

Metropolitan Water Reclamation District of Greater Chicago
(District)

MAINTENANCE AND OPERATIONS DEPARTMENT

**COLLECTION SYSTEM
OPERATION AND MAINTENANCE MANUAL
(Combined Sewer Overflow and Capacity Management Operations and Maintenance
Plan)
DRAFT**

**NPDES No. IL0028088 – O'Brien (North Side) WRP
NPDES No. IL0028053 – Stickney WRP
NPDES No. IL0028061 – Calumet WRP
NPDES No. IL0028070 – Lemont WRP
NPDES No. IL0047741 – Kirie WRP
NPDES No. IL0036137 – Hanover Park WRP
NPDES No. IL0036340 – Egan WRP**

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For public review and comment

Prepared by
Technical Services Unit

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INTRODUCTION

The mission of the District is to protect the health and safety of the public in its service area, protect the quality of the water supply source (Lake Michigan), improve the quality of water in watercourses in its service area, protect businesses and homes from flood damages, and manage water as a vital resource for its service area. The District's service area is 883.5 square miles of Cook County, Illinois. The District is committed to achieving the highest standards of excellence in fulfilling its mission.

Flow within the Chicago Area Waterways System (CAWS) as well as flow between CAWS and Lake Michigan are controlled by five structures: Wilmette Pump Station, Chicago River Controlling Works and Lock, O'Brien Controlling Works and Lock, Lockport Lock and Dam, and Lockport Controlling Works.

While exercising no direct control over the wastewater collection and transmission systems maintained by cities, towns, and villages in Cook County, the District does control municipal sewer construction by permits in suburban Cook County. It also provides, operates and maintains the main trunk lines (interceptors) for the collection of wastewater and treatment thereof as well as facilities to store, treat, and release combined sewage and stormwater runoff within its jurisdiction.

The District is located primarily within the boundaries of Cook County, Illinois. The District serves an area of 883.6 square miles, which includes the City of Chicago and 128 suburban communities. The District serves an equivalent population of 10.35 million people; 5.25 million real people, a commercial and industrial equivalent of 4.5 million people, and a combined sewer overflow equivalent of 0.6 million people. The District's 554 miles of intercepting sewers and force mains range in size from 12 inches to 27 feet in diameter, and are fed by approximately 10,000 local sewer system connections.

The District's Tunnel and Reservoir Project (TARP) is one of the country's largest public works projects for pollution and flood control. One hundred and nine miles (109.4) of tunnels, 8 to 33 feet in diameter and 150 to 300 feet underground, have already been constructed and are in operation.

The District owns and operates one of the world's largest water reclamation plants, in addition to six other plants and 22 pumping stations. The District treats an average of 1.4 billion gallons of wastewater each day. The District's total wastewater treatment capacity is over 2.0 billion gallons per day.

The District controls approximately 76 miles of navigable waterways, which are part of a national system connecting the Atlantic Ocean and the Great Lakes with the Gulf of Mexico. In conjunction with its biosolids recycle and land reclamation program, the District owns over 13,500 acres of land in Fulton County, Illinois.

Beginning in 2005, the District was assigned responsibility for stormwater management for all of Cook County, including areas outside of the District's corporate boundaries. Activities have

focused on organization and ordinance development, development of watershed plans and projects as well as implementation of a small stream maintenance program.

1.0 MANAGEMENT

1.1 PURPOSE

The purpose of this manual is to describe the means by which the District accomplishes two of its primary objectives: to avoid contamination of the Chicago Area Waterways (CAWS) and to protect the health and safety of the public in its service area. The District serves an area of 883.6 square miles which includes the City of Chicago and 128 suburban communities. Of the total service area, approximately 375 square miles have combined sewers and 508.6 square miles have separate sewers. Managing combined sewer overflows (CSOs) within the combined areas and separate sewer overflows (SSOs) within the separate areas are key to the District accomplishing its above primary objectives. To this end, this manual describes the Infrastructure Management, End of Pipe Management, Public Outreach and Education, Technology Testing, and associated Standard Operating Practices necessary to achieve our stated objectives.

1.2 ORGANIZATION

The District is governed by a nine-member Board of Commissioners. Commissioners are elected at large and serve on a salaried part-time basis. Three commissioners are elected every two years for six-year terms.

The Executive Director, who reports directly to the Board of Commissioners, manages the District's day-to-day operations. Eight appointed department heads report to the Executive Director.

Under the direction of the Executive Director, three departments undertake the primary responsibility for carrying out the objectives stated above: Maintenance and Operations, Engineering, and Monitoring and Research.

- Maintenance and Operations has four divisions: General, North Area, Stickney Area and Calumet Area
- Engineering has three divisions: Infrastructure Management, Process Facilities Design, and Construction
- Monitoring and Research has three divisions: Environmental Monitoring and Research, Analytical Laboratories, and Industrial Waste

1.2.1 Maintenance and Operations (Relevant Division)

The General Division has three relevant sections:

- Waterways Control Section
 1. Administrative Unit
 2. Channels Operations Unit
 3. Channel Control Unit
 4. Lockport Powerhouse Unit
- Collection Systems Section
 1. Collection System Administration Unit

2. North Service Area Unit
3. Central Service Area Unit
4. South Service Area Unit

- Technical Administration Section
 1. Technical Administration Unit
 2. Technical Services Unit
 3. Contract Preparation Unit

1.2.2 Engineering (Relevant Division)

The Infrastructure Management Division consists of four relevant sections:

- Administrative Section
- Collection Facilities/TARP Section
- Local Sewer Systems Section
- Stormwater Management Section

1.2.3 Monitoring and Research (Relevant Divisions)

The Environmental Monitoring and Research Division consist of two relevant sections:

- Analytical Microbiology and Biomonitoring Section
- Aquatic Ecology and Water Quality Section

The Analytical Laboratories Division consists of two relevant sections:

- Stickney Analytical Laboratory
- Industrial Waste Analytical Laboratory

The Industrial Waste Division consists of seven relevant sections:

- Industrial Waste Administrative
- Enforcement
- User Charge and Technical Services
- Field Services Central Area
- Field Services South Area
- Field Services North Area
- Field Services Northwest Area

The responsibilities of each division are described in further detail in subsequent sections of this manual.

See the District's current Budget Book on the District's website for an organizational chart and additional information on the Relevant District Departments, Divisions, Sections and Units:

<http://pepportal.mwr.d.local:50100/irj/portal/anonymous?NavigationTarget=navurl://45687c4beb c14a072052f943c334a50b>

2.0 INFRASTRUCTURE MANAGEMENT

2.1 POLLUTION PREVENTION CONTROL

2.1.1 Local Sewers Section

The Local Sewers Systems Section administers the Watershed Management Ordinance (WMO). Articles 7, 9, and 10 of the WMO regulate the design, construction, operation, and maintenance of public and private sewer connections for residential, commercial, institutional, governmental and industrial developments, public sewerage systems, and treatment facilities, which discharge directly or indirectly into District facilities or waters within the District's jurisdiction through the review and issuance of permits. The WMO also requires stormwater management facilities for developments to ensure that the runoff from new developments and redevelopments do not exacerbate existing runoff and flooding conditions.

The WMO's Technical Guidance Manual (TGM) provides minimum engineering standards for the design, construction, operation, and maintenance of the above-referenced facilities. Proposed sewer construction plans/applications must demonstrate compliance with relevant articles of the WMO before a sewer construction permit is issued.

The WMO, TGM, and other related documents can be found on the District's website at <http://wmo.mwrd.org>.

2.1.1.1 Inflow and Infiltration Control Program

The separate sanitary sewers within the District's service area are designed and intended to receive and convey only domestic and industrial wastewaters together with a limited amount of groundwater infiltration. Stormwater runoff and excessive groundwater infiltration, however, have in many cases been entering and overloading sanitary sewers through deficiencies in the sewer systems such as open pipe joints, cracked or broken pipes, leaking manholes, and illegal connections (i.e., direct or indirect stormwater/groundwater connections to separate sanitary sewers). Sewer overloading arising from such deficiencies may cause health hazards, financial losses, and inconvenience to area residents. These detrimental conditions occur as a consequence of water pollution from treatment plant bypasses and sewage overflows into streams, and also as a result of backups of sewage into buildings and onto streets and yards. Excessive extraneous clear water flows also result in additional sewage treatment costs to the public.

Since the enactment of the 1985 Sewer Summit Agreement (SSA), many communities have invested in rehabilitation efforts, yet the sewer systems still have excessive stormwater inflow and groundwater infiltration (I/I) requiring further reduction. Many communities still need to establish on-going maintenance programs and budgets that continually repair local systems.

The Illinois Environmental Protection Agency (IEPA) has imposed a special condition as part of the District's National Pollutant Discharge Elimination System (NPDES) Permits that requires the owners and/or operators of separate sanitary sewer systems that discharge directly and/or indirectly to the District's facilities (satellite entities) to implement measures in addition to those

required under the SSA if excessive I/I causes or contributes to sanitary sewer overflows (SSOs) and/or basement backups (BBs). In order to address the requirements set forth in the NPDES Permits and other federal, state and local regulations, it is the intent of the District to set forth a regionally applied Infiltration/Inflow Control Program (Program) for the rehabilitation and correction of sanitary sewer system deficiencies, and for the continuation of adequate long-term sanitary sewer management and maintenance programs by the satellite entities that are tributary to the District's facilities.

As a result of the above, the District created an Advisory Technical Panel (ATP) consisting of representatives of the tributary agencies, consultants, a sewer contractor and representatives from the District. Representatives from the USEPA and IEPA participated in the ATP discussions. The purpose of the ATP was to seek input and suggestions for the creation of a new I/I Control Program. The first meeting of the ATP was held on November 18, 2011 and continues to meet quarterly. The new I/I Control Program was adopted by the Board of Commissioners on July 10, 2014, and development of the Technical Guidance Manual is ongoing. The new Infiltration/Inflow Control Program, is incorporated into Article 8 of the WMO which can be found on the District's website at <http://wmo.mwr.org>.

2.1.2 Industrial Waste/Enforcement Programs

The Industrial Waste Division (IWD) of the Monitoring and Research Department consists of four sections: Administrative, User Charge and Technical Services, Field Services, and Enforcement. The primary responsibility of IWD is the enforcement of the District's Sewage and Waste Control Ordinance (SWCO) and the User Charge Ordinance (UCO) which can be found on the District's website at

<http://pepportal.mwr.local:50100/irj/portal/anonymous?NavigationTarget=navurl://77736bc1946759617132ba3e6459cb26>

IWD is also responsible for the collection, compilation and presentation of data pertaining to industrial user discharges to the District's sewerage system. IWD also carries out the District's responsibility as a primary response agency for hazardous materials emergencies in Cook County.

2.1.2.1 Administrative Section

The Administration Section is responsible for the general administration of IWD and for coordination and direction of the work of the User Charge and Technical Services, Field Services, and Enforcement Sections.

2.1.2.2 User Charge and Technical Services Section

The User Charge and Technical Services Section administers the District's federally-approved User Charge system as authorized under the UCO. The Section receives and reviews reports from approximately 3,500 users annually containing calculations of their respective User Charge liabilities under the UCO and documentation corroborating their data. The costs for the

administration of the SWCO and the UCO are recovered from industrial users through Minimum Pretreatment Requirements charges, Noncompliance Enforcement charges and User Charge Verification charges.

2.1.2.3 Field Services Section

The Field Services Section (FSS) of IWD conducts inspections and sampling of wastewater discharges at various industrial and commercial facilities within the District's jurisdiction to determine compliance with the SWCO and for verification of user-provided data as required by the UCO. On average, approximately 2,500 locations are sampled and 3,000 locations inspected each year. Corrective compliance action is taken against facilities that are found in violation of the SWCO.

The FSS is on call 24 hours per day, 365 days per year, to respond to emergency situations or complaints. These calls originate from local municipalities, Police and Fire Departments, the EPA, the Coast Guard, private citizens, or as industrial self-reported incidents involving the discharge or potential discharge of harmful wastes into the sanitary sewers or the waterways of Cook County. The FSS responds to approximately 350 such calls each year.

Additionally, the FSS is responsible for the following activities:

- Monitors the quality of Lake Michigan and the Chicago Area Waterway System in order to detect and reduce the incidence of pollution and to protect the area's source of drinking water.
- Collects samples from groundwater monitoring wells installed in the vicinity of the District's Tunnel and Reservoir Plan (TARP) and at certain District facilities to detect the presence of contaminants from District operations.
- Monitors the wastes brought by chemical toilet service companies for discharge at the Stickney WRP.
- Investigates willful and/or accidental spills and discharges of pollutants and hazardous, toxic, or volatile materials into the sewer systems and waterways, and oversees containment and cleanup activities pertaining to such events.

2.1.2.4 Enforcement Section

The Enforcement Section is responsible for the routine administration and enforcement of the SWCO, which incorporates the federal categorical and non-categorical pretreatment regulations and specifies limits for contaminants and other wastes discharged into the sewer systems and waterways within the District's boundaries.

2.1.2.5 Sewage and Waste Control Ordinance

The SWCO was first adopted in 1969 and has been comprehensively amended to include technically-based local discharge limits and the District's USEPA-approved Pretreatment Program. Its purpose is the protection of the public health and safety by abating and preventing pollution. Through the administration of the SWCO and the Pretreatment Program, the District