Stormwater Management Program Plan

City of Naperville, Riverwalk - Naperville, IL Photo by: Engineering Resource Associates, Inc

CITY OF NAPERVILLE

DUPAGE/WILL COUNTY, ILLINOIS

EFFECTIVE: MARCH 2015

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Table of Contents

List of Tables and Figures

1 Overview of the Stormwater Management Program Plan

DuPage River - Naperville, Illinois Photo by T.E.D.

1.1 Introduction

This Stormwater Management Program Plan (SMPP) was developed by City of Naperville based off a SMPP template provided by the Lake County Stormwater Management Commission. The purpose of the SMPP is to meet the minimum standards required by the United States Environmental Protection Agency (USEPA) under the National Pollutant Discharge Elimination System (NPDES) Phase II program. Federal regulations through the USEPA require that all Municipal Separate Storm Sewer Systems (MS4s), partially or fully in urbanized areas based on the 2000 census, obtain stormwater permits for their discharges into receiving waters. There are many different types of MS4s including municipalities, park districts, drainage districts, township highway departments, counties and county and state transportation departments (DuPage County Division of Transportation (DuDOT) and Illinois Department of Transportation (IDOT)).

The SMPP describes the procedures and practices that can be implemented by the City of Naperville toward the goal of reducing the discharge of pollutants within stormwater runoff in order to comply with Federal standards. Compliance with the plan is intended to protect water quality thus contributing to the following amenities:

- cleaner lakes and streams,
- improved recreational opportunities and tourism,
- flood damage reduction,
- better aesthetics and wildlife habitat, and

- a safer and healthier environment for the citizens.

The SMPP addresses the primary program elements for all City of Naperville activities, including the manner in which City of Naperville:

- reviews, permits and inspects construction activity within its limits;
- manages the planning, design and construction of projects performed within its limits;
- maintains its facilities and performs its day-to-day operations;
- works toward protecting the receiving waters from illicit discharges;
- provides public education and outreach;
- trains its employees in carrying out and reporting program activities; and
- continually monitors and evaluates the program.

1.2 State & Federal Regulations

Federal environmental regulations based on the 1972 Clean Water Act (CWA) require that MS4s, construction sites and industrial activities control polluted stormwater runoff from entering receiving bodies of water (including navigable streams and lakes). The NPDES permit process regulates the discharge from these sources based on amendments to CWA in 1987 and the subsequent 1990 and 1999 regulations by the U.S. Environmental Protection Agency (USEPA). In Illinois, the USEPA has delegated administration of the Federal NDPES program to the Illinois Environmental Protection Agency (IEPA). On December 20, 1999 the IEPA issued a general NPDES Phase II permit for all MS4s. The General Permit is included in **Appendix 5.13**. Under the General ILR 40 Permit each MS4 was required to submit a Notice of Intent (NOI) declaring compliance with the conditions of the permit by March 10, 2003. The original NOI describes the proposed activities and best management practices that occurred over the original 5-year period toward the ultimate goal of developing a compliant SMPP. At the end of the 5th year (March 1, 2008) the components of the SMPP were required to be implemented; per the ILR40 permit. The IEPA reissued the ILR 40 permit on April 1, 2009.

Additionally, under the General ILR10 permit also administered IEPA, all construction projects that disturb greater than 1 acre of total land area are required to obtain an NPDES permit from IEPA prior to the start of

construction. Municipalities covered by the General ILR40 permit, are automatically covered under ILR10 30 days after the IEPA receives the NOI from the municipality.

1.3 Countywide Approach to NPDES Compliance

The DuPage County Stormwater Management is a countywide governmental agency created by county ordinance under the authority of Illinois Revised Statute 55/5-1062. The principle purpose of the countywide ordinance is to promote effective, equitable, acceptable and legal stormwater management measures. Other purposes include managing and mitigating the effects of urbanization on drainage, reducing the existing potential for stormwater damage, protecting human life and health from the hazards of flooding and the degradation of water quality, and protecting and enhancing the quality, quantity and availability of surface and groundwater resources amongst many other purposes.

The City of Naperville is a Partial Waiver Community with respect to the DuPage Countywide Stormwater Ordinance. The City of Naperville reviews all permits with respect to compliance with the ordinance except for special management areas such as wetlands, buffers, floodplain and floodway. Any development that may impact any of those special management areas needs certification from the county before the city issues a permit.

The General Permit allows for MS4s to take credit for activities being performed by a Qualifying Local Program (QLP) toward meeting its permit requirements. DuPage County Stormwater Management is a Qualifying Local Program for MS4s in DuPage County. As part of their ongoing services, DuPage County Stormwater Management performs some functions related to each of the six minimum control measures. However, MS4s are required to provide additional services for each of the Minimum Control Measures with the greatest effort in the Illicit Discharge Detection and Elimination and Pollution Prevention/Good Housekeeping categories.

However, using the countywide approach, municipalities may take credit for the programs and ordinances developed by DuPage County Stormwater Management as well as tailor specific local BMP programs for compliance with the Phase II rules.

A general list below summarizes additional DuPage County Stormwater Management services under the 6 minimum control categories:

1. **Public Education and Outreach**: DuPage County Stormwater Management provides, through its Stormwater Outreach Coordinator, various training workshops, homeowners workshops, brochures, training manuals, teacher/student education, videos, etc.,

2. **Public Participation and Involvement**: DuPage County Stormwater Management coordinates and participates in public meetings and committees, including the Municipal/County Intergovernmental Advisory Committee, Stormwater Management Committee (SMC), Municipal Engineers Technical Advisory Committee (TAC), and volunteer support.

3. **Illicit Discharge Detection & Elimination:** DuPage County has initiated their Illicit Discharge Detection and Elimination (IDDE) program and has agreed to sample not only the DuPage County portion of the City of Naperville but also our Will County portion. That way the entire City will be checked consistently. If something is found, the City is responsible for tracing the discharge to the source and working with the property owner to correct the problem.

4. **Construction Site Runoff Control**: DuPage County Stormwater Management adopted the Countywide Stormwater & Flood Plain Ordinance (CSFPO) in 1991, which establishes the

minimum stormwater management requirements for development in DuPage County. The CSFPO, which is enforced by DuPage County Stormwater Management as well as by certified communities in the county, establishes standards for construction site runoff control.

5. **Post-Construction Runoff Control**: The Watershed Development Ordinance (WDO) also establishes standards for post-construction runoff control.
6. **Pollution Prevention/Good Housekeeping**: DuPage County Stormwater Management provides guidance for winter de-icing and chloride reduction, best management practices, and other green initiatives.

1.4 Organization of SMPP

The SMPP identifies best management practices to be implemented in six different categories. These categories are:

- Public Education and Outreach,
- Public Participation/Involvement,
- Construction Site Runoff Control,
- Post-Construction Runoff Control,
- Illicit Discharge Detection and Elimination, and
- Pollution Prevention/Good Housekeeping.

Chapter 1: Overview of the Stormwater Management Program Plan - discusses the format of the SMPP document and the regulations associated with NPDES II through county, state and federal agencies.

Chapter 2: Program Management - discusses the logistics of the Plan. This includes the organization, implementation and responsible parties necessary to achieve overall compliance with the SMPP and Permit. It also identifies how the City of Naperville coordinates with other county and state agencies and discusses the legal authority that the MS4s have to implement the Plan components.

Chapter 3: The Program - addresses stormwater pollutant control measures implemented by the City of Naperville per the six minimum control categories established by the USEPA:

- Public Education and Outreach,
- Public Participation/Involvement,
- Construction Site Runoff Control,
- Post-Construction Runoff Control,
- Illicit Discharge Detection and Elimination, and
- Pollution Prevention/Good Housekeeping.

Chapter 4: Monitoring, Program Evaluation and Reporting - describes the monitoring, evaluation and reporting procedures associated with the program. The SMPP is a guide created to protect the City of Naperville's receiving waters from pollution and resultant degradation. This Chapter assists in identifying best management practices and processes that may require improvement and refinement as the document becomes an effective tool.

Chapter 5: Appendices – including forms, references, exhibits and bibliography.

1.5 Watersheds, Sub-Watersheds and Receiving Waters

East Branch of the DuPage River

The City of Naperville is primarily located within the Lower West Branch of the DuPage River Watershed and the Spring Brook–DuPage River Watershed. There are several receiving waters, tributary to the West Branch of the DuPage River, which are located within the City. These streams include Ferry Creek, Cress Creek and the Steeple Run watershed.

The major Watersheds and receiving waters are presented in **Figure 1 Map or Major Sub-watershed and Receiving Waters.**

DuPage River Watershed

The DuPage River, consisting of the East and West Branches as well as the mainstem Lower DuPage, is the largest tributary to the Des Plaines River Basin, covering 353 square miles. The watershed is unique in that it is not a true headwater stream. The Lower DuPage River begins at the joining of two other rivers. The watershed is also unique in that the IEPA includes a portion of the Illinois and Michigan Canal, as a part of the watershed.

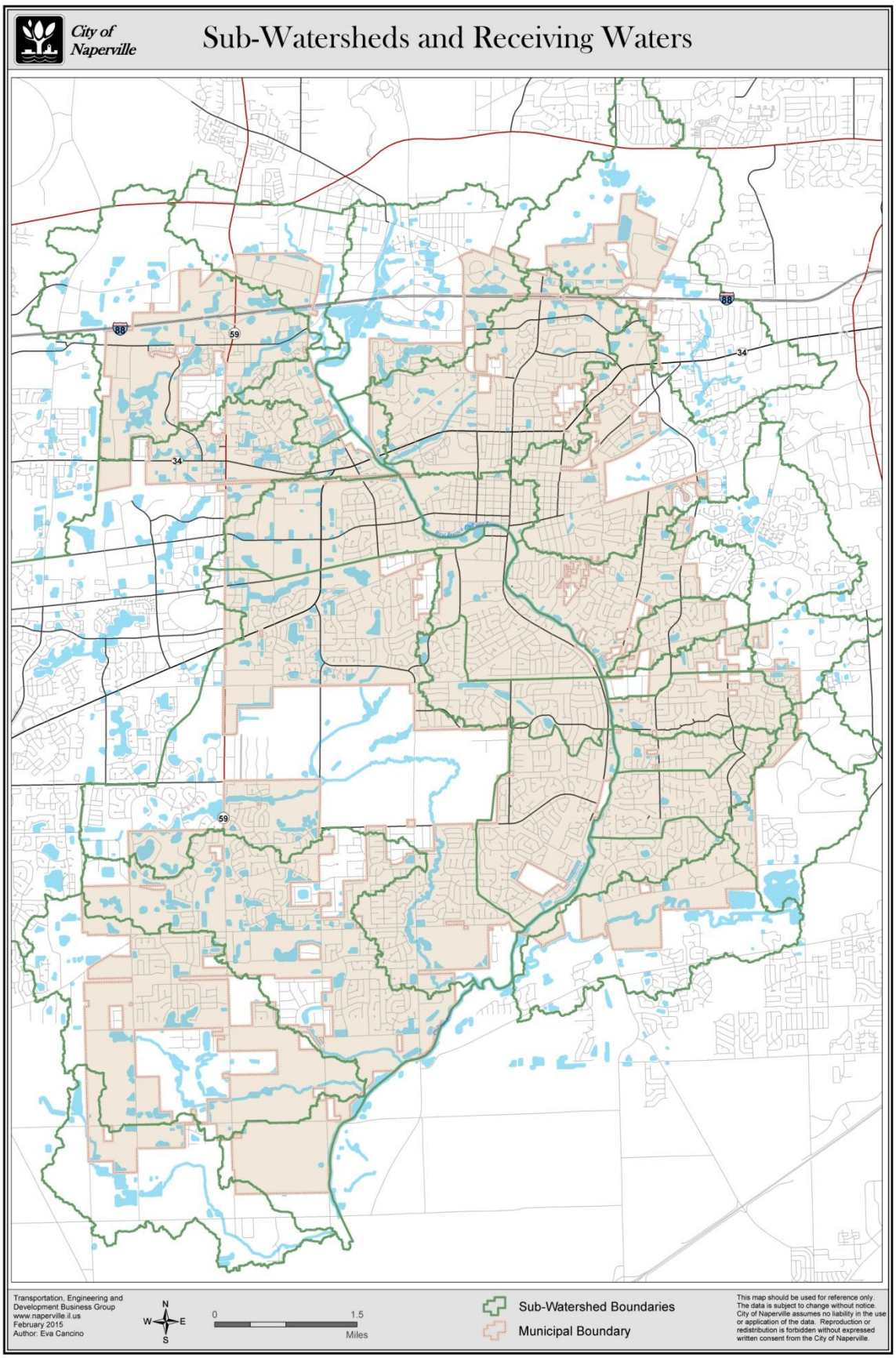
The East Branch DuPage River watershed

- Encompasses 81 square miles of central DuPage and northern Will Counties.
- The tributaries to the East Branch River include Lacey Creek, Armitage Ditch, St. Joseph Creek and Prentiss Creek.
- The main stem of the East Branch is approximately 26 linear miles.
- Sixteen municipalities are located within the watershed.
- The land uses found in the East Branch watershed are residential (53.6%) and urban (20.5%).

The West Branch DuPage River watershed

- Encompasses 128 square miles of DuPage, Cook and northern Will Counties.
- There are ten tributaries to the West Branch DuPage River: Klein Creek, Winfield Creek, Kress Creek, Ferry Creek, Spring Brook #1 and Tributaries #1-5.
- The main stem of the West Branch is approximately 34 linear miles.
- Twenty-one municipalities are located within the watershed.
- The land uses found in the West Branch watershed are residential (44.2%) and urban (23.4%).

Figure 1 Map or Major Sub-watershed and Receiving Waters.



2 Program Management

This Chapter describes the organizational structures of the City of Naperville, the County and IEPA. It further discusses the roles and responsibilities of the various involved parties.

2.1 Implementation of this SMPP

The SMPP includes detailed discussions on the types of tasks that are required to meet the permit conditions under the NPDES II program and how to perform these tasks. **Appendix 5.12** includes related tracking forms. The tracking forms are broken out into three categories (based on the frequency of occurrence). There are three different tracking forms included: Annual, As-Needed and On-Going. These forms should be printed annually and the progress of all tasks tracked. At the end of the yearly reporting period (March 1 – February 28/29) the forms should be filed in a binder to document SMPP related activities to IEPA, or their authorized agent, in the case of an audit. It is anticipated that implementation of this SMPP constitutes compliance with the program. The SMPP must be posted on the City of Naperville website located at http://naperville.il.us.

2.2 Intra-Department Coordination

The City Council is the policy and budget setting authority for the City of Naperville. The Public Works Department and the Transportation, Engineering and Development (T.E.D.) Business Group work together to implement this SMPP. The Stormwater Coordinator has primary responsibility for managing the overall program.

2.2.A Stormwater Coordinator

The City of Naperville Transportation, Engineering and Development Business Group Director/City Engineer is the Stormwater Coordinator and is responsible for the oversight and implementation of this SMPP. The Stormwater Coordinator has many different responsibilities, he/she:

- Is the lead contact for coordination with the DuPage County Stormwater Management, the Illinois Environmental Protection Agency, contractors, the development community and other external regulatory agencies;
- Understands the requirements of ILR40, ensures that the SMPP meets the requirements of the permit and that the City of Naperville effectively implements the SMPP;
- Ensures that the City of Naperville complies with all minimum DuPage County Countywide Stormwater & Floodplain Ordinance and Naperville Municipal Code provisions;
- Ensures that the Municipal Facilities comply with all minimum ILR40 permit requirements;
- Is aware when a Municipal Project is required to be authorized under the ILR10 permit. In these cases the Stormwater Coordinator should ensure that the NOI is received by IEPA at least 30 days prior to the start of construction; and
- Assists the development community in understanding when a ILR10 permit is required and whether construction sites comply with the general ILR10, the Naperville Municipal Code and DuPage County Countywide Stormwater & Floodplain Ordinance permit conditions; and

- Should understand the role illicit discharges play in the overall NPDES II program. In general, an incidence of non-compliance must be filed with IEPA for illicit discharges exiting an MS4's outfall into a receiving water. Additionally, if the illicit discharge is generated by a construction site, it may be necessary for both the applicant and the MS4 to file the ION form with IEPA.

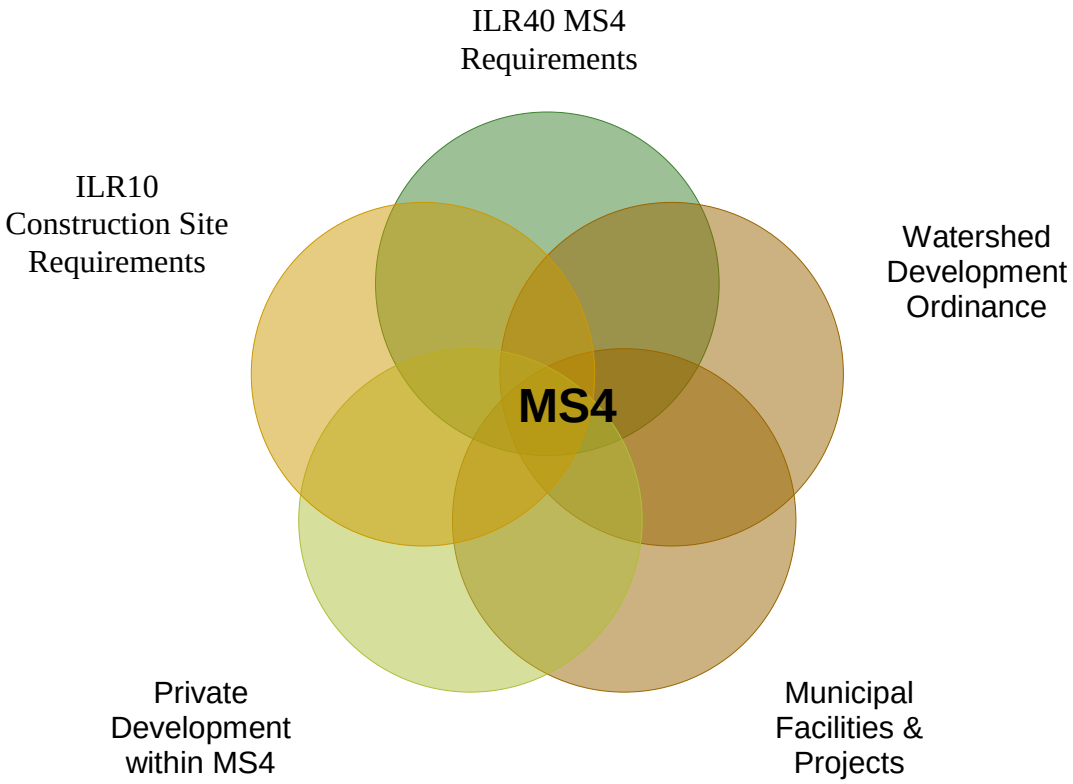


Figure 2: **Roles of MS4**
provided by Gewalt Hamilton & Associates

2.2.B Engineering Department

Transportation, Engineering and Development Business Group personnel support the Stormwater Coordinator in obtaining compliance with both the NDPES and CSFPO programs.

The Transportation, Engineering and Development Business Group Director/City Engineer is also the Stormwater Ordinance Administrator with respect to the administration and enforcement of the DuPage County CSFPO. The design and construction of all public projects shall comply with the CSFPO. As the Stormwater Ordinance Administrator, the City of Naperville Transportation, Engineering and Development Business Group Director/City Engineer has the responsibility to concur that projects meet CSFPO standards prior to the issuance of permits, and oversee site inspections during construction. Refer to Chapter 3.4-3.5 for additional information on this process.

2.2.C Public Works Department

Public Works personnel carry out infrastructure maintenance activities within the MS4. Public Works personnel, along with personnel from the City's Code Enforcement Team are designated as the primary entities responsible for performing the duties specified under Chapter 3.3 Illicit Discharge Detection and Elimination and Chapter 3.6 Pollution Prevention and Good Housekeeping.

2.3 Coordination with DuPage County Stormwater Management

Coordination between the MS4 and the DuPage County Stormwater Management occurs through both participation in the DuPage County sponsored forums and through the Partial Waiver Community Status under the DuPage County CSFPO. The MS4's Stormwater Coordinator is the lead contact for participation in the forums. If the MS4 is a Partial Waiver Community, the MS4's Enforcement Officer is responsible for enforcement of the CSFPO and is designated by the MS4 to the DuPage County Stormwater Management.

2.4 Coordination with Consultants

The MS4 may enlist the services of consultants to assist in the implementation of the CSFPO (including, but not limited to, plan review, site inspections and enforcement), and the design of MS4 projects. The Stormwater Coordinator has the responsibility of administering these contracts.

2.5 Coordination of Contractors

The City of Naperville may hire contracted services. The City of Naperville also has a responsibility to educate contractors hired by the municipality in requirements of this SMPP and applicable requirements of the ILR40 and ILR10 permits. Furthermore, the municipality has the responsibility to ensure that the development community hires contractors which meet the qualifications necessary under the program, refer to Chapter 3.4.B for additional information on qualified personnel.

2.6 Coordination with the Public

Coordination with the Public occurs on several levels. The Public Education and Outreach Program of this SMPP is discussed in Chapter 3.1. The Public Participation and Involvement Program of this SMPP is discussed in Chapter 3.2. The public has the opportunity to comment on proposed preliminary and final plats through the Plan and Zoning Commission and City Council meeting process established in the Municipal Code.

2.7 Coordination with the IEPA

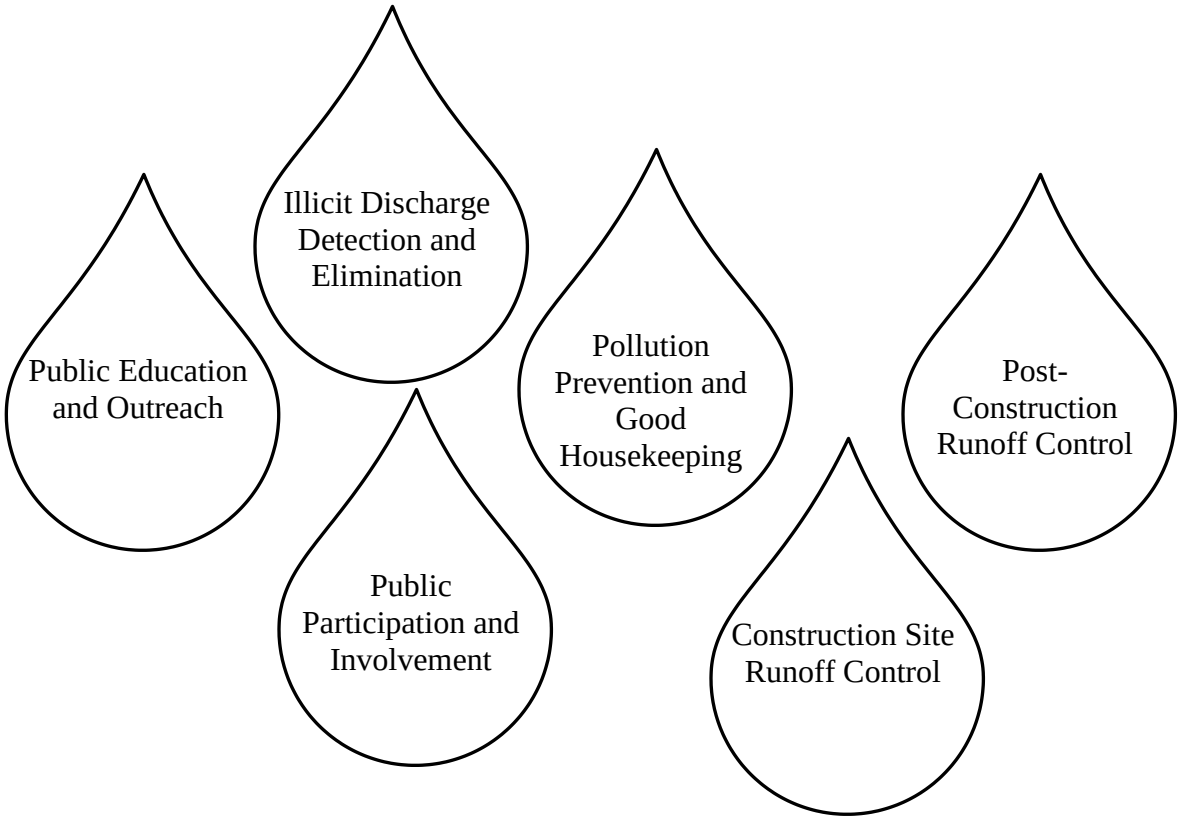
The City of Naperville is required to complete annual reports which describe the status of compliance with the ILR40 permit conditions and other related information as presented on the annual report template provided by the QLP. The annual report must be posted on the City of Naperville's website and submitted to the IEPA by the first day of June each year. Annual reporting to IEPA should consist of "implemented SMPP" for all tasks completed in accordance with this SMPP. Additional information should be provided for areas of enhancement or tasks not completed. The City of Naperville has always co-reported their activities along with DuPage County on an annual basis, with the City providing the County with their annual report and the County actually submitting the reports.

Records regarding the completion and progress of the SMPP commitments must be kept by the community. The task sheets, described in Chapter 2.1, should be updated throughout the year. The completed task sheets should be located in a binder with necessary supporting documentation. The binder must be available for inspection by both IEPA and the general public.

2.8 Coordination with the Development Community

The City of Naperville has a responsibility to assist the development community in understanding when a ILR10 permit is required and whether construction sites comply with the general ILR10, the DuPage County Countywide Stormwater & Floodplain Ordinance and Naperville Municipal Code permit conditions. The City of Naperville should understand the role illicit discharges play in the overall NPDES II program. In general, an incidence of non-compliance must be filed with IEPA for illicit discharges exiting an MS4's outfall into a receiving water. Additionally, if the illicit discharge is generated by a construction site, it may be necessary for both the applicant and the MS4 to file the ION form with IEPA.

3 The Program



This Stormwater Management Program Plan includes six components, each of which is necessary in an effort to reduce/eliminate stormwater pollution in receiving water bodies. Chapter 3.1 describes the efforts to educate the public about stormwater pollution and stormwater pollution prevention. The manner in which City of Naperville incorporates public participation and involvement into the SMPP is explained in Chapter 3.2. Chapter 3.3 describes the approach to detecting and eliminating stormwater illicit discharges. Construction and post construction runoff control is addressed in Chapters 3.4 and 3.5. Lastly, Chapter 3.6 discusses responsibilities for the care and upkeep of its general facilities, associated maintenance yards, and municipal roads and to minimize pollution. This chapter also discusses necessary training for employees on the implementation of the SMPP.

3.1 Public Education and Outreach

The City of Naperville conducts public education programs that inform the community of potential impacts to receiving waters and the contributions the public can make to reduce pollutants in stormwater runoff. The City of Naperville targets public schools, public libraries, developers, contractors, homeowners, business owners, boaters, and the remaining general public as part of this Public Education and Outreach Program.

The City of Naperville, in cooperation with the QLP, utilizes a variety of methods to educate and provide outreach to the public about the importance of managing pollutants that potentially could enter the stormwater system. The program includes the following activities which are discussed in greater detail in this chapter.

- Distribute information sheets regarding stormwater best management practices (BMP), water quality BMP, and proper hazardous waste use and disposal.
- Maintain a water quality/stormwater section in the City of Naperville's website.
- Attend/sponsor outreach activities to homeowners / property owner associations, commercial / industrial facilities, schools, and other events.
- Coordinate, publicize, and participate in the DuPage River/Salt Creek Work Group and the Lower DuPage River Coalition events.
- Maintain the City of Naperville's website which offers links to additional educational information, and ways to contact City of Naperville personnel.

3.1.A Distribution of Paper Materials

City of Naperville actively pursues the acquisition of educational sheets prepared by the QLP, IEPA, USEPA, Center for Watershed Protection, Chicago Metropolitan Agency for Planning "CMAP"(previously Northeastern Illinois Planning Commission "NIPC"), University of Wisconsin Extension, Conservation Foundation, and other agencies and organizations. The City of Naperville maintains a list of available publications in the SMPP binder and on the web-site. The City of Naperville lists the Public Works Department telephone number on all City of Naperville outreach publications to encourage residences to contact City of Naperville with environmental concerns.

Types of materials distributed include:

- The "Guidelines for Draining Swimming Pools" fact sheet,

- The “Protect Our Water” door hanger,
- Informational sheets/pamphlets regarding storm water best management practices,
- Informational sheets/pamphlets regarding water quality best management practices,
- Informational sheets/pamphlets regarding construction site activities (soil erosion and sediment control best management practices),
- Informational sheets/pamphlets regarding the hazards associated with illegal discharges and improper disposal of waste and the manner in which to report such discharges.
- Informational sheets/pamphlets regarding green infrastructure strategies such as green roofs, rain gardens, rain barrels, bioswales, permeable piping, dry wells and permeable pavement.
- Informational sheets/pamphlets published by DuPage County Green Initiatives and the Will County Land Use Department regarding proper hazardous waste use and disposal, and
- A water quality/storm water section in the municipal newsletter.

Publications are provided in the following manner:

- At take-a-away racks, at annual outreach events,
- The municipal newsletter, a quarterly publication,
- At Earth Day/Green Day events held in the community, and
- At scheduled meetings with the general public. These meetings are on an as needed or as requested basis and may be with the home owners associations, businesses, or local schools.

3.1.B Classroom Education

When permitted, the City of Naperville conducts classroom presentations at local schools. A Household Hazardous Waste (HHW) representative prepares the presentation with the City of Naperville support. The City of Naperville keeps a log of event dates and participating schools.

3.1.C Web Site

The City of Naperville's web site includes stormwater quality specific elements. The web-site gives information regarding water quality, solid waste and hazardous material, green infrastructure, illicit discharges, stormwater and general environmental health; refer to Chapter 3.1.A for a more detailed description of the type of information to be posted. The web-site is updated by the City of Naperville staff and tracked for hits. A significant amount of information is made available through links to other educational and informational sites.

This SMPP, the NOI and any previous annual reports must be posted on the City of Naperville's website. Each year's annual report must be posted on the City of Naperville's website and submitted to the IEPA by the first day of June each year.

3.1.D Outreach Events

When possible, the City of Naperville attends and/or sponsors outreach events and scheduled meetings with the general public. These events are held on an as needed or as requested basis. Audiences may include the home owners associations, lake associations, businesses, and neighborhood groups.

3.1.E Technical Workshops

The QLP periodically hosts or co-host workshops for the general public that focus on specific stormwater topics. These workshops typically discuss stormwater topics currently of interest within the city and watershed region. They offer the opportunity to share information and facilitate a collective focus on potential solutions to the challenges faced by the city, watershed region, and other stakeholders. The City publicizes these events at take-a-way racks and on the web-site.

3.1.F Storm Drain Stenciling & Markers

The City of Naperville supports the efforts of private entities to stencil or apply stickers to inlets, and their purchase of factory stamped inlet grates. These efforts apply messages at storm drain inlets with the intent of assisting in educating the public about stormwater runoff pollution. The City of Naperville efforts include:

- Providing the "Storm Drain Stenciling" brochure (by The Conservation Foundation) and assisting Home Owners Associations, school groups etc. that express interest.
- Will require all new development to furnish stamped inlet grates as of March 2016.
- The City of Naperville will begin to require that all new rehabilitated open lid storm sewer structures will have the "No Dumping Drains To River" stamped on the inlet grate in 2016.

3.1.G Household Hazardous Wastes

The average garage contains a lot of products that are classified as hazardous wastes, including paints, stains and solvents, used motor oil, pesticides and cleaning products. While some household hazardous waste (HHW) may be dumped into storm drains, most enters the storm drain system as a result of outdoor rinsing and cleanup. Improper disposal of HHW can result in acute toxicity to downstream aquatic life. The desired neighborhood behavior is to bring hazardous material to the HHW drop off facility, and to use appropriate pollution prevention techniques when conducting rinsing, cleaning and fueling operations. The City of Naperville is home to the Regional Household Hazardous Waste Facility and encourages resident participation. These include:

- Mass media campaigns to educate residents about proper outdoor cleaning/ rinsing techniques
- Conventional outreach materials notifying residents about HHW

3.1.G.1 Environmental Collection Campus

The City of Naperville provides solid waste management programs for local and surrounding areas. The Environmental Collection Campus located adjacent to the Public Works Service Center includes a Recycling Drop-off Center (open to all City of Naperville residents) and the Household Hazardous Waste (HHW) Drop-off facility (open to all Illinois residents). These facilities are aimed at reducing our reliance on landfills through source reduction, recycling and energy recovery. In general, the drop-off facilities help residents dispose of problem wastes, such as household chemicals, fluorescent bulbs, batteries, oil based paint, and electronic equipment,. These recycling programs are targeted at residential markets in order to divert as much solid waste as possible from reaching landfills. The City of Naperville also administers its' own public information and education efforts events, and publishes various resources.

3.1.H Septic System Maintenance

Failing septic systems can be a major source of bacteria, nitrogen, and phosphorus, depending on the overall density of systems present in a sub watershed. Fortunately most of Naperville properties are connected to a separate wastewater collection system managed by the city and any remaining septic systems exist in unincorporated lands regulated by DuPage or Will County. Despite the majority of properties with connection to the separate wastewater collection systems, properties with septic system failure results in illicit surface or subsurface discharges to streams. Septic systems are a classic case of out of sight and out of mind. Many owners take their septic systems for granted, until they back up or break out on the surface of their lawn. Subsurface failures, which are the most common, go unnoticed. In addition, inspections pump outs, and repairs can be costly, so many homeowners tend to put off the expense until there is a real problem. Lastly, many septic system owners are not aware of the link between septic systems and water quality. The City employs a standard policy that when a property is annexed into the City of Naperville the property owner must lawfully abandon the septic system and connect to the city wastewater collection system. The city relies on coordination with DuPage and Will County to monitor and sustain property owner compliance with good septic system operation.

3.1.I Vehicle Fluid Maintenance

Dumping of automotive fluids into storm drains can cause major water quality problems, since only a few quarts of oil or a few gallons of antifreeze can severely degrade a small stream. Dumping fluids delivers hydrocarbons, oil and grease, metals, xylene and other pollutants to streams, which can be toxic during dry-weather conditions when existing flow cannot dilute these discharges. The major culprit has been the backyard mechanic who changes his or her own automotive fluids. The City employs a range of tools to improve septic system maintenance. These include:

- Outreach materials distributed at auto parts store and service stations

- Community oil recycling centers – HHW site
- Directories of used oil collection stations
- Pollution hotlines
- Fines and other enforcement actions

3.1.J Car Washing

Car washing is a common neighborhood behavior that can produce transitory discharges of sediment, nutrients and other pollutants to the curb, and ultimately the storm drain. Communities have utilized many innovative outreach tools to promote environmentally safe car washing, including:

- Media campaigns
- Brochures promoting nozzles with shut off valves
- Storm drain plug and wet vacuum provisions for charity car wash events
- Water bill inserts promoting environmentally safe car washing products
- Discounted tickets for use at commercial car washes

3.1.K Pool Dewatering

Chlorinated water discharged to surface waters, roadways or storm sewers has an adverse impact on local stormwater quality. High concentrations of chlorine are toxic to wildlife, fish and aquatic plants. The pH of the water should be between 6.5 and 8.5. Algaecides such as copper or silver can interrupt the normal algal and plant growth in receiving waters and should not be present when draining. Prepare appropriately before draining down a pool. It is recommended that one of the following measures be used:

1) De-chlorinate the water in the pool prior to draining through mechanical or chemical means; these types of products are available at local stores.

2) De-chlorinate the water in the pool through natural means. Pool water must sit at least 2 days with a reasonable amount of sun, after the addition of chlorine or bromine. It is recommended that the chlorine level be tested after 2 days to ensure that concentrations are at a safe level (below 0.1-mg/l).

3) Drain the pool slowly over a several day period across the lawn; or drain directly into the sanitary sewer using the following additional guidelines:
   a) Avoid discharging suspended particles (e.g. foreign objects blown into the pool like leaves, seedlings, twigs etc) with pool water.

b) When draining your pool, do not discharge directly onto other private properties or into public right-of-way including storm sewer inlets.

The City of Naperville has a fact sheet, ***Pool Dewatering Fact Sheet*** **(Appendix 5.8),** stating the above information. Outreach efforts (such as including information in the news letter, other mail-outs or adding information to the take-a-way racks) should occur each fall, preferably September.

3.2 Public Participation and Involvement

The public participation and involvement program allows input from citizens during the development and implementation of the SMPP. The SMPP should be evaluated annually. Major highlights and deficiencies should be noted annually and the plan revised accordingly on a minimum 5-yr basis, or as necessary.

3.2.A Public Review Process

Notice of the SMPP is published in the citywide newsletter and advertised at the HHW site. Comments on the SMPP are continually accepted through the web-site, phone calls or other media. Comments are evaluated for inclusion and incorporated into the next revision of the SMPP as appropriate.

3.2.B Complaints, Suggestions and Requests

Calls are screened, logged and routed to the appropriate department for action. General program related calls are directed to the City Engineer, or designee. Construction activity related telephone calls are directed to the City Engineer, or designee. Illicit Discharge, storm sewer, and other related stormwater runoff concerns are directed to the City Engineer. The City of Naperville maintains a website which enables and encourages public contact on these issues.

3.2.C Watershed Planning and Stakeholders Meetings

The City of Naperville participates (and encourage the participation of local stakeholders) in the QLP or other sponsored watershed planning events. The City of Naperville will adopt Watershed Plans per the direction and in coordination with the QLP.

3.2.D Illicit Discharge/Illegal Dumping Hotline

The City of Naperville maintains, operates and publicizes a call in phone number where parties can contact the City with environmental concerns and report illegal dumping. Primary advertisement venues include the website and all related municipal publications. Telephone calls received from residents, other internal Departments or other agencies are directed to the city non-emergency dispatch 630-420-6187. This dispatcher will assess the nature of the report and either dispatch the city Hazmat Team or direct the matter to the Transportation, Engineering and Development Business Group – Code Team. Incidents involving IDDE will be logged on the **Illicit Discharge Tracking Form** (**Appendix 5.10)**.

3.2.E Regional Municipal/County Intergovernmental Advisory Committee

The City of Naperville participates in Municipal/County Intergovernmental Advisory Committee meetings and events hosted by the QLP. The city maintains representation on the stormwater committees in both DuPage and Will County.

3.2.F Adopt-A-Road

The City of Naperville Public Works Department locally administers an Adopt-A-Road Program for roadways within the municipal limits. The objective of the program is to improve and promote the image of the entire community by allowing residents and organizations to participate in maintaining and enhancing Naperville's streetscape.. Participants agree to pick up litter from a section of the roadside for two years or more.

3.3 Illicit Discharge Detection and Elimination

Currently, illicit discharges (defined in 40 CFR 122.26(B)(2)) contribute considerable pollutant loads to receiving waters. There are two primary situations that constitute illicit discharges; these include non-stormwater runoff from contaminated sites and the deliberate discharge or dumping of non-stormwater. Illicit discharges can enter the storm sewer system as either an indirect or direct connection.

3.3.A Regulatory Authority

Effective implementation of an IDDE program requires adequate legal authority to remove illicit discharges and prohibit future illicit discharges. This regulatory authority is achieved through adoption of the CSFPO, the City of Naperville Ordinance #13-059. Additionally, IEPA has regulatory authority to control pollutant discharges and can take the necessary steps to correct or remove an inappropriate discharge over and above SM4 jurisdiction.

3.3.A.1 Watershed Development Ordinance

The City of Naperville Municipal Code prohibits illicit discharges as part of the development process. These provisions are applicable for regulated development activities as defined by the Municipal Code. Regulated developments are required to meet the soil erosion and sediment control standards of the Municipal Code. Furthermore, the Municipal Code requires that the applicant prohibit illicit discharges into the stormwater management system generated during the development process.

The Municipal Code allows the City of Naperville to require inspections, performance bonds, and to adopt/enforce violation procedures. These tools assist in achieving complaint construction sites. These items are further discussed in Chapters 3.4 and 3.5.

3.3.A.2 Illicit Discharge Ordinance

The City of Naperville created and adopted an Illicit Discharge Ordinance, #09-148. The Ordinance as defined in the Municipal Code is the mechanism to allow for the execution and enforcement of compliance.

3.3.A.3 Subdivision and Public Utility Ordinance

The City of Naperville created and adopted Subdivision and Public Utility Ordinances and regulations. These Ordinances are administered as directed in the Municipal Code by city department and can be used to further support the activities required by the SMPP.

3.3.B Understanding Outfalls and Illicit Discharges

Understanding the potential locations and the nature of illicit discharges in urban watersheds is essential to find, fix and prevent them.

3.3.B.1 Pollutant Indicators

3.3.B.1.a PHYSICAL INDICATORS

Adapted from New Hampshire Estuaries Project and the IDDE Guidance Manual by the Center for Watershed Protection.

Odor

Water is a neutral medium and does not produce odor; however, most organic and some inorganic chemicals contribute odor to water. Odor in water may originate from municipal and industrial waste discharges, from natural sources such as decomposition of vegetative matter, or from associated microbial activity.

Table 1: Odor or Potential Illicit Discharges (adapted from CWP)

Odor	**Possible Cause**
Sewage	Wastewater treatment facilities, domestic waste connected into storm drain, failing septic system
Sulfide (rotten eggs)	Decaying organic waste from industries such as meat packers, dairies and canneries
Rancid/sour	Many chemicals, including pesticides and fertilizers, emit powerful odors that may produce irritation or stinging sensations.
Petroleum/gas	Industry associated with vehicle maintenance or petroleum product storage; gas stations
Laundry	Laundromat, dry cleaning, household laundry

Color

Color is a numeric computation of the color observed in a water quality sample, as measured in cobalt-platinum units. Both industrial liquid wastes and sewage tend to have elevated color values. Unfortunately, some "clean" flow types can also have high color values. A color value higher than 500 units may indicate an industrial discharge.

Table 2: Color of Potential Illicit Discharges (adapted from CWP)

Water Color	Possible Cause	Images
Brown Water – water ranging in color from light-tea to chocolate milk; it may have a rotten egg odor.	Human causes may be eroded, disturbed soils from constr. sites, animal enclosures, destabilized stream banks and lake shore erosion due to boat traffic.	
Yellow –	Human causes may include textile facilities, chemical plants or pollen.	
Gray Water – water appears milky and may have a rotten egg smell and/or soap odor. There may also be an appearance of cottony slime.	Human causes may be illicit connections of domestic wastewater; untreated septic system discharge; illegal boat discharge; and parking lot runoff.	
Green Water – ranging from blue green to bright green color and may impart odor. Conditions typically occur from May to October.	Human causes may be over-fertilizing lawns, boat discharges, septic systems, agriculture operations, or discharging poorly treated wastewater.	
Orange/Red -	Human causes may include meat packing facilities or dyes.	
Green Flecks – resembling floating blue-green paint chips or grass clippings. These *Blooms* and are potentially toxic.	Human cause is excessive nutrients. Fertilizers used on lawns can contaminate surface and ground water.	

Table 2 (continued)

Water Color	Possible Cause	Images
Green Hair-Like Strands - bright or dark green, resembling cotton candy and often in floating mats.	Human causes are excessive nutrients from fertilizers or failed on-shore septic systems.	
Multi-Color Water – various or uniform color, other than brown, green or gray. For rainbow sheen see floatables.	Human causes include oil or hazardous waste spill, paint and paint equipment rinsed into storm drains or into failing septic systems.	

Turbidity

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.

Turbidity and color are related terms but are not the same. Remember, turbidity is a measure of how easily light can penetrate through the sample bottle, whereas color is defined by the tint or intensity of the color observed.

Figure 3
Turbidity Severity Examples
(adapted from CWP)

Turbidity
Severity 1

Turbidity
Severity 2

Turbidity
Severity 3

Floatables

The presence of sewage, floating scum, foam, oil sheen, or other materials can be obvious indicators of an illicit discharge. However, trash originating from areas adjacent to the outfall is this section.

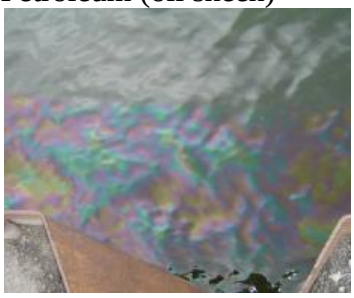
- If you think the floatable is sewage, you should automatically assign it a severity score of three since no other source looks quite like it.
- Suds are rated based on their foaminess and staying power. A severity score of three is designated for thick foam that travels many feet before breaking up. Natural foam breaks apart easily, can be brown, black or yellowish and may smell fishy or musty.
- Surface oil sheens are ranked based on their thickness and coverage. In some cases, surface sheens may not be from oil discharges, but instead created by in-stream processes. A petroleum sheens doesn't break apart and quickly flows back together.

Figure 4
Natural Sheen versus Synthetic
(adapted from CWP)

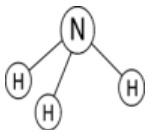
Sheen from natural bacteria forms a swirl-like film that cracks if disturbed

Synthetic oil forms a swirling pattern

Table 3: Floatables in Potential Illicit Discharges (adapted from CWP)

Floatables	
Sewage 	Human causes include connection of domestic wastewater, leaking sanitary sewers or failing septic systems.
Suds and Foam – 	Common human causes of unnatural foam include leaking sewer lines, boat discharges, improper sewer connections to storm sewers and detergents from car washing activities.
Petroleum (oil sheen) 	Human causes may include leaking underground storage tank or illegal dumping.
Grease 	Common human causes include overflow from sanitary systems (due to clogging from grease) and illegal dumping.

Ammonia

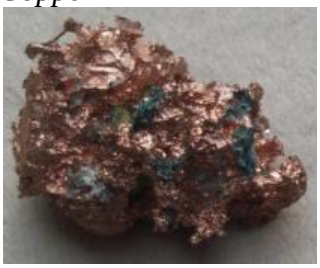


Ammonia is a good indicator of sewage, since its concentration is much higher there than in groundwater or tap water. High ammonia concentrations (>50 mg/l) may also indicate liquid wastes from some industrial sites. Ammonia is relatively simple and safe to analyze. Some challenges include the potential generation of wastes from non-human sources, such as pets or wildlife.

Chlorine

Chlorine is used throughout the country to disinfect tap water, except where private wells provide the water supply. Chlorine concentrations in tap water tend to be significantly higher than most other discharge types. Unfortunately, chlorine is extremely volatile, and even moderate levels of organic materials can cause chlorine levels to drop below detection levels. Because chlorine is non-conservative, it is not a reliable indicator, although if very high chlorine levels are measured, it is a strong indication of a water line break, swimming pool discharge, or industrial discharge from a chlorine bleaching process.

Copper



Concentrations of copper in dry-weather flows can be a result of corrosion of water pipes or automotive sources (for example, radiators, brake lines, and electrical equipment). The occurrence of copper in dry-weather flows could also be caused by inappropriate discharges from facilities that either use or manufacture copper-based products. A copper value of >0.025-mg/L indicates an industrial discharge is present.

Industrial sources of copper include the following:

- Copper manufacturing (smelting),
- Copper metal processing/scrap remelting,
- Metal plating,
- Chemicals manufacturing,
- Analytical laboratories,
- Power plants,
- Electronics,
- Wood preserving, and
- Copper wire production.

In each of these industries, wastes containing copper would normally be discharged to a treatment facility. Sludge from the waste treatment facility, whether on-site (including lagooning) or publicly operated treatment facilities, would contain copper. If the sludge (or the treatment process) is not managed properly, copper could enter the storm sewer system.

Detergents

Most illicit discharges have elevated concentration of detergents. Sewage and washwater discharges contain detergents used to clean clothes or dishes, whereas liquid wastes contain detergents from industrial or commercial cleansers. The nearly universal presence of detergents in illicit discharges, combined with their absence in natural waters or tap water, makes them an excellent indicator. Research has revealed three indicator parameters that measure the level of detergent or its components-- surfactants, fluorescence, and surface tension. Surfactants have been the most widely applied and transferable of the three indicators. Fluorescence and surface tension show promise, but only limited field testing has been performed on these more experimental parameters; therefore these are not tested. Refer to Boron and Surfactants descriptions.

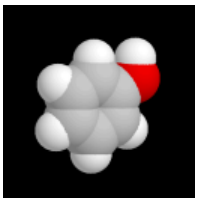
E. coli, Enterococci and Total Coliform

Each of these bacteria is found at very high concentrations in sewage compared to other flow types, and is a good indicator of sewage or seepage discharges, unless pet or wildlife sources exist in the subwatershed. Overall, bacteria are good supplemental indicators and can be used to find “problem” streams or outfalls that exceed public health standards. A Fecal Coliform count greater than 400 per 100 mL indicates waste water contamination.

Fluoride

Fluoride, at a concentration of two parts per million, is added to drinking water supplies in most communities to improve dental health. Consequently, fluoride is an excellent conservative indicator of tap water discharges or leaks from water supply pipes that end up in the storm drain. Fluoride is obviously not a good indicator in communities that do not fluorinate drinking water, or where individual wells provide drinking water. Flouride levels greater than 0.6-mg/L indicate a potable water source is connected to the stormwater system.

Phenol



Phenol is a very commonly occurring chemical and can be found in foods, medicines, and cleaning products, as well as industrial products and by-products. Generally, the appearance of phenols in stormwater would indicate a misconnected industrial sewer to a storm drain or ditch. Exceptions would include runoff from treated wood storage yards (for example, treated lumber and telephone poles) and improper disposal (flash dumping) of cleaning products. A phenol value greater than 0.1-mg/L indicate an illicit discharge is present.

Industrial sources of phenol include the following:

- Chemical manufacturing (organic),
- Textile manufacturing,
- Paint and coatings manufacturing,
- Metal coating,
- Resin manufacturing,
- Tire manufacturing,
- Plastics fabricating,
- Electronics,
- Oil refining and re-refining,
- Naval stores (turpentine and other wood treatment chemicals),
- Pharmaceutical manufacturing,
- Paint stripping (for example, automotive and aircraft),
- Military installations (rework and repair facilities),
- Coke manufacturing,
- Iron production, and
- Ferro-alloy manufacturing.

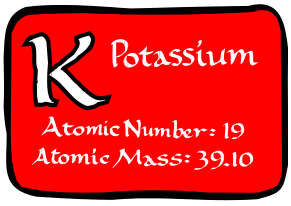
Other sources of phenol include improper handling and disposal of cleaning compounds by institutions such as hospitals and nursing homes.

pH

Potential ID Range: <6.5 and > 8.5

Most discharge flow types are neutral, having a pH value around 7, although groundwater concentrations can be somewhat variable. pH is a reasonably good indicator for liquid wastes from industries, which can have very high or low pH (ranging from 3 to 12). The pH of residential wash water tends to be rather basic (pH of 8 or 9). The pH of a discharge is very simple to monitor in the field with low cost test strips or probes. Although pH data is often not conclusive by itself, it can identify problem outfalls that merit follow-up investigations using more effective indicators.

Potassium



Potassium is found at relatively high concentrations in sewage, and extremely high concentrations in many industrial process waters. Consequently, potassium can act as a good first screen for industrial wastes, and can also be used in combination with ammonia to distinguish wash waters from sanitary wastes. An ammonium to potassium ratio of >1 or <1indicate waste water or wash water discharge respectively. A potassium value of >20-mg/l is a good indicator for industrial discharges.

Surfactants

Surfactants are the active ingredients in most commercial detergents, and are typically measured as Methyl Blue Active Substances (or MBAS). They are a synthetic replacement for soap, which builds up deposits on clothing over time. Since surfactants are not found in nature, but are always present in detergents, they are excellent indicators of sewage and wash waters. The presence of surfactants in cleansers, emulsifiers and lubricants also makes them an excellent indicator of industrial or commercial liquid wastes. A surfactant value of > 0.25-mg/L within residential areas indicates that either a sewage or washwater is present in the stormwater; a value of >5-mg/L within non-residential areas indicates that there is an industrial discharge (refer to Table 46 from the Illicit Discharge Detection and Elimination manual by the Center for Watershed Protection for use in determining industrial flow types).

3.3.C Indirect Connection Program

Indirect connections are subtle connections, such as dumping or spillage of materials into storm sewer drains. Flash dumping is a common type of indirect connection. Generally, indirect modes of entry produce

intermittent or transitory discharges, with the exception of groundwater seepage. There are five main modes of indirect entry for discharges.

3.3.C.1 Groundwater Seepage

Seepage discharges can be either continuous or intermittent, depending on the depth of the water table and the season. Groundwater seepage usually consists of relatively clean water that is not an illicit discharge by itself, but can mask other illicit discharges. If storm drains are located close to sanitary sewers, groundwater seepage may intermingle with diluted sewage. Addressing seepage that is observed during the outfall screening process is described in more detail in this Chapter.

3.3.C.2 Spills

These transitory discharges occur when a spill travels across an impervious surface and enters a storm drain inlet. Spills can occur at many industrial, commercial and transport-related sites. A very common example is an oil or gas spill from an accident that then travels across the road and into the storm drain system. The Spill Response Plan is described in Chapter 3.6.B.

3.3.C.3 Dumping

Dumping a liquid into a storm drain inlet: This type of transitory discharge is created when liquid wastes such as oil, grease, paint, solvents, and various automotive fluids are dumped into the storm drain. Liquid dumping occurs intermittently at sites that improperly dispose of rinse water and wash water during maintenance and cleanup operations. A common example is cleaning deep fryers in the parking lot of fast food operations. The Storm Drain Stenciling, Household Hazardous Wastes, Vehicle Fluid Maintenance and Pool Dewatering programs are designed to minimize dumping; these programs are described in Chapter 3.1.F, G, I and K. Additionally, the City maintains a Illegal Dumping Hotline which is described in Chapter 3.2.D. The procedure for handling a dumping incident is described in Chapter 3.6.B.1.

3.3.C.4 Outdoor washing activities

Outdoor washing may or may not be an illicit discharge, depending on the nature of the generating site that produces the wash water. For example, hosing off individual sidewalks and driveways may not generate significant flows or pollutant loads. On the other hand, routine washing of fueling areas, outdoor storage areas, and parking lots (power washing), and construction equipment cleanouts may result in unacceptable pollutant loads. Individual washing activities are addressed through the Public Education and Outreach Program in Chapter 3.1.J whereas observed/documented routine washing activities should be addressed through the Removal of Illicit Discharges Procedure in Chapter 3.3.E.4.

3.3.C.5 Non-target irrigation from landscaping or lawns

Irrigation can produce intermittent discharges from over-watering or misdirected sprinklers that send tap water over impervious areas. In some instances, non-target irrigation can produce unacceptable loads of nutrients, organic matter or pesticides. The most common example is a discharge from commercial landscaping areas adjacent to parking lots connected to the storm drain system. This type of discharge is addressed by the Public Education and Outreach Program in Chapter 3.1.

3.3.C.6 Identifying Outfalls and Receiving Waters

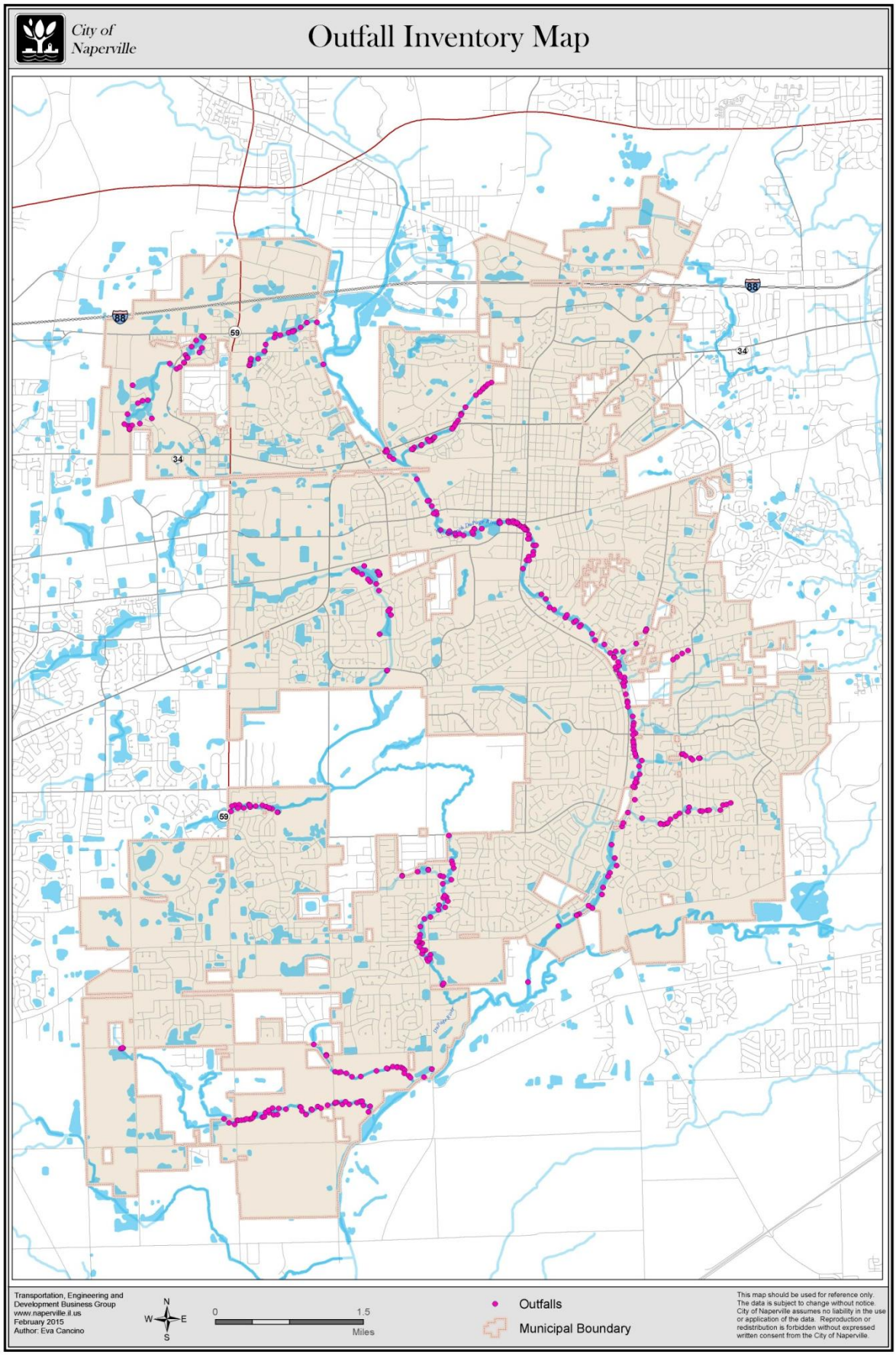
An Outfall (is defined at 40 CFR 122.26(B)(9)) means a point source (as defined by 40 CFR 122.2) at the point where a municipal separate storm sewer discharges into a waters of the United States "receiving water". Open conveyances connecting two municipal storm sewers, or pipes, tunnels or other conveyances which connect segments of the same stream or other Waters of the United States are not considered Outfalls. For the purposes of this manual the following definitions shall be used:

> *Outfall:* Storm sewer outlet, or other open conveyance point discharge location, that discharges into a Waters of the U.S, receiving water or another MS4.

Regulated systems include the conveyance or system of conveyances including roads with drainage systems, municipal streets, catch basins, gutters, ditches, swales, manmade channels or storm sewers.

The City of Naperville has established an outfall inventory. The inventory data is housed in the city GIS system and is managed by the Department of Public Works. Inventory data can be collected with a survey-grade GPS unit. The inventory data is used to create an ***Outfall Inventory Map (Figure 5)***. This map is used in combination with the overall ***Storm Sewer Atlas*** can be used determine the extent of discharged dry weather flows, the possible sources of the dry weather flows, and the particular water bodies these flows may be affecting. The inlets and outfall locations have been labeled to facilitate locating, detecting and tracking of identified illicit discharges. The ***Storm Sewer Atlas and Outfall Inventory Map*** is maintained in the City's GIS system by the Public Works Department.

Figure 5 Outfall Inventory Map.



The outfall map should be revised annually to incorporate newly permitted outfalls associated with new development or redevelopment. An in-field outfall inventory should be performed every 5 years; the focus of this effort is confirm the overall outfall record and to search for new outfalls (i.e. those not already included on the existing ***Outfall Inventory Map***). The search for new outfalls should be combined with the pre-screening efforts (Chapter 3.3.D.1).

3.3.D Illicit Discharge Detection and Elimination (IDDE) program

The City of Naperville has adopted the DuPage County IDDE program as the method and practice of monitoring IDDE Screening. The city as a partner with DuPage County administers the program. DuPage also provides the similar level of service for the City in the Will County portion of the City of Naperville. The following sections are derived from the DuPage County IDDE Program Technical Manual, which DuPage County amends and updates from time to time. The language contained here is to illustrate the methodology of the plan; the actual plan is maintained by DuPage County and is available on the DuPage County website.

3.3.D.1 Introduction

The primary goal of the Illicit Discharge Detection and Elimination (IDDE) program is to identify potential illegal connections and discharges to the municipal separate storm sewer system (MS4) including spills and dumping. This is a dry-weather program comprised of outfall screening, source (system) investigation, elimination of illicit connections and sources, and enforcement. This program, along with other programs and NPDES-related activities, will help the County and its municipalities avoid causing or contributing to a violation of any applicable water quality standard as outlined in Title 35 of the Illinois Administrative Code under Subtitle C, Chapter I, Part 302 as well as avoid exceeding specified Waste Load Allocations developed for specific Illinois waterways.

The purpose of the Illicit Discharge Detection and Elimination (IDDE) Technical Guidance chapter is to describe the procedures for performing the screening of outfalls as well as procedures for investigating and eliminating suspected illicit discharges.

The chapter is subdivided into the following sections:

- SECTION 3.3.D.2: Outfall Screening
- SECTION 3.3.D.9: Investigation Procedures
- SECTION 3.3.D.13: Procedures for Disconnection of Identified Illicit Discharges

The NPDES Phase II program is limited to regulatory outfalls, that is, outfalls associated with municipal separate storm sewer systems (MS4s). Within DuPage County, these regulatory outfalls include those outfalls that are owned or operated by DuPage County, municipalities, and any other public entities. While private storm sewer systems are not included in the NPDES program, DuPage County's IDDE program has been expanded to include the ability to collect discharge samples at outfalls associated with private storm sewer systems. In order for the program to be effective, it is important to visit the outfalls as frequently as possible since illicit discharges can only be discovered if the outfalls are observed on a regular basis. This observation can be through formal outfall screening (described in this chapter) or various other monitoring methods, not discussed in this chapter, including routine volunteer (resident) observations of one or multiple outfalls or use of unmanned monitoring methods at outfalls. As a point of clarification, screening and

monitoring are synonymous within the context of this program and the term screening will be used throughout this chapter instead of the term monitoring.

3.3.D.2 Outfall Screening

The Outfall Screening program is comprised of two basic components:

- SECTION 3.3.D.3: Outfall Prioritization
- SECTION 3.3.D.8: Routine Outfall Screening

The term "outfall screening" within this document applies to any visit by a field technician to an outfall as part of a planned, on-going field investigation. Ideally, all outfalls will be visited at least once annually. Some IDDE programs are very large, making it very expensive to perform screening once annually. There are several approaches to addressing this issue including, but not limited to:

- Limiting the number of outfalls by visiting only major outfalls (discussed below)
- Reducing the screening frequency to one visit to each outfall during each 5-year permit cycle
- Dedicating the resources necessary to perform annual visits of all outfalls
- Limiting the number of outfalls through prioritization

Some states have limited the Illicit Discharge Detection and Elimination Program to major outfalls. Major outfalls are defined in the Code of Federal Regulations as follows:

> *Major municipal separate storm sewer outfall (or ``major outfall'') means a municipal separate storm sewer outfall that discharges from a single pipe with an inside diameter of 36 inches or more or its equivalent (discharge from a single conveyance other than circular pipe which is associated with a drainage area of more than 50 acres); or for municipal separate storm sewers that receive storm water from lands zoned for industrial activity (based on comprehensive zoning plans or the equivalent), an outfall that discharges from a single pipe with an inside diameter of 12 inches or more or from its equivalent (discharge from other than a circular pipe associated with a drainage area of 2 acres or more). 40CFR122.26*

Limiting the program initially to major outfalls is one way to make the program more manageable, but research performed by Pitt (2001) suggests that screening small outfalls may be "at least as important" as large outfalls. In addition, DuPage County recognizes that illicit discharges can emanate from both private and public sources. It is for these reasons that DuPage County's program will include the ability to screen all outfalls, regardless of size and ownership. The frequency in which outfalls are visited will be determined as the program evolves based upon historical data regarding the rate at which screening is performed and the availability of staff resources. As mentioned above, an attempt will be made initially to visit every outfall at least once annually. If this does not appear to be feasible, the order and frequency of screening specific outfalls may be determined by prioritizing the outfalls using the approach described later within this chapter (see section 3.3.D.3 Outfall Prioritization).

Initially, the County will begin screening outfalls on the following waterways (not necessarily in the order presented):

- Salt Creek main stem
- East Branch DuPage River main stem
- West Branch DuPage River main stem

The screening will proceed from upstream to downstream along these main stem reaches. After the initial screening is completed for these main stems, the program will be reviewed and the necessity of prioritization will be evaluated.

3.3.D.3 Outfall Prioritization

The ILR40 permits issued for the first and second permit cycles of the NPDES Phase II program are non-specific regarding how the detection of illicit discharges is to be performed. Outfall prioritization is not necessary when there are a small number of outfalls to visit or in the event that there are significant staff resources available to perform the work. Because DuPage County's program includes a large number of outfalls, it may be necessary to prioritize the outfalls in order to ensure that the outfalls with the highest probability of contributing illicit discharges are visited first and as frequently as possible.

Outfall prioritization includes assessing various factors associated with outfalls and determining the likelihood of each outfall, relative to other outfalls, of being a contributor of illicit discharges. This task is an on-going one that will be reviewed and revised as the program evolves through the collection of specific data on individual outfalls.

The prioritization process is based on a number of illicit discharge risk factors. These illicit discharge risk factors are divided into two distinct groups:

- Reach Illicit Discharge Risk Factors
- Subbasin Illicit Discharge Risk Factors

The risk factors can be used for prioritization based upon specific data associated with the reaches and subbasins. In order to use these risk factors, it is necessary to define an appropriate element with which to prioritize. While outfalls could be used directly, it is recommended that the regulatory waterways be subdivided into waterway segments of uniform length that can be prioritized based upon their potential for receiving illicit discharges. These will be referred to as "IDDE waterway segments." Each IDDE waterway segment will have a unique collection of outfalls with which it is associated. The priority associated with the IDDE waterway segment becomes the priority associated with the outfalls directly associated with the IDDE waterway segment.

3.3.D.4 Reach Illicit Discharge Risk Factors

There are two pieces of data that can be used to weigh a particular pre-defined reach's likelihood of being impacted by illicit discharges. These are related directly to the stream system and are:

- Number of outfalls per stream mile
- Dry-weather in-stream water quality data

The number of outfalls per stream mile provides an indication of the level of opportunity that exists within a given reach for illicit inflows to enter the stream system based solely on the density of outfalls. The higher the number of outfalls, the greater the "risk" of potential illicit flows entering the storm sewer system. The number of outfalls can be limited to the regulatory outfalls, but using the actual number of outfalls, both private and regulatory, will be a better indicator.

If dry weather water quality data is available for a waterway, it should be used to identify specific locations where elevated pollutant levels have been observed. Specifically, high levels of fecal coliform or E. Coli,

nitrogen, and phosphorus are good indicators of a potential problem. Suggested in-stream parameters and thresholds are included within this chapter (see Table 5 on page 47).

3.3.D.5 Sub-basin Illicit Discharge Risk Factors

DuPage County's detailed watershed and subbasin boundary mapping data will be used as the basis of the Subbasin Illicit Discharge Risk Factor calculation. The evaluation should be performed using the smallest subbasin mapping units available (also referred to as catchments in the DuPage County GIS). This will provide a more refined definition regarding the location of the most probable illicit connection locations. These factors can be used to establish a total score for each subbasin that can be associated with an outfall and ultimately a portion of the stream system so that a comparison with other stream system segments throughout the County can be performed.

In order for the Subbasin Illicit Discharge Risk Factors to be useful, it will be important to know how each subbasin is connected to the receiving waterway. Specifically, every outfall must be associated with a subbasin. While it would be convenient to have each subbasin associated with a single outfall, this would result in unrealistically small subbasins, therefore a single subbasin will likely be associated with a number of outfalls. The risk factor computed for a given subbasin will be assumed to be applicable to all outfalls associated with it. In general, the number of outfalls and the non-homogeneity of the illicit discharge risk factors increase with the size of the subbasins. Therefore, the larger the subbasins become, the less indicative the scores are regarding any single outfall's potential for contributing illicit discharges. This is why it is important to keep the subbasins relatively small, but not to an unmanageable degree.

Table 4 provides a summary of Subbasin Illicit Discharge Risk Factors that might be considered when developing scores for the subbasins. It may not be necessary to use all of these factors. The factors used will depend on which factors are most relevant within DuPage County as well as the availability of the data necessary to compute the individual factor totals.

Table 4: Subbasin Illicit Discharge Risk Factors

Subbasin Illicit Discharge Risk Factor	Required Data	Data Sources
Land Use	• Density of specific types of land uses	• DuPage County Stormwater Management Division
Density of Existing Septic Systems	• Location of individual septic systems • Dates when constructed or last replaced (if available)	• DuPage County Health Department septic system inspection records • Similar records from municipalities with septic systems
Combined Sewer	• Locations where combined sewers used to be located • Locations of current combined sewers	• DuPage County Public Works Department • Municipal public works directors and municipal engineers
Septic to Sanitary Sewer Conversion	• Location of properties that had septic systems and were converted to sanitary sewer connections • Date when converted (if available)	• DuPage County Health Department septic system inspection records • Municipal public works directors and municipal engineers
Condition of Storm Sewer	• Location of storm sewer system • Date when constructed (or replaced)	• DuPage County Division of Transportation • DuPage County Stormwater Management Division • Municipal public works directors and municipal engineers
Condition of Sanitary Sewer	• Location of sanitary sewer system • Date when constructed (or replaced)	• DuPage County Public Works Department • Municipal public works directors and municipal engineers
Density of Industrial NPDES Permit Holders	• Location of all industrial properties • SIC code (if available) • Activity/Product(s) manufactured • Date when constructed (if available) • NPDES industrial permit holder locations • Number of industrial NPDES permit holders per square mile of tributary area	• DuPage County Stormwater Management Division DuPage County Building Department • EPA • Individual industrial property owner Refer to Appendix A of the Center for Watershed Protection's "Illicit Discharge Detection and Elimination Technical Appendices"
Age of Development	• Location of properties of approximately the same age (cluster properties into approximately homogenous age groups) • Approximate age of each cluster of properties	• DuPage County Stormwater Management Division DuPage County Building Department • Municipal Building Departments • Windshield survey
Historical Discharge Complaints	• Historical septic system complaint records • Historical pollutant discharge complaints related to storm sewers	• DuPage County Public Works Department • Municipal public works directors and municipal engineers

3.3.D.6 Prioritization Process

The Illicit Discharge Risk Factor analysis does require a great deal of data and it is best conducted using the County's GIS. The analysis includes the following ten steps:

Step 1: Define IDDE waterway segments
Step 2: Delineate Subbasins
Step 3: Determine which of the Reach Illicit Discharge Risk Factors and Subbasin Illicit Discharge Risk Factors are going to be used for prioritization
Step 4: Gather data required to compute the Reach Illicit Discharge Risk Factors and Basin Illicit Discharge Risk Factors
Step 5: Compute Reach Illicit Discharge Risk Factors
Step 6: Compute Subbasin Illicit Discharge Risk Factors
Step 7: Compute Subbasin Illicit Discharge Risk Scores
Step 8: Create Prioritization Scoring Map and Table
Step 9: Perform Critical Review
Step 10: Review Prioritization

Step 1 - Define IDDE waterway segments

The fundamental unit used for prioritization is the IDDE waterway segment. These segments are created by subdividing the regulatory waterways longitudinally into segments of uniform length that can be assigned a priority based upon their potential for receiving illicit discharges. Any length can be used, but using a length of 1 mile is recommended for simplicity. If the length needs to be reduced in order to account for variability reflected in the subbasins and along the waterway, then it should be shortened.

This task can be performed using the County's stream centerline data. Each IDDE waterway segment must be given a unique name and should be initialized at its confluence (0+00) with a higher order stream. These IDDE waterway segments will be used to communicate the resulting prioritization information, therefore it is important that they be defined clearly (i.e., beginning and ending points of specific segments clearly identified and unique names assigned for each segment). At a minimum, IDDE waterway segments must be defined along the Primary DuPage County IDDE Waterways as defined in the Municipal Separate Storm Sewer System Mapping Chapter.

Step 2 - Delineate Subbasins

DuPage County has detailed basin delineation information available that was developed as part of the County's watershed planning, flood plain mapping, and drainage investigation project work. This information can be used as the basis for performing this step. Plot all known outfall locations and relate each outfall to the IDDE waterway segment (defined in Step 1) into which the outfall directly discharges. Then, subbasins must be defined and related to specific outfalls or groups of outfalls. It will be important to understand how each subbasin connects to major waterways. This means that it will be important to have as much information as possible regarding the stormwater management system within a subbasin, especially for subbasins that are not adjacent to Primary DuPage County IDDE Waterways. Subbasins will likely fall under one of the following four types:

1) Subbasins adjacent to Primary DuPage County IDDE Waterways draining through outfalls discharging directly to Primary DuPage County IDDE Waterways.
2) Subbasins without outfalls (distributed / non-point runoff draining to major waterway) draining directly to Primary DuPage County IDDE Waterways.

3) Interior subbasins (not adjacent to Primary DuPage County IDDE Waterways) draining to outfalls that discharge directly to Primary DuPage County IDDE Waterways.
4) Internally drained subbasins that do not drain to a Primary DuPage County IDDE Waterway (i.e., no outfalls).

The first and third types will be the most common while the second type does not involve outfalls, therefore runoff from these areas would not be regulated under the IDDE program and the fourth type, i.e., completely isolated depressional areas; will likely be a very rare occurrence.

While preferred, the subbasins do not have to be delineated such that a subbasin has a single outfall with which it is associated. That is, it will likely be necessary to relate more than one outfall with a given subbasin (except for internally drained subbasins which will not have any outfalls).

Step 3 - Determine which of the Reach Illicit Discharge Risk Factors and Subbasin Illicit Discharge Risk Factors are going to be used for prioritization

Each of the illicit discharge risk factors requires varying amounts of data with differing levels of relative complexity associated with acquisition. While one could use all of the factors listed in Table 4 using them all is not necessary. In fact, using too many may prevent the development of a prioritization plan within a reasonable timeframe. The key is to select those factors that are relevant in DuPage County and will help reveal those areas that have the highest likelihood of having illicit discharges. Another consideration is the relative ease of acquiring the data. If the information required for a particular factor is not readily available or will take too much time to organize into a format that can be used, then that factor may not be a good choice.

Both of the Reach Illicit Discharge Risk Factors mentioned earlier, outfall density and in-stream water quality data should be used, if available. The outfall density is a good indicator of risk while existing in-stream water quality data provides an indication of areas with high in-stream pollutant levels (relative to established thresholds). One potential drawback to the in-stream water quality data is that it is not available for every reach within the County; therefore those reaches that have been included in an in-stream monitoring program would have the advantage of having more information with which to assess their risk.

At a minimum, the following Subbasin Illicit Discharge Risk Factors are recommended specifically for DuPage County:

- Land Use
- Density of Existing Septic Systems
- Age of Development
- Historical Discharge Complaints

Other factors listed in Table 4 can be added depending on data availability and the need to further refine the subbasin risk.

Step 4 - Gather data required to compute the Reach Illicit Discharge Risk Factors and Subbasin Illicit Discharge Risk Factors

Potential data sources are provided in Table 4.

Step 5 - Compute Reach Illicit Discharge Risk Factors

The potential Reach Illicit Discharge Risk Factors are:

- Number of outfalls per stream mile
- Dry-weather in-stream water quality data

These factors are directly associated with the stream reach. It is not necessary to use both of them, although it is recommended. The number of outfalls per stream mile is one of the easiest factors to compute and provides some indication regarding risk of illicit discharges being introduced to the stream system. It is for these reasons that the number or outfalls per stream mile should be considered a mandatory factor to be considered during prioritization.

The number of outfalls per stream mile can be computed for each IDDE waterway segment by counting the number of known outfalls along each IDDE waterway segment. The number of total outfalls, both private and regulatory, is preferred. Typically, a value of greater than 20 outfalls per stream mile is considered high enough to indicate an elevated risk, although in highly urbanized areas like DuPage County, the average outfall density may be much higher requiring that the threshold be raised in order to define a meaningful breakpoint to differentiate the higher risk reaches from the lower risk reaches. The outfall density per stream mile should be computed for the entire County in order to verify that 20 outfalls per mile is a reasonable breakpoint for elevated risk. If the stream outfall density is consistently greater than 20 outfalls per stream mile, then the breakpoint should be raised (see Table 7).

In-stream sampling data may also be used for prioritization. The DuPage River Salt Creek Workgroup (DRSCW) has collected sampling data at a number of locations within the East Branch DuPage, West Branch DuPage, and Salt Creek watersheds. The data being collected includes pH, temperature, conductivity, and dissolved oxygen as well as BOD (5-day Biochemical Oxygen Demand), nutrients, toxics, and metals. Table 5 provides examples of in-stream values that can be used for a variety of parameters. If these dry-weather in-stream water quality benchmarks are outside of the "normal sample range" provided, the cause could be due to illicit discharges entering the stream system. Parameters other than the ones currently collected as part of the DRSCW's work are included in the table for use in the event that the in-stream monitoring program is expanded. The values provided in Table 5 are provided as general guidance and must not be used as absolute thresholds since they may vary from watershed to watershed and site to site. It is also important to note that an in-stream value that is outside of what is presented as normal is not necessarily evidence of an illicit discharge.

Table 5: In-Stream Parameter Thresholds for Prioritization

PARAMETER	NORMAL IN-STREAM RANGE (GUIDANCE VALUE)	REFERENCE (SEE END OF CHAPTER)
E. Coli (*Escherichia coli*)	Normal Sample < 1000 MPN / 100 mL	4
Total Phosphorus (No WWTP – see note 1)	Normal Sample < 0.40 mg/l	4
Total Phosphorus (WWTP nearby – see note 2	Normal Sample < 1.0 mg/l	8
Ammonia-nitrogen	Normal Sample < 1.0 mg/l	8
Conductivity (summer)	Normal Sample < 1900 µS/cm	5,8
Total Nitrogen (No WWTP – see note 1)	Normal Sample < 3.5 mg/l	4
Total Nitrogen (WWTP nearby – see note 2	Normal Sample < 8.0 mg/l	8
pH	6.5 ≤ Normal Sample pH ≤ 8	6,8
Dissolved Oxygen	Normal Sample > 2 mg/l	7,8

NOTES:
1. No WWTP influence, i.e., in-stream sample not taken within the zone of initial dilution of the plant, i.e., ZID)
2. Near WWTP, i.e., in-stream sample taken within the zone of initial dilution of the plant, i.e., ZID)

If dry-weather in-stream monitoring data is outside of the normal range, then the IDDE waterway segment containing the in-stream sample location becomes a candidate for becoming a high priority reach. That is, if the threshold value is exceeded, then the IDDE Waterway Segment associated with the in-stream monitoring location becomes a 1st Priority segment. If additional in-stream parameter concentrations have been collected, the list above should be expanded and corresponding threshold values assigned. In addition to specific sampling data, or in lieu of it, the IEPA's 303(d) list data may be used to identify reaches with impairments. This data is somewhat limited in its usefulness in identifying specific locations along a reach due to the length of the segments used in the assessment. If 303(d) list data are used, one could simply make these identified "impaired" reaches a high priority, regardless of the potential source identified. A more detailed evaluation of the potential source data could be performed, but is probably not worth the effort. Caution should be used when using the 303(d) list information and specific in-stream water quality data not only because the locations of the available data are biased to larger waterways (primarily the main stems), but also because illicit discharges are not necessarily associated with an in-stream impairment.

The DRSCW has collected detailed data on fish and macro-invertebrate populations. Screening against habitat as well as ambient water and sediment quality explains the majority of the variation seen in these populations. However, if within certain stream segments low values are recorded, and are not satisfactorily explained by other factors, then these segments also become candidates for a high priority reach. This information is available through the DRSCW.

Step 6 - Compute Subbasin Illicit Discharge Risk Factors

After all of the data necessary to compute the selected Subbasin Illicit Discharge Risk Factors are collected, the scoring for the individual factors (see "Factor Value" in Table 6) and the total score for each subbasin unit can be computed. The approach is to assign a likelihood of low, medium (if applicable – some risk factors do not have a medium value option), or high for each of the selected Subbasin Illicit Discharge Risk Factors (selected in Step 3), which numerically will be assigned using 1, 2 (if applicable), or 3 respectively. This is accomplished by collecting the necessary data associated with each of the Subbasin Illicit Discharge Risk Factors selected and using the resulting %, density, age, etc. to assign a Factor Value. The result will be a Factor Value of 1, 2, or 3 for each of the selected Subbasin Illicit Discharge Risk Factors that can be used in Step 7 to compute total scores for each subbasin. It is important that it is clear where each subbasin discharges (i.e., connects) into the receiving waterway since this will determine the assignment of subbasins to specific IDDE waterway segments.

Table 6 summarizes the suggested scoring criteria for each risk factor. As mentioned previously, it is not necessary to use all of the risk factors for the assessment.

Table 6: Sub-Basin Illicit Discharge Risk Factors

SUBBASIN ILLICIT DISCHARGE RISK FACTOR	FACTOR VALUE[2]		
	Low = 1	**Medium = 2**	**High = 3**
Land Use[1]	"Open" land use % > "Business / Residential" land use % AND "Open" land use % > "Manufacturing / Commercial" land use %	"Business / Residential" land use % > "Open" land use % AND "Business / Residential" land use % > "Manufacturing / Commercial" land use %	"Manufacturing / Commercial" > "Open" land use % AND "Manufacturing / Commercial" > "Business / Residential" land use % OR Industrial land use parcels per sq mi > 10 parcels
Density of Existing Septic Systems	Number of septic systems per sq mi < 100		Number of septic systems per sq mi ≥ 100
Combined Sewers	Combined sewer separation has not occurred at anytime or anywhere within the subbasin (unit of interest) AND There is no combined sewer currently in the subbasin (unit of interest)		Combined sewer separation has occurred sometime and somewhere in the subbasin (unit of interest) OR There is combined sewer within the subbasin (unit of interest)
Septic to Sanitary Sewer Conversion	Septic to sewer conversion has not occurred at anytime or anywhere within the subbasin (unit of interest)		Septic to sewer conversion has occurred sometime and somewhere in the subbasin (unit of interest)
Condition of Storm Sewer	No storm sewer within the subbasin (unit of interest) is > 50 years old		There is storm sewer within the subbasin (unit of interest) > 50 years old
Condition of Sanitary Sewer	No sanitary sewer within the subbasin (unit of interest) is > 50 years old		There is sanitary sewer within the subbasin (unit of interest) > 50 years old
Density of Industrial NPDES Permit Holders	Sites per sq mi < 3	3 ≤ sites per sq mi ≤ 10	Sites per sq mi > 10
Age of Development	Age of buildings (years) < 25	25 ≤ Age of buildings (years) ≤ 50	Age of buildings (years) > 50
Historical Discharge Complaints	Number of complaints < 5	5 ≤ Number of complaints ≤ 10	Number of complaints > 10

NOTES:

1. Each of the three land use groups are discussed on the following pages.
2. The ranges associated with each Factor Value are interpreted based on guidance provided in the Center for Watershed Protection's "Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments".

Land Use

DuPage County has developed parcel-based land use for the entire County. These 17 parcel-based land uses can be combined into three broad land use categories for the purposes of assigning illicit discharge risk potential.

Open

- Vacant
- Agricultural
- Golf Course Open Space
- Forest Preserve Open Space
- Other Open Space
- Detention Pond Open Space

Business / Residential

- Office Research
- Business Park
- Institutional
- Unsewered Single Family Residential
- Sewered Single Family Residential
- Multiple Family Residential

Manufacturing / Commercial

- Industrial
- Commercial
- Sewered Roadway
- Unsewered Roadway
- Other transportation-related properties

The approach is to compute the total amount (area) of each of the three groups of land uses (i.e., Open, Business / Residential, Industrial / Commercial) and determine which group predominates within a subbasin. A simple percentage for each of the three groups for each subbasin is calculated and the land use group that forms the majority is used as one of the criteria to assign the Factor Value. In addition, the number of Industrial parcels will be tallied within each subbasin and a density in terms of industrial parcels per square mile can be computed. This will minimize the chance of missing an area with a significant amount of industrial property that does not receive a high Factor Value simply because of the relative magnitude of other land uses within the subbasin. A cautionary note: many times, large industries reside on multiple parcels, therefore the number of industrial parcels per square mile may over-estimate the perceived quantity of separate industries. The alternative is to determine the actual individual industries based upon tax parcel information or other land use mapping that may be based upon actual owner information, but this will be more time-consuming than the simple parcel-based approach which can easily be performed using the County's GIS.

Density of Existing Septic Systems

In order to use this factor, the location of all septic systems throughout the County is required. The number of septic systems per square mile is computed for each subbasin and a Factor Value can be assigned based on the computed density. This factor could be modified to include an age component (e.g., only count septic systems that are greater than 30 years of age), but this data may be difficult to acquire.

Combined Sewer

Areas that were formerly served by combined sewers, but were separated have a high potential for improper connections. In addition, areas that are currently served entirely or partially by combined sewers are likely candidates for cross connections. If a subbasin includes any areas that either did contain or currently contain combined sewers, then there is a high risk of illicit discharges from the subbasin under consideration.

Septic To Sanitary Sewer Conversion

This is similar to the ***Combined Sewer*** factor in the sense that areas that were formerly served by septic systems, and were converted to separate sanitary sewers, have a high potential for improper connections. If a subbasin includes any areas that were formerly served by septic systems, then there is a high risk of illicit discharges from the subbasin under consideration.

Condition of Storm Sewer

The condition of the storm sewer within a subbasin may also provide some indication as to whether there is a high probability of illicit discharges entering the storm sewer. Older systems are more prone to leaks due to deterioration and improper connections over time. A simple assessment of whether there is or is not any storm sewer over 50 years of age is recommended. Fifty years is recommended since this represents the design life of most sewer systems. A more sophisticated approach can be used based on the percentage of the sewer system that is over 50 years of age, but this is more difficult and is likely not worth the effort, unless this data is readily available.

Condition of Sanitary Sewer

The condition of the sanitary sewer within a subbasin may also provide some indication as to whether there is an increased chance of illicit discharges entering the storm sewer system due to exfiltration from the sanitary sewer system. Older sanitary systems are more prone to leaks due to deterioration over time. Most sanitary systems are constructed deeper than storm sewer systems, but this is not always the case, especially in older areas. Therefore, a leaky sanitary sewer located at a higher elevation in the vicinity of a nearby storm sewer may be a source of illicit discharges. Private laterals are more likely candidates than older sanitary sewers as illicit discharge sources, but they are assumed to be included in the "Age of Development" risk factor described below, although private laterals could also be used as a separate subbasin illicit discharge risk factor if accurate records of replacement history are available (note: if "Age of Development" is used for prioritization, do not use lateral age as a separate factor since this might overestimate the risk associated with older development). A simple assessment of whether there is or is not any sanitary sewer (or laterals) over 50 years of age can be performed. Fifty years is recommended since this represents the design life of most sewer systems. A more sophisticated approach can be used based on the percentage of the sewer system that is over 50 years of age, but this is more difficult and is likely not worth the effort, unless this data is readily available.

Density of Industrial NPDES Permit Holders

The density of industrial storm water permit holders is also a good indicator of potential sources of illicit discharges. These permit holders have already been identified as having a high likelihood of discharging pollutants that are potentially harmful to the receiving waterway. That is why they have a separate NPDES permit for discharges. The location of industrial storm water permit holders is available from the IEPA.

This is a subset of the industrial properties within the County since not all industrial activities require an NPDES permit. Standard Industrial Classifications (SIC) or North American Industry Classification System (NAICS) codes may also be used to help identify parcels or groups of parcels that have a high potential for contributing illicit discharges to MS4s and other storm sewer systems. Use of SIC or NAICS codes is not recommended due to the effort required to collect and categorize the data, although they may be used if further refinement is required after the initial prioritization is complete.

Age of Development

Older development has a high probability of contributing illicit discharges due to infrastructure deterioration and ultimate failure as well as a longer period of time for residents to construct illicit connections.

Historical Discharge Complaints

Historical complaints regarding illicit discharges made to the DuPage County Stormwater Management Division, DuPage County Health Department, DuPage County Public Works, and any other complaint sources (including municipal records) should be compiled and reviewed for relevance. Some of these complaints may have been logged as drainage complaints. Complaints that are over 5 years old should not be used in the evaluation.

Step 7 - Compute Subbasin Illicit Discharge Risk Scores

The Subbasin Illicit Discharge Risk Factors computed in the previous step for each subbasin will be used to compute an overall score for each subbasin. The approach is as follows:

$$\textbf{Individual subbasin score} = \frac{\sum \textbf{(Subbasin Illicit Discharge Risk Factors)}}{\textbf{(\# of Basin Factor Values)}}$$

Where,

Individual subbasin score: the normalized score for each subbasin with a value between 1 and 3.

Subbasin Illicit Discharge Risk Factors: "Factor Values" computed in Step 6 for each of the selected factors

# of Basin Factor Values: the total number of Basin Illicit Discharge Risk Factors selected in Step 3. This does not include the Reach Illicit Discharge Risk Factors.

After a score is computed for each of the subbasins, the score must be associated with an IDDE waterway segment (defined in step 1). Each IDDE waterway segment will have at least one subbasin discharging directly into it. The association between a subbasin and an IDDE waterway is dictated by the location of the outfall discharge points along the stream system. While one could develop weighting criteria (based on subbasin area) for prioritizing scores to IDDE waterway segments, a simpler approach is recommended that will result in a conservative estimate of those segments in the vicinity of areas with a high potential for being sources of illicit discharges. The recommended approach is as follows:

- compile a list of all of the subbasins associated with each IDDE waterway segment, then
- compare the individual subbasin scores associated with a given IDDE waterway segment and determine the highest score, then
- assign the highest subbasin score to the IDDE waterway segment (see Table 7).

Step 8 – Create Prioritization Scoring Map and Table

Once the Reach Illicit D*is*charge Risk Factor and Subbasin Illicit Discharge Risk Factor analysis has been performed, each of the IDDE waterway segments can be ranked and priorities assigned. Table 7 can be used for each IDDE waterway segment to determine the recommended priority assignments.

Table 7: IDDE Waterway Segment Priorization Ranking Criteria

	REACH ILLICIT DISCHARGE RISK FACTOR	HIGHEST SUBBASIN SCORE ASSOCIATED WITH THE IDDE WATERWAY SEGMENT OF INTEREST		
	> 20 outfalls per mile[1] OR In-stream thresholds exceeded	**3** HIGH RISK	**2** MEDIUM RISK	**1** LOW RISK
1st Priority	X			
2nd Priority		X		
3rd Priority			X	
4th Priority				X

NOTES:

1. Value may be adjusted based upon review of average DuPage County outfall density

Based on the results of the assignments defined in Table 7, each IDDE waterway segment will have a priority associated with it. These assignments should be shown on a map so that priority trends can be reviewed. As mentioned previously, the outfalls related to a particular IDDE waterway segment will be assigned the priority ranking determined for their associated waterway segment in Step 8.

Step 9 – Perform Critical Review

Using the map prepared in the previous step, groups of segments of equal priority can be lumped together to create clustered reaches with a similar priority. It is important to use common sense so that overall trends are observed so that "spotty" reach prioritizations are not defined. For example, a single isolated low priority segment surrounded by high priority segments should be ignored and the collection of segments (including the low priority segment) defined as a high priority reach.

If the prioritization is unclear, then other factors may need to be assessed (revisit steps 3 and 4) or the IDDE waterway segment lengths may have to be decreased (revisit step 1).

Step 10 – Review Prioritization

The prioritization will be reviewed and updated, if necessary, on an annual basis. The review and update process will include:

(1) Updating the number of outfalls within the IDDE waterway segments to include additional outfalls reported by communities, other public agencies and those discovered during outfall screening visits by County staff.

(2) Consideration of use of other factors or decreasing IDDE waterway segment lengths in an effort to further refine the prioritization.

3.3.D.7 Alternative Approach

The prioritization process may be simplified by eliminating the Sub basin Illicit Discharge Risk Factor analysis and simply basing the prioritization on the number of outfalls per stream mile (outfall density). Specifically, basing the prioritization on outfall density will provide an approach for prioritizing the outfall screening based on a single indicator of risk. This will limit the prioritization to using data that is an integral part of all IDDE programs, outfall locations; therefore no additional data collection is required.

This approach is appropriate as an interim prioritization, but should not replace the detailed procedure described in section 3.3.D.6.

3.3.D.8 Routine Outfall Screening

3.4

A component of the IDDE Program is routine outfall screening. This is an annual review of a scheduled number or extent of outfalls within a community. The following sections discuss various indicator parameters, procedures, and other elements involved with a comprehensive outfall screening program.

3.4.A.1.a PERMITTED DISCHARGES

In the course of conducting routine outfall screening, a portion of the outfalls inspected will not be dry and may have sufficient flow to conduct a grab sample. Flow in and of itself is not an indication of an illicit discharge even after a prolonged dry period. In fact, some flows that are present in an MS4 may be specifically allowable. The General NPDES Permit No ILR40 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 the permit:

- Water line and fire hydrant flushing
- Landscape irrigation water
- Rising ground waters
- Ground water infiltration
- Pumped ground water
- Discharges from potable water sources
- 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 of 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)
- Discharge of storm water associated with construction site activities for municipal construction projects of one acre or more (when in compliance with ILR10)

3.4.A.1.b INDICATOR PARAMETERS

There are a variety of indicator parameters that are in use throughout the United States for aiding in IDDE outfall screening. These include on-site visual characterization, on-site colorimetric tests, on-site instrument tests, and off-site/laboratory tests. Visual and Chemical parameters for the DuPage IDDE Screening are discussed in the following section. Additional potential follow-up screening tests are also identified.

3.4.A.1.c VISUAL CHARACTERIZATION PARAMETERS

IDDE programs include a narrative description of the visual observances when inspecting an outfall. Typical on-site visual characterization elements recommended for the DuPage IDDE program include the following:

- Odor
- Color
- Turbidity
- Floatable Matter
- Deposits/Stains
- Vegetation
- Damage to Outfall Structure

Table 8: Visual Characterization Interpretation

PARAMETER	INTERPRETATION
Odor	*sewage:* smell associated with stale sanitary wastewater, especially in pools near outfall. *sulfur ("rotten eggs"):* industries that discharge sulfide compounds or organics (meat packers, canneries, dairies, etc.). *oil and gas:* petroleum refineries or many facilities associated with vehicle maintenance or petroleum product storage *rancid-sour:* food preparation facilities (restaurants, hotels, etc.).
Color	*cloudy:* sanitary wastewater, concrete or stone operations, fertilizer facilities, automotive dealers. *opaque:* food processors, lumber mills, metal operations, pigment plants.
Turbidity	*cloudy:* sanitary wastewater, concrete or stone operations, fertilizer facilities, automotive dealers. *opaque:* food processors, lumber mills, metal operations, pigments plants.
Floatable Matter	*oil sheen:* petroleum refineries or storage facilities and vehicle service facilities. (2) *sewage:* sanitary wastewater.
Deposits and Stains	*sediment:* construction site erosion. *oily:* petroleum refineries or storage facilities and vehicle service facilities.
Vegetation	*excessive growth:* food product facilities *inhibited growth:* high stormwater flows, beverage facilities, printing plants, metal product facilities, drug manufacturing, petroleum facilities, vehicle facilities and automobile dealers.
Damage to Outfall Structures	*concrete cracking, concrete spalling, industrial flows, metal corrosion:* industrial flows

(1) Adapted from "Table 3: Physical Observation Parameters and Likely Associated Flow Sources (Pitt, 2001)" of "Techniques for Identifying and Correcting Illicit and Inappropriate Discharges Task #2 Technical Memorandum".

(2) Some naturally occurring phenomenon can be mistaken for the presence of oil. A quick way to distinguish between oil-related materials and natural residue is to disturb the area in question. If it breaks up into 'platelets' it is a natural material. If it returns to cover the area of disturbance without breaking up, it is probably an oil related product.

3.4.A.1.D CHEMICAL SCREENING PARAMETERS

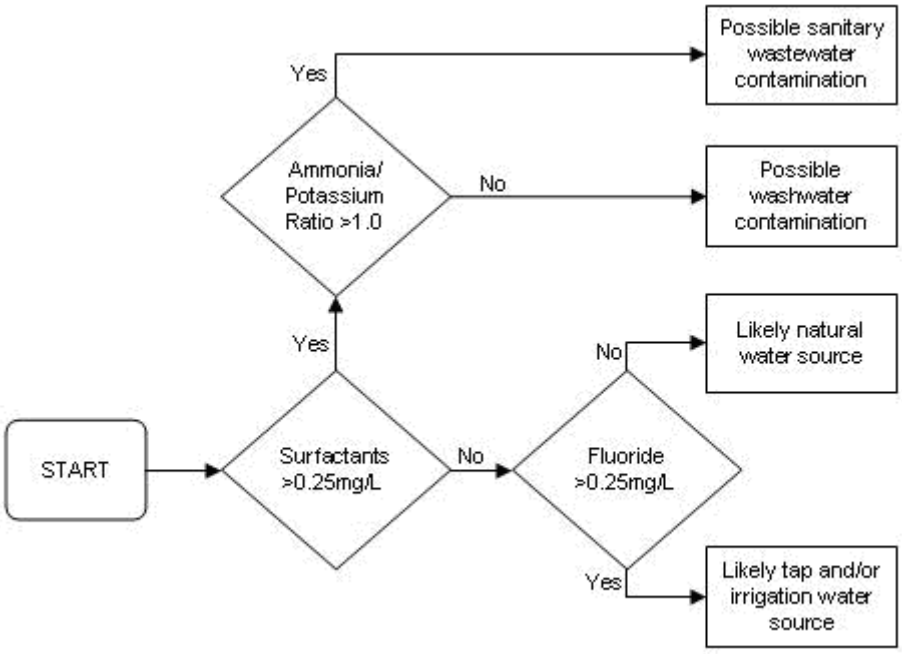
Discharge samples will be collected at active outfalls (defined as an outfall where flow is present during periods of dry weather in sufficient quantities to obtain a grab sample) to determine whether potential illicit discharges are present. A variety of indicator parameters are available for general screening, with up to 15 or more typically in use throughout the United States. These include, but are not limited to: ammonia, boron, chlorine, color, conductivity, E.Coli, detergents, fluorescence, fluoride, hardness, pH, potassium, surface tension, surfactants, and turbidity. However, a small number of indicator parameters are typically employed in general screening to identify the presence of potential illicit discharges.

The following parameters will be used for routine outfall screening in DuPage County:

- Surfactants (a detergent measurement)
- Ammonia
- Potassium
- Fluoride
- Conductivity
- pH

Individually, these tests are not able to identify all illicit discharge sources, but together they are able to identify most sanitary wastewater, washwater, and potable water discharges. In combination with other visual and chemical screening parameters, they can also be used to identify potential industrial discharge problems. Figure 6 identifies the likely sources of flow for active outfalls dominated by residential land use.

Figure 6 IDDE Screening Parameters and Thresholds



Source: Center for Watershed Protection and Robert Pitt, 2004

For outfalls with mixed land use, the inclusion of pH and Conductivity (as a measure of Total Dissolved Solids) can help identify potential industrial sources. Because of the variability and typical mixed nature of industrial discharges, if industrial sources are suspected, it is typically best to go directly to the potential source and, based on the type of industry, select appropriate screening parameters for testing. However, illicit industrial source potential can be guided by reviewing the results of the Visual characterization with conductivity and pH results following the guidance included in Tables 9 and 10.

Both field and lab testing have their own procedures for the handling of samples and testing based on the source of the test materials, with pros and cons associated with each. One advantage of field tests is the ability to obtain immediate results that may expedite identification of outfalls with a high potential for the presence of illicit discharges, providing a real-time decision model. One disadvantage is that some field test kits can contain hazardous waste components for certain parameters that require special handling and disposal considerations.

Colorimetric tests can be performed using color comparators or sophisticated equipment such as a spectrophotometer. In general, colorimetric tests using color comparators are inherently subjective as the comparison of the test ampoule color with the color comparator is interpreted by an individual. Common color comparators include color wheels, slides, test strips, and vials. In addition, the comparator and individual test ampoules can degrade in effectiveness over time and typically have clearly identified expiration dates. Colorimetric testing performed with equipment such as a spectrophotometer eliminates the subjectivity of the testing, although manufacturers of portable colorimetric testing equipment have identified variances in results depending on the parameter in question, regardless of whether comparator or electronic testing equipment is used.

Lab tests are conducted in a more controlled environment and with a higher level of accuracy, but the effort and cost associated with transporting and conducting lab tests may not be warranted. In light of this, DuPage County will perform the colorimetric testing first and if the results warrant further testing, samples will be taken to a lab for further investigation following generally accepted chain-of-custody procedures.

Therefore, while the recommended test thresholds and identification flow chart provided within this section are strong indications of the presence of illicit discharges, not all discharges with elevated pollutant levels require immediate follow-up investigation. The term "follow-up investigation" is meant to indicate a return visit to an outfall based on one or more screening indicator parameters. Follow-up investigations are typically grouped into categories of response.

High Priority Follow-up Investigation: A high priority follow-up investigation is a more immediate response associated with one or more screening indicator parameters (visual and/or chemical) that strongly suggest the presence of an illicit discharge. A return visit to these outfalls should be made as soon as possible (ideally immediately) to conduct a confirmation screening and then proceed with an investigation of the system in an attempt to identify or isolate the potential illicit discharge source(s).

Medium Priority Follow-up Investigation: A medium priority follow-up investigation is a programmed/scheduled return visit to an outfall associated with one or more screening indicator parameters (visual and/or chemical) that may suggest the presence of an illicit discharge. A return visit to these outfalls should be made in a programmatic/scheduled response to conduct a second screening (confirmation screening) and then proceed with an investigation, if warranted, of the system in an attempt to identify or isolate the potential illicit discharge source(s). While not requiring "immediate" response, these investigations should be conducted in a timely manner to further develop the program. Within this category, there may be additional prioritization based on available resources, ability to identify outlier samples based on sampling history, and other factors.

Low Priority Follow-up Investigation: A low priority follow-up investigation is a programmed/scheduled return visit to an outfall associated with one or more screening indicator parameters (visual and/or chemical) that are present but have a much lesser potential for the presence of an illicit discharge. A return visit to these outfalls should be made in a programmatic/scheduled response to conduct a second screening, typically after all municipal outfalls are screened once and potentially after high priority outfalls are further investigated, unless resources are available to conduct more frequent re-screening.

A summary of common indicator parameters has been provided in Table 1-6 with a designation regarding their relative concentration in discharges from specific non-stormwater flow sources.

Table 9: Illicit Discharge Field Survey Parameters

	NON-STORMWATER FLOW SOURCES							
	NATURAL WATER	**POTABLE WATER**	**SANITARY SEWAGE**	**SEPTAGE WATER**	**INDUS. WATER**	**WASH WATER**	**RINSE WATER**	**IRRIG. WATER**
PARAMETER								
Fluorides	-	+	+	+	+/-	+	+	+
Surfactants	-	-	+	-	-	+	+	-
Florescence	-	-	+	+	-	+	+	-
Potassium	-	-	+	+	-	-	-	-
Ammonia	-	-	+	+	-	-	-	-
Odor	-	-	+	+	+	+/-	-	-
Color	-	-	-	-	+	-	-	-
Clarity	-	-	+	+	+	+	+/-	-
Floatables	-	-	+	-	+	+/-	+/-	-
Deposits and stains	-	-	+	-	+	+/-	+/-	-
Vegetation change	-	-	+	+	+	+/-	-	+
Structural damage	-	-	-	-	+	-	-	-
Conductivity	-	-	+	+	+	+/-	+	+
pH	-	-	-	-	+	-	-	-
Note: -	implies relatively low concentration							
+	implies relatively high concentration							
+/-	implies variable conditions							

Adapted from FIELD SURVEY PARAMETERS AND ASSOCIATED NON-STORMWATER FLOW SOURCES (PITT, 2001)

Table 10 provides a detailed summary of characteristics for specific industrial categories. These characteristics can be helpful in identifying the type of industrial dischargers that might be responsible for a potential illicit discharge.

Table 10: Characteristics of Industrial Discharges

INDUSTRIAL CATEGORIES MAJOR CLASSFICATIONS SIC GROUP NUMBERS	ODOR	COLOR	TURBIDITY	FLOATABLES	DEBRIS AND STAINS	STRUCTURAL DAMAGE	VEGETATION	PH	TOTAL DISSOLVED SOLIDS
Primary Industries									
20 Food and Kindred Products									
201 Meat Products	Spoiled Meats, Rotten Eggs and Flesh	Brown to Reddish-Brown	High	Animal Fats, Byproducts, Pieces of Processed Meats	Brown to Black	High	Flourish	Normal	High
202 Dairy Products	Spoiled Mile, Rancid Butter	Grey to White	High	Animal Fats, Spoiled Milk Products	Grey to Light Brown	High	Flourish	Acidic	High
203 Canned and Preserved Fruits and Vegetables	Decaying Products Compost Pile	Various	High	Vegetable Waxes, Seeds, Skins, Cores, Leaves	Brown	Low	Normal	Wide Range	High
204 Grain Mill Products	Slightly Sweet & Musty, Grainy	Brown to Reddish Brown	High	Grain Hulls and Skins, Straw & Plant Fragments	Light Brown	Low	Normal	Normal	High
205 Bakery Products	Sweet and or Spoiled	Brown to Black	High	Cooking Oils, Lard, Flour, Sugar	Grey to Light Brown	Low	Normal	Normal	High
206 Sugar and Confectionary Products	NA	NA	Low	Low Potential	White Crystals	Low	Normal	Normal	High
207 Fats and Oils	Spoiled Meats, lard or Grease	Brown to Black	High	Animal Fats, Lard	Grey to Light Brown	Low	Normal	Normal	High
208 Beverages	Flat Soda, Beer or Wine, Alcohol, Yeast	Various	Mod.	Grains 6 Hops, Broken Glass, Discarded Canning Items	Light Brown	High	Inhibited	Wide Range	High
21 Tobacco Manufactures	Dried Tobacco, Cigars, Cigarettes	Brown to Black	Low	Tobacco Stems & Leaves, Papers and Fillers	Brown	Low	Normal	Normal	Low
22 Textile Mill Products	Wet Burlap, Bleach, Soap, Detergents	Various	High	Fibers, Oils, Grease	Grey to Black	Low	Inhibited	Basic	High
23 Apparel; and Other Finished Products	NA	Various	Low	Some Fabric Particles	NA	Low	Normal	Normal	Low
Material Manufacture									
24 Lumber & Wood Products	NA	NA	Low	Some Sawdust	Light Brown	Low	Normal	Normal	Low
25 Furniture & Fixtures	Various	Various	Low	Some Sawdust, Solvents	Light Brown	Low	Normal	Normal	Low
26 Paper & Allied Products	Bleach, Various Chemicals	Various	Mod.	Sawdust, Pulp Paper, Waxes, Oils	Light Brown	Low	Normal	Wide Range	Low
27 Printing, Publishing, and Allied Industries	Ink, Solvents	Brown to Black	Mod.	Paper Dust, Solvents	Grey to Light Brown	Low	Inhibited	Normal	High
31 Leather & Leather Products	Leather, bleach, Rotten Eggs or Flesh	Various	High	Animal Flesh & Hair, Oils, Grease	Grey to Black, Salt Crystals	High	Highly Inhibited	Wide Range	High

Table 10: Characteristics of Industrial Discharges (Continued)

INDUSTRIAL CATEGORIES MAJOR CLASSIFICATIONS SIC GROUP NUMBERS	ODOR	COLOR	TURBIDITY	FLOATABLES	DEBRIS AND STAINS	STRUCTURAL DAMAGE	VEGETATION	PH	TOTAL DISSOLVED SOLIDS
33 Primary Metal Industries	Various	Brown to Black	Mod.	Ore, Coke, Limestone, Millscale, Oils	Grey to Black	High	Inhibited	Acidic	High
34 Fabricated Metal Products	Detergents, Rotten Eggs	Brown to Black	High	Dirt, Grease, Oils, Sand, Clay Dust	Grey to Black	Low	Inhibited	Wide Range	High
32 Stone, Clay, Glass, and Concrete Products	Wet Clay, Mud, Detergents	Brown to Reddish-Brown	Mod.	Glass Particles Dust from Clay or Stone	Grey to Light Brown	Low	Normal	Basic	Low
Chemical Manufacture									
28 Chemical & Allied Products									
2812 Alkalies and Chlorine	Strong Halogen or Chlorine, Pungent, Burning	Alkalies – NA Chlorine – Yellow to Green	Low	NA	Alkalies – White Carbonate Scale Chlorine - NA	High	Highly Inhibited	Basic	High
2816 Inorganic Pigments	NA	Various	High	Low Potential	Various	Low	Highly Inhibited	Wide Range	High
282 Plastic Materials and Synthetics	Pungent, Fishy	Various	High	Plastic Fragments, Pieces of Synthetic Products	Various	Low	Inhibited	Wide Range	High
283 Drugs	NA	Various	High	Gelatin Byproducts for Capsulating Drugs	Various	Low	Highly Inhibited	Normal	High
284 Soap, Detergents & cleaning Preparations	Sweet or Flowery	Various	High	Oils, Grease	Grey to Black	Low	Inhibited	Basic	High
285 Paints, Varnishes, Lacquers, Enamels and Allied Products (SB – Solvent Base)	Lates – Ammonia SB – Dependent Upon Solvent (Paint Thinner, Mineral Spirits)	Various	High	Latex – NA SB – All Solvents	Grey to Black	Low	Inhibited	Latex – Basic SB - Normal	High
286 Indust. Organic Chemicals									
2861 Gum and Wood Chemicals	Pine Spirits	Brown to Black	High	Rosins and Pine Tars	Grey to Black	Low	Inhibited	Acidic	High
2865 Cyclic Crudes, & Cyclic Intermediates Dyes, & Organic Pigments	Sweet Organic Smell	NA	Low	Translucent Sheet	NA	Low	Highly Inhibited	Normal	Low

Table 10: Characteristics of Industrial Discharges (Continued)

INDUSTRIAL CATEGORIES MAJOR CLASSIFICATIONS SIC GROUP NUMBERS	ODOR	COLOR	TURBIDITY	FLOATABLES	DEBRIS AND STAINS	STRUCTURAL DAMAGE	VEGETATION	PH	TOTAL DISSOLVED SOLIDS
287 Agricultural Chemicals									
2873 Nitrogenous Fertilizers	NA	NA	Low	NA	White Crystalline Powder	High	Inhibited	Acidic	High
2874 Phosphatic Fertilizers	Pungent Sweet	Milky White High	NA	White Amorphous Powder	High	Inhibited	Acidic	High	
2875 Fertilizers, Mixing Only	Various	Brown to Black	High	Pelletized Fertilizers	Brown Amorphous Powder	Low	Normal	Normal	High
29 Petroleux Refining and Related Industries									
291 Petroleum Refining	Rotten Eggs, Kerosene, Gasoline	Brown to Black	High	Any Crude or Processed Fuel	Black Salt Crystals	Low	Inhibited	Wide Range	High
30 Rubber & Miscellaneous Plastic Products	Rotten Eggs, Chlorine, Peroxide	Brown to Black	Mod.	Shredded Rubber Pieces of Fabric or Metal	Grey to Black	Low	Inhibited	Wide Range	High
Transportation & Construction									
15 Building Construction	Various	Brown to Black	High	Oils, Grease, Fuels	Grey to Black	Low	Normal	Normal	High
16 Heavy Construction	Various	Brown to Black	High	Oils, Grease, Fuels, Diluted Asphalt or Cement	Grey to Black	Low	Normal	Normal	High
Retail									
52 Building Materials, Hardware, Garden Supply, and Mobil Home Dealers	NA	Brown to Black	Low	Some Seeds, Plant Parts, Dirt, Sawdust, or Oil	Light Brown	Low	Normal	Normal	Low
53 Gen. Merchandise Stores	NA	NA	NA	NA	NA	Low	Normal	Normal	Low
54 Food Stores	Spoiled Produce, Rancid, Sour	Various	Low	Fragments of Food, Decaying Produce	Light Brown	Low	Flourish	Normal	Low
55 Automotive Dealers & Gasoline Service Stations	Oil or Gasoline	Brown to Black	Mod.	Oil or Gasoline	Brown	Low	Inhibited	Normal	Low
56 Apparel & Accessory Stores	NA	NA	Low	NA	NA	Low	Normal	Normal	Low
57 Home Furniture, Furnishings, & Equip. Stores	NA	NA	Low	NA	NA	Low	Normal	Normal	Low

Table 10: Characteristics of Industrial Discharges (Continued)

Industrial Categories Major Classifications SIC Group Numbers	Odor	Color	Turbidity	Floatables	Debris and Stains	Structural Damage	Vegetation	pH	Total dissolved solids
58 Eating & Drinking Places	Spoiled Foods Oil & Grease	Brown to Black	Low	Spoiled or Leftover Foods	Brown	Low	Normal	Normal	Low
Coal Steam Electric Power	NA	Brown to Black	High	Coal Dust	Black Amorphous Powder	Low	Normal	Slightly Acidic	Low
Nuclear Steam Electric Power	NA	Light Brown Low		Oils, Lubricants	Light Brown	Low	Normal	Normal	Low

ADAPTED FROM CHEMICAL AND PHYSICAL PROPERTIES FOR INDUSTRIAL NON-STORMWATER DISCHARGES (PITT, 2001)

3.4.A.1.e ADDITIONAL SCREENING PARAMETERS

Industrial Discharges

In some cases of specific suspected discharge types or as part of follow-up screening activities, additional parameters can aid in characterizing the discharge. Specifically, if the previous screening parameters and other characterizations (see Tables 9 and 10) indicate a high potential for industrial non-stormwater discharges, an expanded list of available parameters exists and should be consulted when pursuing targeted industrial follow-up screening efforts as listed in Table 11. Testing for many of these parameters is best conducted in a controlled laboratory setting; however, several tests can be conducted in the field with portable test kits or instrumentation.

Table 11: Significant Chemicals in Industrial Wastewaters

Chemical:	Industry:
Acetic acid	Acetate rayon, pickle and beetroot manufacture.
Alkalies	Cotton and straw Kiering, cotton manufacture, mercerizing, wool scouring, and laundries.
Ammonia	Gas, coke, and chemical manufacture.
Arsenic	Sheep-dipping, and felt mongering.
Chlorine	Laundries, paper mills, and textile bleaching.
Chromium	Plating, Chrome tanning, and aluminum anodizing.
Cadmium	Plating.
Citric acid	Soft drinks and citrus fruit processing.
Copper	Plating, pickling, and rayon , manufacture.
Cyanides	Plating, metal cleaning, case-hardening, and gas manufacture.
Fats, oils	Wool scouring, laundries, textiles, and oil refineries.
Fluorides	Gas, coke, and chemical manufacture, fertilizer plants, transistor manufacture, metal refining, ceramic plants, and glass etching.
Formalin	Manufacture of synthetic resins and penicillin.
Hydrocarbons	Petrochemical and rubber factories.
Hydrogen peroxide	Textile bleaching, and rocket motor testing.
Lead	Battery manufacture, lead mining, paint manufacture, and gasoline manufacture.
Mercaptans	Oil refining, and pulp mills
Mineral acids	Chemical manufacture, mines, Fe and Cu pickling, brewing, textiles, photo-engraving, and batter manufacture.
Nickel	Plating.
Nitro compounds	Explosives and chemical works.
Organic acids	Distilleries and fermentation plants.
Phenols	Gas and coke manufacture, synthetic resin manufacture, textiles, tanneries, tar, chemical, and dye manufacture and sheep-dipping.
Silver	Plating, and photography.
Starch	Food, textile, and wallpaper manufacture.
Sugars	Dairies, foods, sugar refining, and preserves.
Sulfides	Textiles, tanneries, gas manufacture, and rayon manufacture.
Sulfites	Wood process, viscose manufacture, and bleaching.
Tannic acid	Tanning, and sawmills.
Tartaric acid	Dyeing, wine, leather, and chemical manufacture.
Zinc	Galvanizing, plating, viscose manufacture, and rubber process

Source: Van der Leeden, et al 1990.

Impaired Waters

In areas with developed TMDLs, parameters that aid in understanding or identifying constituents that can impact stream pollutant loads may be added to identify potential impairment sources and improve discharges to waterways.

Human Markers

Additionally, new techniques are being developed that aid in sanitary or industrial characterization such as using DNA tests for Bacteroides to distinguish between animal and human wastewater sources.

3.4.A.1.f FIELD SCREENING PROCEDURE

The following outline details an initial standardized field screening procedure that identifies required staffing, general safety equipment and considerations, field equipment, and data collection methods. As the IDDE program matures, changes should be incorporated as needed to optimize the procedure.

a. Outfall Screening Staff – Normal outfall field screening should be conducted by a two person team with appropriate equipment to accomplish the screening in a safe and efficient manner.

b. Safety – Depending on screening methodology, safety equipment will vary. A project-specific safety plan is recommended including identification of hazards and location of medical facilities. For normal outfall reconnaissance and screening, safety equipment generally includes, but is not limited to the following:
    - a standard first aid kit (bandages, gauze, tape, etc)
    - cell phone(s) (and/or radios)
    - rubber gloves
    - steel toed boots
    - safety glasses
    - safety vests
    - hard hats
    - waders and floatation devices (if working from a canoe or wading streams)
    - traffic cone and vehicle safety light if working in streets

c. Screening Equipment – Depending on the final screening methodology, screening equipment will vary. Typical screening equipment includes, but is not limited to the following:
    - System mapping
    - Data collection forms, writing instruments, clip board
    - Watch and measuring tape
    - Digital camera
    - Sample collection jar/device and waste disposal bottle/container
    - Sample collection pole and bucket (in anticipation of hard to reach sample sites)
    - Test kits (for portable/on-site field screening)
    - Sampling instruments (for on-site screening)
    - Sample jars (for samples identified for laboratory testing – if necessary)
    - Cooler and ice (to transport samples for lab testing – if necessary)
    - GPS Device (Leica GPS1200)
    - Optional equipment includes an electronic data collector or field laptop computer

d. Screening Weather Conditions - IDDE field screening should be conducted during dry weather periods, typically at least 72 hours after any rainfall (0.1 inches or greater). Screening can be done as soon as 48 hours after measurable rainfall if necessary but may lead to a greater number of flowing outfalls because of higher ground water levels and detention pond flows.

e. Field Screening Outfall Prioritization - Field screening points will, where possible, be prioritized based on outfall density, total drainage area, population density of the site, age of the structure or buildings in the area, history of the area, and land use types, etc. (See Section 3.3.D.6).

f. Field Screening Location – Field screening points shall be located where practicable at the outfall. If the outfall is inaccessible or submerged, the farthest downstream manhole, or other accessible location downstream in the system is typical. If necessary and immediate screening of inaccessible outfalls is impractical, the outfall conditions that resulted in screening not being possible should be noted and it should be identified for screening at a later date with appropriate resources.

g. Data Collection Forms - Data should be collected using a standardized IDDE inspection form. A sample Illicit Discharge Inspection Form is included at the end of this Chapter and should be used for all inspections to record physical and chemical testing results (if necessary). Alternately, digital data forms can be developed and used for expedited data recording.

   On-site parameters are collected on field forms that are specific for each outfall that requires screening and are typically developed ahead of field activities with appropriate background information to verify that the correct site location is being inspected. Often at the inception of a program, or in the case where a new outfall is discovered, a blank field form is available and filled out with relevant information at the site. In some programs, paper field forms are supplemented or replaced with hand held data collection devices or computer tablets in some cases, including GPS equipment to allow expedited data collection and downloading.

      i. General Outfall Information – general information (Background Data, Outfall Description) already known should be indicated on a data collection form prior to going into the field. This will assist with location and verification of the outfall. While in the field, existing documented information should be verified and corrected if necessary and new information indicated (see sample form). A photograph of the outfall should be taken to aid in future visits to confirm location, document current physical characteristics and through time, document change in characteristics.

      ii. Physical Characteristics – physical characteristics for flowing and non-flowing outfalls should be document by completing the appropriate section of the data collection form (see sample form and Indicator Parameters Section for additional guidance).

      iii. Chemical Characteristics – If sufficient flow is observed and samples can be safely collected, a field chemical analysis of the discharge should be performed and documented on the data collection form (see sample form and Indicator Parameters Section for additional guidance).

h. Sample Collection - The field chemical analysis will consist of the following:

i. Take grab samples at a flowing outfall that has sufficient flow that a sample can reasonably taken for field screening.

ii. Samples should be collected in a clean sample container.

iii. If sample containers are reused in the field, the container should be rinsed out three times with the water from the outfall being sampled.

iv. Care should be taken not to scrape the bottom of the outfall and capture sediment and other benthic materials.

v. Stream flows/pond water and water pooled at the outfall should NOT be taken as the outfall grab sample; however, these sources CAN be sampled to aid in overall characterization of water quality in the area. Specifically, pooled water can and should be taken to supplement the normal outfall sampling in the case where the pooled water looks like it may contain pollutants from past (intermittent) discharges or dumping (discoloration, floatables, etc). Pooled water (or other stream/pond) grab samples should be tested on-site and, if test results return positive for potential pollutant indicators, it is suggested that an additional grab sample (of up to one liter) be taken for potential follow-up lab testing after review of potential sources and tests to be conducted. Collected sample jars should be put on ice in a cooler to preserve them as best as possible as many tests have retention times and specific preservatives and handling requirements.

vi. Amount of grab samples/quantity of collected water necessary will vary depending on the field screening method (test kit, on-site instrument test, lab sample).

vii. Detailed procedures for collecting each sample and conducting each test should be reviewed following the manufactures guidance.

viii. Testing should be conducted for each screening parameter following manufacturer's guidance.

ix. Results should be immediately transferred to the data collection form following the test.

x. Unused grab sample water can generally be poured out on site. Used sample vials/ampoules, etc should be handled and disposed of per manufacturers directions.

xi. Test kits and instruments should be cleaned and closed carefully after completion of tests.

xii. Once the field screening is complete and all resources are repacked and secure the team should proceed to the next outfall.

xiii. If test results return highly positive for potential pollutant indicators or visual observations appear to contain conclusive indication of an active illicit discharge, identify the outfall for follow-up screening (see Section 3.3.D.9).

3.4.A.2 Investigation Procedures

Routine outfall screening and reported spills or dumping may trigger the need to conduct follow-up investigations. The following procedure outlines the general decision making process for initiating and conducting follow-up investigations or placing an outfall on a "watch list" for potential future action.

3.4.A.3 Deciding When to Conduct Further Investigations

The County will investigate portions of the municipal separate storm sewer system that, based on field screening sampling results or other information appear to contain illicit discharges or other sources of non-storm water discharges.

The following instances as outlined will generally be considered as conditions that warrant timely follow-up investigations along with the recommended action:

a. Routine field screening parameters suggest that an illicit discharge may be present. Table 12 provides thresholds for various parameters:

Table 12: Screening Parameter Thresholds

Screening Parameter	Threshold	Action
Surfactants (Detergents)	Sample > 0.25 mg/L	Evaluate Ammonia and Potassium Levels and Ratio for potential source(s)
Potassium	Sample > 3.1 mg/L	Exceeds average spring water and tap water levels (Reference - Pitt). Review local sample result "Library" if available. Review other test results including Ammonia/Potassium Ratio then conduct normal confirmation follow-up actions (See Section 3.3.D.12)
Ammonia	Sample > 0.1 mg/L	Exceeds average spring water and tap water levels (Reference - Pitt). Review local sample result "Library" if available. Review other test results including Ammonia/Potassium Ratio then conduct normal confirmation follow-up actions (See Section 3.3.D.12).
Ammonia/Potassium Ratio	Sample Ratio > 1 (possible wastewater) Sample Ratio <1 (possible washwater)	Note potential source(s) and conduct normal confirmation follow-up actions (See Section 3.3.D.12)
Fluoride	Sample > 0.25 mg/L	Exceeds typical groundwater levels. Likely contains sources of potable water or sewage. Conduct normal confirmation follow-up actions (See Section 3.3.D.12)
pH	Sample < 5 SU or Sample > 9 SU	Likely contains an industrial process water source. Review potential industrial sources. (See Table 10)
Conductivity	Sample > 2000 uS/cm	Exceeds average spring and tap water levels and may indicate industrial or other source (Reference -

		Pitt). Review local sample result "Library" if available and other test results then conduct normal confirmation actions (See Section 3.3.D.12).

Notes:

- Threshold levels/ratios as noted in Table 12 do not necessarily "guarantee" the presence of an illicit discharge. Visual parameters should also be considered as potential indicators.
- In some cases, not all chemical parameters may be tested for during the initial screening (such as potassium) for various reasons including: complexity of the field test; use of hazardous chemicals; cost; and other considerations.
- It may be beneficial to develop a "Library" of local chemical test results of potable water and ground water samples or document reported average potable water chlorine and fluoride levels from standard water quality reports.
- Chemical test that exceed (or are below) the levels presented above, in Figure 6 and on the Illicit Discharge Inspection Form do not necessarily indicate the presence (or lack) of an illicit discharge. Permitted industrial storm water discharges or other permitted non-storm water discharges may be present or may be masked by excessive clear water flows. Additionally, these tests can be somewhat subjective if visual colorimetric test kits are used and there can also be varying levels of accuracy depending on the test kits selected.
- Documentation of results can also be used to compare one outfall level to another, develop history on an outfall (i.e. establish baseline levels) and serve as potential indicators of illicit discharges.

b. The result of routine field screening when compared to the combination of Physical and Chemical parameters provided in 9 indicate a high probability of the presence of Sanitary Sewage, Septage Water, Industrial Water, Wash Water, or Rinse Water.
    i. Recommended follow-up actions include:
        a. If Table 9 indicates a high probability for Industrial sources, Table 10 should be reviewed for additional potential source characterization
        b. Table 11, where appropriate will aid in follow-up screening parameter identification
        c. Review known land use for drainage basin system locations containing land use/businesses with high potential to be discharge source
        d. Select test parameters best suited to identify likely discharge sources
        e. Conduct follow-up screening investigations by testing immediately downstream of potential source(s) for both routine field screening parameters and any specific selected chemical tests

c. Reported spills or dumping
    i. Document as many details of reported occurrence as possible including but not limited to the following:
        a. Time and Date
        b. Location
        c. Name of suspect person or business (if known)
        d. Nature of material (if known)
        e. Is the incident about to occur (in the instance of dumping)
        f. Is the incident on-going
        g. Has this been known to occur in the past
        h. Name and number of person reporting incident (if willing to offer)

i. Other information

ii. County should develop a form to document this information and form should be kept near the phone of the person taking calls from the spills hotline or other likely person.

iii. Priority -
   a. Appropriate emergency follow-up action should be taken if the incident is about to occur, on-going, or recently occurred to protect the health of residents, the environment, and County infrastructure.
   b. Non-emergency situations should be evaluated for additional follow-up actions depending on the nature of the problem.

3.4.A.4 Deciding to Place an Outfall on a "Watch List"

If physical, chemical, or other indications show signs of potential or past illicit discharges but do not meet the criteria for conducting follow-up investigations the outfall may be placed on a "watch list". The "watch list" is a schedule to re-screen suspect outfalls on a more frequent basis than the normal routine outfall screening.

Criteria for placing an outfall on a future screening "watch list" may include but are not limited to the following:

a. Inactive outfalls with staining, corrosion/pitting, discolored pools, excessive (or void of) vegetation, or other signs of potential past or intermittent discharges.
b. Active outfalls with surfactants < 0.25 mg/l, but > 0.0 mg/l
c. Active outfalls that were identified for follow-up screening but when follow-up confirmation testing is conducted, parameters are below previous identified thresholds or the outfall is no longer active.
d. Active outfalls where follow-up investigations are not successful in locating source(s).
e. Outfalls with reported or historical past indications of potential illicit discharges including dumping but are not active.
f. Outfalls with suspected intermittent and potential illicit discharges should be followed-up using specific approaches to trap samples. These include caulk dams, suspended absorption devices, automatic samplers, or other techniques.

3.4.A.5 Procedures for Following Up on Known or Suspected Illicit Discharges

When monitoring activities or a report hotline call as outlined in Section 3.3.D.13 identify a possible IDDE, the county will contact the city so the city can perform enforcement.

For active outfalls identified in the field screening (or through other means such as complaint driven notification) as having a reasonable potential for containing illicit discharges or other sources of unallowable non-stormwater discharges, the County and city will attempt to locate the source of the potential discharge. The following procedure will generally be followed:

a. Confirmation Screening – The suspect outfall will be revisited within a reasonable timeframe following the initial field screening and, assuming the outfall remains active, re-sampled for testing at a laboratory to confirm the presence of the identified parameters. This sampling will include provisions for any additional testing not initially performed in the field.

- If the outfall is inactive or produces screening levels that appear too low to reasonably conduct follow-up investigation, the follow-up can be terminated and the outfall can be placed on the future follow-up "watch list" schedule.

b. Additional Screening Tests - If additional sampling parameters were identified based on suspect industrial sources, they should be taken following a successful confirmation sampling. If they include on-site test kit or instrument tests and do not produce positive results, they can be dropped from the remaining follow-up sampling effort but may be re-tested if a potential source is isolated because some chemicals can be present in low levels if there is sufficient dilution but more likely to be present in higher concentrations closer to the discharge source.

c. Upstream Screening - The sampling crew will follow the storm drainage system upstream to the next accessible upstream manhole or storm sewer junction to confirm the presence of flow and sampling. A three person team may be necessary depending on the location and depth of manholes and other sampling locations and conditions, including heavy traffic and the potential to follow confined space protocols for deep structures. If fewer parameters can be evaluated to reduce cost and effort (such as surfactants or industrial parameter that is tested on-site with test kits or instrument test) other parameters may be dropped from the sampling regiment if desired. The full sample set should be periodically tested to verify no significant change in detection levels.

- This procedure will be continued using storm sewer system mapping until the suspect illicit discharge chemical source location is isolated to one or more storm sewer segments if possible.

d. Windshield Survey - Once the location is isolated, the field crew will search for obvious visual signs of illicit connections and discharges by conducting a "windshield survey". The survey includes photographing the surrounding area including buildings, observing business types, and other items of interest. Other items of interest can include, but are not limited to outdoor storage areas, staining, or other potential signs of illicit discharges or dumping. Inlets and catch basins, if present may be inspected for the presence of discolored water, staining, or other indications of non-storm water discharges and may include direct chemical testing of catch basin sumps. No internal entry of any business is included in this effort. The results of the survey will be shared with County and city staff at a meeting for discussion of potential sources and recommended next steps.

e. Building Records Review - Following the "windshield survey", building records may be researched to identify potential cross connections and discussions may be held with building owners.

f. Advanced Investigation Techniques - If no immediate source is apparent after visual site inspection of sewers and buildings, the County and city will consider other methods to identify the flow such as sewer system televising, smoke testing, and dye water testing (IEPA should be notified in advance of the time and location of any dye water testing).

i. Televising – For drainage systems where field screening isolated the pollutant(s) to a single storm sewer segment and previous investigative efforts or discussions with municipal staff did not result in any other specific actions or recommendations, the most common next step may be to televise the isolated storm sewer line for potential illicit

connections or inflow/infiltration points. The televising is reviewed for direct and indirect flow sources, staining, debris buildup and other potential pollutant source indicators. This effort can generally be accomplished without notification or permission of surrounding landowners.

ii. Smoke Testing – For drainage systems where field screening isolated the pollutant(s) to a single storm sewer segment, and where discussions with municipal staff (or results from storm sewer line televising suggest a potential illicit connection or are inconclusive), a potential next step is to conduct smoke testing of the isolated storm sewer line. Smoke testing can identify larger direct and some indirect connections to the storm sewer system. This effort is accomplished after notification of surrounding landowners by providing information to each homeowner/business of the upcoming test in the area, as well as notifying appropriate municipal staff and fire/police staff a minimum of two to three days prior to testing. Informing downstream communities is typically not needed because smoke migration is relatively local.

iii. Dye Testing - For drainage systems where field screening isolated the pollutant(s) to a single storm sewer segment but other methods of investigation fail to completely identify the source of the suspect connection, dyed water testing can assist in locating the source. This effort is accomplished after notification of surrounding landowners and, depending on what line is to be tested, often requires permission to enter private property. A private or municipal potable water source is typically needed for this testing. Appropriate notification of regulatory officials and any downstream connected municipalities should also be conducted. Multiple field staff are needed to drop the dye and watch potential receiving sewers/areas. Dye testing is often done in conjunction with televising to identify the source(s) of the dye as they can be direct, indirect, and multiple. Dye can be added to specific building drains or other suspect direct connection locations or can be added to an adjacent sanitary sewer line and 'flooded' to check for dye water transference to the storm line.

iv. Leak Detection Survey (Assumes Fluoride (or chlorine) Parameter Used) - For each drainage system where field screening for pollutant(s) of interest resulted in isolating the pollutant(s) to a single storm sewer segment and the pollutant(s) of interest included fluoride (or chlorine) and no obvious source is manifest, leaking water lines may be a source of the potable water. Potable water sources can lead to unnecessary outfall screening, dilute pollution sources, and can infiltrate into sanitary and storm systems resulting in unnecessary costs by the municipality to treat the potable water in the distribution system and treat excess infiltration and inflow in the sanitary sewer system. A leak detection survey on the water mains is recommended in the area of the suspected flow. This can typically be conducted with a single staff person with appropriate equipment and experience. If a leak is identified, the location of the leak will be identified and forwarded to appropriate staff for repair. If there is a repair made, a follow-up visit to check for the presence of flow and, if applicable, additional leak detection survey efforts on the area to confirm that there were no other apparent leaks present. Potable water sources are not typically illicit discharges in and of themselves.

v. Assessing Permitted Industrial Discharges - The County and city will assess whether or not an identified source facility is appropriately permitted to discharge into the storm

sewer system. This can be done by contacting IEPA with the name and address of the business in question for information on their permit or using other methods.

3.4.A.6 Procedures for Disconnection of Identified Illicit Discharges

Illicit Discharges Within the city of Naperville - When an illicit connection/discharge is located, the city will begin procedures to work with the subject property/owner to eliminate the connection as expediently as possible.

Notification to Neighboring (downstream) Municipalities - In the case of an illicit discharge that originates within the city and that discharges directly to a neighboring municipality's MS4, the County will notify the affected municipality as soon as practicable of the identified source, typically within 24 hours of confirming the illicit discharge source.

Illicit Discharges Originating from unincorporated Areas Within the City of Naperville - In the case of an illicit discharge that originates from an area other than incorporated City of Naperville, the City will notify the "originating" municipality and or counties as soon as practicable, ideally within 24 hours.

Minimization of Discharge - Prior to the actual disconnection, the City will require the owner/operator of the illicit connection/discharge to take all reasonable measures to minimize the discharge of pollutants to the municipal separate storm sewer system.

Elimination of Illicit Connections/Discharges - Each illicit connection/discharge discovery will be handled on a case-by-case basis. The City has not prepared an exact remedy or timeframe for illicit discharge correction because of the wide variability of potential discharge situations. More complicated or costly remedies may take a longer period of time to correct. If it appears that more than 72 hours will be required to remedy the situation, the IEPA will be contacted and provided with additional details regarding the problem, including but not limited to interim measures to eliminate or reduce pollutant exposure, and an estimated timeline for complete elimination.

Illicit Discharge and Spills Contact Information – City of Naperville Non-Emergency Dispatch (630) 420-6187 (Naperville IDDE Hotline number).

3.5 Construction Site Runoff Control

The goal of the City of Naperville Municipal Code Chapter 9 - Soil Erosion and Sedimentation Control Ordinance (SESCO) is to ensure that new development does not increase existing stormwater problems or create new ones. The Municipal Code establishes citywide standards for runoff maintenance, detention sites, soil erosion and sediment control, water quality, wetlands and floodplains. These provisions are only applicable for regulated development activities as defined by the Municipal Code. Applicants that hydrologically disturb greater than 1-acre are also required to seek coverage under the statewide construction general permit by filing a Notice of Intent (NOI) with IEPA.

The Municipal Code is implemented within the municipal boundaries and the municipal planning area. DuPage and Will County have similar ordinances regulating land disturbance in City MS4 system is a receiving water of unincorporated areas and tributary areas of other municipalities.

3.5.A Regulatory Program

Land Use and Land Development applicants are directed to City of Naperville Transportation, Engineering, and Development Business Group (T.E.D) for information pertaining to the permitting process. TED manages a Development Review Team (DRT) that guides applicants to submit the completed permitting forms and supporting documentation for review and comment. The TED DRT is comprised of representatives from several city departments. The team directly involved with storm drainage review and permitting is the Engineering Team. After the DRT concurs that the applicable provisions of the Municipal Code have been addressed, a permit is issued. Each permit lists any additional conditions that are applicable to the development.

DuPage County Flood Plains, Floodways and Special Management Areas

As discussed, all applicants are directed to the City's Transportation, Engineering and Development Business Group for information pertaining to the permitting process. Developments that are in DuPage County and are involved with flood plains, floodways and special management areas must also follow the requirements of the DuPage County Ordinance. TED therefore refers applicants to also submit a complete application permit form and supporting documentation to DuPage County for review, comment, and certification. After DuPage County issues certification s that the applicable provisions of the county ordinance have been addressed, a city permit is issued. Each permit lists any additional conditions that are applicable to the development.

Will County Flood Plains, Floodways and Special Management Areas

As discussed, all applicants are directed to the City's Transportation, Engineering and Development Business Group for information pertaining to the permitting process. Developments that are in Will County and are involved with flood plains, floodways and special management areas must also follow the requirements of the Will County Ordinance. TED therefore refers applicants to also submit a complete application permit form and supporting documentation directly to the US Army Corps of Engineers, IDNR and FEMA as applicable for review, comment, and certification. After all necessary certifications and permits are issued, a

city permit is issued. Each permit lists any additional conditions that are applicable to the development.

Overall Requirements

Ordinance provisions include but are not limited, to the following:

- Grading, soil erosion and sediment control plan. The plan must:
  - Prevent discharge of sediment from the site through the implementation of soil erosion control practices, primarily, and sediment control secondarily, and
  - Protect receiving waters, natural areas and adjacent properties from damage which may result from the proposed grading.
- Waste control;
- Runoff Volume Reduction Hierarchy and Water Quality;
- Established inspection duties for the applicant and procedures for inspections;
- Record keeping and reporting procedures;
- Security deposits to ensure faithful performance;
- Enforcement measures to achieve compliance; and
- One year warranty period, for applicable developments.

The DuPage County Appendix E: Technical Guidance to the DuPage County Stormwater and Flood Plain Ordinance and the Illinois Urban Manual 2002, or as amended, includes detailed guidance on selection and implementation on related best management practices.

As part of the permit review process, applicants that hydrologically disturb greater than 1-acre are also required to seek coverage under the statewide construction general permit by filing a Notice of Intent (NOI) with IEPA. During construction, applicants are required to submit to IEPA Incidence of Noncompliance (ION) forms, as necessary. After the site is substantially stabilized, the applicant is required to submit a Notice of Termination (NOT).

3.5.B Responsible Parties

3.5.B.1 Applicant

The applicant is ultimately responsible for ensuring compliant soil erosion and sediment control measures on-site during construction. General contractors, sub-contractors and other hired employees of the applicant can assist the applicant in maintaining a compliant site; however the applicant remains the responsible party. The applicant is also responsible for obtaining all other required state and federal permits, including an NOI with IEPA and upholding all permit conditions (including completing inspection logs).

3.5.B.2 Erosion Control Inspectors

The purpose of Naperville Municipal Code is to facilitate positive communication between the City of Naperville and the permit holder by creating a single point of contact for soil erosion/sediment control issues with the idea that it is easier to prevent soil erosion and sediment control problems than it is to correct them after they have occurred. Further, the program is intended to improve site conditions, minimize environmental impacts, and educate contractors/developers/inspectors about proper soil erosion/sediment control Best Management Practices.

The applicant, for a permit site is required to hire or employ a qualified Erosion Control Inspector (ECI) for the duration of the project.

The (ECI) can work for the permittee's contractor, subcontractor, consultant, etc. The (ECI) does not have to be a direct employee of the permittee. The project owner has the responsibility to conduct inspections as required, document inspections, keep inspections and project plans available on site, report noncompliance issues promptly, recommend soil erosion/sediment control measures. Assuming the owner and (ECI) are competently completing these steps, the (ECI) is considered to meet the requirements of the program. Ultimately, liability for a development in noncompliance may fall to the owner, the applicant, the contractor, the developer, the (ECI), or anyone else involved as determined on a case by case basis.

Sites that do not require a permit may still require a (ECI) under the NPDES II permit process. Significant efforts have been made to minimize overlap between the two programs. Currently all sites with greater than 1-ac or more of hydrologic disturbance require a permit from IEPA and a designated inspector. The site inspection logs can typically meet the permit conditions of both the WDO and the IEPA.

3.5.B.3 Enforcement Officer

The City Engineer is responsible for administration and enforcement of the provisions of the Stormwater portions of the Municipal Code.. Additionally, the City Engineer is responsible for performing inspections and monitoring the development. Review and inspection efforts can be performed by personnel under his/her direct supervision. A full description of the City Engineers responsibilities is included in Appendix E. The City Engineer follows established procedures for notifying applicants of deficiencies and obtaining site compliance (i.e. enforcement).

It is also both the right and the responsibility of the City Engineer to ensure that all incidences of non-compliance received from a ECI are resolved.

Alternative 3.4.B.3 Municipal Contact – Stormwater Coordinator

The City of Naperville has the responsibility to designate a contact with both DuPage and Will Counties and the IEPA. The City of Naperville has designated the City Engineer to fulfill both roles. DuPage County refers to this person as their community contact. The community contact

provides support and coordinates with DuPage and Will Counties on development related activities within the community. The IEPA considers this person the Stormwater Coordinator. Chapter 2.2.A provides additional information regarding the role of the Stormwater Coordinator.

3.5.C Minimum Construction Site Practices

A site plan is required to comply with minimum prescribed practice requirements set forth in the Municipal Code. The Municipal Code also allows for the City of Naperville to require additional measures, above and beyond minimum control measures, to prevent the discharge pollutants from construction sites. Design and implementation guidance is available in the DuPage County Technical Reference Manual and other reference materials identified in the SMPP. A copy of the DuPage County Technical Reference Manual can be found here: (http://www.dupageco.org/EDP/Stormwater_Management/Water_Quality/1424/).

Some minimum control measures include the following:

- Construction site sequencing and phasing,
- Preservation of existing vegetation and natural resources (through the runoff volume reduction hierarchy provisions),
- Stormwater conveyance systems (including concentrated flows, diversions, etc.),
- Stockpile management,
- Soil erosion control measures (including blanket and seeding),
- Stabilized construction entrances/exits and haul routes,
- Sediment Control (including silt fence, inlet/outlet protection, ditch checks, sediment traps, sediment basins etc.),
- Wind and Dust control measures,
- Non-stormwater management (including dewatering practices, waste management practices, spill prevention and control practices etc.),
- Construction Buffers, and
- Construction Details.

3.5.D Site Plan Review

The City of Naperville is the enforcement agency of the Stormwater Provisions of the Municipal Code. The city's Transportation, Engineering, and Development Business Group (T.E.D) provide applicants with a variety of documents necessary to obtain municipal permits. Included in the packet is relevant permitting information including the performance guarantee information.

TED performs a review of the proposed site plan and provides comments to the applicant on any plan deficiencies and/or recommended plan enhancements. The plan review also assists in

identifying other approvals that the applicant may be required to obtain. After the TED concurs that the applicable provisions of the Municipal Code have been addressed a permit is issued.

3.5.E Site Inspection Procedures

Representatives of the City Of Naperville are authorized to enter upon any land or water to inspect development activity and to verify the existing conditions of a development site that is under permit review.

The City of Naperville may inspect site development at any stage in the construction process. For major developments, the City of Naperville shall conduct site inspections, at a minimum, at the end of the construction stages 1 and 7 listed below. Construction plans approved by the City Engineer shall be maintained by the site owner at the site during progress of the work. Recommended inspection intervals are listed below:

1. Upon completion of installation of sediment and runoff control measures (including perimeter controls and diversions), prior to proceeding with any other earth disturbance or grading,
2. After stripping and clearing,
3. After rough grading,
4. After final grading,
5. After seeding and landscaping deadlines,
6. After every seven (7) calendar days or storm event with greater then 0.5-inches of rainfall,
7. After final stabilization and landscaping, prior to removal of sediment controls.

Site Inspection Process:

- The City of Naperville requires a pre-construction meeting on applicable development sites. During the pre-construction meeting the ***Pre-Construction Meeting Form*** **(Appendix 5.4)** is filled out by the City of Naperville attendee. It is also recommended that the inspector request to see the SMPP and IEPA NOI for applicable construction sites.
- The applicant notifies the City of Naperville when initial sediment and runoff controls measures have been installed.
- The City of Naperville inspects the initial sediment and runoff control measures and authorizes the start of general construction.
- The City of Naperville inspects the stormwater management system and authorizes additional site improvement activities.
- The site owner performs site inspections at the recommended intervals listed above. The city may inspect the site for interim compliance and completes the ***SE/SC Inspection Form*** **(Appendix 5.5).**
- The City of Naperville requires as-built documentation of the stormwater management system prior to final site stabilization. Tags of the seed mixes are kept by the developer for inspection.. Upon approval of the as-built, the applicant shall permanently stabilize the site.

3.5.F Complaints

The city frequently receives phone calls regarding a development, either during the review or construction phase. Both site design and construction related phone calls are directed to the TED, the City Engineer, or designee, and logged. Site design comments are handled on a case by case basis. Construction related calls are typically addressed by performing a site inspection.

3.5.G Performance Guarantees

Performance Guarantee (surety) is required for public improvements (i.e. sewer, water, and right-of-way work), stormwater management system, landscaping, and erosion control. The Engineers Opinion of Probable Construction Cost (EOPCC) is provided to the City of Naperville for their review/approval. The required surety amount shall be 110% of City of Naperville approved EOPCC.

The City of Naperville will hold 10% of the surety for a minimum of 1-yr after site stabilization is complete to ensure that the vegetation is established and no failures occur. For sites with native vegetation, this portion of the surety will be held for a minimum of 3-yr after site stabilization. The applicant may apply for reductions of surety. Refer to the Municipal Code for information regarding the surety requirements.

3.5.H Violation Notification Procedures

In general the compliance due date should be within 5-working days. However, if the inspector determines that the violation is or will result in significant environmental, health or safety hazards a 24-hour due date should be set. For time-critical violations, the developer should also be advised to complete a Notice of Incidence report with IEPA for all sites that were required to obtain an NOI with IEPA. If the discharge from the construction site enters receiving water within the MS4 jurisdictional boundaries, it is highly recommended that the MS4 also file an ION with IEPA.

The **SE/SC Inspection Form** is found in **Appendix 5.5**. Step 1 can be initiated by observation of a violation during a routine inspection, or in response to a notice of noncompliance received from a ECI.

Step 1: Violation Is Observed

- The inspector completes the **SE/SC Inspection Form**.
- Photographs of the violation(s) should be taken and saved.
- The Violation shall be described to the construction site contact.
- A copy of the **SE/SC Inspection Form** is provided to the contractor and the developer. The **SE/SC Inspection Form** indicates the remedial measures required and a maximum time frame for action.

- At the end of the indicated time frame the City of Naperville performs a follow-up site inspection. The inspector attempts to schedule the follow-up inspection with the construction site contact.

Step 2: 1st Follow-Up Site Inspection

The construction site contact shall be notified of the anticipated inspection time. The site is inspected including all items previously documented on the previous **SE/SC Inspection Form**. The inspector will determine if the remedial measures have all been satisfactorily addressed, substantially completed, or if significant non-compliance remains.

- If the remedial measures have been satisfactorily addressed then the **SE/SC Inspection Form** is filled out indicating compliance and provided to the contractor and developer.
- If the inspector determines that the remedial measures have been substantially completed, but not entirely resolved, the inspector shall follow Step 1 above.
- If the inspector determines that the remedial measures have not been substantially completed, the inspector shall follow Step 3 discussed below. Photographs of the violations should be taken and saved.

Step 3: 1st Notice of Violation

A formal **Notice of Violation** letter will be sent to the contractor and developer; see sample letter in **Appendix 5.6**. The letter will include the following information.

- Description of the violations (including ordinance provisions),
- Mandatory remedial measures, and
- Maximum time frame for resolution (typically 5 working days),

Step 4: 2nd Follow-Up Site Inspection

The inspector will determine if the remedial measures have all been satisfactorily addressed, substantially completed, or if significant non-compliance remains.

- If the remedial measures have been satisfactorily addressed then the **SE/SC Inspection Form** is filled out indicating compliance and provided to the contractor and developer.
- If the inspector determines that the remedial measures have been substantially completed, but not entirely resolved, the inspector shall follow Step 1 above.
- If the inspector determines that the remedial measures have not been substantially completed, the inspector shall follow Step 3 discussed below. Photographs of the violations should be taken.

Step 5: 2nd Notice of Violation

Depending on the severity of the outstanding violations the inspector may issue a Red Tag and a Conditional Stop Work Order upon completion of the inspection. The Stop Work Order allows for the resolution of the violation but no other on-site improvements. Building and/or Occupancy Permits will not be issued and surety reductions will not be entertained until the violation is resolved. A formal **Notice of Violation** letter will be sent, via certified mail, to the contractor and developer; see sample letter in **Appendix 5.6**. The letter will include the following information.

- Description of the violations (including ordinance provisions),
- Mandatory remedial measures, and
- Maximum time frame for resolution (typically 5 working days).

Step 6: 3rd Follow-Up Site Inspection:

The inspector will determine if the remedial measures have all been satisfactorily addressed, substantially completed, or if significant non-compliance remains.

- If the remedial measures have been satisfactorily addressed then the **SE/SC Inspection Form** is filled out indicating compliance and provided to the contractor and developer.
- If the inspector determines that the remedial measures have been substantially completed, but not entirely resolved, the inspector shall follow Step 1 above.
- If the inspector determines that the remedial measures have not been substantially completed, the inspector shall follow Step 3 discussed below. Photographs of the violations should be taken and saved.

Step 7: 3rd Notice of Violation

The inspector issues a Red Tag and a Conditional Stop Work Order upon completion of the inspection, if one has not already been issued. The Stop Work Order allows for the resolution of the violation but no other on-site improvements. Building and/or Occupancy Permits will not be issued and surety reductions will not be entertained until the violation is resolved. Representatives from TED shall conduct an internal meeting to discuss the violation and subsequent actions. These actions may include: issuing fines at a rate allowable by the Municipal Code per violation since the 1st notice of violation; draw from surety to enable City of Naperville to have the remedial measures corrected; seeking City of Naperville legal consul and pursuing injunctive or other legal relief.

A formal **Notice of Violation** letter will be sent, via certified mail, to the contractor and developer; see sample letter in **Appendix 5.6**. The letter will include the following information.

- Request a meeting with the applicant/development and City of Naperville staff;
- Description of the violations (including ordinance provisions),
- Mandatory remedial measures,

- Maximum time frame for resolution (typically 5 working days), and
- States additional penalties or measures that will be imposed if the violation(s) persist.

Repeat Steps 6 & 7 until resolution

3.5.I BMP Reference Information

Reference information includes, but is not limited to, the following sources:

- Native Plant Guide,
- Lake County SMC's Technical Reference Manual,
- Illinois Urban Manual,
- SMC's
    - soil erosion and sediment checklist,
    - soil erosion and sediment control notes,
    - typical construction sequencing,
- Construction details are available on the City of Naperville's website,
- Chicago Metropolitan Agency for Planning (previously Northeastern Illinois Planning Commission) Course Manuals,
- IDOT manuals,
- Center for Watershed Protection documents, and
- IEPA and USEPA publications.

3.5.J Construction Site Waste Control

The City Municipal Code includes several provisions that address illicit discharges generated by construction sites. The applicant is required to prohibit the dumping, depositing, dropping, throwing, discarding or leaving of litter and construction material and all other illicit discharges from entering the stormwater management system.

3.5.K Development Tracking

Development permitting activity is tracked and documented by the City of Naperville, TED.

3.5.L Pavement Projects

Pavement resurfacing and maintenance projects are determined through pavement evaluation studies. . Project work shall follow IDOT Standard Specifications and applicable provisions of

the City Municipal Code. At a minimum, protect drainage structures with inlet filter bags during construction activities.

3.6 Post Construction Runoff Control

The City of Naperville complies with NDPES permit requirements by incorporating Ordinance and BMP standards to minimize the discharge of pollutants of development projects. This chapter describes how the compliance with stormwater discharge permit requirements for long-term post-construction practices that protect water quality and control runoff flow is achieved.

This SMPP creates and references extensive policies and procedures for regulating design and construction activities for protecting receiving waters. The design and construction site practices selected and implemented by the responsible party for a given site are expected to meet BMP measures described in the Revisions to Appendix E: Technical Guidance for the DuPage County Countywide Stormwater and Floodplain Ordinance and IEPA's Program recommendations. All proposed permanent stormwater treatment practices must be reviewed and approved by the City Engineer.

3.6.A Regulatory Program

The Naperville Municipal Code includes numerous performance standards on Grading, Stormwater and Soil Erosion/Sediment Control that must be met for all parties undertaking construction.

3.6.B Runoff Volume Reduction Hierarchy

The Naperville Municipal Code includes performance standards which require that the site plan include a combination of structural and/or non-structural BMPs that will reduce the discharge of pollutants, the volume and velocity of storm water flow to the maximum extent practicable. The permittee should ensure that the development plan addresses these provisions during the plan review process.

3.6.C Green Infrastructure

Each permittee should adopt strategies that incorporate storm water infiltration, reuse and evapo-transpiration of storm water into the project to the maximum extent practicable. Site plan design and review should ensure that the development plan incorporates green infrastructure or low impact design techniques when possible. Types of techniques include green roofs, rain gardens, rain barrels, bio-swales, permeable piping, dry wells and permeable pavement.

3.6.D Long Term Operation and Maintenance

The SMPP includes two long term maintenance plans. These sample maintenance plans are included in **Appendix 5.11**.

- The first plan is the recommended plan for existing detention and stormwater management facilities, whether publicly or privately maintained. The intent of this sample plan is to provide guidance for the maintenance of facilities that do not have an approved plan. If an existing facility already has an adequate plan adequate; this document would supersede the sample plan.
- The second plan is provided by applicants during the permit review period. This plan should be reviewed and enhanced by the applicant to reflect the sites specific design. Receipt of the signed and recorded maintenance plan is required prior to issuance of a permit.

3.6.E Site Inspections

The inspection program for its general facilities is discussed in detail in Chapter 3.6.A. The inspection procedure for site inspections related to construction activities is discussed in detail in Chapter 3.4.E. This section focuses on post-construction inspections of previously developed sites, streambanks / shorelines, streambeds, and detention / retention ponds.

3.6.E.1 Previously Developed Sites

The City of Naperville inspects sites on a problem and complaint basis. Previously accepted developments are inspected with respect to the approved maintenance plan. A letter indicating the maintenance activity highlights, deficiencies or additional enhancements to the plan should be provided to the responsible party.

- For older developments that do not have a maintenance plan, the City of Naperville inspects facilities with respect to the sample existing facilities maintenance plan. A letter indicating the maintenance activity highlights and deficiencies should be provided to the responsible party. The sample maintenance plan is provided with the letter and the responsible party is encouraged to implement an annual maintenance program.

3.6.E.2 Shorelines

Inspection of detention and retention basin shorelines can be conducted in the spring and/or fall pending weather conditions. Pond locations are listed on the ***Detention/Retention Pond Checklist*** **(Appendix 5.7**). Observed erosion, seeding/re-seeding or slope stabilization needs are documented. Documented deficiencies should be reported to City Engineer who evaluates and determines appropriate remediation activities. Remedial actions might include notifying the property owner or including maintenance activities in the City of Naperville's work program.

New developments are required to provide a maintenance plan for constructed detention/retention facilities. The recorded maintenance plan for developments permitted through the Countywide Stormwater & Floodplain Ordinance (CSFPO) is used, if available, for shoreline areas. Typical BMP for maintenance of these areas are similar to those for a construction site. SMC's streambank/shoreline stabilization manual is used as a starting point in choosing the appropriate BMP for remediation activities.

3.6.E.3 Streambanks and Stream Bed Sediment Accumulation

Inspection of stream bank shorelines can be conducted in the spring and/or fall pending weather conditions. Stream locations are depicted on **Figure 1.** Document observed erosion and/or sediment accumulation. Documented deficiencies should be reported to City Engineer who evaluates and determines appropriate remediation activities. Remedial actions might include notifying the property owner or including maintenance activities in the City of Naperville work program.

3.6.E.4 Detention / Retention Pond Sediment Accumulation

Ensure that new detention/retention ponds are over excavated during construction to account for sediment accumulation. The developer is responsible for ensuring that the design grade is established prior to City of Naperville's acceptance of the pond. Pond information, including the

design permanent pool pond depths, is added to the City's GIS system upon acceptance of the pond.

If the inspected pond depth is found to be 2 feet or less from the design depth (i.e. shallower than the design permanent pool depth) this information should be reported to City Engineer who evaluates and determines appropriate remediation activities.

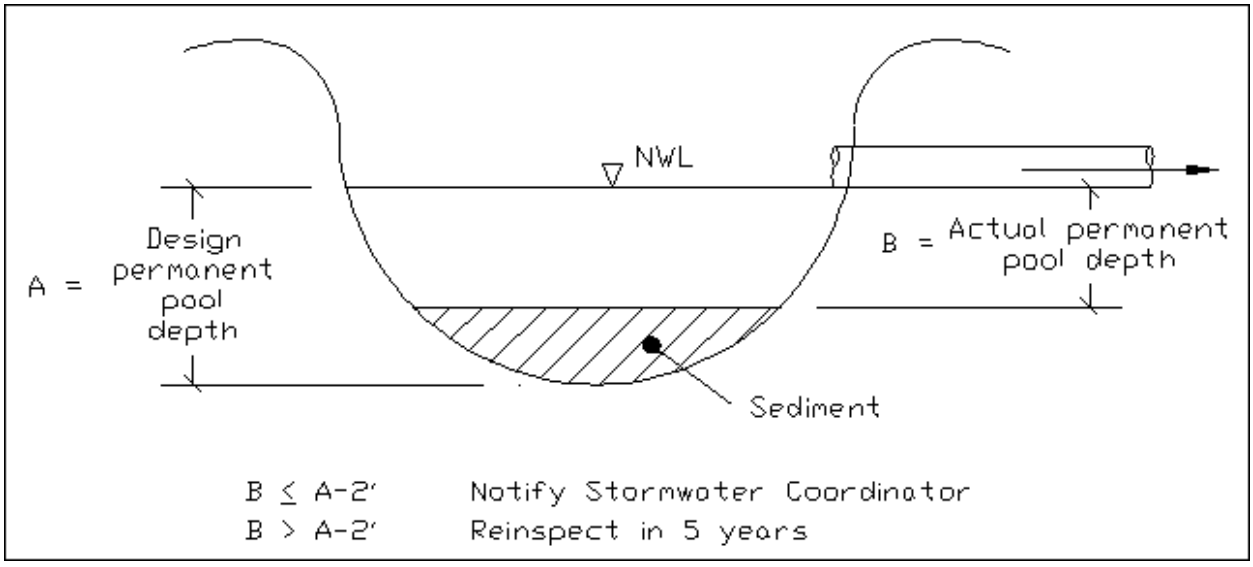


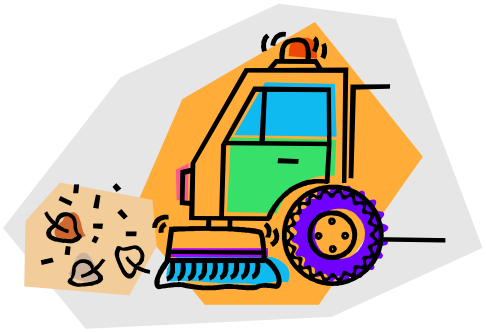
Figure 7: Pond Sediment Accumulation

3.7 Pollution Prevention and Good Housekeeping

The City of Naperville is responsible for the care and upkeep of the general facilities, municipal roads, its general facilities and associated maintenance yards. Many maintenance activities are most regularly performed directly by staff; however from time to time contractors are employed

to perform specific activities. This chapter describes how the compliance with permit requirements is achieved by incorporating pollution prevention and good housekeeping stormwater quality management into day-to-day operations. On-going education and training is provided to ensure that all of its employees have the knowledge and skills necessary to perform their functions effectively and efficiently.

3.7.A Inspection and Maintenance Program



The following chapters describe areas/items that require inspection and their recommended inspection frequency. It further details recommended maintenance activities and subsequent tracking procedures for each of the tasks.

3.7.A.1 Street Sweeping

Street sweeping operations are performed to reduce potential illicit discharges and to provide a clean environment. The curb lines of all streets are cleaned on a rotating basis. The rotation may be changed or interrupted if heavy rain occurs, the sweeper is out of order due to mechanical problems, or the Operations Division experiences heavy workload. Arterial roads are swept/cleaned three times per year and all residential streets are swept/cleaned by a city contractor twice per year. The in house sweeper handles all service requests, special events and in house construction jobs. City generated spoils are loaded into refuse dumpsters and hauled to an approved landfill. While, spoils collected by the city contractor are hauled out every other week to an approved landfill while sweeping is in progress. The intended frequency of street sweeping operations is as follows:

- Beginning of May – All streets receive their first round of sweeping
- Beginning of August – Arterial roads receive their second round of sweeping
- Second week of November – Residential streets receive their second round of sweeping
- Last week of April (weather depending) – Arterial roads receive their third round of sweeping

3.7.A.2 Drainageways

Drainageways include any river, stream, creek, brook, branch, natural or artificial depression, ponded area, lakes, flowage, slough, ditch, conduit, culvert, gully, ravine, swale, wash, or natural or man-made drainageway, in or into which surface or groundwater flows, either perennially or intermittently.

3.7.A.2.a POND OUTLETS

The ***Detention/Retention Pond Checklist*** (**5.7)** is used to determine inspection locations. Structures are added to the checklist after new developments are approved and accepted. Locations identified on the checklists are inspected before a forecasted storm (0.50 inches or more), during the storm event and once again afterwards to clean, inspects and repair infrastructure. Observed obstructions are cleared and debris hauled to the spoil waste area. Ponds are inspected and evaluated for a low, medium and high level of flood height according to the following classifications.

Flood Height Classification

- Low – Normal Water Level (NWL)
- Medium – NWL to top of grate
- High – Top of Grate and above

Condition

- Good – outlet is unimpaired, not blocked
- Fair –outlet obstructions observed although outlet is discharging
- Poor – outlet is blocked or obstructed

Comments
Note structural defects or other observances.

Inspections continue until water level recedes to mid-pipe (Medium classification).
If maintenance work is required for a pipe culvert within the City of Naperville limits but in the State of Illinois right of way, the State's Maintenance Facility is notified. Similarly, DuPage County, 630-407-5500, is contacted for work within their right of way.

3.7.A.2.b DRIVEWAY CULVERTS

Maintenance and replacement of driveway culverts is the property owner's responsibility. All culverts that will be within the City of Naperville right-of-way shall be designed with the appropriate ASTM Class of RCP and will have the appropriately sized precast concrete flared-end section on each end. All culverts over 12 inches in diameter shall have the appropriate grating covering the flared-end section opening.

3.7.A.2.c CATCH BASINS

Catch basin locations are identified on the **Storm Sewer Atlas**. The Public Works Department's goal is to annually clean approximately 20% of all catch basins, to a minimum sump depth of 2 feet. Spoil waste obtained from catch basin cleaning is disposed of and taken care of by the DuPage County Wastewater facility in Woodridge, IL. Locations of cleaned catch basins are tracked.

Catch basins found to have structural deficiencies are reported to the Public Works Department. Necessary remedial actions are completed by the Stormwater Maintenance Section or incorporated into a capital project.

3.7.A.2.d Storm Sewers

If catch basin debris is at the invert elevation of the downstream pipe (i.e. has completely filled the sump area), then the downstream storm sewer system is also cleaned. Likewise, if a water main break or other heavy flow occurs that flushes potential illicit discharges into the storm sewer system, the receiving storm sewer lines are inspected and then cleaned as necessary.

3.7.A.2.e Other Inlet and Grate Cleaning

Cleaning of these areas occurs annually, on a rotational basis between city districts and on an as-needed basis (e.g. complaints, incidences, standing water, etc). Spoil waste that is obtained from inlet and grate cleaning or vacuuming is disposed of at the DuPage County wastewater Treatment facility in Woodridge, Illinois. All waste from jet flushing is sucked out by our Vactor truck.

3.7.A.2.f Swales and Overland Flow Paths

Right-of-way Drainage Swales: The Public Works Department documents observed or reported erosion or sediment accumulation. Areas of significant concern are incorporated into a maintenance program.

Privately Owned Drainage Swales (side/rear yard): Observed or reported erosion or sediment accumulation in privately owned swales are referred to the Building Department for follow-up. Building Department notifies the property owner on an as needed basis for appropriate remediation required.

3.7.A.3 Landscape Maintenance

The City of Naperville maintains care and upkeep of its general facilities, municipal roads, associated maintenance yards, and other public areas. Municipal staff is responsible for Litter and Debris control described in Chapter 3.6.A.3.a below. The City of Naperville annually selects and contracts with a landscape contractor. The landscape contractor is responsible for the remainder of the landscape maintenance program under the supervision of the Public Works Department. The City of Naperville is responsible for ensuring that their landscape contractors are provided with training and/or other information to ensure that they adhere to the City of Naperville's SMPP.

3.7.A.3.a LITTER AND DEBRIS

Litter and debris can accumulate on City of Naperville property and roadway right-of-ways. The City's contractor is responsible for the cleanup of all city owned facilities. Clean-up at park and recreation areas is the responsibility of the Naperville Park District. Other City of Naperville properties and right-of-ways (including municipal, Township, County and State right-of-ways within the MS4 limits) are cleaned by Public Works personnel or volunteer groups on an as-needed basis.

3.7.A.3.b PRIVATE RESIDENCE YARD WASTE

Yard waste and leaves from private residences are collected through the refuse collection contract. Yard waste is collected weekly from mid-March through Mid-December. The City of Naperville also provides a bulk curbside leaf collection program, which typically starts the third week of October and runs for approximately six weeks.

3.7.A.3.c FERTILIZERS

The annual landscape contractor is required to be a licensed applicator for fertilizers. Weed killer and fertilizers are typically scheduled two times per year. Contractor specifications incorporate low impact products. The use of pesticides and fertilizers shall be managed in a way that minimizes the volume of storm water runoff and pollutants.

3.7.A.4 Snow Removal and Ice Control

During snow removal and ice control activities, salt, de-icing chemicals, abrasives and snow melt may pollute stormwater runoff. To address these potential pollutants, the following procedures for the "winter season" (November 1 through April 1) are implemented.

3.7.A.4.a ROADWAY ICE CONTROL

The City of Naperville's goal is to use the minimal amount of salt, de-icing chemicals and additives necessary for effective control. Prior to November 1, preparation work to obtain seasonal readiness is completed. These tasks include: inspecting and re-conditioning of spreaders and spinners, install these items onto snow removal vehicles, performing test operations, calibrating distribution rates per National Salt Institution Application Guidelines, and conducting better driver training. The completion of these preparatory tasks helps to ensure that only the necessary level of salt is applied.

Once the ambient temperature is below 20-degrees Fahrenheit, a Public Works Supervisor considers the additional use of Calcium Chloride to improve the efficiency of snow melting efforts. If deemed necessary, it is applied to the salt material prior to spreading, at a rate of 7-Gal/CY; a computer controls the application rate. The Calcium Chloride dispensing system (including pump and sprayers) is primed for operation monthly to ensure proper working conditions.

DPW staff has been taking measures to limit the use of salt due to its high cost and environmental impacts. The cost of salt has gone from $39.31 in 2007/08 to $52.46 in 2013/2014. Staff has reduced road salt usage by lowering the application rates for the salt when possible. Under certain circumstances only hills, curves, intersections, arterials, and Priority 1 streets (collector and neighborhood connector roadways) have been salted. Procedures have also been modified to, under certain conditions; postpone application of salt to residential side streets until after snow plowing has been completed. As a result, although residential streets may not be completely free of snow and ice, they will be safe and passable based on the traffic volume for vehicles driving at a reasonable speed for the conditions.

3.7.A.4.b SALT DELIVERY AND STORAGE

Steps are taken to ensure that the delivery, storage and distribution of salt does not pollute stormwater runoff from the Public Works Service Center. The floor of the salt storage building and adjacent receiving/unloading area are constructed of asphalt. Delivered salt is unloaded at two storage domes in the City. These domes are located at 180 Fort Hill Dr. and 3816 S. Plainfield/Naperville Rd. The limits of the salt pile are pushed back from the door opening to minimize potential illicit runoff. In the event that there is runoff from the salt storage building or unloading area, a street sweeper and front-end loader are utilized to clean the runoff area.

3.7.A.4.c SNOW PLOWING

Snow plowing activities direct snow off the pavement and onto the parkways. This reduces the amount of salt, chemical additives, abrasives or other pollutants that go directly into the storm sewer system. When deemed necessary, the Public Works Department hauls accumulated snow to designated stockpile locations. These locations are asphalt surface areas. Snow blowing, plowing or dumping into drainageways is not allowed. Once the snow has melted, the stockpile areas are cleaned with a street sweeper removing any debris deposited.

3.7.A.5 Vehicle and Equipment Operations

Vehicle and equipment fueling procedures and practices are designed to minimize or eliminate the discharge of pollutants to the stormwater management system, including receiving waters.

3.7.A.5.a VEHICLE FUELING

The vehicle fueling area contains four underground double wall fiberglass storage tanks. These tanks are monitored by a continuous statistical leak detection system. Leak tests are performed

on an annual basis as required by a third party. Surface runoff, in the vicinity of the tank farm, is directed to the north of the fuel site.

3.7.A.5.b VEHICLE MAINTENANCE

Vehicle maintenance procedures and practices are designed to minimize or eliminate the discharge of petroleum based pollutants to the stormwater management system, including receiving waters. This chapter discusses proper handling and disposal of vehicle maintenance by-products such as waste oil, antifreeze, batteries and tires.

Waste Oil

Used motor oil, transmission fluids, gear lubes, brake fluids and other vehicle fluids (except antifreeze) are collected and stored in a 1,000 gallon tank. Typically, the waste oil tank is emptied and the contents removed for recycling.

Antifreeze

Used antifreeze is stored in a specialized 250 gallon tank. When 200-gallons are accumulated, a special waste hauler is contacted for collection and disposal.

Batteries

Used batteries are stored in an enclosed covered container in the Fleet Services Division at the Public Works Complex. Typically, the batteries are collected bi-monthly from a local vendor.

Tires

Used tires are disposed of bi-monthly by a local vendor. Tires are stored outside in a sealed container at the Public Works Complex until picked up for disposal.

Other

Fleet Service Technicians are certified in air-conditioning. The Freon is captured and recycled whenever they work on vehicle air conditioning systems. This saves on the environment and the cost of Freon.

3.7.A.6 Animal Nuisance Control

The Public Works Department, upon receiving notification, collects "road kill" from right-of-way areas. The carcasses are bagged and housed within a freezer at the Public Works Complex. Once the freezer is full, Saint Francis Pet Funeral Services & Crematory comes to pick them up and the animals are cremated.

3.7.A.7 Waste Management

Waste Management consists of implementing procedural and structural practices for handling, storing and disposing of wastes generated by a maintenance activity. This helps prevent the release of waste materials into the stormwater management system including receiving waters. Waste management practices include removal of materials such as asphalt and concrete maintenance by-products, excess earth excavation, contaminated soil, hazardous wastes, sanitary waste and material from within the triple basins.

3.7.A.7.a Spoil Stock Pile

The spoil stock pile is located at the Public Works Service Center. Asphalt and concrete maintenance by-products and excess earth excavation materials are temporarily stored in the stock pile. Attempts are made to recycle asphalt and concrete products prior to storage in the spoil stock pile. Licensed waste haulers are contracted to remove and dispose the contents of the spoil stock pile at a licensed landfill when designated waste storage bins are approaching capacity. Surface runoff from this area is largely contained by BMP's in storm sewer catch basins.

3.7.A.7.b Contaminated Soil Management

Collect or manage contaminated soil/sediment generated during an emergency response or identified during construction activities for treatment or disposal. Attempts are made to avoid stockpiling of the contaminated soil. If temporary stock piling is necessary, place the stockpile on an impermeable liner. Additionally, BMP (presented in the SMC's Technical Reference Manual or the Illinois Urban Manual) are used to protect the down slope of the stockpiled area for erosion downstream. Locate the construction access on the upstream side of the temporary stock pile.

3.7.A.7.c Hazardous Waste

Store all hazardous wastes in sealed containers constructed of compatible material and labeled. The containers are located in non-flammable storage cabinets or on a containment pallet. These items include paint, aerosol cans, gasoline, solvents and other hazardous wastes. Please refer to chapter 3.6.A.7 for vehicle related hazardous wastes. Do not overfill containers. Paint brushes

and equipment used for water and oil-based paints are cleaned within the designated cleaning area. Contain associated waste and other cleaning fluids within an enclosed tank, the tank is maintained by a private licensed special waste company.

3.7.A.7.d SANITARY WASTE

Discharge sanitary waste into a sanitary sewer or managed by a licensed waste hauler.

3.7.A.7.e TRIPLE BASINS

Floor drains in the garage bay floor area of the Public Works Service Center are directed to an underground Triple Basin. At a minimum, the Triple Basin are vacuumed out and completely cleaned bi-monthly. Vacuumed out material is transported to the wastewater treatment station to air-dry on a protected impervious surface. The dried material is then transported to a landfill.

3.7.A.8 Water Conservation & Irrigation

Water conservation practices minimize water use and help to avoid erosion and/or the transport of pollutants into the stormwater management system. During periods of dry weather, a sprinkling/irrigation schedule is enforced. Maintenance activities (performed by the staff or its contractors) preserve water by utilizing vacuum recovery as opposed to water based cleaning when possible. Additionally, the water main replacement program decreases the possibility for water main leaks. In the event that a water main leak occurs, valve off the leaking section as soon as possible and then repair.

3.7.A.9 Green Infrastructure

Green infrastructure which is incorporated into projects is regulated by the City Municipal Code. The applicable code sections pertain to the city's adoption of the Dupage County Stormwater Ordinance. The Dupage County Technical Guidance Manual identifies the methods for the consideration of BMP's. BMP's are installed by permit and long term maintenance is covered by Detention Easement and Covenant language recorded with the land plat.

3.7.B Spill Response Plan

Spill prevention and control procedures are implemented wherever non-hazardous chemicals and/or hazardous substances are stored or used. These procedures and practices are implemented to prevent and control spills in a manner that minimizes or prevents discharge to the stormwater management system and receiving waters. The following general guidelines are implemented, when cleanup activities and safety are not compromised, regardless of the location of the spill:

- Cover and protect spills from stormwater run-on and rainfall, until they are removed,
- Dry cleanup methods are used whenever possible,
- Dispose of used cleanup materials, contaminated materials and recovered spill material in accordance with the Hazardous Waste Management practices or the Solid Waste Management practices of this plan,
- Contaminated water used for cleaning and decontamination shall not be allowed to enter the stormwater management system,
- Keep waste storage areas clean, well organized and equipped with appropriate cleanup supplies, and
- Maintain perimeter controls, containment structures, covers and liners to ensure proper function.

3.7.B.1 Non-Hazardous Spills/Dumping

Non-hazardous spills typically consistent of an illicit discharge of household material(s) into the street or stormwater management system. Upon notification or observance of a non-hazardous illicit discharge, City personnel implement the following procedure:

- Encourage the public and provide direction to utilize the HHW program instead of discharging household materials on the ground or into sewers that lead to waterways.
- Sandbag the receiving inlet to prevent additional discharge into the storm sewer system, as necessary. It may be necessary to sand bag the next downstream inlet. Public works and the Fire Department may coordinate using diking materials, spill booms and oil only spill pads compatible with the material improperly discharged.

- Check structures (immediate and downstream). If possible, materials are vacuumed out. The structure(s) are then jetted to dilute and flush the remaining unrecoverable illicit discharge.
- Clean up may consist of applying various absorbents then sweeping up the remnant material.
- Clean up may consist of applying "Oil Dry" or sand and then sweeping up the remnant material.
- The T.E.D. department documents the location, type of spill and action taken on the ***Indirect Illicit Discharge Tracking Form*** **(Appendix 5.10)**. .
- If a person is observed causing an illicit discharge, City Dispatch is notified and appropriate citations are issued by the City's Code Enforcement.

3.7.B.2 Hazardous Spills/Potentially Hazardous Spills

Upon notification or observance of a hazardous illicit discharge, City personnel implement the following procedure:

- Call 911, explain the incident. The Fire Department responds;
- Public Works provides emergency traffic control, manpower, equipment and utility maps. Both Departments work together in a unified command structure in order to properly mitigate the hazard.
- The Fire Department evaluates the situation and develops an Incident Action Plan intended to properly mitigate the hazard in an environmentally safe manner.
- The Fire Department's existing emergency response procedure, for hazardous spill containment clean-up activities, is followed;
- The T.E.D. Department documents the location, type of spill and action take on the ***Indirect Illicit Discharge Incident Tracking Form*** (Appendix 5.10).

3.7.C Employee Training

The City of Naperville's practice is to provide education and training to all of its employees to ensure that they have the knowledge and skills necessary to perform their functions effectively

and efficiently. The purpose of the Employee Stormwater Training Program is to teach appropriate employees about the following:

- Stormwater characteristics and water quality issues;
- The roles and responsibilities of the various Departments, and individuals within these Departments, regarding implementation of the SMPP to consistently achieve Permit compliance;
- Activities and practices that are, or could be sources, of stormwater pollution and non-stormwater discharges;
- On managing and maintaining green infrastructure and low impact design features; and,
- How to use the SMPP and available guidance materials to select and implement best management practices.

4 Program and Performance Monitoring, Evaluation and Reporting

The SMPP represents an organized approach to achieving compliance with the stormwater expectations of the NPDES Phase II program for both private and public activities within the City. Land development, redevelopment and transportation improvement projects were required to comply with the provisions of the WDO prior acceptance of the SMPP. Additionally, the City had numerous written and unwritten procedures for various tasks. This SMPP documents and organizes previously existing procedures and incorporates the objectives of the WDO to create one cohesive program addressing pre-development, construction, post-development activities and municipal operations.

This chapter describes how the City will monitor and evaluate the proposed stormwater pollution prevention plan based on the above stated objective. As part of the stormwater management program, the City:

- reviews its activities,
- inspects its facilities,

- oversees, guides, and trains its personnel, and
- evaluates the allocation of resources available to implement stormwater quality efforts.

This chapter describes how program monitoring, evaluation and reporting will be accomplished.

4.1 Performance Milestones

Previously established ordinances and programs implement many of the anticipated tasks. The following schedule describes general performance expectations.

- Within 6 months following the acceptance of the SMPP, applicable employees will receive training regarding the implementation of the SMPP.

- Within 1 year following the acceptance of the SMPP, program enhancement items within Chapter 3 will be implemented, except for the IDDE program milestones discussed below. Refer to Chapter 2.1 for a description of tasks associated with the implementation of the SMPP.

- Within 3 years following the acceptance of the SMPP, the Outfall Inspection Procedure will be completed for all pipes identified, during the pre-screening efforts, as having dry weather flow.

- Within 5 years following the acceptance of the SMPP, tracing and removal procedures will be completed for all pipes identified, during the Outfall Inspection Procedure, as contributing illicit discharges to receiving waters.

4.2 Program Monitoring and Research

The latest version of General NPDES Permit No. ILR40, which became effective on April 1, 2009, requires all MS4s to: (1) monitor their stormwater management programs for compliance with the conditions of the permit; and, (2) to assess, on an annual basis, the appropriateness of their stormwater management program activities (i.e., BMPs) and their progress towards achieving the statutory goal of reducing the discharge of pollutants to the maximum extent practicable (MEP). According to General NPDES Permit No. ILR40, the monitoring conducted by an MS4 shall include at least annual monitoring of receiving waters upstream and downstream of discharges from the MS4 to evaluate the effects of stormwater discharges on the receiving waters and/or assess the appropriateness and effectiveness of the MS4's stormwater management program activities (i.e., BMPs).

In order to comply with these requirements, the City of Naperville has partnered with DuPage County to identify and sample locations in both the DuPage County and Will County section of the City of Naperville that, are located on receiving waters upstream and downstream of discharges from the storm sewer system. At these locations, the physical characteristics of the sampling point are observed and water quality samples (i.e., grab samples) are collected on an annual basis. Collected water quality samples are tested for: insert list of monitoring parameters (e.g., copper, phosphorus, chlorine, ammonia, alkalinity, pH) of sampling locations.

The Stormwater Coordinator will review the annual water quality monitoring results to determine if there are any noticeable increases (or decreases) in any of the water quality parameters between the upstream and downstream sampling locations. Possible causes of any increases (or decreases) will be investigated and any appropriate corrective actions will be incorporated in the MS4's stormwater management program. City of Naperville will include a summary of its annual water quality monitoring results in Part C of the Annual Facility Inspection Report that it prepares and submits to IEPA each year.

Additionally, at the end of each annual reporting period (i.e., March 1 – February 28/29), the City of Naperville will evaluate its stormwater management program activities (i.e., BMPs) and its annual water quality monitoring results in order to assess the appropriateness of its stormwater management program. The following are some indicators that the MS4 may use to gauge the appropriateness of its stormwater management program:

- no change, or an improvement, in the annual water quality monitoring results;
- improved community awareness regarding the impacts of stormwater runoff;
- increased number of hits on webpage providing information on NPDES related topics;
- increased public involvement;
- reduced number of outfalls with physical indicators suggesting an illicit discharge;
- reduced number of septic system failures;
- reduced number of SE/SC violations;
- reduced number of post-construction stormwater management BMPs requiring maintenance;
- implementation of stormwater retrofits, by the municipality or the public, to manage and/or treat stormwater runoff from previously developed sites;
- and, improved awareness amongst municipal staff, including consultants and contractors, regarding the impacts of stormwater runoff.

City of Naperville will include an overall assessment of its stormwater management program and the appropriateness of its BMPs in Part B of the Annual Facility Inspection Report that it prepares and submits to IEPA each year. The MS4 will use the assessment to gain insight into how its stormwater management program may need to evolve and to identify additional or alternative activities that may need to be incorporated into the program.

In addition, the City of Naperville will continue to seek information regarding innovative stormwater management practices, technologies, and activities. Information and guidance obtained through MAC meetings and other sources will be incorporated into the MS4's stormwater management program as practical.

4.3 Program Evaluation

The primary mechanism for evaluating the program and ensuring that the field staff has adequate knowledge is supervision by responsible managers. Management personnel include the Public Works and the Transportation and Engineering Department Directors and Assistant Directors. Management support tasks include observing and evaluating design, construction and field personnel as they implement the requirements of the SMPP on both municipal and private projects, and maintenance personnel as they conduct their assigned activities. These responsibilities were outlined in detail in Chapter 2: Program Management.

The following types of questions/answers are discussed annually between the Stormwater Coordinator, Managers and field staff.

- Are proper stormwater management practices integrated into planning, designing and constructing both City and private projects?
- Are efforts to incorporate stormwater practices into maintenance activities effective and efficient?
- Is the training program sufficient?
- Is the SMPP sufficient?
- Are the procedures for implementing the SMPP adequate?

5 Appendices

5.1 List of Acronyms

BMP	Best Management Practices
CMAP	Chicago Metropolitan Agency for Planning
CSFPO	Countywide Stormwater & Flood Plain
CWA	Clean Water Act
CWP	Center for Watershed Protection
DRSCW	DuPage River/Salt Creek Workgroup
DRT	Development Review Team
DuDOT	DuPage County Division of Transportation
ECI	Erosion Control Inspector
EOPCC	Engineers Opinion of Probable Construction Cost
FEMA	Federal Emergency Management Agency
HHW	Household Hazardous Waste
IDDE	Illicit Discharge Detection and Elimination
IDNR	Illinois Department of Natural Resources
IDOT	Illinois Department of Transportation
IEPA	Illinois Environmental Protection Agency
MBAS	Methyl Blue Active Substances
MS4	Municipal Separate Storm Sewer Systems
NAICS	North American Industry Classification System
NIPC	Northeastern Illinois Planning Commission
NOI	Notice of Intent
NOT	Notice of Termination
NPDES	National Pollutant Discharge Elimination System
NWL	Normal Water Level
QLP	Qualifying Local Program
SIC	Standard Industrial Classifications
SMC	Stormwater Management Committee
SMPP	Stormwater Management Program Plan
TAC	Technical Advisory Committee
TED	Transportation, Engineering and Development
TMDL	Total Maximum Daily Load
USEPA	United States Environmental Protection Agency
WDO	Watershed Development Ordinance

5.2 Stormwater Outfall Screening Equipment Checklist

Description	Supplier	Model Number	Notes	Approximate Price	Quantity	Total
TOTAL:	**$4,096.94**					
General Electronics						
Garmin eTrex Summit HC	Garmin	010-00633-00	Available from Amazon.com for $187.99	$246.41	1	$246.41
Topo US 2008	Garmin	010-11001-00	Available from Amazon.com for $80.99	$116.65	1	$116.65
Olympus Stylus 850SW (Black), Waterproof Camera	Olympus	B0011EAA0O, 226325		$239.99	1	$239.99
Olympus Floating Camera Strap	Olympus	B0014DURIW		$19.99	1	$19.99
M+2 GB XD-Picture Card	Olympus	202220	202170 can be purchased if 202220 is not available.	$32.99	1	$32.99
Fisherbrand Traceable Waterproof/Shockproof Stopwatch	Fisher Scientific	06-662-56		$14.75	1	$14.75
Koehler Bright Star WorkSAFE I Flashlight (17-901A)	Fisher Scientific	17-901A		$12.24	1	$12.24
Safety Equipment						
Cabela's Dry-Plus G-II Bootfoot Chest Waders, Size ?	Cabelas.com	IJ-830198		$119.99	1	$119.99
Cabela's Dry-Plus G-II Bootfoot Chest Waders, Size ?	Cabelas.com	IJ-830198		$119.99	1	$119.99
Cabela's Dry-Plus G-II Bootfoot Chest Waders, Size ?	Cabelas.com	IJ-830198		$119.99	1	$119.99
Fisher Safety First Aid Kit	Fisher Scientific	17-987-97A	Or, at benmeadows.com, 8JB-109223 for $35.20	$50.68	1	$50.68
Fisherbrand Leak-Resistant HDPE Wide-Mouth Bottles (24 ct)	Fisher Scientific	02-911-976		$116.40	1	$116.40
Fisherbrand Powder-Free Nitrile Exam Gloves, Medium (100 ct)	Fisher Scientific	19-130-1597C		$19.22	1	$19.22
Fisherbrand Powder-Free Nitrile Exam Gloves, X-Large (100 ct)	Fisher Scientific	19-130-1597E		$19.22	1	$19.22
Fisherbrand Powder-Free Nitrile Exam Gloves, Large (100 ct)	Fisher Scientific	19-130-1597D		$19.22	1	$19.22
MAPA Professional Two-Tone Flock-Lined Neoprene/Natural Rubber Gloves (12 ct)	Fisher Scientific	11-392-33D		$28.00	1	$28.00
Fisherbrand Contempo Spectacles, Tinted Lens Color (12 ct)	Fisher Scientific	19-130-2093		$88.85	1	$88.85
Sampling Equipment						
Fisherbrand Reusable Polyethylene Dipper, 6 ft.	Fisher Scientific	14-242-5		$60.13	1	$60.13
500ml Plastic Beaker with Handle	Fisher Scientific	326495-0500/EMD		$6.70	2	$13.40
Deskmate Polypropylene Desktop, 133527	Ben Meadows	133527		$15.80	1	$15.80
LUFKIN 100'L Fiberglass Tape Feet, 10ths & 100ths, Style A Case	Ben Meadows	123022		$17.70	1	$17.70
Laboratory Supplies						
Full Range (0-14 SU) pH Strips	Fisher Scientific	M95903		$20.11	4	$80.44
YSI Model 30 SCT Handheld Conductivity Meters w/ 10 ft cable	Fisher Scientific	09-324-43		$699.00	1	$699.00
SPADNS 2 (Arsenic-free) Fluoride Reagent AccuVac Ampules, Pkg of 25	Hach	2527025	Note: 12.5 tests per order	$26.35	4	$105.40
Beaker, Polypropylene, Low Form, 50 mL	Fisher Scientific	108041		$2.79	12	$33.48
DR/890 Portable Colorimeter	Fisher Scientific	4847000		$1,020.00	1	$1,020.00
Wipes, Disposable, 11 x 22 cm, 280/pk	Hach	2097000		$4.09	2	$8.18
Fisherbrand 500mL Easy-Squeeze Wash Bottles, case of 6	Fisher Scientific	02-897-3	Noted as deionized; 02-897-11 is just water.	$32.25	1	$32.25
Deionized Water, 4 L	Hach	272-56	Cheaper elsewhere!	$19.39	2	$38.78
COD Vial Adapter	Hach	4846400		$16.49	1	$16.49
Funnel, micro	Hach	2584335		$2.59	1	$2.59
Nitrogen-Ammonia Reagent Set, Low-Range Ammonia (50 ct)	Hach	2604545	Note: 25 tests per order.	$76.19	2	$152.38
Fisherbrand Finnpipette II Single-Channel Pipetter	Fisher Scientific	21-377-823		$266.00	1	$266.00
5000UL MLA OXF BENMTE 250/PK (pipette tips)	Fisher Scientific	21-197-8D		$26.04	1	$26.04
Detergents Visual Method Kit	Chemetrics	K-9400	Note: 20 tests per order	$70.60	1	$70.60
Detergents Visual Method Refill	Chemetrics	R-9400	Note: 20 tests per refill	$53.70	1	$53.70

5.3 Stormwater Outfall Inspection Data Form

Pipe / Outfall Location (include ID if available):_____

Pipe Description (material, shape, dimensions):_____
-OR-
Open Drainage Description (material, shape, dimensions):_____

Inspector's Names _____

Date/Time of Inspection: _____

Date & amount of last rainfall: _____in.

Is pipe/outfall active? _____

Ambient Temperature: _____°F

Water Temperature: _____°F

Insert Photo Here

OUTFALL SCREENING RESULTS
FIRST SAMPLE
OBSERVATIONS SAMPLE RESULTS (Expected Range/Level)

Color:_____ pH:

_____(5.0>sample<9.0)

Odor:_____ Detergent:_____mg/l

(sample<0.25)

Turbidity:_____ Fluoride:_____mg/l

(sample<0.25)

Floatable Matter:_____ Ammonia:_____mg/l

(sample<0.1)

Deposits/Stains:_____ Potassium:_____mg/l

(sample<3.1)

Vegetation:_____ Conductivity:_____uS/cm

(sample<150)

Damage to Outfall Structure:_____ Ammonia/Potassium Ratio:_____

FLOW/DISCHARGE ESTIMATE_____

Velocity: slow (<2 ft/s) Moderate (2-5 ft/s) Fast (> 5 ft/s) Water Level in Pipe/Channel:_____inches.

Additional Comments/Observations: _____

_____

_____

_____

OUTFALL SCREENING RESULTS
SECOND SAMPLE (if necessary) Date/Time: _____
OBSERVATIONS **SAMPLE RESULTS** (Expected Range/Level)

Color:_____ pH:

_____(5.0>sample<9.0)

Odor:_____ Detergent:_____mg/l

(sample<0.25)

Turbidity:_____ Fluoride:_____mg/l

(sample<0.25)

Floatable Matter:_____ Ammonia:_____mg/l

(sample<0.1)

Potassium:_____mg/l

(sample<3.1)

Ammonia/Potassium Ratio:_____ Conductivity:_____uS/cm

(sample<150)

6 FLOW/DISCHARGE ESTIMATE

Velocity: slow (<2 ft/s) Moderate (2-5 ft/s) Fast (> 5 ft/s) Water Level in Pipe/Channel:_____inches.

Additional Comments/Observations: _____

_____

_____

5.4 Pre-Construction Meeting Form

Naperville

T.E.D. Pre-Construction Agenda for DRT

Project Name:			
Project Location:		Permit Number:	
Pre-Construction Meeting:		Location:	
Project Manager 1:		Phone:	
Project Manager 2:		Phone:	
Review Engineer:		Phone:	
T.E.D. Inspector:		Phone:	
Consulting Engineer:		Phone:	
General Contractor:		Phone:	
24-hour Emergency Contact:		Phone:	
Date Of Most Current Plans:	2/11/2015	Anticipated Final Date:	
☐ Sign In Sheet	☐ Special Conditions Comments:		

Project Type

SelectProjectType

Permits Required

☐ County DuPage Will Permit	☐ Naperville Right Of Way	☐ County Health Dept
☐ Field Trailer Tent Permit	☐ Licensed Sidewalk Contractor	☐ Naperville Building Permit
☐ Railroad Permit	☐ TEPA Water/Sewer	☐ Naperville Demo Permit
☐ Tree Removal Permit	☐ DTPRA	☐ TDOT Permit
☐ Naperville Fire Dept		

Requirements For All Projects

☐ Discuss JULTE Joint Meet Address Clearly Marked	Joint Meeting Date: _____	Joint Meeting Location:
☐ WATER USE: All water for construction purposes MUST be metered. Hydrant meters are available from DPU/Water (deposit required) 1200 W. Ogden Avenue, Phone:(630)420-6070/20/97	☐ Valve Operation: No site piping valves are to be operated by contractors without DPU/Water authorization. Citations will be issued to plumbers and/or Superintendents for non-compliance. Water will not be turned on until requested by contractor.	☐ Please contact the inspection desk a minimum of 72-hours in advance at 630/420-6082 to schedule only inspections. All other permit, code, zoning questions call (630) 420-6070/20/97
☐ Allowable Construction Work Hours (HANDOUT)	☐ Construction Entrances, truck routes and City permitting. (HANDOUT)	☐ Discuss Mud Debris or Dust on City streets.
☐ Soil Erosion/Silt Fence	☐ Discuss Stockpile Locations pertaining to proposed utilities and sight distance concerns.	☐ Contractor Trade Parking
☐ Discuss Tmportance of Stormwater management and protection of	☐ Modifications to fire suppression piping after the water has already	☐ Domestic Water Service Will Not be turned on prior to water meter installation.

existing facilities.

been turned on may require additional testing/chlorinating/sampling.

☐ Traffic Control/Pedestrian control ☐ Naperville Truck Permits http://naperville.il.us/truckroutes.aspx

Site Engineering Requirements

☐ Utility companies present to discuss what is needed or potential conflicts.

☐ Park Site Conveyance if site has a park site obligation & what is expected of the developer's timely construction of the sites.

☐ Submittal for approval- Asphalt and concrete mix designs/streetlight.

☐ Requirements for Obtaining Bldg Permits

☐ Discuss and pass out a copy of the City's Record drawing procedure & requirements. (HANDOUT)

☐ Timely restoration of "off site" work.

☐ Discuss Required Inspections For Site

☐ Discuss "field Change Process" as it relates to site engineering.

☐ Discuss required inspections for site engineering. (HANDOUT)

General Contractor's anticipated Final Date: _____

☐ Discuss final Inspection for Site Engineering.

☐ On all sites over 1 acre in size, documentation that the Owner/Developer has submitted their Notice of Intent (NOI) and Stormwater Pollution Prevention Plan (SWPPP) to the EPA.

Architectural Inspection Requirements

☐ Discuss time Frame for top of Foundation.

☐ Discuss requirements of a "Final Occupancy Permit

Anticipated opening is: _____

☐ Permit and plans/prints Must be displayed at the time of inspection; failure to do so will result in a failed inspection.

☐ Discuss the "field change" process as it relates to Architectural.

General Contractor's Anticipated Final Date: _____

☐ Required Inspections For Dwellings (HANDOUT)

☐ Distribute/Discuss OSHA safety standards

☐ Other Agency Permits Requirements

☐ Ufer Ground Required In Footing

Demolition:

☐ Discuss Ordinance (HANDOUT)

☐ Port-O-Potty

☐ Dumpster Placement

☐ Fencing Requirements

☐ Water Service Disconnect

☐ Lead Water Service Rebates

☐ Discuss Location Of Dry Wells

☐ Parking

☐ Noise Level

☐ Discuss Requirements For Building Permit

☐ Electric Issues

☐ Timely Restoration Of "Off Site" Work

5.5 Soil Erosion and Sediment Control Inspection Form

City of Naperville
SE/SC INSPECTION REPORT

Project:		Date:	
Inspector:		Weather:	

PRACTICE	ACTIVITY	YES	NO	N/A
Sediment Control Measures				
Perimeter Controls/Silt Fence	Installed	☐	☐	☐
	Maintained	☐	☐	☐
Storm water inlets	Protected	☐	☐	☐
	Maintained	☐	☐	☐
Stockpiles	Contained	☐	☐	☐
	Stabilized	☐	☐	☐
Construction Entrance	Installed	☐	☐	☐
	Maintained	☐	☐	☐
Culvert Inlet Protection	Installed	☐	☐	☐
	Maintained	☐	☐	☐
Dewatering/Pumping	Sump Pit	☐	☐	☐
	Outlet	☐	☐	☐
Sediment Traps	Installed	☐	☐	☐
	Maintained	☐	☐	☐
Streets	Scraped	☐	☐	☐
	Swept	☐	☐	☐
Erosion Control Measures				
Disturbed Area Stabilization	Mulched	☐	☐	☐
	Seeded	☐	☐	☐
	Blanketed	☐	☐	☐
	Other	☐	☐	☐
Detention Basin	Stabilized	☐	☐	☐
	Protected	☐	☐	☐
Reseeding	Required	☐	☐	☐
Dust Control	Required	☐	☐	☐
General Site Maintenance				
Concrete Washout Areas	Maintained	☐	☐	☐
Staging/Storage Areas	Free of Litter, Leaks, Spills	☐	☐	☐
Special Management Areas				
Wetland/Prairie/Trees	Protected/undisturbed	☐	☐	☐
Overall				
Evidence of Sediment Leaving the Site		☐	☐	☐

City of Naperville
SE/SC INSPECTION REPORT

Comments
1.)
2.)
3.)
4.)

Actions Taken/Needed

				Yes	No
Corrections (if any) must be made by:	ASAP	Documentation (i.e. photos, e-mails, etc)		☐	☐
Report/Inspection Results: ☐	Left on Site	☐ Mailed on:	☐	Phoned to:	
☐	Filed	☐ E-mailed on:	☐	Faxed to:	
Project Contact notified:					
	Yes No				
Follow up Meeting Required?	☐ ☑				
Inspector's Signature		Date: _____			

5.6 Sample Notice of Violation Letter

Naperville

[Date] [#] NOTICE OF VIOLATION

[Permittee Name]
[Company]
[Address]
[City, State, ZIP]
[E-mail]

Subject: [Project Name]
Erosion Control Permit # [ ]
[#] Notice of Erosion Control Violation

Dear Permittee:

You are hereby notified of the following violation(s) EROSION AND SEDIMENTATION CONTROL PERMIT requirement pursuant to the Naperville Municipal Code 5-9-5. Immediate attention to correct and remedy these violations is required.

- Failure to notify the city prior to construction
- Failure to display permit
- Failure to provide or maintain site documentation
- Failure to install/maintain soil erosion and sediment control measures
  - Stabilized construction entrance
  - Perimeter controls/ silt fence
  - Storm water inlet and culver protection
  - Stock piles protection
  - Sediment traps
  - Concrete Washout facilities
  - Waste storage/handling
  - Street cleaning
- Failure to install/maintain soil erosion and sediment control stabilization measures
  - temporary or permanent seeding/sodding
  - Detention basin controls
  - landscaping
- Failure to install/maintain non-erosive drainage outlet from the site
- Failure to notify the city at the time detention is operational
- Failure to notify the city of the completion of construction

You must take immediate action to correct these violations as follows:

City of Naperville ◆ 400 South Eagle Street ◆ P.O. Box 3020 ◆ Naperville, Illinois ◆ 60566-7020 ◆ (630) 420-6111 ◆ www.naperville.il.us

- As no pollution has left the site you have seven (7) days for the date of this letter to complete remedial work and file a letter with the city outlining the actions taken, by whom and when they were completed.
- Pollution is leaving the site and immediate action is required. If immediate action is not taken the city may issue a "stop work notice" until corrective action is complete and may proceed with citation proceedings. You must make immediate verbal contact with the city and file a letter with the city outlining the actions taken, by whom and when they were completed within seven (7) days for the date of this letter.
- Critical pollution concerns exist, or site personnel are unresponsive. A "stop work notice" is being issued and will remain in effect until corrective action is complete and a corrective action plan is approved. The city may also proceed with citation proceedings and initiate remedies by means of surety. You must make immediate verbal contact with the city and file a letter with the city outlining the actions taken, by whom and when they were completed within seven (7) days for the date of this letter.

You are directed to make all correspondence to:

City of Naperville
Transportation, Engineering and Development Business Group (TED)
William Novack, TED Director/City Engineer
400 South Eagle Street
Naperville, Illinois 60540
novackw@naperville.il.us

Calls can be made to Inspection Dispatch at 630-420-6100, option#1, or during non-business hours to 630-420-6187.

Sincerely,

[Name]
City of Naperville
Transportation, Engineering and Development Business Group (TED)
[Title]

5.7 Detention/Retention Pond Checklist

NORTH BASINS

Operator Name:

Date Checked:

Basin #	Grid #	Basin Locations	Basin OK	Load Out Needed	Comments / Problems
1	33	Country Lakes			
2	35	McDowell @ Redfield			
3	35	Raymond @ Chanticleer-Lakes Condos			
4	50	Raymond @ Redfield			
5	40	Bauer @ Washington			
6	41	1509 Vest			
7	41	959 Lockwood Cr.			
8	41	Iroquois Basin			
9	71	Columbia @ Plank			
10	71/72	Plank btwn Milton & Springhill			
11	72/57	Springhill Basin			
12	57	Marles Ct.			
13	58	1020 Frances Ct			
14	58	1472 Larson Ct			
15	57	Ogden @ Dickens			
16	73	Century Hills			
17	71	Charles @ North Ave			
18	71	Charles @ Dead End			
19	71	Country Commons Basin			
20	86	340 S Julian			
21	86	White Oak (Dead End)			

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NORTH BASINS

Operator Name:

Date Checked:

Basin #	Grid #	Basin Locations	Basin OK	Load Out Needed	Comments / Problems
1	33	Country Lakes			
2	35	McDowell @ Redfield			
3	35	Raymond @ Chanticleer-Lakes Condos			
4	50	Raymond @ Redfield			
5	40	Bauer @ Washington			
6	41	1509 Vest			
7	41	959 Lockwood Cr.			
8	41	Iroquois Basin			
9	71	Columbia @ Plank			
10	71/72	Plank btwn Milton & Springhill			
11	72/57	Springhill Basin			
12	57	Marles Ct.			
13	58	1020 Frances Ct			
14	58	1472 Larson Ct			
15	57	Ogden @ Dickens			
16	73	Century Hills			
17	71	Charles @ North Ave			
18	71	Charles @ Dead End			
19	71	Country Commons Basin			
20	86	340 S Julian			
21	86	White Oak (Dead End)			

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NORTH BASINS

Basin #	Grid #	Basin Locations	Instructions
1	33	Country Lakes	Check out flow grate in pond next to Autumn Run Apartments. Building #1609. 1st entrance off Country Lakes Dr. north of Allister Dr.
2	35	McDowell @ Redfield	Check all grates in basin.
3	35	Raymond @ Chanticleer-Lakes Condos	Check grate Southside of entrance at pond near Spillway.
4	50	Raymond @ Redfield	Check out flow grate in pond along Raymond Dr.
5	40	Bauer @ Washington	Check grates in field at Jefferson Jr. High.
6	41	1509 Vest	Check rear yard beehives in basin.
7	41	959 Lockwood Cr.	Check grate in S/W corner of pond.
8	41	Iroquois Basin	Check out flow grate in basin and manhole in sidewalk east of 537 Iroquois for flow.
9	71	Columbia @ Plank	Access Rd for RR. Check PVC line that runs under Plank Rd. from the North Basin. End of pipe is in berm S. side of Plank
10	71/72	Plank btwn Milton & Springhill	South side of Plank check grates in Spillways.
11	72/57	Springhill Basin	Check all grates and beehives from westside of Milton to far east Springhill Dr.
12	57	Marles Ct.	Check basins on east and west sides of Marles Ct.
13	58	1020 Frances Ct	Check overflow grate (behind sidewalk in bushes) and flared end at ponds edge east of overflow grate.
14	58	1472 Larson Ct	Rear Yard. Check inflow pipe under railroad tracks at chain link fence.
15	57	Ogden @ Dickens	Check outflow grate behind Medical Center's lot.
16	73	Century Hills	South side of tracks (rear of 28W274 Woodstock Ct) check tall structure in ditchline at tracks for debris covering drainage holes.
17	71	Charles @ North Ave	Check grate east side of berm btwn retirement home and rear of 1155 Timber Lane Ct.
18	71	Charles @ Dead End	Check grate rear of 416 Dillman Ct. in ditchline.
19	71	Country Commons Basin	**North Ave:** *North side* - check overflow grate west of Spillway, *South Side* - check flat grate in slopebox & check restrictor in tall manhole with beehive cover for obstructions. **Huffman St.** side (near park) s/w portion of basin: check round grate at east end of rip rap, check both outflow grates s/w end of basin, check pumps (they only run during low water levels.
20	86	340 S Julian	Check grate in ditchline.
21	86	White Oak (Dead End)	Check outflow pipe in ditchline of Park.

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NORTH BASINS CONT'D

Basin #	Grid #	Basin Locations	Instructions
22	116	837 Proud Clarion Ct.	Check rear yard grate in ditchline (right side of home).
23	102	Charles @ Prairie	(School Baseball Fields) Check manhole on berm (beehive grate) for waterflow behind backstop.
24	102/103	Pamela Ct	(Basin left of 1332) Check beehive for debris and flow.
25	102/103	Crestwood Ct	Check beehives in rear of 1335,1339, 1342 and basin right side of 1336. Check for flow.
26	102	Green Trails	1000 ft. east of Olesen - check outflow pipe south side of box.
27	103	Chesterfield Basin	Check flat grate rear of 608 Lynchburg Ct. at ponds edge.
28	117	829/832 Wexford Ct.	Check rear yard grate at block chain fence.
29	118	828 Woodbine Ct.	Check rear yard slopebox grate in woods.
30	132	Hobson Grove Park	(Off Oleson) Check long slopebox grate against berm in center wooded area.
31	131/132	Hobson Mill Basins	Check all grates in ditchline (East and West sides).
32	132	Hobson Oaks Dr.	Check both east and west basin grates.
33	133	Naper Blvd. @ Hobson	Check grate at ponds edge (S/W corner).
34	134	Stonebriar Ct.	(Basin with gazebo) Check restrictor in closed lid manhole top of berm, opposite of gazebo. Check grates in basin also.
35	112	Buttonwood @ Sequoia	Check grates & beehives in basin. Outflow is in N/W corner of basin under pine trees.
36	112	Maywatts Park	(1320 Sequoia) Check grates and low flow pipes in manholes in pkwy. North side - check beehives in basin.
37	96	Lake Osborne	Check outflow grate at ponds edge (S. side) off Oswego Rd.
38	81	Jefferson @ Ogden	East of Ogden behind strip mall. Check beehives in basin and manholes on Jefferson in sidewalk btwn electric boxes at first drive entrance to apartments. Check low flow pipes.
39	82	1155 Aurora Ave.	(All Saints Academy) Check slopbox in N/W corner of parking lot.
40	83	Jefferson @ The River	Check grate south side of bridge, west of the river.

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SOUTH BASINS

Operator Name:

Date Checked:

Basin #	Grid #	Basin Locations	Basin OK	Load Out Needed	Comments / Problems
1	144	Modaff @ Waxwing			
2	145	1423 Terrance			
3	145/160	Win Ding Creek Park			
4	162	Baily Rd @ The River			
5	147	Brad Ct.			
6	163	Baily Rd. east of Fire House			
7	163	Eagle Park			
8	163	Fender ditchline			
9	163	Millrace/Signal Point			
10	164	University Heights Basin			
11	179	Stanford Meadows Basin			
12	179	Hidden Valley Basins			
13	165	Slipper Rock Basin			
14	150	Mustang Basins			
15	150	77th @Kenyon			
16	194	2258 Trillium			
17	207/208	Royce @ Barkdol			
18	207	329 Royce Woods Ct.			
19	178	Spindle Tree & Naper Blvd.			

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SOUTH BASINS CONT'D

Basin #	Grid #	Basin Locations	Basin OK	Load Out Needed	Comments / Problems
20	177	Oakridge Basin			
21	162	Napoleon Dr.			
22	177	Leamington Ct.			
23	176	Landcaster Cr.			
24	175	Cherrywood Cr.			
25	174	87th @ Modaff			
26	190	Greenway Meadows			
27	205	Knock Knolls commons			
28	204	Knock Knolls			
29	187	Plainfield/Naperville @ Leverenz			
30	187	2233 Mecan			
31	201	2719 Salix			
32	201	Willow Ridge Basin			
33	215	95th @ Book			
34	199	2640 Idaho			
35	212	3335 Tallgrass			
36	212	3338 Tallgrass			
37	228	3045 Saganashkee			
38	231	Lawrence @ swim club			
39	246	104th @ Lawrence			
40	247	104th @ Plainfield/Naperville			

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SOUTH BASINS

Basin #	Grid #	Basin Locations	Instructions
1	144	Modaff @ Waxwing	(Westglen Commons) Check outflow grate east end of pond.
2	145	1423 Terrance	(Rear yard) check both grates in ditch line.
3	145/160	Win Ding Creek Park	**1)** Check inflow grate far west end of pond. **2)** Check outflow grate east end of pond. **3)** Check structure east of entrance (flat grate) look for obstructions inside of structure. **4)** Check flared end grate at east end of ditch line across from 137 W. Bailey.
4	162	Baily Rd @ The River	South side of Bailey. Check grate along waters edge.
5	147	Brad Ct.	Check beehives rear of 403,407 and flared end behind all.
6	163	Baily Rd. east of Fire House	(Evergreen Woods Basin) Check outlow grate cast of 1st cul de sac just east of firehouse. Grate is in west end of basin behind the bushes.
7	163	Eagle Park	Start at Dover/Bakewell and follow basin east to Fender Rd. Check all grates and beehives.
8	163	Fender ditchline	Check flat grates in ditch line both sides of Fender btwn Millrace & Darius.
9	163	Millrace/Signal Point	(Next to swim club) Check grate bottom of berm behind 928 Millrace and check all grates west of here to Fairoak Rd.
10	164	University Heights Basin	(Rear of 1756 Bucknell Ct) Check water flow in structure on berm (in btwn both basins) with flat grate. (Drains east to west)
11	179	Stanford Meadows Basin	(West side of Stanford @ Purdue) Check outflow grate on far west berm and all other flat grates/beehives in basin.
12	179	Hidden Valley Basins	(Hidden Valley @ Lisson) Check grates in all 4 basins from Lisson to Wehrli on Hidden Valley Cr.
13	165	Slipper Rock Basin	(Across from south side of Denison Ct) Check outflow at east berm where spillways go into ComEd easement.
14	150	Mustang Basins	Check all beehives in basins from 77th to Green Ridge alon Yackley Rd.
15	150	77th @Kenyon	Check grates in basin.
16	194	2258 Trillium	(Rear yard) Check rear yard grate and beehives on berm. Check outflow pipe behind shed near ComEd easement.
17	207/208	Royce @ Barkdol	*N/E corner* - check grate & beehives in basin. *N/W corner* - check flared end in rear of 2523 Barkdol.
18	207	329 Royce Woods Ct.	(Rear yard) Check grate in rear yard near sidewalk along Royce Rd.
19	178	Spindle Tree & Naper Blvd.	(Staunton basin) Check outflow grate and beehives at ponds edge for debris.

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SOUTH BASINS CONT'D

Basin #	Grid #	Basin Locations	Instructions
20	177	Oakridge Basin	Check all grates, beehives and low flow pipes in concrete pillows in basin along 87th from Plumtree to Riverwoods.
21	162	Napoleon Dr.	Check large grate alon berm on east side of Napoleon Dr. south of 1720. Check grate in pond west of Napoleon along Coach Dr.
22	177	Leamington Ct.	(Swim club) Check beehives and grates in basin.
23	176	Landcaster Cr.	(Rear of 38 Glencoe Ct) Check flat grate in ditch line along berm.
24	175	Cherrywood Cr.	(Rear of 2112) Check large grate in ditch line along berm.
25	174	87th @ Modaff	(N/W corner) Check all grates in basin.
26	190	Greenway Meadows	(North side of Ring Rd. west of Worthing) Check grates & beehives in basin.
27	205	Knoch Knolls commons	(West of McDonalds Conservatory) Check grate in ditch line north side of Knoch Knolls @ light pole #205020.
28	204	Knoch Knolls	(Btwn Modaff & Seiler) Check beehives for debris and flow.
29	187	Plainfield/Naperville @ Leverenz	Check large pipes in pond that cross under Plainfield/Naperville north of intersection east side of pond.
30	187	2233 Mecan	Check grate in ditch line.
31	201	2719 Salix	Check spillways and grate.
32	201	Willow Ridge Basin	Check grates in pond. Check outflow grate south side of pond. (Manhole in sidewalk along 95th, check for flow)
33	215	95th @ Book	(West side of Book south of 95th) Check outflow grate in pond next to bank. (Grate is on east side of pond)
34	199	2640 Idaho	(Rear yard) Check slopebox grate at ponds edge.
35	212	3335 Tallgrass	Check restrictor in manhole at top of berm (end of the walking path west side) under power lines. Manhole has open cover.
36	212	3338 Tallgrass	(Tallgrass greenway) Check outflow grate in S/E corner of pond.
37	228	3045 Saganashkee	(Rear) Check beehive at end of walking path along field.
38	231	Lawrence @ swim club	Check outflow grate @ ponds edge (north side).
39	246	104th @ Lawrence	(South of school) Check grates & beehives in basin.
40	247	104th @ Plainfield/Naperville	(Strip mall entrance) Check low flow pipe in structure (west side of berm).

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5.8 Pool Dewatering Fact Sheet

(SAMPLE LETTER)

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 Transportation, Engineering and Development Business Group and the Public Works Department at 630-420-6100 and 630-420-6095.

Please do your part to help promote cleaner wetlands, streams, lakes and rivers.
Thank you

5.9 Spill Response Notice

Stormwater Pollution Found in Your Area!

This is not a citation.

This is to inform you that our staff found the following pollutants in the storm sewer system in your area. This storm sewer system leads directly to

_____ .

- ❑ Motor oil
- ❑ Oil filters
- ❑ Antifreeze/ transmission fluid
- ❑ Paint
- ❑ Solvent/degreaser
- ❑ Cooking grease
- ❑ Detergent
- ❑ Home improvement waste (concrete, mortar)
- ❑ Pet waste
- ❑ Yard waste (leaves, grass, mulch)
- ❑ Excessive dirt and gravel
- ❑ Trash
- ❑ Construction debris
- ❑ Pesticides and fertilizers
- ❑ Other

_____

For more information or to report an illegal discharge of pollutants, please call:

WHEN IT RAINS IT DRAINS

www.epa.gov/npdes/stormwater

EPA United States Environmental Protection Agency

EPA 833-F-03-002
April 2003

Stormwater runoff is precipitation from rain or snowmelt that flows over the ground. As it flows, it can pick up debris, chemicals, dirt, and other pollutants and deposit them into a storm sewer system or waterbody.

Anything that enters a storm sewer system is discharged *untreated* into the waterbodies we use for swimming, fishing, and providing drinking water.

Remember: Only Rain Down the Drain

To keep the stormwater leaving your home or workplace clean, follow these simple guidelines:

- Use pesticides and fertilizers sparingly.
- Repair auto leaks.
- Dispose of household hazardous waste, used auto fluids (antifreeze, oil, etc.), and batteries at designated collection or recycling locations.
- Clean up after your pet.
- Use a commercial car wash or wash your car on a lawn or other unpaved surface.
- Sweep up yard debris rather than hosing down areas. Compost or recycle yard waste when possible.
- Clean paint brushes in a sink, not outdoors. Properly dispose of excess paints through a household hazardous waste collection program.
- Sweep up and properly dispose of construction debris like concrete and mortar.

5.10 Illicit Discharge Tracking and Summary Forms

Naperville

Illicit Discharge Hotline Incident Tracking Sheet				
Incident ID:				
Responder Information				
Call taken by:			Call date:	
Call time:			Precipitation (inches) in past 24-48 hrs:	
Reporter Information				
Incident time:			Incident date:	
Caller contact information (*optional*):				
Incident Location *(complete one or more below)*				
Latitude and longitude:				
Stream address or outfall #:				
Closest street address:				
Nearby landmark:				
Primary Location Description	**Secondary Location Description:**			
☐ Stream corridor *(In or adjacent to stream)*	☐ Outfall	☐ In-stream flow	☐ Along banks	
☐ Upland area *(Land not adjacent to stream)*	☐ Near storm drain	☐ Near other water source (storm water pond, wetland, etc.):		
Narrative description of location:				
Upland Problem Indicator Description				
☐ Dumping	☐ Oil/solvents/chemicals	☐ Sewage		
☐ Wash water, suds, etc.	☐ Other: _____			
Stream Corridor Problem Indicator Description				
Odor	☐ None	☐ Sewage	☐ Rancid/Sour	☐ Petroleum (gas)
	☐ Sulfide (rotten eggs); natural gas	☐ Other: Describe in "Narrative" section		
Appearance	☐ "Normal"	☐ Oil sheen	☐ Cloudy	☐ Suds
	☐ Other: Describe in "Narrative" section			
Floatables	☐ None:	☐ Sewage (toilet paper, etc)	☐ Algae	☐ Dead fish
	☐ Other: Describe in "Narrative" section			
Narrative description of problem indicators:				
Suspected Violator (name, personal or vehicle description, license plate #, etc.):				

Naperville

Investigation Notes	
Initial investigation date:	Investigators:
☐ No investigation made	Reason:
☐ Referred to different department/agency:	Department/Agency:
☐ Investigated: No action necessary	
☐ Investigated: Requires action	Description of actions:
Hours between call and investigation:	Hours to close incident:
Date case closed:	
Notes:	

5.11 Sample Maintenance Plans

DUPAGE COUNTY STORMWATER MANAGEMENT
PERMIT APPLICATION FOR
HUFFMAN STREET FLOOD CONTROL PROJECT – PHASE 3B
COUNTRY COMMONS PARK BASIN IMPROVEMENTS

TAB 7
MAINTENANCE SUBMITTAL

SECTIONS 15-149, 15-150, 15-151

Prepared For:

City of Naperville
Department of Transportation and Engineering
400 South Eagle Street, PO Box 3020
Naperville, Illinois 60540

Prepared By:

Christopher B. Burke Engineering, Ltd.
9575 West Higgins Road, Suite 600
Rosemont, Illinois 60018

CBBEL PROJECT No. 96-238F

March 4, 2011
Revised December 22, 2011

CHRISTOPHER B. BURKE ENGINEERING, LTD.
9575 West Higgins Road Suite 600
Rosemont, Illinois 60018-4920 Tel (847) 823-0500 Fax (847) 823-0520

EROSION CONTROL MEASURES

An erosion control protection barrier will be installed around the perimeter of the disturbed area. The sediment and erosion control plans shall be implemented prior to the commencement of construction. The proposed sediment and erosion control plans and specifications are shown on the engineering plan sets.

SCHEDULE FOR MAINTENANCE OF STORMWATER FACILITIES

Routine inspections will be perform on the detention facilities and all appurtenances (i.e., inlets, outlets etc,) at the rate of once every 6 months or more frequently if necessary. The City of Naperville will be responsible for the maintenance of the facilities for the proposed project once construction is complete and disturbed areas have been stabilized.

The proposed project will impact on-site riparian area. The Riparian Maintenance Plan is included in this tab.

LONG TERM RIPARIAN MAINTENANCE PLAN

Compensatory mitigation is required as a condition for issuing DuPage County stormwater management permits authorizing disturbance to riparian environments. The riparian mitigation plan is intended to replace functions and values that are impacted by permitted activities. A riparian mitigation plan generally involves restoring the disturbed riparian environment.

The following maintenance plan includes activities to promote the long-term preservation and maintenance of the on-site riparian environment as well as present who is responsible for the activities and how they will be funded.

Riparian Area Maintenance and Management

An environmental consultant will visit the site as specified to monitor the progress and health of the riparian area. These visits are to determine if remedial measures are required and to recommend procedures to correct any deficiencies. In most cases, these deficiencies are related to the maintenance of the area. Site visits shall take place to determine if erosion control measures are functioning properly and to assess the development of riparian vegetation. The following maintenance activities shall be completed periodically during the growing season (March 1-October 31). Prescribed burn management may be completed on an as-needed basis if desired to meet vegetation objectives.

1. Site Monitoring Visits: Three annual site monitoring visits will be completed to assess whether erosion rills are forming, if the water control structures are functioning properly, and to assess the overall condition of the riparian vegetation, including invasive weed growth. Any deficiencies shall be documented along with recommendations for appropriate remediation, or remedied during the visits. The results of each visit shall be summarized in a short report with photographs for record keeping.

2. Debris Management: All trash, brush, grass clippings, construction debris, etc. shall be periodically removed from the riparian area. Landscape waste shall not be dumped into the riparian area.

3. Stormwater Structure Maintenance: All storm water control structures, culverts and grates, etc. shall be inspected, cleaned out and/or repaired periodically to prevent clogging and potential flooding. This will be especially important in early Spring and late Fall. Prolonged elevated water levels can kill planted vegetation if not rectified quickly and are a human safety hazard. Maintenance staff shall visit the site on a regular basis to monitor the blockage of inlets and outlets, including removal of debris from stormwater culvert openings and grates.

4. Soil Erosion Control Management: If erosion problems such as rills or bank sloughing develop, they are to be repaired soon after detection by a firm specializing in soil erosion control and/or native landscaping. All soil erosion control devices or materials, such as seed, erosion control blanket, or mulch shall be installed according to manufacturer's directions or Illinois Urban Manual standards.

5. Prescribed Burn Management – If Desired: This management option helps to reduce undesirable weedy species and encourage native species. Prescribed burning reduces the accumulation of plant litter, thereby creating openings for the germination and establishment of native species. These burns will only be performed by qualified burn managers. Burning is particularly effective after the third growing season following native seed installation. Periodic burning once every three to five years is suggested to improve the quality of the riparian and native upland vegetation.

6. Invasive Weed Control: Reed canary grass, common reed, sandbar willow, teasel, buckthorn, field thistle, and other invasive weeds will be controlled by the following: mechanically, through the use of early summer mowing, culturally through the use of prescribed fire (as fuels allow) once every three to five years; chemically through the application of herbicide on persistent perennial weeds in cases where mowing is ineffective; or a combination of methods. Mowing that is performed near the start of flowering can dramatically reduce the flowers that are pollinated and form seeds.

Special mowing of native seeding areas may be considered in the first two years following seed installation to promote native species and discourage weeds. The newly seeded native areas will be mowed only once or twice per year (early June and/or early August) to a height not lower than eight inches. Mowing at this frequency and height reduces the production of weed seeds without adversely affecting native grass establishment. After year two, entire areas of establishing native vegetation will not be mowed. However, spot-mowing using a hand-held weed trimmer is useful to reduce individual stems of annual weeds (e.g. ragweed), biennials (e.g. sweet clover, teasel), and sometimes perennials (e.g. thistle) early in their flowering stages to prevent the formation of seeds. Weed species will be herbicided or mowed only after proper identification.

8. Recordkeeping: Records of management activities shall be maintained by the applicant. Annual Reports based on the above records will be prepared and submitted to DuPage County by January 1 of the following year.

9. Supplemental Seeding: Supplemental seeding the riparian and upland buffer areas with an appropriate seed mix may be necessary in the event extensive weed control (herbiciding) leaves areas un-vegetated. Nearby native plants will spread seed by natural mechanisms, or seed from on-site plants can be gathered in October-November and installed by hand. Seeding of large areas (>1/4 acre) will be installed by a native landscaping firm. Seed will also be purchased from local native seed suppliers. Only native seeding, as presented in the approved plans will be completed. The seeding/planting of non-native ornamental plants or commercial landscaping within the natural areas is discouraged.

Monitoring

Vegetation Sampling

A meander vegetation sampling will be conducted within the riparian and native upland buffer areas to provide full representation of all plant species. The sampling shall be completed once a year during the growing season following the initial planting. Representative photographs will be taken at the time of sampling at permanent locations designated by the contracted consultant during the first monitoring visit. An annual monitoring report will be submitted to EDP by January 1 of the following year containing the Plant Community Quality with calculations of the native mean C-values and FQI values for the entire site, and addressing compliance with approved performance standards.

Monitoring Reports and Ownership

An annual monitoring report based on the above sampling methods will be submitted to EDP by January 1 of the following year. The report will include a review of progress in meeting goals and performance standards, and proposed actions to deal with any shortfalls. If any of the performance criteria are not met for any year, the permittee will provide a detailed explanation and proposed corrective measures.

Performance Standards

The performance standards are based on the presence of sustainable riparian area and native upland buffer, quality of vegetation, soil stabilization and attainment of wildlife habitat objectives. The vegetation performance standards for the proposed site are similar to the Chicago District, however are adjusted as appropriate for the project site.

Vegetation Standards

1. A temporary cover crop will be planted on all slopes immediately upon completion of mitigation grading to prevent soil erosion. Within 3 months, at least 90% of the slopes, as measured by areal coverage, will be vegetated. If the desired long-term slope vegetation is not planted with the temporary crop, it will be planted in the first available growing season appropriate for each species. All cover crop species will be nonpersistent or native and not allelopathic. If a temporary cover crop is not planted immediately upon completion of grading, soil erosion control blanket will be installed to prevent soil erosion.

2. By the end of the first year, no area over the seeded riparian area and upland buffer area greater than 1.0 square meter shall be devoid of vegetation, as measured by areal coverage.

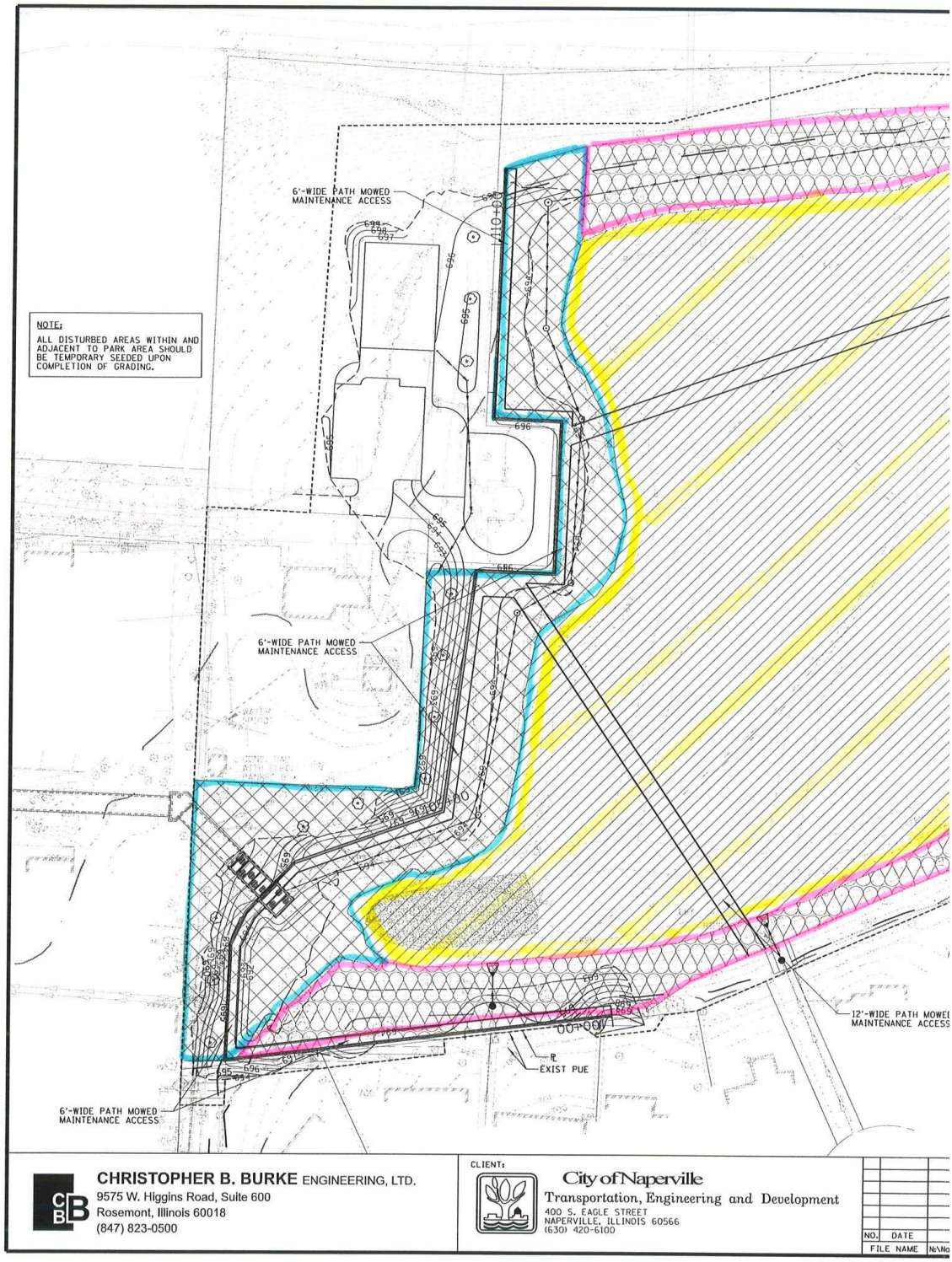
   By the end of the second year, no area over the seeded riparian area and upland buffer area greater than 0.5 square meter shall be devoid of vegetation, as measured by areal coverage

   By the end of the third year, no area over the seeded riparian area and upland buffer area greater than 0.5 square meter shall be devoid of vegetation, as measured by areal coverage

3. By the end of the first year, at least 35% of the vegetation present shall be native, non-invasive species based on an estimate of aerial coverage.

   By the end of the second year, at least 50% of the vegetation present shall be native, non-invasive species based on an estimate of aerial coverage.

   By the end of the third year, at least 75% of the vegetation present shall be native, non-invasive species based on an estimate of aerial coverage.


NOTE:
ALL DISTURBED AREAS WITHIN AND ADJACENT TO PARK AREA SHOULD BE TEMPORARY SEEDED UPON COMPLETION OF GRADING.
6'-WIDE PATH MOWED MAINTENANCE ACCESS
6'-WIDE PATH MOWED MAINTENANCE ACCESS
6'-WIDE PATH MOWED MAINTENANCE ACCESS
12'-WIDE PATH MOWED MAINTENANCE ACCESS
EXIST PUE
CHRISTOPHER B. BURKE ENGINEERING, LTD.
9575 W. Higgins Road, Suite 600
Rosemont, Illinois 60018
(847) 823-0500
CLIENT:
City of Naperville
Transportation, Engineering and Development
400 S. EAGLE STREET
NAPERVILLE, ILLINOIS 60566
(630) 420-6100
NO. DATE
FILE NAME

5.12 Yearly Tracking Forms

BMP	Task	Frequency	To Be Completed By	Completed ? (Include date if Applicable)
	Distribute information sheets regarding stormwater best management practices (BMP), water quality BMP, and proper hazardous waste use and disposal	On-going	City of Naperville	
	Maintain a water quality/stormwater section in the City of Naperville's website.	On-going	City of Naperville	
	Attend/sponsor outreach activities to homeowners / property owner associations, commercial / industrial facilities, schools, and other events.	On-going	City of Naperville	
	Coordinate, publicize, and participate in the DuPage River/Salt Creek Work Group and the Lower DuPage River Coalition events.	On-going	City of Naperville	
	Maintain the City of Naperville's website which offers links to additional educational information, and ways to contact City of Naperville personnel.	On-going	City of Naperville	
	Distribute the "Guidelines for Draining Swimming Pools" fact sheet	Annually	City of Naperville	
	Distribute the "Protect Our Water" door hanger	On-going	City of Naperville	
	Distribute informational sheets/pamphlets regarding storm water best management practices	On-going	City of Naperville	
	Distribute informational sheets/pamphlets regarding water quality best management practices	On-going	City of Naperville	
	Distribute informational sheets/pamphlets regarding construction site activities (soil erosion and sediment control best management practices)	On-going	City of Naperville	
	Distribute informational sheets/pamphlets regarding the hazards associated with illegal discharges and improper disposal of waste and the manner in which to report such discharges	On-going	City of Naperville	
	Distribute informational sheets/pamphlets regarding green infrastructure strategies such as green roofs, rain gardens, rain barrels, bioswales, permeable piping, dry wells and permeable pavement	On-going	City of Naperville	
	Distribute informational sheets/pamphlets published by DuPage County Green Initiatives and the Will County Land Use Department regarding proper hazardous waste use and disposal	On-going	City of Naperville	
	Distribute water quality/storm water section in the municipal newsletter	Annually	City of Naperville	
	Perform regular storm sewer maintenance	On-going	City of Naperville	
	Record, investigate, and comple removal procedures (as needed) for incidents of suspicious discharges	As needed	City of Naperville	
	Screen, log and route soil erosion and sediment control complaints/suggestions/requests to appropriate department for action	On-going	City of Naperville	
	Attend pre-construction meetings, make site inspections and final walk-through	On-going	City of Naperville	
	Enforce City's Violation Notification Procedure and log violations if possible for annual reporting	On-going	City of Naperville	
	Implement storm sewer inspecitons and repairs as needed and log for annual reporting	On-going	City of Naperville	
	Continue to review City policies on an as needed basis	As needed	City of Naperville	
	Track City construction projects	On-going	City of Naperville	

5.13 General Permit ILR40

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: City of Naperville
2. MS4 Mailing Address: 400 S. Eagle Street
   City: Naperville State: Il
3. Operator Type: City Other:
4. Operator Status: Local Other:
5. Name(s) of governmental entity(ies) in which MS4 is located:

DuPage County

Will County

6. Area of land that drains to your MS4 in square miles: 227
7. Latitude and Longitude at approximate geographical center of MS4 for which you are requesting authorization to discharge:

Latitude:			Longitude:		
41	46	16.05	-88	9	12.12
Degrees	Minutes:	Seconds:	Degrees:	Minutes:	Seconds:

8. Name(s) of known receiving waters

EBEB: East Branch DuPage River's Mainstem

WBWB: West Branch DuPage River's Mainstem

FRWA: Fox River's Waubansee Creek

DuPage River

EBRC: East Branch DuPage River's Rott Creek

WBFE: West Branch DuPage River's Ferry Creek

5. WBCC: West Branch DuPage River's Cress C

WBSR: West Branch DuPage River's Steeple R

WBWG: West Branch DuPage River's Winding C

West Branch DuPage River's Spring Brook Tribu

5.14 Bibliography and References

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Handbook for Identifying Illicit Stormwater Discharges, Charlotte County Edition, Charlotte County, Florida.

Industrial User Inspection and Sampling Manual for POTWs, The Office of Wastewater Enforcement and Compliance Water Enforcement Division – USEPA, April 1994.

Illicit Discharge Detection and Elimination, A Guidance Manual for Program Development and Technical Assessments, Center for Watershed Protection, October 2004.

DuPage County Illicit Discharge Detection and Elimination (IDDE) Technical Guidance Manual, DuPage County Stormwater Management, May 2009.