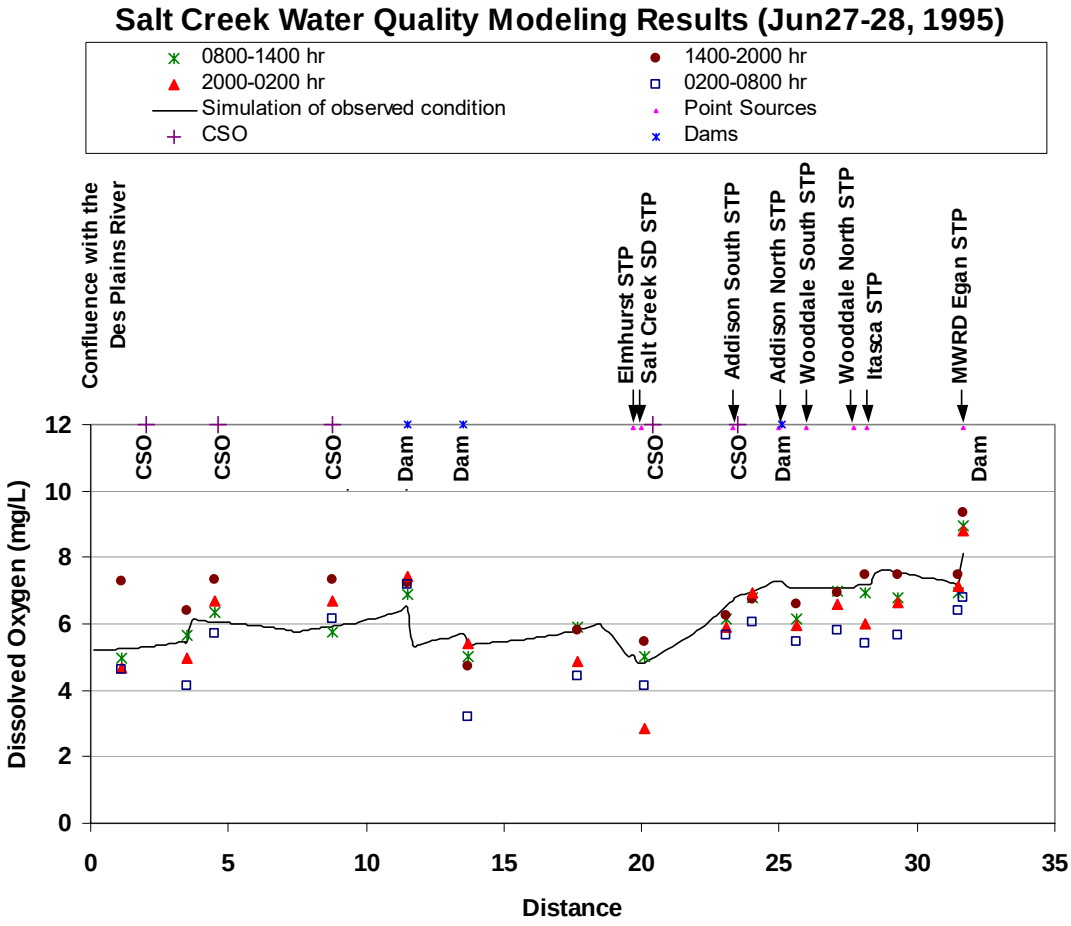


Figure 5-5 shows the observed DO concentrations at each sampling time interval as points and the simulated DO concentration as a solid line. The simulated DO concentrations were based on the steady-state modeling originally done by the USGS (1996). The horizontal axis in the plot shows the distance upstream 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).

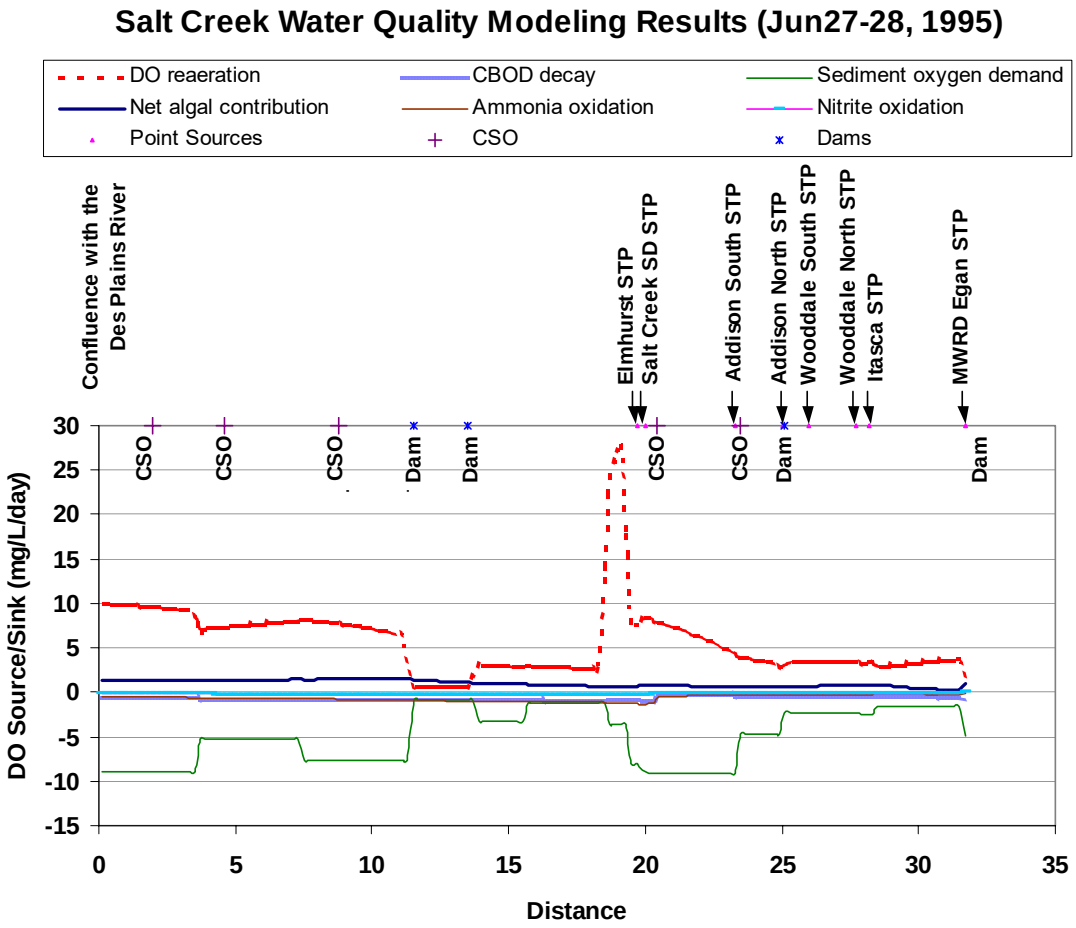
Various components of the DO mass balance (i.e., CBOD decay, exertion of sediment oxygen demand (SOD), nitrification, net algal contribution due to respiration and photosynthesis, and reaeration) were analyzed using the model results. Relative contributions and magnitudes of DO mass balance components 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



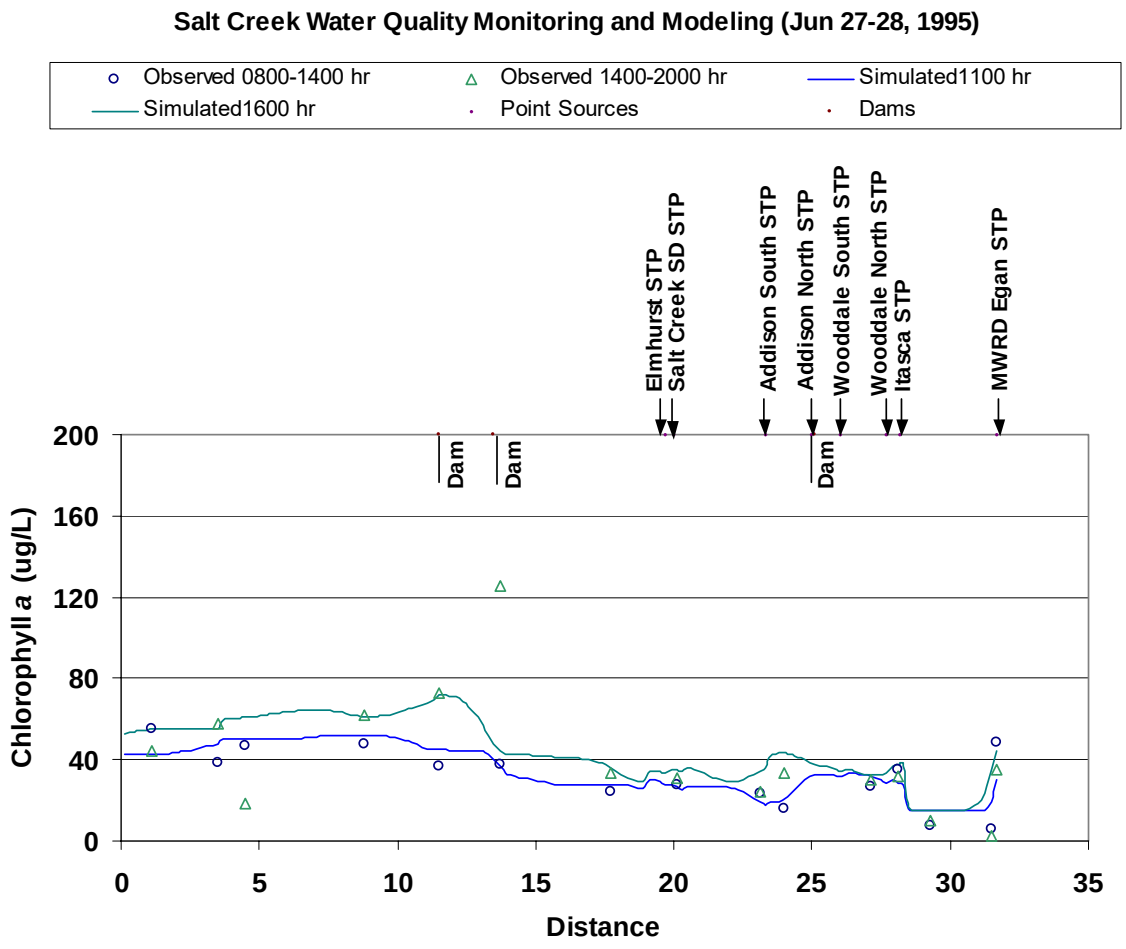
5.3.1 Diurnal Variation of Dissolved Oxygen Due to Algal Respiration and Photosynthesis

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

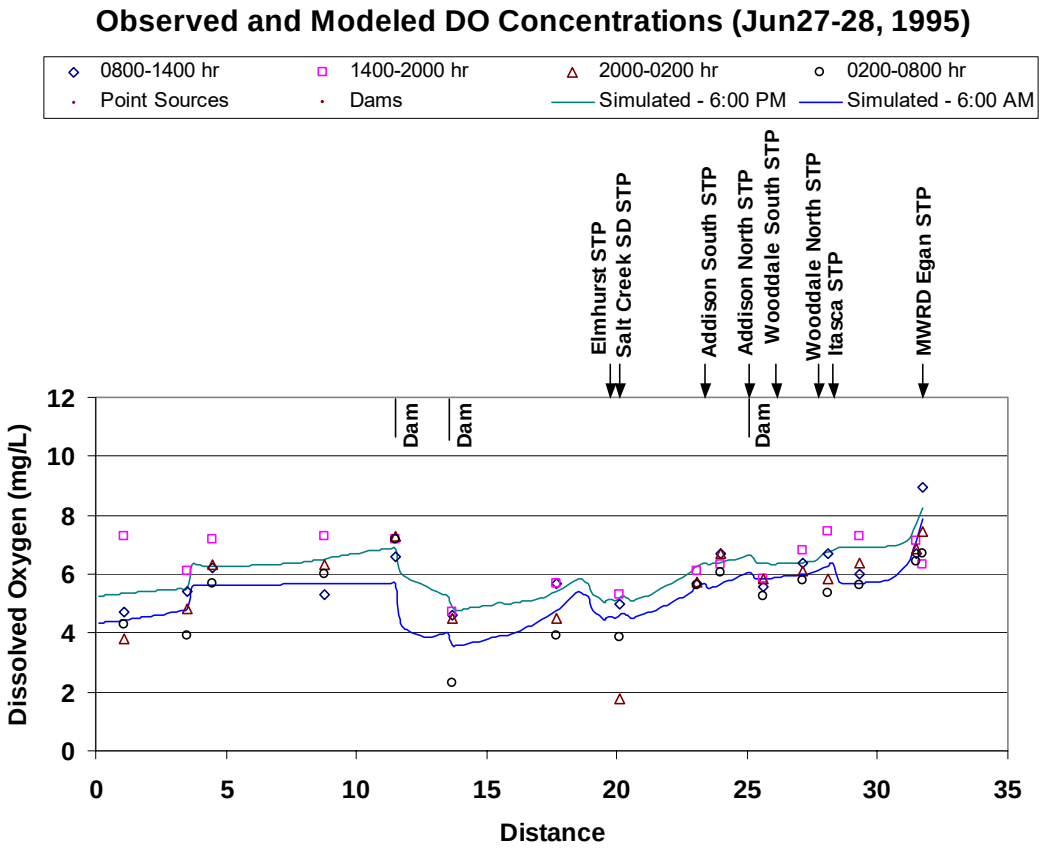


A healthy stream requires algae to provide food for the aquatic life. However, algal growth that severely depletes night-time DO concentrations can be problematic for aquatic life. Algae produces oxygen in the photosynthesis process in the presence of light and contributes to the DO pool. Algae also 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

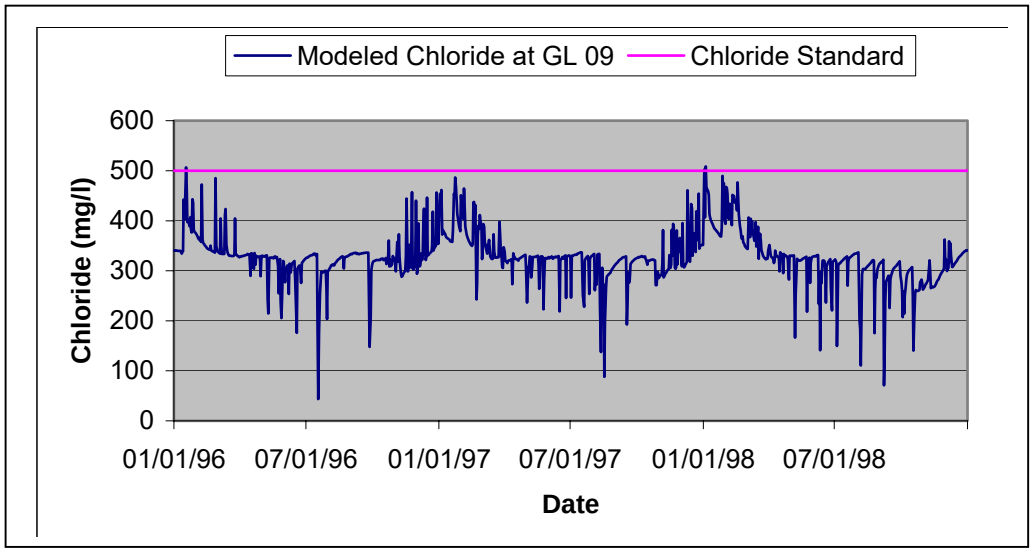
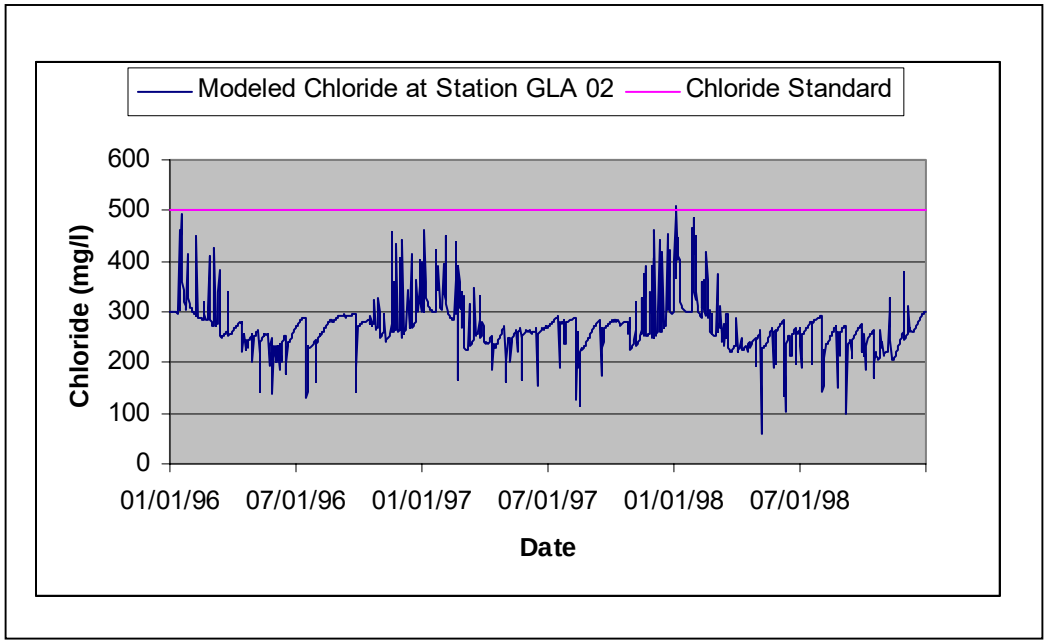


FIGURE 6-2
Modeled Chloride Concentrations at the Addison Creek Station GLA 02 for the TMDL Allocation Scenario



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

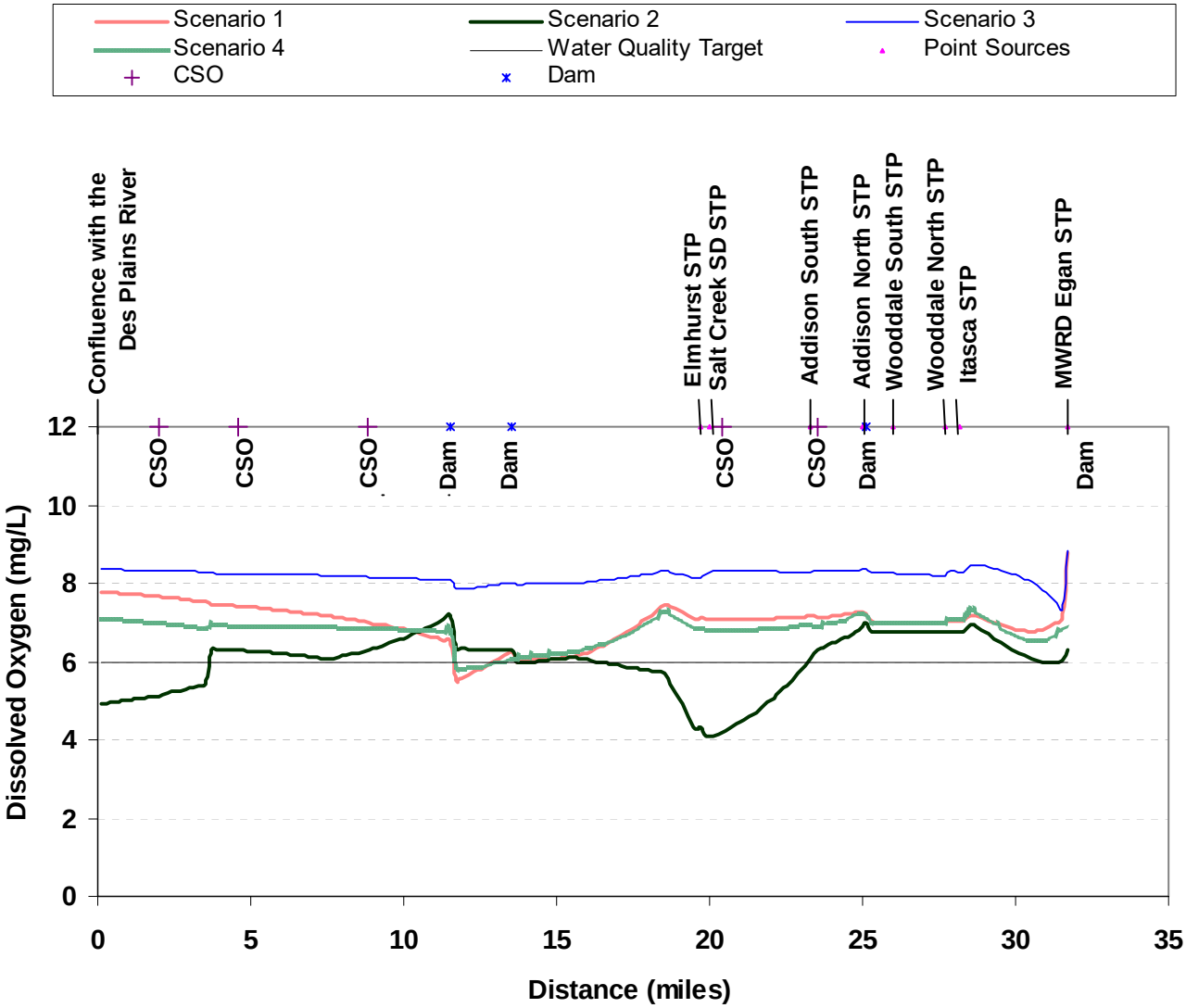


FIGURE 6-4
Modeled Dissolved Oxygen Concentrations for the TMDL Allocation Scenario

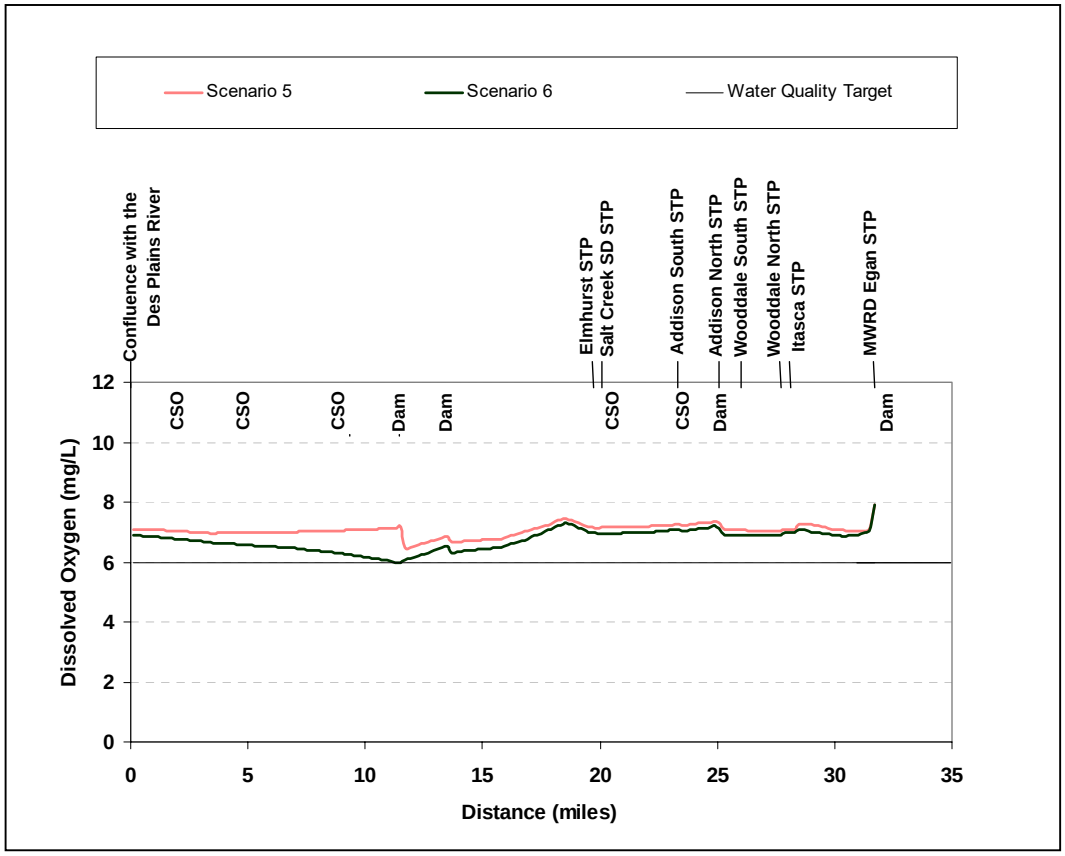


TABLE 6-5
Point Source Allocations for CBOD and Ammonia

		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

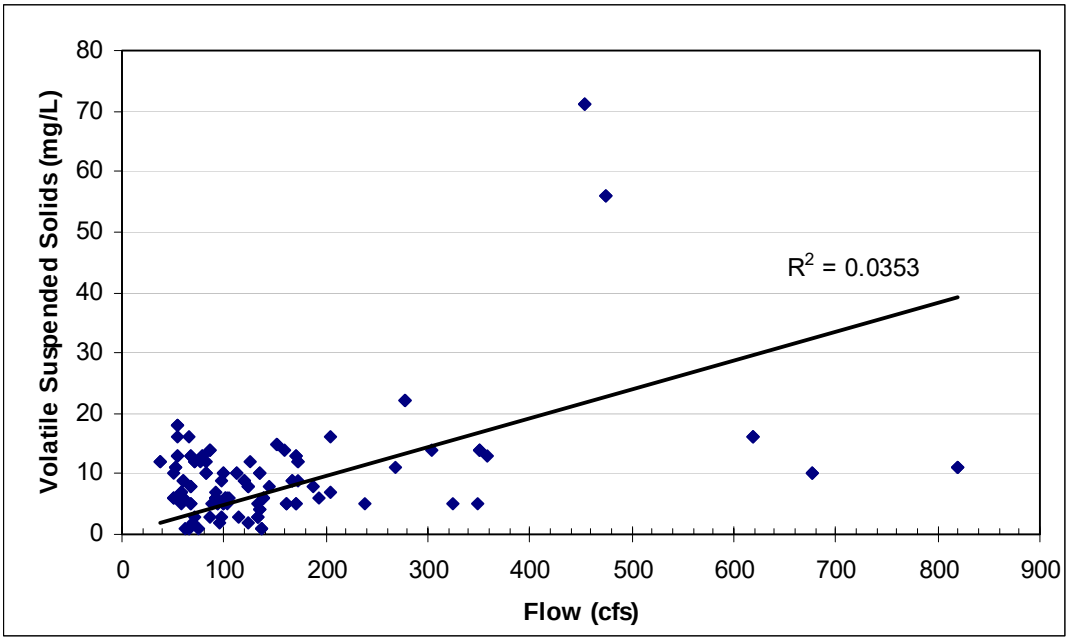


FIGURE 6-6
The Monthly Maximum, Minimum and Average VSS Concentrations Using the 1990-1998 Monitoring Data from the Salt Creek Site (05531500)

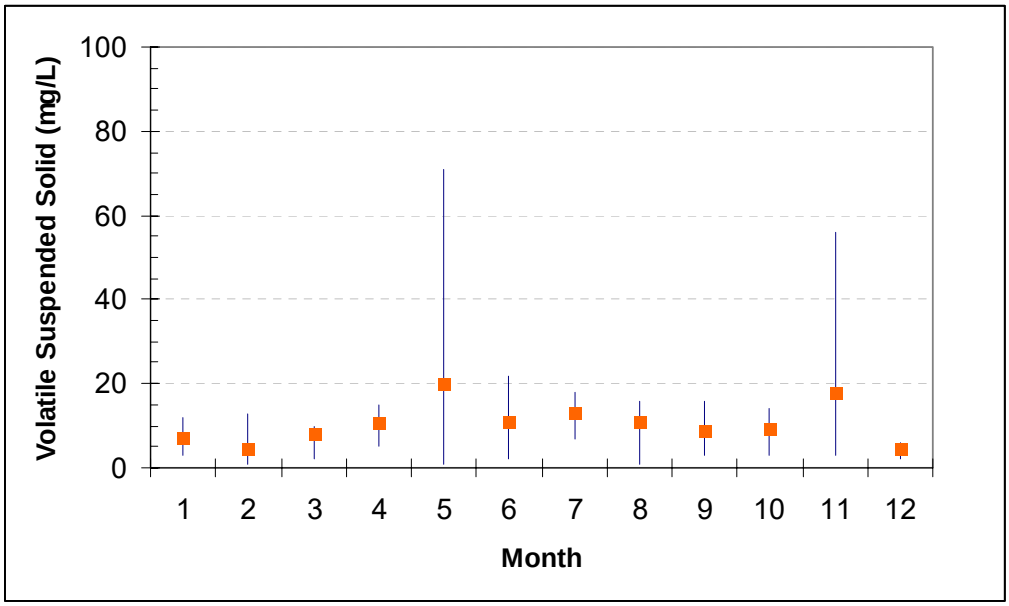


TABLE 6-6
TMDL Allocations for CBOD and Ammonia and VSS for Salt Creek

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.

References

AQUA TERRA Consultants and HydroQual, Inc. *Modeling Nutrient Loads to Long Island Sound from Connecticut Watersheds, and Impacts of Future Buildout and Management Scenarios*. Prepared for CT Department of Environmental Protection. Hartford, Connecticut. 2000.

Bicknell, B.R., et al. (Draft) *Hydological Simulation Program - FORTRAN, User's Manual for Version 12*. U.S. EPA, National Exposure Research Laboratory. Athens, Georgia. 2000.

Bicknell, B.R., et al. *Hydological Simulation Program - FORTRAN, User's Manual for Version 11*. EPA/600/R-97/080. U.S. EPA, National Exposure Research Laboratory. Athens, Georgia. 1997.

Bowie, George L., *et al*. *Rates, Constants, and Kinetics Formulations in Surface Water Quality Modeling (Second Edition)*. EPA/600/3-85/040. Office of Research and Development, USEPA, Athens, Georgia. 1985.

Butts, T.A. and R.L. Evans. 1978. *Sediment Oxygen Demand Studies of Selected Northeastern Illinois Streams.* Staff paper no. 29. Northeastern Illinois Planning Commission. Chicago, Illinois.

Donigian, Jr., A.S., *HSPF Training Workshop Handbook and CD*. Lecture #19. Calibration and Verification Issues, Slide #L19-22. USEPA Headquarters, Washington Information Center, 10-14 January, 2000. Presented and prepared for USEPA, Office of Water, Office of Science and Technology. Washington, D.C. 2000.

Donigian, T. President and principal engineer, Aqua Terra Consultants in Mountain View California, Personal communication, April, 2001.

Eicken, Gary. Memorandum to Tim Colemen. *Draft Report Total Maximum Daily Loads for Salt Creek, Illinois (November 2002)*. April 17, 2003.

Environmental Systems Research Institute, Inc.
http://www.esri.com/data/online/tiger/index.html.

Illinois Department of Natural Resources (DNR). Digital Spatial Data of Illinois, CD-ROM. Illinois Geographic Information System (IGIS).1996.

Illinois Environmental Protection Agency. 1996. *Illinois Water Quality Report 1994-1995*, Volume I. Bureau of Water. Springfield, Illinois.

Illinois General Use Water Quality Standards. Title 35 of the Illinois Environmental Protection Act, Subtitle C: Water Pollution Subtitle C: Water Pollution, Part 302.

Lumb, A.M., et al. *Users Manual for an Expert System (HSPEXP) for Calibration of the Hydrological Simulation Program - FORTRAN*. Water-Resources Investigations Report 94-4168, U.S. Geological Survey. Reston, Virginia. 1994.

Melching, C. S. and T. J. Chang. *Simulation of Water Quality for Salt Creek in Northeastern Illinois*. U.S. Geological Survey Open-File Report 96-318, Urbana, Illinois. 1996.

National Weather Service. *Evaporation Atlas for the Contiguous 48 United States*. NOAA Technical Report NWS 33. U. S. Department of Commerce, NOAA. Washington, D.C. 1982a.

National Weather Service. *Mean Monthly, Seasonal, and Annual Pan Evaporation for the United States*. NOAA Technical Report NWS 34. U. S. Department of Commerce, NOAA. Washington, D.C. 1982b.

National Weather Service. *Mean Monthly, Seasonal, and Annual Pan Evaporation for the United States*. NOAA Technical Report NWS 34. U. S. Department of Commerce, NOAA. Washington, D.C. Map 4/4 "Pan Coefficients". 1982c.

Novotny, V., et al. *Urban and Highway Snowmelt: Minimizing the Impact on Receiving Water.* Final Report. Project 94-IRM-2. Water Environment Research Federation. 1999.

Novotny. V, Olem. H.. Water Quality: Prevention, Identification, and Management of Diffuse Pollution , ISBN: 0-471-28413-0, John Wiley & Sons, Inc, New York, 1994

Oregon State University. Software system web site. http://www.ocs.orst.edu/prism.

Price, Thomas H. *Application Guide for the Hydrologic Modeling in DuPage County Using Hydrologic Simulation Program - Fortran (HSPF): Model Organization and Use, Data Collection and Processing, Calibration*. Northeastern Illinois Planning Commission. Prepared for Stormwater Management Division, Environmental Concerns. DuPage County, Illinois. May 1996.

Price, Thomas H. *Hydrologic Calibration of HSPF Model for DuPage County*. Prepared for Stormwater Management Division, Environmental Concerns. DuPage County, Illinois. 1994.

Singh, K.P., and Ramamurthy, G.S. *Seven-day, Ten-year Low Flows of Streams in Northeastern Illinois*. Illinois State Water Survey Contract Report 545. Champaign, Illinois. 1993.

STORET. http://www.epa.gov/storet.

USEPA. *Consolidated Assessment and Listing Methodology*, First Edition, Office of Wetlands, Oceans and Watersheds, Washington, DC. July 2002.

USEPA. *Guidance for Water Quality-based Decisions: The TMDL process*. EPA 440-4-19-001, Office of Water (WH-553), Washington, DC. 1991.

Yurdin, Bruce. 1991. E-mail message to Carey Brand, CH2M HILL. Dated November 15, 2001. Subject of Salt Creek TMDL.