

Stormwater Management Program Plan



VILLAGE OF LAKE ZURICH
LAKE COUNTY, ILLINOIS

2012

SMPP

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1 Overview of the Stormwater Management Program Plan



Braemar Unit 2 – Lake Zurich, IL

1.1 Introduction

This Stormwater Management Program Plan (SMPP) was developed by the Village of Lake Zurich 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 (LCDOT and IDOT).

The SMPP describes the procedures and practices that can be implemented by the Village of Lake Zurich 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 Village of Lake Zurich activities, including the manner in which the Village:

- 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 NPDES 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 5.16**. 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 compliance 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 Lake County Stormwater Management Commission (SMC) is a countywide governmental agency created by county ordinance under the authority of Illinois Revised Statute 55/5-1062. SMC's goals include the reduction of flood damage and water quality degradation. Another purpose of SMC is to assure that new development addresses non-point source pollution, does not increase flood and drainage hazards to others, or create unstable conditions susceptible to erosion. To accomplish this, the SMC works cooperatively with individuals, groups, and units of government as well as serving as the

corporate enforcement authority for the Lake County Watershed Development Ordinance. SMC enforces the WDO in non-certified communities on behalf of the municipality. The municipality is responsible for enforcing the WDO in Certified Communities. A municipality is considered a Certified Community after its petition is approved by SMC. SMC utilizes technical assistance, education programs and watershed planning to increase public awareness of natural resources and the impacts of urbanization on stormwater quality. In addition, SMC provides solutions to problems related to stormwater and identifies effective ways of managing natural resources.

In 2002, SMC formed an Ad Hoc Municipal Advisory Committee (MAC) specifically to advise MS4s on the NPDES Phase II Permit program. Municipalities, townships, drainage districts, consultants and county representatives comprise the MAC. SMC advised and assisted the MS4s in preparing their NOIs, but is not a permittee as it does not own or operate any sewer systems.

The General Permit allows for MS4s to take credit for activities being performed by a Qualifying Local Program (QLP) toward meeting its permit requirements. The Lake County Stormwater Management Commission (SMC) is a Qualifying Local Program for MS4s in Lake County. As part of their ongoing services, SMC performs some functions related to each of the six minimum control measures. SMC has been providing services under four of the six minimum control categories since it began implementing a comprehensive, countywide stormwater program in 1991. 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.

SMC sponsors informative workshops and roundtable discussions. It formed the Municipal Advisory Committee (MAC) to receive input on how SMC can best assist local governments during the permit application process and implementation period. Through these discussions, it was decided that each municipality (or MS4) submit its own "Notice of Intent" (NOI) to be covered under IEPA's statewide general permit. However, using the countywide approach, municipalities may take credit for the programs and ordinances developed by SMC as well as tailor specific local BMP programs for compliance with the Phase II rules.

As part of the countywide approach to comply with the NPDES Phase II program, SMC assists municipalities with the following:

- Supports NPDES II presentations to local boards,
- Develops model Notice of Intent (NOI),
- Provides countywide drainage system overview and receiving waters map,
- Provides general 5-year BMP Plan for NOI,
- Develops specific BMP Measurable Goals and program development tasks,
- Serves as a clearinghouse for all support information and acts as a liaison to IEPA and USEPA,

- Supports an on-going Municipal Advisory Committee (MAC),
- Drafts a model of the Annual Performance Report and specific BMP Measurable Goals for the subsequent years, and
- Provides model Illicit Discharge Ordinance language.
- Provides SMPP Template.

SMC countywide services qualify for credit under four of the six Minimum Control Measures. Additionally, SMC developed the SMPP template for revision/adoption by the MS4s. This template is intended to be reviewed, revised and accepted by MS4s within the county and describes a program intended to be in compliance with the ILR40 permit requirements. A general list below summarizes additional SMC services under the 6 minimum control categories:

1. **Public Education and Outreach:** SMC provides, through its Public Information Coordinator, various training workshops, homeowners workshops, brochures, training manuals, teacher/student education, videos, etc.,
2. **Public Participation and Involvement:** SMC coordinates and participates in public meetings and committees, including the Municipal Advisory Committee (MAC), SMC Board of Commissioners, Technical Advisory Committee (TAC), citizen watershed planning committees, Watershed Management Board (WMB), and volunteer support.
3. **Construction Site Runoff Control:** SMC adopted the countywide Watershed Development Ordinance in 1992, which establishes the minimum stormwater management requirements for development in Lake County. The WDO, which is enforced by SMC as well as by certified communities in the county, establishes standards for construction site runoff control.
4. **Post-Construction Runoff Control:** The Watershed Development Ordinance also establishes standards for post-construction runoff control.

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 Village of Lake Zurich 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 Village 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 Village 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

The Village is located within portions of the Des Plaines River and Fox River watersheds. There are several receiving waters, tributary to the Des Plaines and Fox Rivers, which are located within the Village. These include Buffalo Creek, Indian Creek, Flint Creek and the Lake of Lake Zurich. Other on-stream bodies of water are also considered part of the receiving water system.

Watershed: The land area that contributes stormwater to one of the four major Rivers in Lake County.

Sub-Watershed: The land area that contributes stormwater to one of the receiving waters tributary to a major River.

Receiving Water: A natural or man-made system into which stormwater or treated wastewater is discharged, including the four major rivers in Lake County, their tributary stream systems and other Waters of the U.S.

The major Watersheds and Receiving waters are presented on **Figure 1 Map of Major Sub-watershed and Receiving Waters**.

Des Plaines River Watershed

The Des Plaines River watershed originates in Racine and Kenosha Counties in Wisconsin flowing south into Illinois. The Des Plaines watershed in Lake County drains an area of approximately 202 square miles or 129,577 acres. It is the largest of the county's four major watersheds. The topography of the watershed is dominated by a gently rolling landscape with numerous wet marshy areas. The Lake County portion of the watershed is divided into nine sub-watersheds.

The Des Plaines River watershed wholly or predominantly includes the communities of Arlington Heights, Buffalo Grove, Deer Park, Grayslake, Gurnee, Hawthorn Woods, Indian Creek, Kildeer, Libertyville, Lincolnshire, Lindenhurst, Long Grove, Mettawa, Mundelein, Old Mill Creek, Riverwoods, Third Lake, Vernon Hills, Wadsworth and Wheeling. New development has centered on the many lakes in the watershed. Open space areas are concentrated along the Des Plaines River, where the Lake County Forest Preserve District has substantial holdings, which stretch uninterrupted from the Wisconsin-Illinois border into Cook County. Watershed planning activities continue for the entire Des Plaines River watershed and planning sponsors include the Illinois Department of Natural Resources, U.S. Army Corps of Engineers, Lake, Cook and DuPage Counties. The Lake County Stormwater Management Commission has completed watershed management plans for the Indian Creek, Bull Creek/Bull's Brook, and Squaw Creek sub-watersheds to date. As funding becomes available, future watershed planning efforts will be implemented.

Fox River Watershed

The Fox River originates about 15 miles northwest of Milwaukee, Wisconsin. The river enters the northwest corner of Lake County in the Chain O'Lakes area and then enters McHenry County, but reenters Lake County south of Fox River Valley Gardens. About 163 square miles of Lake County drains to the Fox River.

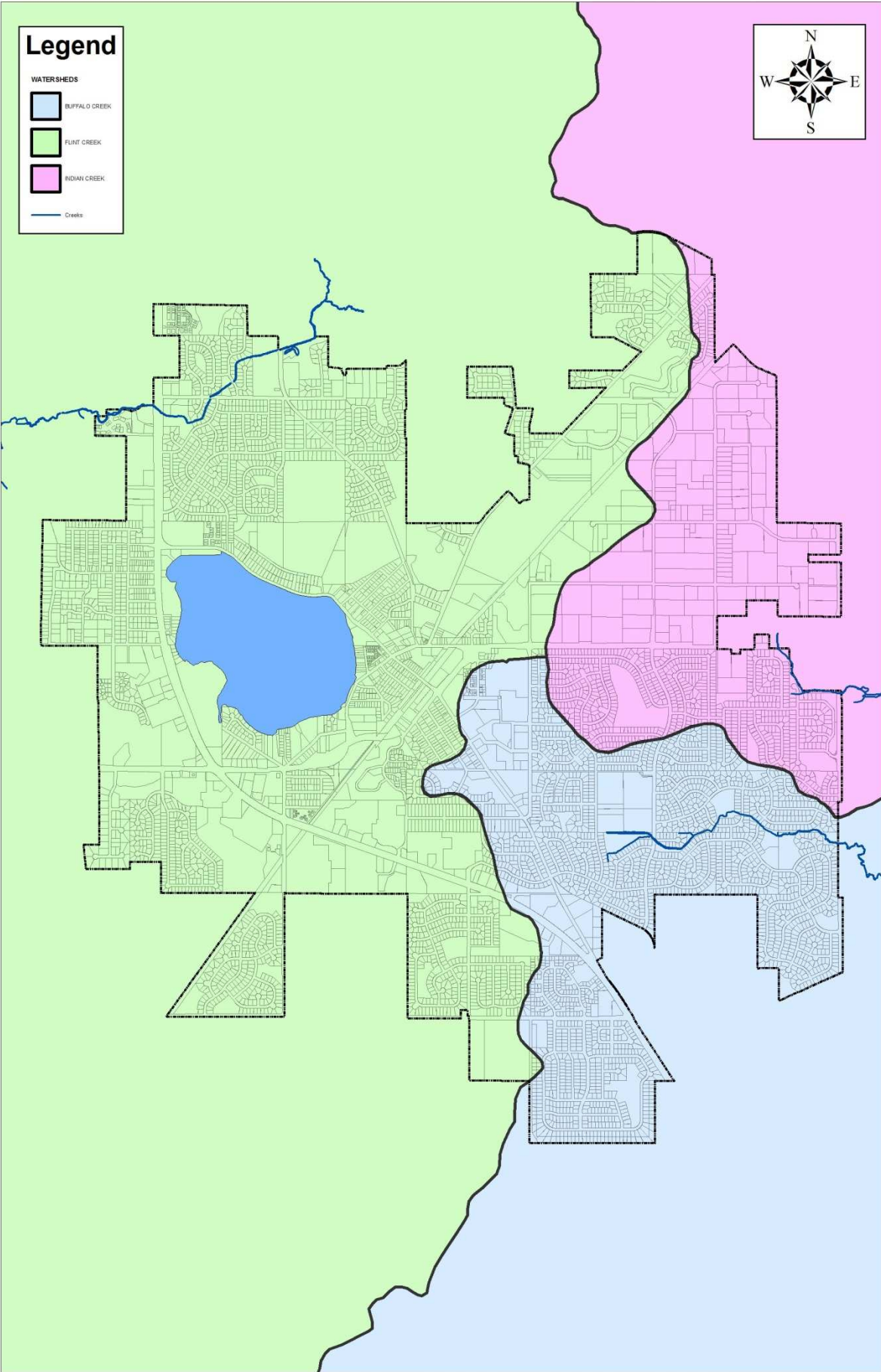
Along the Fox River from the state line to Algonquin, the terrain is flat and contains many lakes and low-lying wetlands. The upland areas of the watershed include gently sloping topography to steep hilly terrain.

Major tributaries to the Fox River in Lake County include the Chain O'Lakes, Sequoit Creek, Squaw Creek, Mutton Creek, Slocum Lake Drain, Tower Lake Drain and Flint Creek. The northern area around the Chain O'Lakes is substantially developed around the many lakes while the middle of the watershed is experiencing an increase in suburbanization. The same can be said for the southern area of the watershed, which includes existing and new development with estate and rural estate development.

The Fox River watershed includes all or portions of the communities of Antioch, Barrington, Barrington Hills, Deer Park, Fox Lake, Fox River Grove, Grayslake, Hainesville, Hawthorn Woods, Island Lake, Lake Barrington, Lake Villa, Lake Zurich,

Lakemoor, Mundelein, North Barrington, Port Barrington, Round Lake, Round Lake Beach, Round Lake Heights, Round Lake Park, Tower Lakes, Volo and Wauconda.

SMC has completed watershed management plans for the Fish Lake Drain, Flint, Mutton, Sequoit, Slocum and Squaw subwatersheds. In 2007, the Flint Creek Watershed Partnership completed a new plan that meets the EPA's criteria for watershed-based plans under section 319 of the Clean Water Act. SMC is currently completing a similar upgrade for the Fish Lake Drain watershed.



2 Program Management

This Chapter describes the organizational structures of the Village, 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 5.15** 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 Village's website.

2.2 Intra-Department Coordination

The Board of Trustees is the policy and budget setting authority for the Village. The Engineering and Public Works Departments work together to implement this SMPP. The Stormwater Coordinator has primary responsibility for managing the overall program.

2.2.A Stormwater Coordinator

The Watershed Enforcement Officer 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 Lake County Stormwater Management Commission, 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 Village effectively implements the SMPP;
- ensures that the Village complies with all minimum Watershed Development Ordinance (WDO) 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 and WDO 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.

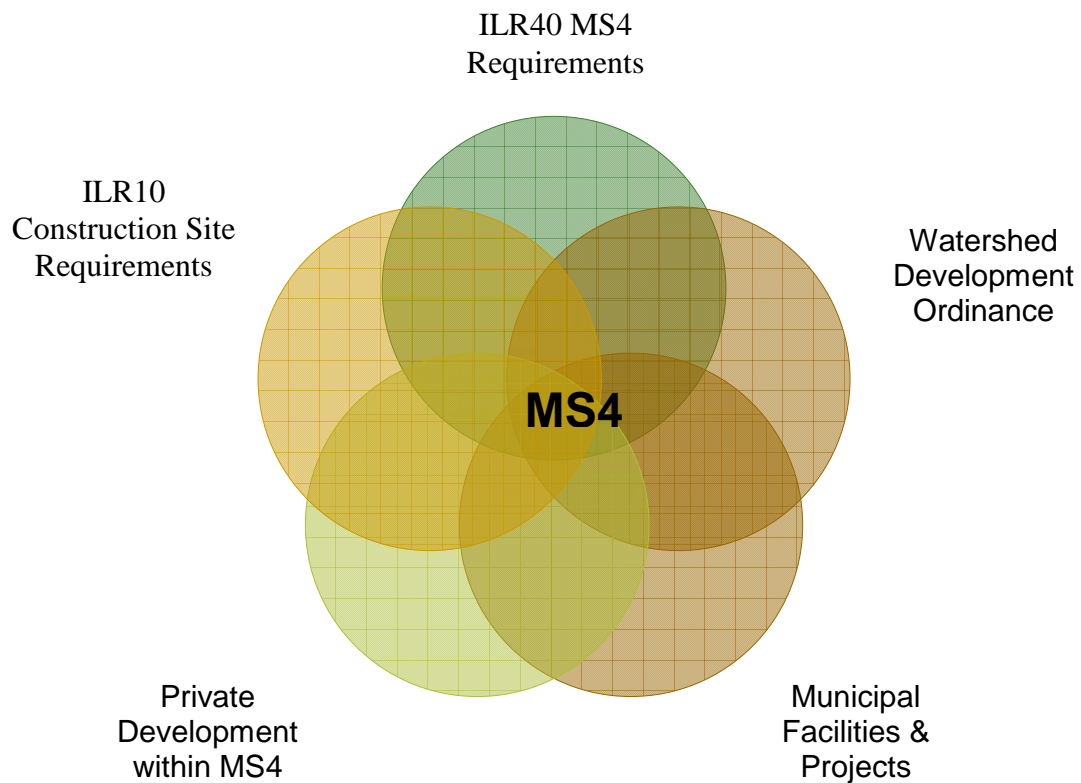


Figure 2: Roles of MS4
provided by Gewalt Hamilton & Associates

2.2.B Engineering Department

Engineering personnel support the Enforcement Officer in obtaining compliance with both the NDPEs and WDO programs.

The Village Engineer is also the Enforcement Officer with respect to the administration and enforcement of the Lake County Watershed Development Ordinance (WDO). The design and construction of all public projects shall comply with the WDO. The Enforcement Officer has the responsibility to concur that projects meet WDO 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

Infrastructure maintenance activities within the MS4 are carried out by Public Works personnel. Public Works personnel are designated as the primary entity 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 Lake County Stormwater Management

Commission

Coordination between the MS4 and the Lake County Stormwater Management Commission (SMC) occurs through both participation in the SMC sponsored MAC forums and through the Certified Community Status under the Lake County Watershed Development Ordinance (WDO). The MS4's Stormwater Coordinator is the lead contact for participation in the MAC forums. If the MS4 is a Certified Community, the MS4's Enforcement Officer is responsible for enforcement of the WDO and is designated by the MS4 to the SMC.

2.4 Coordination with Consultants

The MS4 may enlist the services of consultants to assist in the implementation of the WDO (including, but not limited to, the design of MS4 projects.) The Engineering Department has the responsibility of administering these contracts.

2.5 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 plans through the Plan Commission and Municipal Board process established in the Municipal Code.

2.6 Coordination with the IEPA

The Village 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 Village'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.

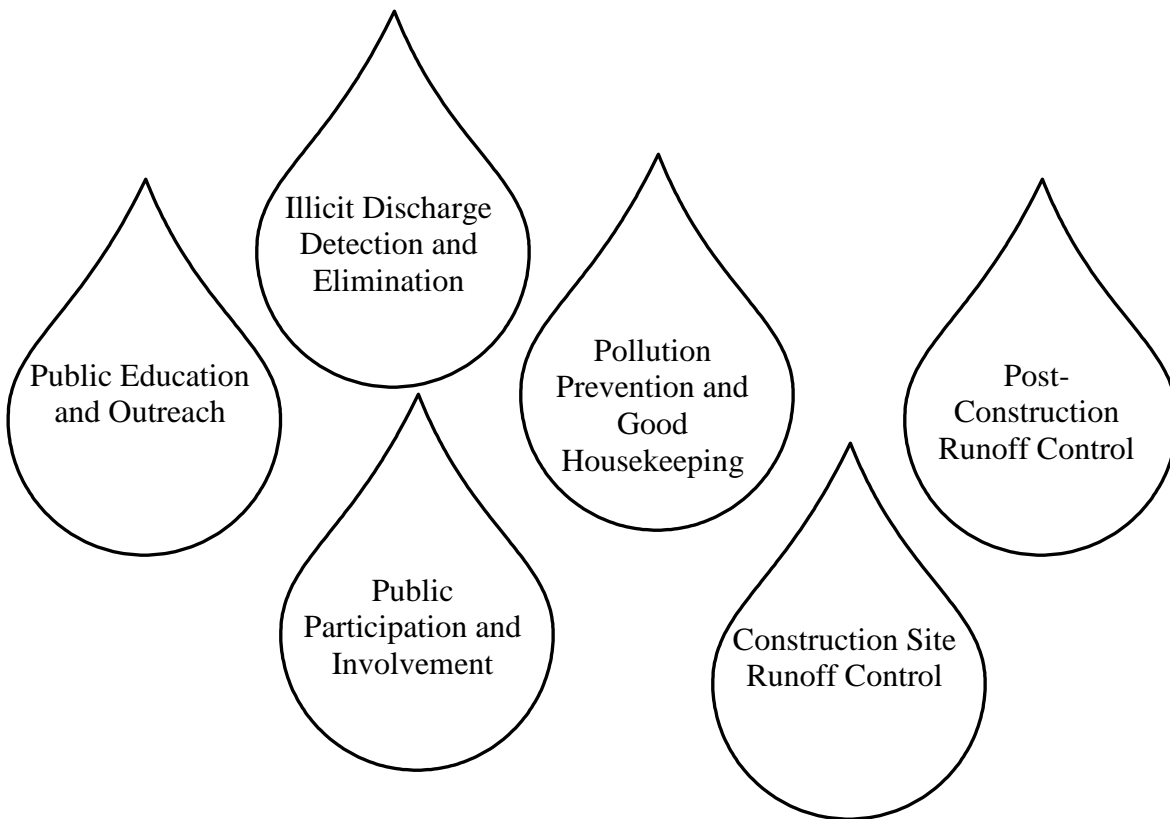
Records regarding the completion and progress of the SMPP commitments must be kept by the community. The task sheets, described in Chapter 2.1, should be updated throughout the year. The completed task sheets should be located in a binder with necessary supporting documentation. The binder must be available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

2.7 Coordination with the Development Community

The Village has a responsibility to assist the development community in understanding when an ILR10 permit is required and whether construction sites comply with the general ILR10 and WDO permit conditions. The Village 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 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.

Furthermore, the municipality has a responsibility to inform the development community that they are required to hire contractors which meet the qualifications necessary under the program, refer to Chapter 3.4.B for additional information on qualified personnel.

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 the Village 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 Village of Lake Zurich 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 Village of Lake Zurich 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 Village of Lake Zurich, 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 BMP, water quality BMP, and proper hazardous waste use and disposal.
- Attend outreach activities to homeowners / property owner associations, commercial / industrial facilities, schools, and other events.
- Coordinate, publicize, and participate in bi-annual SWALCO events.
- Maintain the Village website which offers a link to the Village's SMPP, and offers email and phone numbers for Village personnel.

3.1.A Distribution of Paper Materials

The Village of Lake Zurich 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, Solid Waste of Lake County (SWALCO) and other agencies and organizations. The Village maintains a list of available publications in the SMPP binder. The Village of Lake Zurich provides the Public Works Department's telephone number to encourage residences to contact the Village with environmental concerns.

Types of materials distributed include:

- 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 rain gardens, and rain barrels.
- Informational sheets/pamphlets published by SWALCO regarding proper hazardous waste use and disposal, and

Publications are provided in the following manner:

- At take-a-way racks located at the Public Works Facility,
- At the Chamber of Commerce Expo held annually 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 possible and permitted, the Village of Lake Zurich may offer classroom presentations at local schools to interested groups or organizations. In some instances, such presentations may involve the participation of a QLP representative who provides additional materials for the presentation. The Village of Lake Zurich will post event dates when applicable.

3.1.C Web Site (<http://www.volz.org/>)

The Village web site includes copies of the Villages SMPP and Annual Reports. The Village's SMPP gives information regarding water quality, illicit discharges, stormwater and general environmental health. The web-site is updated by Village staff as additional information is made available. A significant amount of information is made available through a link to the QLP who offers additional educational and informational sites.

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

3.1.D Outreach Events

When possible, the Village 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

Periodically, the QLP 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 County. They offer the opportunity to share information and facilitate a collective focus on potential solutions to the challenges faced by the County, Villages, and

other stakeholders. The Village publicizes these events at take-a-way racks and when possible, on the web-site.

3.1.F Storm Drain Stenciling & Markers

The Village 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. Village efforts include:

- Requiring all new development to furnish stamped inlet grates as of March 2009.
- Instituting a program to add “stickers” or other markers to existing inlets through the use of municipal staff or private groups.

3.1.G Household Hazardous Wastes

The average garage contains a lot of products that are classified as hazardous wastes, including paints, stains, 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 participate in HHW collection days, and to use appropriate pollution prevention techniques when conducting rinsing, cleaning and fueling operations. The Village supports the initiatives of the Solid Waste Agency of Lake County to employ a range of tools to improve resident participation. These include:

- Conventional outreach materials notifying residents about HHW and collection days
- Hosting a household hazardous waste collection program in collaboration with SWALCO.
- Providing an oil drop off location at the Public Works facility.

3.1.G.1 Solid Waste Agency of Lake County (SWALCO)

SWALCO provides solid waste management programs to Lake County (in both incorporated and unincorporated areas). Their programs are aimed at reducing our reliance on landfills through source reduction, recycling and energy recovery. In general, the programs help residents dispose of problem wastes, such as household chemicals, electronic equipment, and yardwaste. Their recycling programs are targeted at both commercial and residential markets in order to divert as much solid waste as possible from reaching landfills. They also administer its own public information and education efforts include the “Earth Flag” and “Earth Flag Every Day” programs in the schools, promoting SWALCO events, and publishing various resources.

The Village coordinates with SWALCO to participate in two collections per year. These collections encourage the proper disposal of hazardous materials. Typically there is a spring

event that facilitates proper disposal of electronic devices and a fall event for disposal of household chemicals. The events can be held at the select locations and may change depending on the availability of SWALCO. At a minimum, the Village encourages participation in the event by publicizing these special collections in local newspapers and if possible, on the Village web-site.

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 subwatershed. 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. 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. Septic system inspections are conducted by the Lake County Health Department. If failures are suspected an inspection is scheduled with the County and results are provided to the Village for enforcement of applicable Municipal Codes and Ordinances.

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 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 Village employs the following tools to remediate discharges related to automotive fluids. These include:

- A community oil recycling center located at the Public Works Department
- 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. While typical car washing is usually exempt from the Village's ILR-40 IEPA permitted discharge requirements, care should be taken not to conduct washing in areas which will discharge to the Village's storm system. The Village encourages the use of environmentally friendly products and discharges to be directed towards lawns and other non impervious surface areas for dilution and redirection away from storm inlets and receiving waters.

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 utilize mechanical means of removal by pumping the water to a truck which can be hauled offsite.
 - 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 Village has created discharge requirements related to the discharge of chlorinated pool water, ***Swimming Pool Discharge Requirements (Appendix 5.11)***. An executed copy of the document is required to be submitted prior to the issuance of a Building Permit for proposed pools.

3.2 Public Participation and Involvement

The public participation and involvement program allows input from citizens. 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

Comments on the SMPP are 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 and routed to the appropriate department for action. General program related calls are directed to the Stormwater Coordinator, or designee. Construction activity related telephone calls are directed to the Enforcement Officer, or designee. Illicit Discharge, storm sewer, and other related stormwater runoff concerns are directed to the Stormwater Coordinator, Public Works or Police Departments.

3.2.C Watershed Planning and Stakeholders Meetings

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

3.2.D Illicit Discharge/Illegal Dumping

Concerned citizens can contact the Village's Public Works Facility or Police Department's non-emergency number regarding environmental concerns. Additionally, the Village website contains an email link to a Feedback Form in which residents can email in which they can express their concerns. Telephone calls received from residents, other internal Departments or other agencies are logged on the **Indirect Illicit Discharge Tracking Form (Appendix 5.13)**. The Public Works Director, or his designee, should transfer information from the tracking form to the **Indirect Illicit Discharge Summary Form (Appendix 5.13)** monthly. This tracking form should be reviewed with the Stormwater Coordinator annually to determine if trends can be seen and if there are additional outreach efforts needed.

3.2.E LCSMC Municipal Advisory Committee (MAC)

The Village of Lake Zurich participates in MAC meetings and events hosted by the QLP.

3.3 Illicit Discharge Detection and Elimination¹

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 Lake County Watershed Development Ordinance (WDO) and Village IDDE Ordinance. 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

¹ Section 3.3 is a revision of the Lake Michigan Watershed Stormwater Outfall Screening Program Training Program (April 1994 by SMC), and incorporates material from the Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments (October 2004 by the Center for Watershed Protection and Robert Pitt, University of Alabama).

Several provisions of the Lake County Watershed Development Ordinance (WDO) prohibit illicit discharges as part of the development process. These provisions are only applicable for regulated development activities as defined by the WDO. Regulated developments are required to meet the soil erosion and sediment control standards of the WDO. Furthermore, the WDO requires that the applicant prohibit illicit discharges into the stormwater management system generated during the development process.

The WDO allows the Village of Lake Zurich to require inspection deposits, 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 Village of Lake Zurich created and adopted an Illicit Discharge Ordinance No. 2004-04-276 of the Municipal Code. The Ordinance is the mechanism to allow for the execution and enforcement of the SMPP and is enforced.

3.3.A.3 *Municipal Code*

The Village of Lake Zurich created and adopted the Village Municipal Code. The Municipal Code is administered by the Building, Zoning, and Engineering Departments 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 *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 outfall inventory was completed by the Village of Lake Zurich. This investigation was completed in 2006 and the results have been incorporated into a Microsoft Access database and accompanying *Outfall Inventory Map*. This map is used in combination with the

previously existing *Storm Sewer Atlas* to help 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 numbered to facilitate detection and tracking of identified illicit discharges. The *Storm Sewer Atlas and Outfall Inventory Map* can be obtained from the Engineering Department.

The outfall map should be revised to incorporate permitted outfalls associated with new developments. It is suggested that an outfall inventory be performed every 5 years; the focus of this effort is to search for new outfalls (i.e. those not already included on the existing *Outfall Inventory Map*) if applicable development occurs. The search for new outfalls should be combined with the pre-screening efforts (Chapter 3.3.D.1).

3.3.B.2 Potential Sources of Illicit Discharges

Table 1 shows that direct connections to storm sewer systems most likely originate from commercial/industrial facilities. Thus, the focus on Chapter 3.3 is on the identification of illicit discharges from commercial/industrial facilities.

Table 1: Potential Sources of Illicit Discharges to Storm Sewers

| Potential Sources | Storm Sewer Entry | | Flow Characteristics | |
|----------------------------------|-------------------|----------|----------------------|--------------|
| | Direct | Indirect | Continuous | Intermittent |
| Residential Sources | √ | X | √ | X |
| Sanitary Wastewater | - | √ | √ | X |
| Septic Tank Effluent | X | √ | - | √ |
| Household Chemicals | √ | - | - | √ |
| Laundry Wastewater | - | √ | √ | √ |
| Excess Landscaping | - | √ | - | - |
| Watering | √ | X | - | √ |
| Leaking Potable Water Pipes | √ | X | - | √ |
| Commercial Sources | X | √ | √ | X |
| Gasoline Filling Stations | √ | X | √ | X |
| Vehicle Maint./Repair Facilities | | | | |
| Laundry Wastewater | | | | |
| Construction Site Dewatering | | | | |
| Sanitary Wastewater | | | | |

| | | | | |
|--|--|--|--|--|
| Industrial Sources Leaking Tanks and Pipes Misc. Process Waters | | | | |
|--|--|--|--|--|

√: Most likely condition.

X: May Occur

-: Not very likely

Source: Adapted From: USEPA. January 1993. *Investigation of Inappropriate Pollutant Entries Into Storm Drainage Systems: A User's Guide*. Cincinnati, Ohio.

3.3.B.3 USEPA Exclusions

It is noted that not all dry-weather flows are considered inappropriate discharges. Under certain conditions, the following discharges are not considered inappropriate by USEPA:

- Water line flushing,
- Landscaping irrigation,
- Diverted stream flows,
- Rising groundwaters,
- Uncontaminated groundwater infiltration,
- Uncontaminated pumped groundwater,
- Discharges from potable water sources,
- Flows from foundation drains,
- Air conditioning condensation,
- Irrigation water,
- Springs,
- Water from crawl spaces,
- Lawn watering,
- Individual car washing,
- Flows from riparian habitats and wetlands,
- Dechlorinated swimming pool water, and
- Street wash water.

3.3.B.4 Pollutant Indicators

3.3.B.4.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 2: 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 3: Color of Potential Illicit Discharges (adapted from CWP)

| Water Color | Possible Cause | Images |
|--|---|---|
| <p>Brown Water – water ranging in color from light-tea to chocolate milk; it may have a rotten egg odor.</p> | <p>Human causes may be eroded, disturbed soils from constr. sites, animal enclosures, destabilized stream banks and lake shore erosion due to boat traffic.</p> |  |
| <p>Yellow –</p> | <p>Human causes may include textile facilities, chemical plants or pollen.</p> | |
| <p>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.</p> | <p>Human causes may be illicit connections of domestic wastewater; untreated septic system discharge; illegal boat discharge; and parking lot runoff.</p> |  |
| <p>Green Water – ranging from blue green to bright green color and may impart odor. Conditions typically occur from May to October.</p> | <p>Human causes may be over-fertilizing lawns, boat discharges, septic systems, agriculture operations, or discharging poorly treated wastewater.</p> |  |





| | | |
|--|--|---|
| <p>Orange/Red -</p> | <p>Human causes may include meat packing facilities or dyes.</p> |  |
| <p>Green Flecks – resembling floating blue-green paint chips or grass clippings. These <i>Blooms</i> and are potentially toxic.</p> | <p>Human cause is excessive nutrients. Fertilizers used on lawns can contaminate surface and ground water.</p> |  |

Table 3 (continued)

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

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 4
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 5
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 4: Floatables in Potential Illicit Discharges (adapted from CWP)

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

3.3.B.4.b TESTING INDICATORS

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 wastewater 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. Fluoride 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 <1 indicate 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 Village urges residents to call the Village's Public Works Facility or Lake Zurich Police Department's non-emergency number mentioned in Chapter 3.2.D of this document. 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.

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.

3.3.D Direct Connection Illicit Discharge Program

Direct connections enter through direct piping connections to the storm sewer system, and since direct connections exist regardless of whether or not a stormwater event (e.g. rain or melting snow) is occurring, they are most easily detected during dry-weather periods. Inspection of stormwater outfalls during dry-weather conditions reveals whether non-stormwater flows exist. If non-stormwater flows are observed, they can be screened and tested to determine whether pollutants are present. If the presence of pollutants is indicated, the detective work of identifying the source of the discharge can begin. Once the source is identified, it can then be corrected. A direct connection illicit discharge program consists of three principal components: 1) program planning, 2) outfall screening, and 3) follow-up investigation and program evaluation.

1. ***Program Planning*** involves the office work, planning, and organization required to conduct the subsequent outfall screening and follow-up investigative activities of the program. Program planning identifies the regulatory authority to remove directly connected illicit discharges and the identification of the outfalls and receiving waters in the municipality (both discussed earlier in this chapter). Program planning for the direct connection portion of the overall program also includes the identification of the staffing and equipment needed to conduct the outfall screening, and scheduling of the outfall screening activities.

2. ***Outfall Screening*** consists of pre-screening to determine whether dry-weather flows are present and outfall inspection which includes field-testing and grab samples to determine whether pollutants are present in any observed dry-weather flows.

3. ***Follow-Up Investigation and Program Evaluation*** are the steps necessary to determine the source of any identified pollutant flows and eliminate them. The major follow-up investigation and program evaluation components include:

- reviewing and assessing outfall inspection results,
- internal coordination,
- conducting detailed storm sewer investigations to identify pollutant sources (*tracing*),
- exercising the appropriate legal means to achieve enforcement of the program objective (*removal of pollutants at the source*), and evaluating the program to determine whether subsequent screening activities are necessary.

3.3.D.1 Program Planning

The program planning component is primarily office work related to assembling the necessary information and equipment for efficiently conducting outfall-screening activities. This component of the program addresses the following issues (see **Figure 3**).

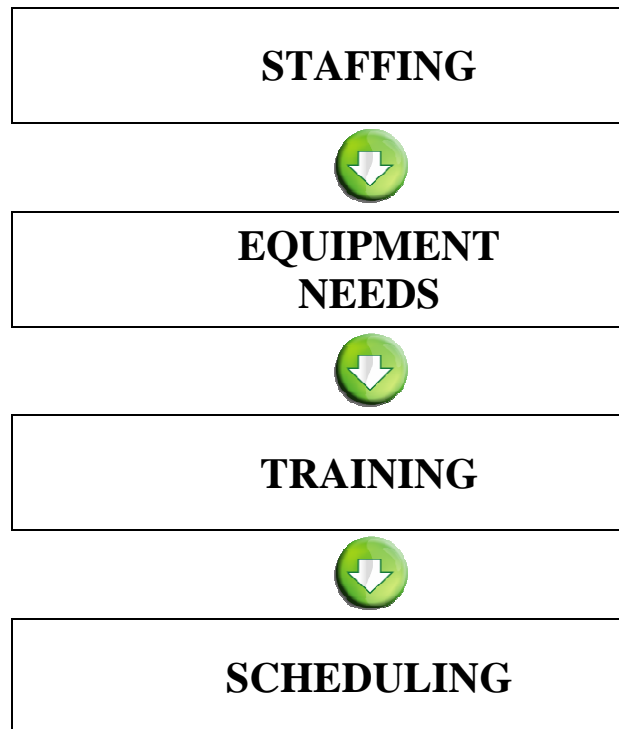


Figure 3: Program Elements

3.3.D.1.a STAFFING

Personnel for an outfall inspection screening program are required for program administration, effort for conducting the outfall screening, and any follow-up investigations. Typically, a one to two-member Public Works crew is required for the outfall screening and follow-up portions of the program. Based on the number of identified outfalls and program goals, it is anticipated that the crew will be required to perform inspections at least several weeks throughout the year.

3.3.D.1.b EQUIPMENT NEEDS

General field equipment and specialized outfall screening equipment are required for IDDE programs. The method of collecting and managing inspection screening data is driven by available technology. Field Crews carry basic safety items, such as cell phones, surgical gloves, and first aid kits.

3.3.D.1.c TRAINING

Applicable Public Works personnel shall thoroughly read and understand the objectives of the IDDE subchapters of this manual. Applicable field personnel shall have completed a standard training session. It is recommended that applicable Public Works personnel accompany the Stormwater Coordinator on at least two outfall inspections to learn the use of the *Stormwater Outfall Inspection Data Form* (**Appendix 5.3**) and the use of sampling equipment and test kits.

3.3.D.1.d SCHEDULING

Scheduling for pre-screening or outfall inspections is dependent on staff availability and weather. Pre-screening generally takes place during the late summer or fall months, ideally in August, September, or October, although other summer or fall months may be acceptable, depending on weather conditions. This time period is generally warm, which improves field efficiency as well as reliability and consistency of field-testing. This time period is also more likely to have extended dry periods with little or no precipitation, which is required for the inspection activities.

In order to ensure that samples collected are representative of dry-weather flows, conduct pre-screening and follow-up inspections preceding a dry-weather period, a period of 72 hours of dry weather. A period of 72 hours is selected to allow local detention facilities to drain and local groundwater flows to recede after precipitation events. However, some judgment may be exercised in evaluating the 72 hour period to sampling. For example, if very light rain or drizzle occurred and no runoff was experienced, it is likely that dry-weather conditions would exist and outfall inspection could be conducted.

3.3.D.2 *Outfall Inspection Procedure*

The identification of potential illicit discharge locations is primarily a two part process, pre-screening and follow-up inspections. Pre-screening is performed by a rapid inspection of all outfalls in a pre-determined area such as along a receiving water. Follow-up inspections are required for those pipes found to have dry weather flow. Once probable illicit discharges are found, identify the sources of illicit discharges and correct per the removal procedure of Chapter 3.3.C.4. Outfall inspection consists of the following tasks:

- Pre-Screening
- Outfall Inspection Setup,
- Outfall Inspection,
- Outfall Assessment and Documentation, and
- Daily closeout.

3.3.D.2.a PRE-SCREENING

Pre-screening consists of a rapid inspection of outfalls, during dry weather flow conditions. Pre-screening was completed by the Village in 2006. During pre-screening outfalls are inspected; outfalls observed to have dry weather flow are documented. Pre-screening results can be seen by viewing the Outfall Database; outfalls with dry weather flows shall be scheduled for an outfall inspection. It is recommended that each outfall be re-screened every 5 years.

3.3.D.2.b OUTFALL INSPECTION SETUP AND PRECAUTIONS

In this step, an attempt is made to visualize the outfall locations and anticipate any potential problems that could affect the days screening activities. Of particular concern in daily setup is whether any safety issues will be associated with the day's screening activities. For example, does traffic need to be controlled or is access to the outfall difficult. Before leaving an outfall inspection location, field crews must ensure that all necessary equipment is available, operable, and calibrated (as appropriate).

Safety is the primary consideration while inspecting upstream sampling locations. In general, the rule "*if in doubt, don't*" is followed. Latex gloves are worn while collecting and handling samples. A first aid kit is included in each vehicle to treat minor injuries. Obtain medical help for major injuries as soon as possible. Report all injuries, minor and major to appropriate persons.

Access to Private Property

In some cases, it may be necessary for Public Works personnel to enter or cross private property to investigate discovered illicit discharges. Public Works personnel shall have identification indicating that they are municipal employees. If permission to access property is denied, a public official should then contact the owner at a later date.

Avoid confrontational situations with citizens and attempt to answer questions concisely and without being alarmist. Public Works personnel should be coached on appropriate responses to questions from citizens. If a field crew feels uncomfortable or threatened, they should remove themselves from the situation and report to the incident to their supervisor.

Traffic

All traffic control measures are to be in accordance with the requirements of the *Manual on Uniform Traffic Control Devices* and other internal Policies and Procedures as set forth by the Public Works Department.

In general, the following additional policies are applicable. Public Works personnel generally work on streets only during the hours of 7 a.m. to 4:30 p.m. except in emergency situations. All field crews are required to wear Personal Protection Equipment (PPE) in accordance with Standard Operating Procedures set forth by the Public Works Department.

Confined Space Entry

Confined space entry for this program would include climbing into or inserting one's head into a pipe, manhole, or catch basin. In general, do not cross the vertical plane defining an outfall pipe or the horizontal plane defining a manhole, unless properly prepared for confined space entry. **IN NO CASE SHALL FIELD CREW MEMBERS WHO ARE UNTRAINED AND/OR UNEQUIPPED FOR CONFINED SPACE ENTRY ATTEMPT TO ENTER CONFINED SPACES.** Confined space entry shall be conducted only by trained personnel with appropriate rescue and monitoring equipment.

Other Hazards

Table 5: Other Outfall Inspection Hazards

| Hazard | Prevention |
|---------------------------------|---|
| Access | Avoid steep slopes, dense brush and deep water. Report unsafe locations and move on to next location. |
| Stuck | Avoid wading where bottom sediments are easily disturbed or depths are unknown. |
| Strong Gas/Solvent Odor | Do not select manhole for sampling |
| Bodily Harm From Manhole Covers | Use manhole hook and watch for pinch points |
| Slip | Proper Foot Gear and Use of Rope If Warranted |
| Falls | Use extended sample collection device; don't cross horizontal or vertical plane at end of outfall |
| Heat and Dehydration | Adequate Water Intake; Avoid Excessive Exertion on Hot Days |
| Sunburn | Sunscreen and Appropriate Clothing |
| Poisonous Plants/Animals | Identify and Avoid |
| Vicious Dogs | Avoid; Use Animal Repellent if necessary |
| Water Bodies | Flotation Devices |
| Ticks | Check Entire Body at End of Each Day |
| Mosquitoes | Apply Repellent |

Test Kit Analysis Safety

In general, safety procedures established by the Public Works Department and the USEPA Industrial User Inspection and Sampling Manual for POTWs and related IEPA publications are used. Following are general guidelines.

1. Appropriate gloves (latex or rubber) are worn AT ALL TIMES when handling samples or conducting test kit analyses. Other appropriate Personal Protection Equipment (PPE) is also worn, as required.
2. Copies of Material Safety Data Sheets (MSDS) are maintained with all test kits. Be familiar with instructions provided in the MSDSs.
3. Always conduct test kit analyses in a well-ventilated area.
4. Wash hands thoroughly with soap and water at every opportunity.

3.3.D.2.cOUTFALL INSPECTION

An outfall inspection is required for outfalls determined to have dry weather flow, or with submerged outlets, based on the pre-screening efforts. Upon arriving at an outfall, the field crew inspects the outfall by approaching the outfall on foot to a proximity that allows visual observations to be made.

Outfalls are assessed to determine which one of the three following conditions applies:

- (1) The outfall is dry or damp with no observed flow,
- (2) Flowing discharges are observed from the outfall, or
- (3) The outfall is partially or completely submerged with no observed flow or is inaccessible.

Scenario 1: No Observed Flow. Under Scenario 1, the field crew should photograph the outfall and complete applicable sections of the *Stormwater Outfall Inspection Data Form (Appendix 5.3)*. Use the flow chart, **Figure 7**, to identify applicable sections of the form that must be filled out.

Scenario 2: Observed Flow. Under Scenario 2, the field crew photographs the outfall and complete applicable sections of the *Stormwater Outfall Inspection Data Form (Appendix 5.3)*. Use the flow chart, **Figure 7**, to identify applicable sections of the form that must be filled out, including sampling/testing requirements. The intent is to gather additional information to determine if an illicit discharge is present. Determine the need for on-site testing and obtaining grab samples for laboratory analysis based on the flow chart guidance. Testing results are then used to identify potential sources.

The initial testing results are not intended to document the event for future removal and/or enforcement actions. If the preliminary test results identify a potential illicit discharge an independent laboratory shall be contracted to test an additional sample prior to initiating removal procedures.

Scenario 3: Submerged or Inaccessible Outfall. Under Scenario 3, if standing water is present in an outfall or if it is inaccessible, then complete available information from Sections 1, 2, 3 and 7 of the *Stormwater Outfall Inspection Data Form (Appendix 5.3)*, with appropriate comments being written in the “Remarks” section of the data form. Locating an upstream sampling point may be required if any of the following conditions exist at an outfall:

- The outfall discharge is submerged or partially submerged due to backwater conditions,
- Site access and safety considerations prevent sample collection,
- The outfall is from a facility providing water quality treatment (for example, detention basin outlet), or
- Other special considerations.

Determine the upstream sampling location using the Village’s storm sewer atlas. Manholes, catch basins, or culvert crossings can be used for upstream sampling locations. Make reasonable efforts to locate upstream sampling points that are accessible and exhibit flow. If inaccessible, resolve the problem in the office with appropriate supervisory personnel.

| | | |
|--|--|--|
|  <p>Submerged: More than ½ below water</p> |  <p>Partially submerged: Bottom is below water</p> |  <p>Fully submerged: Can't see outfall</p> |
|  <p>Outfall fully submerged by debris</p> |  <p>Fully submerged from downstream trees trapping debris</p> |  <p>Partially submerged by leaf debris "back water"</p> |
|  <p>Trickle Flow: Very narrow stream of water</p> |  <p>Moderate Flow: Steady stream, but very shallow depth</p> |  <p>Significant flow (Source is a fire hydrant discharge)</p> |

Figure 6: Characterizing Submersion and Flow
Center for Watershed Protection

3.3.D.2.d OUTFALL ASSESSMENT AND DOCUMENTATION

Complete the *Stormwater Outfall Inspection Data Form* (Appendix 5.3) for all outfall screening and grab sampling activities. All completed forms must be dated, legible, and contain accurate documentation of each outfall inspection. A separate data form must be completed for each outfall. It is recommended that non-smearing pens be used to complete the forms and that all data be objective and factual. Once completed, these data forms are considered accountable documents and are maintained as part of the Village files. In addition to standard information, the data form is used to record other information that is noted at the time the outfall inspection is conducted (e.g. observations of dead or dying plants, fish kills, algal blooms (excessive algae growth), construction activities, and other activities that might provide information regarding the potential for illicit connections or inappropriate discharges).

3.3.D.2.e DAILY CLOSEOUT

Disposal and Clean-up

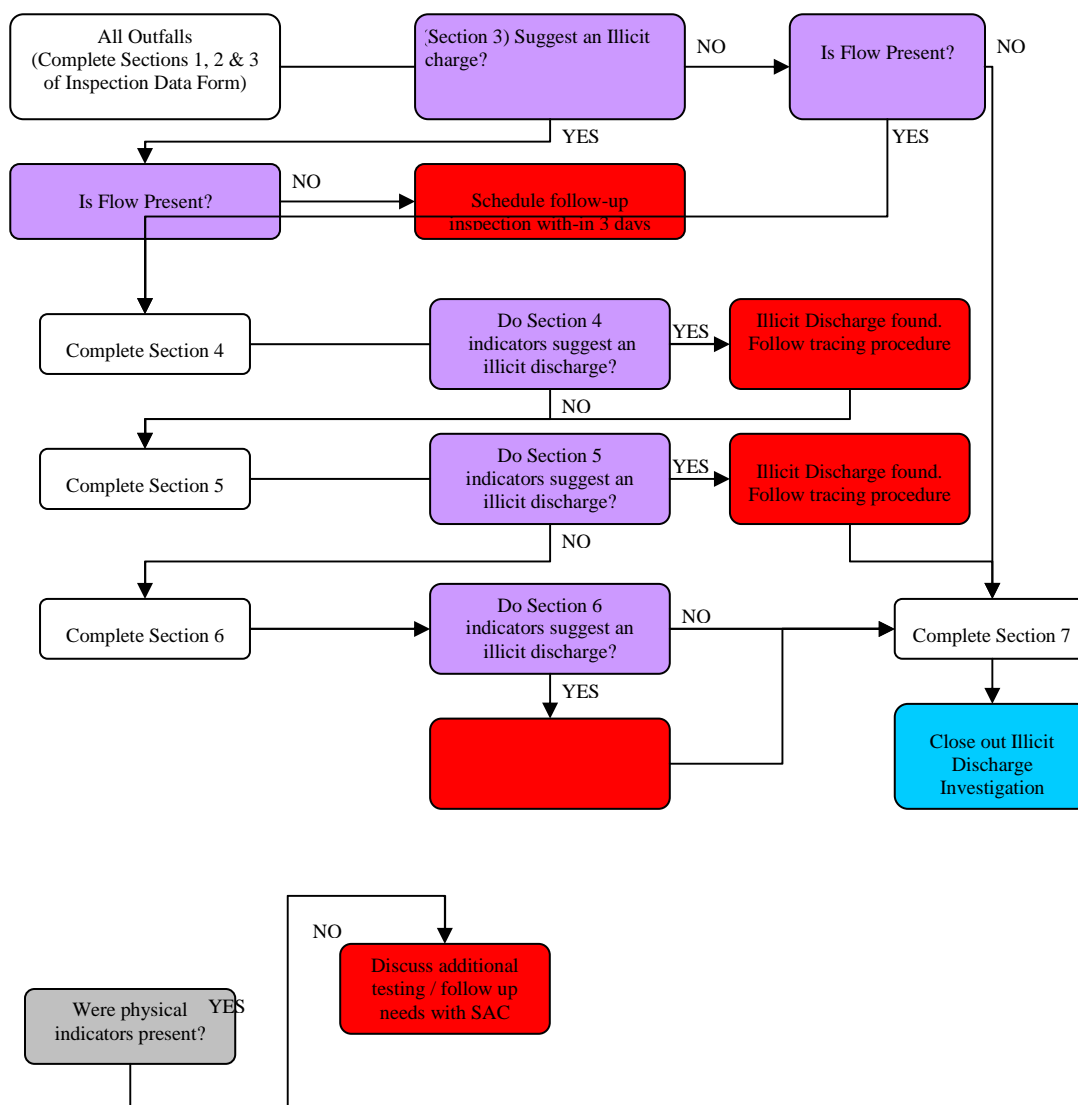
Properly dispose of test waste items per the following table. Before leaving any field inspection site, check the area to ensure that all equipment has been cleaned, collected, and stored. Do not leave any trash or litter at the site.

| Item | Field Disposal | Final Disposal |
|---|---------------------------|--|
| Grab Sample (Uncontaminated) | On Site | ----- |
| Grab Sample (Contaminated by Contact with Test Kit Ampoule) | Liquid Waste Container | Sanitary Sewer |
| Test Kit Ampoule | Used Ampoule container | Dispose of Container as a Hazardous Waste |
| Paper Towels/ Latex Gloves | Trash Bags | Municipal Garbage |

Office Closeout

In the office, file copies of completed data forms. Also, update the outfall screening scheduling and completion form and plan the next screening day's activities. Discuss any problems locating outfalls with appropriate supervisory personnel so that alternate sampling locations can be identified. Once a month, compile data from the *Stormwater Outfall Inspection Data Form* (Appendix 5.3) onto the *Outfall Inspection Screening Summary Form* (Appendix 5.5).

Figure 7: Outfall Inspection Procedure Flow Chart



3.3.D.3 Follow Up Investigation and Program Evaluation

Follow up investigation is required for all outfalls with positive indicators for pollutant discharges. The outfall assessment results are reviewed to determine the magnitude of the dry-weather pollution problem and to determine the necessary steps to identify and remove the sources of any detected pollutants. **Figure 8** provides a flow chart to aid in follow-up investigations of potential illicit discharges.

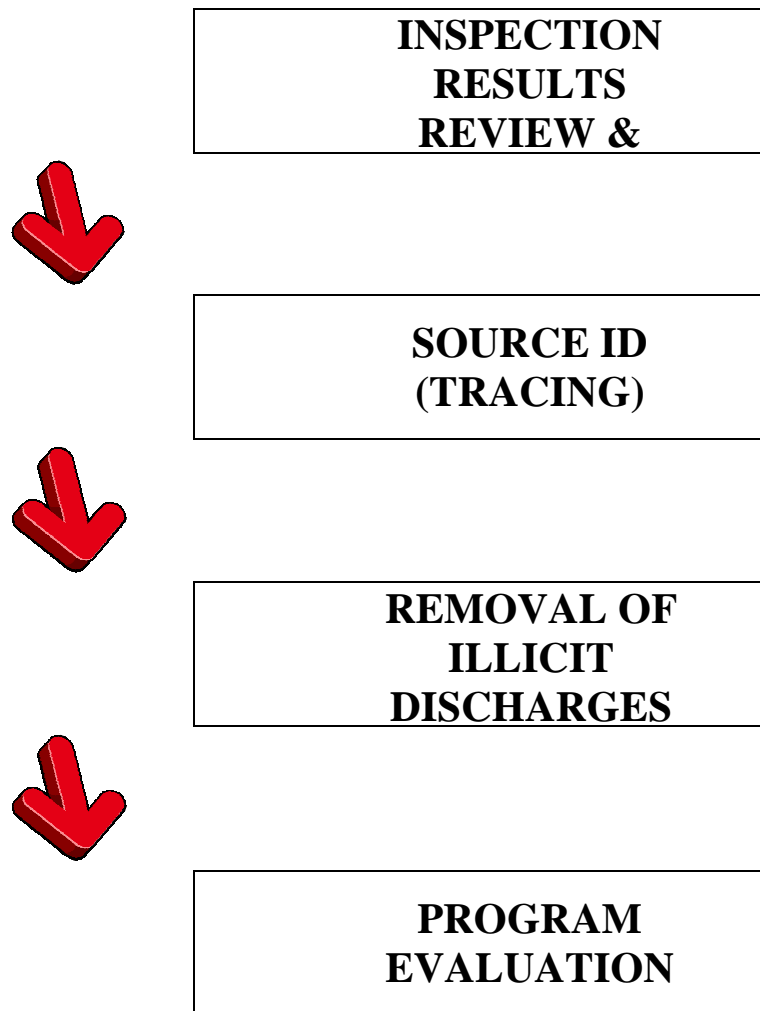


Figure 8: Follow Up Procedure

3.3.D.3.a OUTFALL SCREENING RESULTS REVIEW AND ASSESSMENT

Detailed investigations of the storm sewer system may be required upstream of the outfalls to locate sources of illicit discharges or improper disposal. The need for detailed investigations is based on evaluation of the data from the initial outfall screening. This element of the program serves to detect and remove pollutant sources. This is accomplished by reviewing the *Outfall Inspection Screening Summary Form (Appendix 5.5)* to determine if there are outfalls that require a follow up investigation, target sewer system areas for detailed investigation and then conducting intensive field investigations upstream of the polluted outfall to identify potential sources.

3.3.D.3.b INDEPENDENT VERIFICATION

If the initial outfall assessment identifies potential illicit discharges (through either the on-site or off-site testing procedures), additional sampling is required. The results of the inspection and testing should be discussed with the Enforcement Officer. Contract an independent laboratory to test an additional sample and verify preliminary finding. Use the established procedure to coordinate the independent laboratory testing.

3.3.D.3.c SOURCE IDENTIFICATION

Follow up investigation is required for all outfalls with positive indicators for pollutant discharges during the pre-screening efforts. The procedure for detailed storm sewer investigation and source identification has three major components: 1) mapping and evaluation, 2) storm sewer investigation, and 3) tracing.

Mapping and Evaluation

For each outfall to be investigated, a large-scale working map should be obtained (digitally or in paper form) that includes the entire upstream storm sewer network, outfall locations and parcel boundaries indicated. This map product is based on information from the storm sewer atlas and outfall map and can be obtained from the Engineering Department. Land use information is evaluated to determine the types of residential, commercial, and industrial areas that might contribute the type of pollution identified at the outfall.

If the contributing area is determined to be non-residential, the available Industrial/Business information should also be reviewed. The pre-treatment inspection, performed by the Public Works Department typically indicates chemicals located on-site at each business. The business type and on-site chemicals are logged into the Industrial/Business Inventory. The Inventory is screened for probable pollutant matches. Business Types, at the time of the SMPP creation, include:

- Assembly,
- Automotive,
- Bank-Loans,
- Car Wash,
- Church,

- Contractor,
- Food Processing (Pet, Candy),
- Government/School,
- Grocery Store,
- Health Club/Gym,
- Landscaping/Nursery,
- Laundromat/Dry Cleaning,
- Manufacturing,,
- Medical/Dental/Pharmaceutical,
- Office,
- Printing/Photography,
- Recreations/Park District,
- Residential (Single and Multi-Family),
- Restaurants/Bars,
- Retail,
- Salon/Barber Shop,
- Utility, and
- Warehouse/Distribution.

Make attempts to match detected indicators with upstream activities.

Storm Sewer Investigation

After conducting the mapping evaluation, a manhole-by-manhole inspection is conducted to pinpoint the location of the inappropriate discharge, into the storm sewer / conveyance system. This inspection requires a field crew to revisit the outfall where the polluted dry-weather discharge was detected. The field crew should be equipped with the same testing and safety equipment and follow similar procedures as used during the outfall inspection.

After confirming that dry-weather flow is present at the outfall, the field crew continues moving to the next upstream manhole or access point investigating for dry weather flow. In cases where more than one source of dry-weather discharge enters a manhole, the field crew records this information on the screening form and then tracks each source separately. All sources are tracked upstream, manhole-by-manhole, until the dry-weather discharge is no longer detected. Finally, the last manhole where dry-weather flow is present is identified and potential sources to that manhole are accessed. This data is important for source identification.

The field crew should also determine whether there has been a significant change in the flow rate between manholes. If the flow rate appears to have changed between two manholes in the system, the illicit connection likely occurs between the two manholes. Changes in the concentration of pollutant parameters could also aid in confirming the presence of an illicit connection between the two manholes.

Tracing

Once the manhole inspection has identified the reach area, between two manholes suspected of containing an inappropriate discharge, testing may be necessary. If there is only one possible source to this section of the storm sewer system in the area, source identification and follow-up for corrective action is straightforward. Multiple sources, or non-definitive sources, may require additional evaluation and testing in order to identify the contributing source. The method of testing must be approved by the Enforcement Officer and Public Works Director prior to testing. Potential testing methods include fluorometric dye testing, smoke testing, and/or remote video inspections. Once identified, clearly log the contributing source.

3.3.D.4 Removal of Illicit Discharges

Removal of illicit discharge connections is required at all identified contributing sources. Eight steps are taken to definitively identify and remove an inappropriate discharge to the storm sewer system. These steps are as follows:

Step 1: Have an outside laboratory service test a grab sample taken for the suspected illicit discharge. The sample shall be taken at the manhole located immediately downstream of the suspected discharge connection.

Step 2: Conduct an internal meeting with appropriate personnel likely including Public Works Personnel, Public Works Director, Building Department Code Enforcement Officer, and Watershed Enforcement Officer to discuss inspection and testing results and remedial procedures.

Step 3: The Public Works Administration shall send a notification letter to the owner/operator of the property/site suspected of discharging a pollutant. The letter should request that the owner/operator describe the activities on the site and the possible sources of non-stormwater discharges including information regarding the use and storage of hazardous substances, chemical storage practices, materials handling and disposal practices, storage tanks, types of permits, and pollution prevention plans.

Step 4: Arrange a meeting for an inspection of the property with the Watershed Enforcement Officer, Public Works Personnel, the Building Department Code Enforcement Officer, and the owner/operator of the property where the pollution source is suspected. Most illicit connections and improper disposal can probably be detected during this step. Notify the site owner/operator of the problem and instruct them to take corrective measures.

Step 5: Conduct additional tests as necessary if the initial site inspection is not successful in identifying the source of the problem. The Watershed Enforcement Officer and Public Works Director are responsible for determining the appropriate testing measure to pinpoint the source.

Step 6: If the owner/operator does not voluntarily initiate corrective action, either the Stormwater Officer or Building Department Code Enforcement Office issues a notification of noncompliance. The notification includes a description of the required action(s) a time frame in which to assess the problem and take corrective action. Upon

notification of noncompliance, the owner can be subject to any penalties stipulated in the IDDE Ordinance No 2004-04-276.

Step 7: Conduct follow-up inspections after stipulated time frame has elapsed to determine whether corrective actions have been implemented to: 1) remove the illicit connection or 2) eliminate the improper disposal practice.

Step 8: If corrective actions have been completed (i.e. and the illicit discharge has been eliminated) the Public Works Administration sends a notification of compliance letter to the owner/operator of the property/site suspected of discharging a pollutant.

If corrective actions have not been completed an additional internal meeting with appropriate (municipal) personnel (likely including involved Public Works Personnel, Public Works Director, Building Department Code Enforcement Officer, and Watershed Enforcement Officer) is held to determine appropriate steps to obtain compliance. Appropriate actions may include monetary or other penalties.

Table 6: NPDES-Identified Industrial Facilities

| SIC Code | Description |
|--|--|
| | Facilities subject to stormwater effluent limitations guidelines, new source performance standards, or toxic pollutant effluent standards under 40 CFR Subchapter N (except facilities with toxic pollutant effluent standards that are exempted). |
| 1000-1400 | Mineral industry, including active and inactive mining operations, with exceptions, and certain oil and gas exploration, production, processing, or treatment operations or transmission facilities. |
| 2400 | Lumber and wood products except furniture (except 2434-wood kitchen cabinets) |
| 2600 | Paper and allied products (except 2650-paperboard containers and boxes from purchased paperboard and 2670-converted paper and paperboard products) |
| 2800 | Chemicals and allied products (except 2830-drugs) |
| 2900 | Petroleum refining and related industries (except discharges subject to 40 CFR 419) |
| 3110 | Leather tanning and finishing |
| 3200 | Stone, clay, glass, and concrete products (except discharges subject to 40 CFR 419) |
| 3300 | Primary metal industries |
| 3441 | Fabricated structural metal |
| 3730 | Ship and boat building and repair |
| | Hazardous waste treatment, storage, or disposal facilities, including those that are operating under interim status or a permit under Subtitle C of RCRA |
| | Landfills, land application sites, and open dumps that receive or have received any industrial wastes, including those that are subject to regulation under Subtitle D of RCRA |
| | Facilities involved in the recycling of materials, including metal scrap yards, battery reclaimers, salvage yards, and automobile junkyards, including, but not limited to, those classified as SIC codes 5015 (used motor vehicle parts) and 5093 (scrap and waste materials). |
| | Stream electric power generating facilities including coal handling sites |
| | Transportation facilities with vehicle maintenance shops, equipment cleaning operations, or airport deicing operations (except facilities with SIC codes 4221 through 4225) (only those portions of the station that are either involved in vehicle maintenance including vehicle rehabilitation, mechanical repairs, painting, fueling, and lubrication), equipment cleaning operations, airport deicing operations, or that are otherwise identified as an industrial station. |
| | Construction activity including clearing, grading, and excavation activities except: operations that result in the disturbance of less than 5 acres of total land that are not part of a larger common plan of development or sale |
| THE FOLLOWING CODES REQUIRE A NPDES PERMIT IF CERTAIN ACTIVITIES ARE EXPOSED TO SW | |
| 2000 | Food and kindred products manufacturing or processing |
| 2100 | Tobacco products |
| 2200 | Textile mill products |
| 2300 | Apparel and other finished products made from fabrics and similar materials |
| 2434 | Wood kitchen cabinets |
| 2500 | Furniture and fixtures |
| 2650 | Paperboard containers and boxes |
| 2670 | Converted paper and paperboard products |
| 2700 | Printing, publishing, and allied industries |
| 2830 | Drugs |
| 2850 | Paperboard containers and boxes |
| 3000 | Rubber and miscellaneous products |
| 3100 | Leather and leather products (except 3110-leather tanning and finishing) |
| 3230 | Glass products, made of purchased glass |
| 3400 | Fabricated metal products, except machinery and transportation equipment (except 3441-fabricated structural metal) |
| 3500 | Industrial and commercial machinery and computer equipment |
| 3600 | Electronic and other electrical equipment and components, except computer equipment |
| 3700 | Transportation equipment (except 3730-ship and boat building and repairing) |
| 3800 | Measuring, analyzing, and controlling instruments; photographic, medical, and optical goods; watches |

3.3.D.5 Program Evaluation

Review the results of the screening program to examine whether any trends can be identified that relate the incidence of dry-weather flow observations to the age or land use of a developed area. Experience gained from the USEPA NPDES program indicates a lower chance of observing polluted dry-weather flows in residential and newer development areas, while older and industrial land use areas having a higher incidence of observed dry-weather flows. See **Table 6** for areas that may be more likely to exhibit dry-weather flows. Examine the screening results to determine whether any such obvious conclusions can be made. If so, these conclusions may guide future outfall screening activities.

Outfalls with positive indicators of potential pollution are investigated to identify upstream pollutant sources. Identified illicit direct connections must be eliminated. However, new sources may appear in the future as a result of mistaken cross connections from redevelopment, new-development or remodeling. Indirect or subtle discharges such as flash dumping are difficult to trace to their sources and can only be remedied through public education and reporting. Therefore, it is expected that to some degree they will continue although at a reduced magnitude and frequency. Although the outfall screening program will be successful in identifying and eliminating most pollutants in dry-weather discharges, the continued existence of dry-weather flows and associated pollutants will require an ongoing commitment to continue the outfall screening program.

The inspection screening will determine the effectiveness of the program on a long-term basis and show ongoing improvement through a reduced number of outfalls having positive indicators of potential pollutants. It is logical to assume that after several years of screening, the majority of the dry-weather pollution sources will be eliminated.

3.4 Construction Site Runoff Control

The goal of the Lake County Watershed Development Ordinance (WDO) is to ensure that new development does not increase existing stormwater problems or create new ones. The WDO establishes countywide 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 WDO. 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 WDO is implemented primarily at the local level. In October of 2008, forty-two of fifty-three municipalities in the county were "Certified Communities." The designation allows those communities to enforce WDO standards within their own jurisdictions. SMC administers the WDO and issues permits for the developments within the Non-Certified Communities.

The Village of Lake Zurich has adopted the Lake County Watershed Development Ordinance (WDO) and is currently a Certified Community for the review, permitting, inspection and enforcement of the stormwater provisions of the WDO. The community designates an Enforcement Officer; this person is responsible for the administration and enforcement of the WDO.

3.4.A Regulatory Program

Applicants are directed to the Engineering Department for information pertaining to the permitting process. Developments that exceed the WDO minimum thresholds are provided with a Village of Lake Zurich Watershed Development Ordinance (WDO) application form. Applicants submit the completed form and supporting documentation to the Watershed Enforcement Officer for review and comment. After the Watershed Enforcement Officer concurs that the applicable provisions of the WDO have been addressed, a permit is issued. Each permit lists any additional conditions that are applicable to the development.

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 Lake County Technical Reference Manual and the Illinois Urban Manual 2002, or as amended, include 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).

3.4.B Responsible Parties

3.4.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).

3.4.B.2 *DECI – Designated Inspectors*

The purpose of the DECI program is to facilitate positive communication between the Village 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 sites that exceed the WDO thresholds per Art. IV, Section B.1.j.2., is required to hire or employ a Designated Erosion Control Inspector (DECI).

- All development with 10 acres or more of hydrologic disturbance
- All development with 1 acre or more of hydrologic disturbance ***and*** regulatory floodplain ***or*** wetlands on site or on adjoining properties.

The DECI can work for the permittee's contractor, subcontractor, consultant, etc. He does not have to be a direct employee of the permittee. SMC keeps a list of DECIs that have been approved.

The DECI 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 DECI is competently completing these steps, the DECI 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 DECI, or anyone else involved as determined on a case by case basis.

Sites that do not require a DECI may still require a designated inspector 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 (which is more stringent than the DECI requirements). A designated inspector, under the IEPA program, does not need to be a DECI recognized by SMC; however a DECI can fulfill both rolls. However, the site inspection logs can typically meet the permit conditions of both the WDO and the IEPA.

The DECI reports to the Enforcement Officer. However, SMC administers the DECI program. During the course of a project, the DECI must notify the EO within any if the development site is determined to be noncompliant with the soil erosion and sediment control plan. The Village's Stormwater Coordinator should also be contacted within 24-hours. It is highly recommended that the Stormwater Coordinator remind the DECI to also file an Incidence of Noncompliance (ION) with IEPA. If the discharge from the construction site enters a receiving water within the MS4 jurisdictional boundaries, it is highly recommended that the MS4 also file an ION with IEPA.

3.4.B.3 Enforcement Officer

The Enforcement Officer is responsible for administration and enforcement of the provisions of the WDO. Additionally, the Enforcement Officer 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 EO responsibilities is included in Appendix E of the WDO. The EO 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 Enforcement Officer to ensure that all incidences of non-compliance received from a DECI are resolved. Furthermore it is the Enforcement Officer's right and the responsibility to notify the SMC if a DECI listed by SMC is not adequately performing the DECI responsibilities. SMC may remove a DECI from the approved DECI list. However, a DECI may be removed from a development by the Enforcement Officer at their sole discretion.

3.4.C Minimum Construction Site Practices

A site plan is required to comply with minimum prescribed practice requirements set forth in the WDO. The WDO also allows for the Village of Lake Zurich 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 Lake County Technical Reference Manual (TRM) and other reference materials identified in Appendix 5.17 of the SMPP.

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.

3.4.D Site Plan Review

The Village of Lake Zurich is a certified community for the enforcement of the Stormwater Provisions of the WDO. The Engineering Department provides applicants with a variety of documents necessary to obtain municipal permits. Included in the packet is relevant Watershed Development Permit (WDP) information including the performance guarantee information and WDP application form.

The Engineering Department 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 Engineering Department concurs that the applicable provisions of the WDO have been addressed a permit is issued. The permit lists any additional conditions that are applicable for the development, including providing prior notification of the pre-construction meeting to the Village. Village

attendance of the pre-construction meeting shall be made a condition of the permit for all developments. The applicant is required to post the permit at the construction site.

3.4.E Site Inspection Procedures

Representatives of the Village of Lake Zurich 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 Village of Lake Zurich may inspect site development at any stage in the construction process. For major developments, the Village shall conduct site inspections, at a minimum, at the end of the construction stages 1 and 7 listed below. Construction plans approved by the Enforcement Officer shall be maintained 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 than 0.5-inches of rainfall,
7. After final stabilization and landscaping, prior to removal of sediment controls.

Site Inspection Process:

- The Village of Lake Zurich attends the pre-construction meeting on applicable development sites. It is also recommended that the inspector request to see the SWPPP and IEPA NOI for applicable construction sites.
- The applicant notifies the Village when initial sediment and runoff controls measures have been installed.
- The Village inspects the initial sediment and runoff control measures and authorizes the start of general construction.
- The Village inspects the stormwater management system and authorizes additional site improvement activities.
- The Village performs site inspections at the recommended intervals listed above and completes an inspection report.
- For sites that exceed the WDO thresholds per Art. IV, Section B.1.j.2. a DECI is required, refer to Chapter 3.4.B.2 for additional information regarding the program.

- The Village 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 and approval. Upon approval of the as-builts, the applicant shall permanently stabilize the site.

3.4.F Complaints

The Village 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 Village's Enforcement Officer, or designee. Site design comments are handled on a case by case basis. Construction related calls are typically addressed by performing a site inspection.

3.4.G Performance Guarantees

Pre-construction meeting – No deposit required.

Performance Guarantee (surety) is required for public improvements (i.e. sewer, water, right-of-way work), stormwater management system and landscaping. The Engineers Opinion of Probable Construction Cost (EOPCC) is provided to the Village for their review/approval. The required surety amount shall be 110% of Village approved EOPCC. In cases where the SMC requires a surety the Village will only hold a surety for the portions of the EOPCC that is not being held by SMC. Alternatively, the Village may need to provide SMC with a letter indicating that the Village will hold the surety and not reduce the surety amount until SMC approval has been obtained.

The Village 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.

3.4.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 a receiving water within the MS4 jurisdictional boundaries, it is highly recommended that the MS4 also file an ION with IEPA.

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 DECI.

Step 1: Violation Is Observed

- The inspector completes an inspection of the project's SE/SC measures.

- Photographs of the violation(s) should be taken and saved.
- The Violation shall be described to the construction site contact.
- A violation letter is provided to the contractor and the developer. The letter indicates the remedial measures required and a maximum time frame for action.
- At the end of the indicated time frame the Village 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 within the previous correspondence. 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 contractor and developer is notified that they are in compliance.
- 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. A copy of the Notice of Violation shall also be provided to the Building Department. 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 contractor and/or developer is notified that they are in compliance.
- 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. A copy of the Notice of Violation shall also be provided to the Building Department. 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 contractor and/or developer is notified that they are in compliance.
- 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 the Building and Engineering Departments shall conduct an internal meeting to discuss the violation and subsequent actions. These actions may include: issuing fines of up to \$500/day per violation since the 1st notice of violation; draw from surety to enable the Village to have the remedial measures corrected; seeking Village counsel and pursuing injunctive or other legal relief.

A formal **Notice of Violation** letter will be sent, via certified mail, to the contractor and developer. A copy of the Notice of Violation shall also be provided to the Building Department and the Village Administrator. The letter will include the following information.

- Request a meeting with the applicant/development and Village 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

3.4.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 Village 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.

3.4.J Construction Site Waste Control

The WDO 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.

3.4.K Development Tracking

The Building and Zoning Departments track the Village's developments throughout the construction phases and notify various departments regarding involvement.

3.4.L Pavement Projects

Pavement resurfacing and maintenance projects are determined through pavement evaluation studies that are conducted by the Village's Engineering Department. Project work shall follow IDOT Standard Specifications and applicable provisions of the WDO. At a minimum, protect drainage structures with inlet filter bags during construction activities.

3.5 Post Construction Runoff Control

The Village 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 through the Lake County Technical Reference Manual and IEPA's Program recommendations. All proposed permanent stormwater treatment practices must be reviewed and approved by the Enforcement Officer.

3.5.A Regulatory Program

The WDO includes numerous performance standards on Grading, Stormwater and Soil Erosion/Sediment Control that must be met for all parties undertaking construction. The Lake County Technical Reference Manual is a guidance tool that describes BMP and implementation procedures for enforcing the WDO.

The SMC is responsible for ensuring that all construction within wetland boundaries meets all applicable performance standards on behalf of the Village.

3.5.B Runoff Volume Reduction Hierarchy

The WDO 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.

3.5.C Green Infrastructure

Each permittee should adopt strategies that incorporate storm water infiltration, reuse and evapotranspiration 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 rain gardens, rain barrels, bio-swales, permeable piping, dry wells and permeable pavement.

3.5.D Long Term Operation and Maintenance

The SMPP includes a long term maintenance plan. This sample maintenance plan is included in **Appendix 5.14**.

- The plan is provided to 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 the WDP or listed as a permit condition.

3.5.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.

3.5.E.1 *Previously Developed Sites*

The Village attempts to inspect properties with stormwater management facilities to ensure all systems are functioning as designed.

Previously accepted developments are inspected against the previously approved site plans. Should any deficiency be noted during the inspection with regards to functionality, a letter to the property owner should be sent describing the remediation required.

3.5.E.2 *Shorelines*

Annually inspect the Village's detention basin shorelines in the spring and/or fall pending weather conditions. Observed erosion, seeding/re-seeding or slope stabilization needs are documented. Documented deficiencies should be reported to the Engineering Department who evaluates and determines appropriate remediation activities. Remedial actions might include maintenance activities in the Village'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 Lake County Watershed Development Ordinance (WDO) 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.

3.5.E.3 *Streambanks and Stream Bed Sediment*

Accumulation

Annually inspect 20% receiving water streambanks for erosion and flowlines for sediment plumes. Inspections should be performed in the spring and/or fall pending weather conditions. Document observed erosion and/or sediment accumulation. Documented deficiencies should be reported to Watershed Enforcement Officer who evaluates and determines appropriate remediation activities. Remedial actions might include notifying the property owner or including maintenance activities in the Village of Lake Zurich work program.

3.5.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 Village's acceptance of the pond.

3.6 *Pollution Prevention and Good Housekeeping*

The Village of Lake Zurich 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.

3.6.A 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 when ever 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.

3.6.A.1 *Non-Hazardous Spills/Dumping*

A Non-hazardous spill typically consists of an illicit discharge of household materials into the street or stormwater management system. Upon notification or observance of a non-hazardous illicit discharge, Public Works personnel implement the following procedure:

- Sand bag 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.
- 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 “Oil Dry” or sand and then sweeping up the remnant material.
- After containment and cleanup activities have been performed, the on-site Public Works personnel fills out the ***Spill Response Notice (Appendix 5.12)*** and distributes to adjoining residences/businesses. In residential areas, the hanger should be provided to residences on both sides of the spill and on both sides of the street.
- Public Works personnel document the location, type of spill and action taken on the ***Indirect Illicit Discharge Tracking Form (Appendix 5.13)***. .
- The on-site Public Works personnel provide the tracking form to their supervisor. The supervisor, or his designee, takes the information from the form and transfers it to the ***Indirect Illicit Discharge Summary Form (Appendix 5.13)***.
- If a person is observed causing an illicit discharge, the Enforcement Officer is notified and appropriate citations issued as per the Illicit Discharge and Detection Ordinance.

3.6.A.2 *Hazardous Spills*

Upon notification or observance of a hazardous illicit discharge, Public Works follows the following procedure:

- Call 911, explain the incident. The Fire Department responds;
- If required, the police department provides emergency traffic control, as necessary;
- The Fire Department evaluates the situation and applies “No Flash” or “Oil Dry” as necessary;
- The Fire Department’s existing emergency response procedure, for hazardous spill containment clean-up activities, is followed;
- Public Works documents the location, type of spill and action taken on the Indirect Illicit Discharge Tracking Form (**Appendix 5.13**); and,
- The on-site Public Works personnel provide the tracking form to their supervisor. The supervisor, or his designee, takes the information and provides it to the Enforcement Officer who then transfers it to the *Indirect Illicit Discharge Summary Form (Appendix 5.13)*.

3.6.B Employee Training

The Village’s practice is to provide education and training to all of its Public Works 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.

3.6.B.1 Training Approach

Employees are encouraged to attend all relevant training sessions offered by the QLP and other entities on topics related to the goals/objectives of the SMPP. Additionally, the Village will develop employee training programs with curricula and materials tailored to specific functional groups. Refer to **Table 7**. The materials focus on stormwater pollution prevention measures and practices involved in routine activities carried out by the various functional groups. Training materials primarily focus on revisions to the various programs (that were in place prior to the acceptance of the SMPP).

Table 7: Employee Responsibilities

| Functional Group | Area of Responsibility | Members |
|-------------------------|---|-------------------------|
| Planning and Design | Responsible for overseeing the development and implementation of best management practices through the project planning and design phase for construction projects. | Engineering Department |
| Construction | Responsible for overseeing the implementation of best management practices relating to the construction stage of projects (private and public). | Engineering Department |
| Maintenance | Responsible for development and implementation of best management practices relating to the maintenance of facilities, infrastructure and properties. | Public Works Department |

3.6.B.2 Training Schedule and Frequency

The initial training program will be offered within 6 months of the acceptance of the SMPP. Digital and hard copies of the training materials will be kept and shared with applicable new employees as part of their job introduction. Revisions/enhancements to the SMPP will be approved by the Stormwater Coordinator and then shared with applicable employees. The Stormwater Coordinator will monitor the potential need for overall refresher material distributions and offer additional training as necessary.

Employees are encouraged to share information with other employees via email or other formats. Information may include:

- updates and news which might enhance pollution control activities,
- feedback from field implementation of best management practices, or
- new product information.

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 Village. Land development, redevelopment and transportation improvement projects were required to comply with the provisions of the WDO prior acceptance of the SMPP. Additionally, the Village 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 Village will monitor and evaluate the proposed stormwater pollution prevention plan based on the above stated objective. As part of the stormwater management program, the Village:

- 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

Currently water quality sampling/monitoring is not required under the NPDES Phase II program. Therefore, monitoring efforts focus on qualitative, not quantitative, examination of the stormwater practices. It is anticipated that the USEPA and IEPA programs will evolve to require water quality monitoring and sampling. Future efforts may involve collecting information on the characterization of discharges from outfalls, identifying other sources of pollutants, characterizing the receiving waters, sampling construction site discharges, identifying the performance of existing and potential enhanced stormwater pollution control measures. The Village will comply with future federal and state mandates.

The Stormwater Coordinator will monitor research conducted by others regarding the effectiveness of various alternative stormwater practices, procedures and technologies. The Village will continue to seek innovative stormwater practices and technologies. Information and guidance obtained through the MAC meetings and other sources will be incorporated into this SMPP as practical. This information will be used to provide insight into how the program may need to evolve.

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 Engineering Department and Public Works Director. 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 Enforcement Officer, Public Works Director, and field staff.

- Are proper stormwater management practices integrated into planning, designing and constructing both Village 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 |
| CWA | Clean Water Act |
| DECI | Designated Erosion Control Inspector |
| EO | Enforcement Officer (Lake County WDO) |
| HHW | Household Hazardous Waste |
| ID | Identification |
| IDDE | Illicit Discharge Detection and Elimination |
| IDOT | Illinois Department of Transportation |
| IEPA | Illinois Environmental Protection Agency |
| ION | Incidence of Non-compliance (with IEPA) |
| IUM | Illinois Urban Manual |
| LCDOT | Lake County Division of Transportation |
| LOC | Letter of Credit (surety) |
| MAC | Municipal Advisory Committee (Countywide) |
| MS4 | Municipal Separate Storm Sewer Systems |
| NOI | Notice of Intent |
| NOT | Notice of Termination (with IEPA) |
| NPDES | National Pollutant Discharge Elimination System |
| PPE | Personal Protection Equipment |
| QLP | Qualify Local Program |
| SE/SC | Soil Erosion and Sediment Control |
| SMC | Lake County Stormwater Management Commission |
| SWALCO | Solid Waste Agency of Lake County |
| SMPP | Stormwater Management Program Plan |
| TAC | Technical Advisory Committee |
| TRM | Technical Reference Manual |
| USEPA | United States Environmental Protection Agency |
| WDO | Lake County Watershed Development Ordinance |
| WDP | Watershed Development Permit |
| WMB | Watershed Management Board |

5.2 Stormwater Outfall Inspection Data Form

Section 1: Background Data

| | | |
|---|--|------------------------|
| Subwatershed: | Outfall ID: | |
| Date: | Time (Military): | |
| Temperature: | Inspector(s): | |
| Previous 48 Hours Precipitation: | Photo's Taken (Y/N) | If yes, Photo Numbers: |
| Land Use in Drainage Area (Check all that apply): | <input type="checkbox"/> Open Space <input type="checkbox"/> Industrial <input type="checkbox"/> Institutional <input type="checkbox"/> Residential <input type="checkbox"/> Other: _____ <input type="checkbox"/> Commercial <input type="checkbox"/> Known Industries: _____ | |

Section 2: Outfall Description

| LOCATION | MATERIAL | SHAPE | | DIMENSIONS (IN.) | SUBMERGED |
|------------------------------------|---|---|--|--|---|
| Storm Sewer (Closed Pipe) | <input type="checkbox"/> RCP <input type="checkbox"/> CMP <input type="checkbox"/> PVC <input type="checkbox"/> HDPE <input type="checkbox"/> Steel <input type="checkbox"/> Clay / draintile <input type="checkbox"/> Other: _____ | <input type="checkbox"/> Circular <input type="checkbox"/> Elliptical <input type="checkbox"/> Box <input type="checkbox"/> Other: _____ | <input type="checkbox"/> Single <input type="checkbox"/> Double <input type="checkbox"/> Triple <input type="checkbox"/> Other: _____ | Diameter/Dimensions: _____ _____ | In Water: <input type="checkbox"/> No <input type="checkbox"/> Partially <input type="checkbox"/> Fully With Sediment: <input type="checkbox"/> No <input type="checkbox"/> Partially <input type="checkbox"/> Fully |
| Open drainage (swale/ditch) | <input type="checkbox"/> Concrete <input type="checkbox"/> Earthen <input type="checkbox"/> rip-rap <input type="checkbox"/> Other: _____ | <input type="checkbox"/> Trapezoid <input type="checkbox"/> Parabolic <input type="checkbox"/> Other: _____ | | Depth: Top Width: Bottom Width: | |

Section 3: Physical Indicators

| INDICATOR | CHECK if Present | DESCRIPTION | COMMENTS |
|---|--------------------------|---|----------|
| Outfall Damage | <input type="checkbox"/> | <input type="checkbox"/> Spalling, Cracking or Chipping <input type="checkbox"/> Peeling Paint <input type="checkbox"/> Corrosion | |
| Deposits/Stains | <input type="checkbox"/> | <input type="checkbox"/> Oily <input type="checkbox"/> Flow Line <input type="checkbox"/> Paint <input type="checkbox"/> Other: _____ | |
| Abnormal Vegetation | <input type="checkbox"/> | <input type="checkbox"/> Excessive <input type="checkbox"/> Inhibited | |
| Poor pool quality | <input type="checkbox"/> | <input type="checkbox"/> Odors <input type="checkbox"/> Colors <input type="checkbox"/> Floatables <input type="checkbox"/> Oil Sheen <input type="checkbox"/> Suds <input type="checkbox"/> Excessive Algae <input type="checkbox"/> Other: _____ | |
| Pipe algae/growth | <input type="checkbox"/> | <input type="checkbox"/> Brown <input type="checkbox"/> Orange <input type="checkbox"/> Green <input type="checkbox"/> Other: _____ | |
| Do physical indicators suggest an illicit discharge is present (Y/N): | | | |

| | | |
|------------------|---|---|
| Flow Present? | <input type="checkbox"/> Yes <input type="checkbox"/> No | If No, Skip to Section 7 and Close Illicit Discharge Investigation |
| Flow Description | <input type="checkbox"/> Trickle <input type="checkbox"/> Moderate <input type="checkbox"/> Substantial | |

5.3 Outfall Sampling Report

Outfall Sampling Report

| | |
|----------------|-----------------|
| Structure ID # | Date: |
| Outfall ID # | Time of Sample: |
| Sampled By: | AM PM |

| | | | |
|--------------------|--------|--------|-------|
| Glass Bottle Size: | 250 ml | 500 ml | 32 ml |
|--------------------|--------|--------|-------|

| | | | |
|------------------|----------|-----------|----------------|
| Tests requested: | Flouride | Potassium | Fecal Coliform |
|------------------|----------|-----------|----------------|

| | |
|------------------|-------|
| Relinquished By: | Date: |
| Comments: | Time: |
| Received By: | Date: |
| Comments: | Time: |
| Relinquished By: | Date: |
| Comments: | Time: |
| Received By: | Date: |
| Comments: | Time: |

5.4 Outfall Inspection Screening Summary Form

[illegible]

5.5 Pool Dewatering Fact

Sheet

Engineering Division
70 East Main Street
Lake Zurich, IL 60047



Phone: (847) 541-1694
Fax: (847) 541-1769
Web: www.volz.org

SWIMMING POOL DISCHARGE REQUIREMENTS

1. The chlorine residual in the water shall be less than 0.1 mg/L.
2. Wastewater must be pH neutralized between 6.5 and 8.5
3. The water is to be surface discharged within the owners' property lines and in no way create a public nuisance.
4. The discharge of the water shall in no way damage, destroy, erode, or impair surrounding property.
5. No permanent direct connection shall be made to the sanitary or storm sewer systems and no drainage shall be made into a storm ditch or swale or otherwise result in any of the contents flowing onto, or beyond the boundaries of the owner's property.
6. Under no circumstances shall wastewater generated by the acid cleaning or chlorine washing of swimming pools, wading pools, spas, whirlpools, and therapeutic pools be discharged to the municipal storm.
7. In the event a surface discharge is not available without creating a public nuisance, such wastewater must be neutralized and hauled from the owner(s) property by an enclosed tanker truck or similarly equipped vehicle, or disposed at a legal disposal site. The owner of the swimming pool, wading pool, spa, whirlpool, or therapeutic pool will be required to provide proof of disposal upon the Village's request.
8. The discharge of the water shall in no way violate any regulation of Federal, State and Local Standards.

APPLICANT ACKNOWLEDGES HAVING READ THE ABOVE AND AGREES TO THE SAME

Signature _____

Date: _____

5.6 Indirect Illicit Discharge Tracking and Summary Forms

| Illicit Discharge Incident Tracking Form | | | | |
|--|---|---|---|--|
| 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: | | |
| <input type="checkbox"/> Stream corridor (In or adjacent to stream) | | <input type="checkbox"/> Outfall | <input type="checkbox"/> In-stream flow | <input type="checkbox"/> Along banks |
| <input type="checkbox"/> Upland area (Land not adjacent to stream) | | <input type="checkbox"/> Near storm drain | <input type="checkbox"/> Near other water source (storm water pond, wetland, etc.): | |
| Narrative description of location: | | | | |
| Upland Problem Indicator Description | | | | |
| <input type="checkbox"/> Dumping | | <input type="checkbox"/> Oil/solvents/chemicals | <input type="checkbox"/> Sewage | |
| <input type="checkbox"/> Wash water, suds, etc. | | <input type="checkbox"/> Other: _____ | | |
| Stream Corridor Problem Indicator Description | | | | |
| Odor | <input type="checkbox"/> None | <input type="checkbox"/> Sewage | <input type="checkbox"/> Rancid/Sour | <input type="checkbox"/> Petroleum (gas) |
| | <input type="checkbox"/> Sulfide (rotten eggs); natural gas | <input type="checkbox"/> Other: Describe in "Narrative" section | | |
| Appearance | <input type="checkbox"/> "Normal" | <input type="checkbox"/> Oil sheen | <input type="checkbox"/> Cloudy | <input type="checkbox"/> Suds |
| | <input type="checkbox"/> Other: Describe in "Narrative" section | | | |
| Floatables | <input type="checkbox"/> None: | <input type="checkbox"/> Sewage (toilet paper, etc) | <input type="checkbox"/> Algae | <input type="checkbox"/> Dead fish |
| | <input type="checkbox"/> Other: Describe in "Narrative" section | | | |
| Narrative description of problem indicators: | | | | |
| Suspected Violator (name, personal or vehicle description, license plate #, etc.): | | | | |

General Permit ILR40

General NPDES Permit No. ILR40

Illinois Environmental Protection Agency
Division of Water Pollution Control
1021 North Grand East
P.O. Box 19275
Springfield, Illinois 62794-9275

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

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

Expiration Date: March 31, 2014

Issue Date: February 20, 2009

Effective Date: April 1, 2009

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

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

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

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



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

ILR40.wpd