

**VILLAGE OF RIVER FOREST**

**COMBINED SEWER OVERFLOW  
OPERATIONAL AND MAINTENANCE PLAN**

**NPDES PERMIT NO. ILM580024**

**FEBRUARY 2007**

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## **CHAPTER 1 OBJECTIVES**

This Operations and Maintenance Plan was developed in compliance with the requirements of the Village's National Pollutant Discharge Elimination System (NPDES) Combined Sewer Overflow (CSO) General Permit No. ILM580024. The primary objective of this plan is to provide a program for effectively improving the Village's combined sewer overflow management. More specifically, the plan has been developed to comply with the following eight requirements of the NPDES CSO permit:

1. Collection system inspection on a regular scheduled basis;
2. Sewer, catch basin, manhole, and regulator cleaning and maintenance on a regular scheduled basis;
3. Inspections are made and preventative maintenance is performed on all pump/lift stations;
4. Collections system replacement, where necessary;
5. Detection and elimination of illegal connections;
6. Detection, prevention, and elimination of dry weather overflows;
7. The collection system is operated to maximize storage capacity and the combined sewer portions of the collection system are operated to delay storm water entry into the system; and,
8. The collection system is operated to maximize treatment

## **CHAPTER 2 GENERAL INFORMATION**

The Village of River Forest is located entirely within the Des Plaines River watershed and entirely within the service area of the Metropolitan Water Reclamation District of Greater Chicago (MWRDGC).

### **COMBINED SEWER SYSTEM**

The entire Village of River Forest (100%) is served by a combined sewer system. All wastewater generated in River Forest flows through Village owned and maintained sewers to various MWRDGC interceptor and outfall sewers. Village sewers and MWRDGC outfall sewers ultimately flow to MWRDGC interceptor sewers (located along Thatcher Avenue in River Forest and along 1<sup>st</sup> Avenue in Maywood) which transports all wastewater to the MWRDGC's Stickney Water Reclamation Plant in Stickney, Illinois.

### **COMBINED RELIEF SEWER SYSTEM**

That portion of the Village's combined sewer system located south of Oak Avenue is supplemented by a combined relief sewer system that accepts flow when the combined sewer system's capacity is exceeded. All flow from the combined relief sewer system discharges to the Tunnel and Reservoir Plan (TARP) or deep tunnel located beneath the Des Plaines River. The deep tunnel system is designed to capture the excess first flush from the combined sewer system, which has been found to have higher concentrations of pollutants.

When the deep tunnel's capacity is exceeded, a CSO event will occur. A CSO event involves an overflow to the Des Plaines River through a CSO outfall structure. The flow to the Des Plaines River during a CSO event is a diluted mixture of stormwater and wastewater and contains a significantly lower pollutant load than first flush flow that is intended to be captured by the deep tunnel system.

### **CSO OUTFALL STRUCTURES**

The Village of River Forest maintains two CSO outfall structures:

1. Lake Street/Des Plaines River outfall structure is located just south of Lake Street at 87° 49' 57.79" W and 41° 53' 16.44" N and is 78" in diameter.
2. Madison Street/Des Plaines River outfall structure is located just north of Madison Street at 87° 49' 37.15" W and 41° 52' 45.70" N and is elliptical in shape (58" x 91").

Discharges from the combined relief sewer system into the deep tunnel are controlled by motorized sluice gates owned and operated by the MWRDGC.

## MONITORING & REPORTING OF CSO EVENTS

Pursuant to the NPDES CSO Permit Requirements, the Village is responsible for the reporting of all wet and dry weather overflow discharges. The MWRDGC has installed telemetry equipment (to control the operation of both sluice gates) on both CSO outfall structures to monitor any wet or dry weather overflows. The Village of River Forest has authorized the MWRDGC to submit CSO monitoring data, detailing any overflows, directly to the Illinois Environmental Protection Agency (IEPA) on the Village's behalf.

## PUBLIC NOTIFICATION PROGRAM

Pursuant to the NPDES CSO Permit Requirements, the Village is responsible for developing a program for notifying the public of any discharges. The Village has developed a Public Notification Program that incorporates the MWRDGC's Combined Sewer Overflow Public Notification Plan. The program can be viewed on the Village's website [here](#) (scroll down to "Combined Sewer Overflows").

The primary objective of this program is to inform the public in the event of combined sewer overflows. The Village's plan, in conjunction with the MWRDGC's plan, involves the installation or information signage at all CSO outfall structures and web site notification ([click here to access the MWRDGC CSO Public Notification Program](#)) of any wet weather or dry weather overflows, based upon their telemetry flow monitoring data.

## MAXIMIZE STORAGE OF POLLUTANTS IN COMBINED SEWER SYSTEM

The following is a summary of many of the Village's efforts to maximize the storage of sanitary flow (pollutants) in the combined sewer system, or minimize the flow of stormwater into the combined sewer system:

- Constructed large relief sewers during the 1980's in the southern third of the community.
- In the mid-1990's, the prohibited the connection of roof drainage/downspouts to the combined sewer system and required that downspouts be disconnected from the combined sewer system. This program was implemented to reduce additional clear water flow into the combined sewer system. The downspout disconnection program does include an opportunity for exemption under certain conditions.
- Structural deficiencies in the combined sewer system (sewer mains, catch basins, manholes, etc.) and groundwater infiltration are corrected by reconstruction or through the annual sewer re-lining program.
- The manhole relining program is designed to improve deteriorating manholes and prohibit the flow of groundwater into manhole structures.
- The Village continues a regular program to clean and inspect the combined sewer system (sewer mains and catch basins) so their capacity is undiminished by debris and roots which can impede the flow in the sewers.
- Stormwater Best Management Practices: This pamphlet can be accessed on the Village's web site and describes techniques used to reduce the amount of stormwater drainage into the sewer system and local waterways, sediment control, and soil stabilization to manage

the quantity and improve the quality of stormwater runoff in the most cost effective manner.

- The Village's Stormwater Detention Ordinance (Title 4, Chapter 13, Sections 1 through 9) is "intended to diminish threats to public health and safety caused by the runoff of excessive storm waters, reduce the possibilities of hydraulic overloading of combined sewer systems, and to reduce economic losses to individuals and the community at large. The provisions of this Chapter further regulate, guide and control the construction of buildings, parking lots and other improvements which increase runoff of storm water."

## POLLUTION PREVENTION

Pursuant to the NPDES CSO Permit Requirements, the Village is responsible for creating a Pollution Prevention Plan. The Plan compliments this Operational and Maintenance (O & M) Plan and provides more details about the Village's efforts to prevent contaminants from entering into the combined sewer system.

A few of the services the Village provides are listed below and are intended to collect and remove various solid waste materials from the Village and to keep pollutants and other debris from entering the Village's combined sewer system with the potential of discharging into the Des Plaines River (via CSO outfall structures):

- Street sweeping/cleaning
- Catch basin/drainage structure cleaning
- Solid waste collection and disposal - (refuse, recyclables, yard waste, bulk items)
- Leaf collection and disposal
- Work closely with MWRDGC's Industrial Waste Division

## ILLINOIS POLLUTION CONTROL BOARD

The Illinois Pollution Control Board has not issued any orders or violations regarding either of the two CSO outfall structures.

## SENSITIVE AREAS

Neither CSO outfall structure discharges to sensitive areas such as wetlands or beaches. The Des Plaines River does not provide drinking water to River Forest. No boating activity or other primary contact activities occur in the Des Plaines River in River Forest due to inadequate water depth, physical obstacles such as logs and bridge piers, and as the entire length of the Des Plaines River in River Forest is adjacent to Cook County Forest Preserve with no beaches, swimming areas, or boat landings.

## **CHAPTER 3 MAINTENANCE**

The Village performs or contracts preventative maintenance programs of the combined sewer system to ensure proper operation during dry and wet weather flows. Proper and regular maintenance of the combined sewer system will effectively reduce excessive inflow and/or infiltration into the system, prevent basement sewer backups, prevent adverse surcharging of the manholes, and prevent reduction of solids during "first flush" conditions and discharge at overflows/outfalls.

### **STREET SWEEPING AND LEAF COLLECTION**

The Village of River Forest owns, operates, and maintains a street sweeper for the purpose of sweeping litter and other debris from streets and curbs almost continuously throughout the year – weather permitting. The street sweeping program continues into the fall until the volumes of leaves are too significant for the street sweeper to collect.

During the Village's leaf collection season, which runs from September 15 through December 7, property owners rake leaves into the street where Village crews use pickup trucks equipped with leaf pushing brooms to push leaves into packer trucks which are transported to a transfer station facility for disposal.

### **CATCH BASIN CLEANING**

The Village of River Forest owns, operates, and maintains a vactor-type sewer truck/machine that will be used to clean catch basins and other drainage structures throughout the spring, summer, and fall seasons – weather permitting. The catch basin cleaning program will be performed in accordance with a four-year cycle:

- North Ave to Division St
- Division St to Chicago Ave
- Chicago Ave to Union Pacific Railroad
- Union Pacific Railroad to Madison St

Procedure for Catch Basin Cleaning:

1. Remove cover of basin and position the suction tube to proper angle.
2. Hook up suction tube to hose.
3. Lower tube, suck out debris and mud. High pressure water nozzle is used to loosen debris.
4. After cleaning, inspect structure and sewer for any needed repairs.
5. Material removed from basin is transported to a transfer station facility for disposal.

### **SEWER RODDING**

High pressure jet rodding is performed on the same 4-year cycle. Sewers with a history of problems are serviced more frequently. Procedures for sewer flushing are as follows:

1. Arrive at location with jet truck.
2. Attach proper jetting head to jet hose.

3. Insert jet hose into sewer. Debris and roots are pulled backed to the point of entry manhole.
4. Jet sewer using water under high pressure to remove any blockages and clean line.
5. Debris generated by jet rodding is removed by the vacuum tube.
6. Inspect structure and sewer for any repairs that may be necessary.

## ROOT CUTTING

Root cutting is performed on an as-needed basis. Sewers with a history of problems are serviced more frequently. Procedures for root cutting are as follows:

1. Attach proper size root cutter to jet hose.
2. Root cutting proceeds from manhole to manhole.
3. Debris and roots are pulled backed to the point of entry manhole.
4. After completion of process, inspect structure and sewer for any repairs that may be necessary.

## SEWER RELINING

The Village's annual combined sewer relining program preserves the structural integrity, reduces maintenance requirements, and improves flow capacity by eliminating root intrusion through joints and reducing friction losses along pipe walls due to its extremely smooth surface. The relining process utilizes a "no-dig" technology in which a resin-saturated, coated felt tube is inverted or pulled into a damaged sewer pipe. Hot water or steam is then pumped into the tube to cure the resin and form a tight-fitting, jointless and corrosion-resistant replacement pipe. Service laterals connections are cut into the relined sewer which is then inspected by a sewer televising system.

## MANHOLE RELINING

Manhole relining extends the life of those brick structures that are still structurally sound but are exhibiting signs of distress that if left unattended would eventually fail and require complete removal and replacement. Many manholes exhibit distress within the top 1-2 feet of the structure which was likely caused repetitive freeze-thaw cycles and traffic impact loading. If a manhole exhibits distress at a depth greater than the "chimney" area but is still structurally functional, then the full depth manhole is relined using either a cement or polyurea system.



## **CHAPTER 4 INSPECTIONS & MONITORING**

Any special appurtenances in the sewer system, such as Village-owned siphon chambers, CSO outfall structures, flap gates, etc., will be inspected periodically on a schedule established by the Director of Public Works.

### **MANHOLES**

All manholes will be inspected on a four-year cycle. Manholes will be routinely inspected and the results of the inspections will be documented for necessary repairs.

1. Inflow through the lid: Whether the manhole is located where storm runoff could accumulate around and over the lid, and enter the manhole through pick/vent holes, or through the space between the lid and the frame. This could be remedied by installation of a gasket seal cover or solid watertight cover with concealed pick holes.
2. Frame Seal: The manhole frame should be sealed watertight with the cone or adjustment rings. If signs of water leakage are noted, the frame should be removed and resealed.
3. Adjustment Rings: The existing adjustment rings between the frame and cone will be inspected for water tightness. If a leak(s) is observed, the frame and the rings should be removed and resealed. Any brick/block adjustment rings should be removed and replaced with precast concrete rings.
4. Manhole Walls: To be inspected for signs of leaks. Leaking walls may be repaired by chemical grout sealing. Poured-in-place concrete liners or guniting may be considered for brick/block manholes with multiple defects.
5. Manhole Base and Pipe Invert(s): To be inspected for signs of leaks. Chemical grouting is the most likely repair method.
6. Bench: To be inspected for erosion of the bench. Eroded benches should be repaired by an appropriate method, ranging from application of mortar of an appropriate type to repour of the bench.
7. Steps: To be inspected for leaks at the holes the steps are grouted into, and the condition of the step itself. Possible repair methods include regrouting and/or replacement of the step.

### **SEWERS**

All sewer opening(s) in a manhole shall be visually inspected using a high intensity lamp and a mirror, to the extent visible from the manhole for the signs of obstructions, roots, sediment deposits and other defects.

Televising (contract or in-house) of sewer mains will occur on a ten-year cycle and in conjunction with street improvement and water main improvement projects. Video recordings of the televised sewers are retained by the Village.

#### OUTFALL STRUCTURES AND SIPHON CHAMBERS

Outfall structures shall be inspected annually and be cleaned or repaired as necessary.

#### FLOW MONITORING

If visual or other inspections indicate possible excess flow problems, flow monitoring should be performed at key manholes. Smoke testing, dye testing and excavations may be required where complaints or backup causes are difficult to locate.

#### BUILDING INSPECTIONS

If other inspections indicate that the increased flow may be a source of inflow/infiltration located on private property, an inspection of such property, including any building(s) on it, will be conducted.

Village Staff will be familiarized with the sewer use ordinance so that unauthorized connections to the sewer can be identified and disconnected. Also, they will ensure that these connections are not reconnected later.

#### REHABILITATION AND MAINTENANCE WORK

The rehabilitation work determined necessary to be done, as a result of the inspections described above, will be scheduled as soon as possible. Contemporary and modern methods suitable for such repairs will be used. When necessary, an outside contractor will be used to make the appropriate repairs.

#### ELIMINATION OF DRY WEATHER OVERFLOWS

The Village has installed signs at each CSO outfall structure alerting the public to call 9-1-1 if a discharge or overflow event is observed during dry weather. In the event a dry weather overflow occurs, and as soon as either the Village observes an event or MWRDGC informs the Village of such event (MWRDGC monitors overflow events using telemetry equipment), the Village will notify the IEPA.

The maintenance programs discussed in Chapter 3 and inspection and monitoring procedures discussed in this chapter minimize the potential for dry weather overflows.

## **CHAPTER 5 OTHER CSO PERMIT EFFORTS**

### **RECORD KEEPING**

Public Works will maintain the records of collapsed and blocked sewers, basement backups, street flooding, collection system complaints, and excess flow levels at combined sewer overflows. Said records will be in such a form that can be easily accessed for reference or review. The data collected will form the basis for projecting a sequence of future maintenance work.

### **INVENTORY**

The Village continues to update the map of the combined sewer system in the Village's Geographical Information System (GIS). The combined sewer map(s) will include an inventory of the entire system (mains, manholes, catch basins, inlets, chambers, etc.) and will be updated continuously in accordance with actual system improvements. Paper copies of the latest version of the map will be distributed to field personnel.

### **PROCEDURES FOR NEW DEVELOPMENTS**

The Village of River Forest will issue building permits for applicable projects after approval is granted by the MWRDGC for compliance with its Sewer Permit Ordinance.

**APPENDIX A**  
**CSO OPERATIONAL PLAN CHECKLIST AND CERTIFICATION**