

Metropolitan Water Reclamation District of Greater Chicago

Stormwater Management Program

Annual Report for 2008



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Overview

The Metropolitan Water Reclamation District of Greater Chicago (District) assumed responsibility for stormwater management for all of Cook County, including areas that currently lie outside the District's boundaries, with the passage of Public Act 93-1049 (Act) in November 2004. This program includes the planning, design, construction, operation and maintenance of flood control facilities and related stormwater management projects.

In 2008, significant progress was made with the ongoing efforts in the development of the Detailed Watershed Plans (DWPs) for six watersheds within the county. The DWPs are studies that will provide an assessment of current conditions, identification of stormwater problems, and recommendations of capital projects to mitigate identified regional issues. The District also has continued its successful Small Streams Maintenance Program (SSMP) which provides assistance to all streams within the District's service area. Additionally, the District continued the Rain Barrel Program, and the development of the countywide Watershed Management Ordinance (WMO).

2009 looks to be an exciting year for Stormwater Management at the District as three of the six DWPs are scheduled for completion. The District is planning to release a draft WMO for formal public review that will later be presented to the District's Board of Commissioners for adoption. The SSMP and the Rain Barrel Program will also continue throughout the year. In addition, the District will develop an outreach program that will include the design and installation of rain gardens at local high schools.

Mission and Goals

Stormwater Management Mission Statement

The mission of the countywide stormwater management program is to provide Cook County with effective rules, regulations, and projects that will mitigate stormwater effects on public health, safety, property and the environment.

Goals

The following goals have been established to support the mission of the countywide stormwater management program:

- Goal A) Protect existing and new development by minimizing the increase of stormwater runoff volume beyond that experienced under predevelopment conditions and by reducing peak stormwater flows.
- Goal B) Identify and remedy existing regional flooding problems to the extent feasible.
- Goal C) Establish comprehensive basin plans within each watershed, which quantify, plan for and manage stormwater flows within and among the jurisdictions in those watersheds.
- Goal D) Promote responsible land use practices in all areas of the watersheds of Cook County, particularly within floodplains and floodways.
- Goal E) Establish uniform, minimum, countywide stormwater management regulations while recognizing and coordinating with those stormwater programs effectively operating within Cook County.
- Goal F) Require cooperation and consistency in stormwater management activities between the government entities having stormwater jurisdiction, and clearly define the roles and responsibilities of each entity.
- Goal G) Coordinate with surrounding counties to ensure minimal negative impacts of inter-county stormwater runoff flows.
- Goal H) Coordinate with watershed councils to provide for the short and long term maintenance of natural waterways, manmade drainageways, and stormwater management facilities in new and existing developments.
- Goal I) Seek to maximize available revenue sources in undertaking comprehensive watershed planning and stormwater facility construction activities, thereby leveraging and reducing reliance on the stormwater funds raised by levy.
- Goal J) Protect existing water resources, including lakes, streams, floodplains, wetlands, and groundwater, from detrimental and unnecessary modification so that their beneficial functions are maintained and public expenditures and damages are minimized.
- Goal K) Develop and maintain a comprehensive hydrologic, hydraulic, demographic and cartographic database using the best available and most appropriate technology to manage the stormwater, flood and water quality data needs of the program.

- Goal L) Promote the awareness and understanding of stormwater management issues by the practitioner and the layperson through ongoing public information and education.
- Goal M) Reduce or mitigate the environmentally detrimental effects of existing and future runoff in order to improve and maintain water quality and protect water related environments.
- Goal N) Control sediment and erosion in and from any source, such as drainageways, developments, construction sites, and agricultural areas.
- Goal O) Consider water quality and habitat protection measures in all stormwater management activities within Cook County.
- Goal P) Preserve and enhance existing aquatic and riparian environments and encourage restoration of degraded areas.
- Goal Q) Encourage the public to consider stormwater as a resource rather than as a nuisance.
- Goal R) Manage and operate the program in an effective and cost-efficient manner.
- Goal S) Be in compliance with all applicable state and federal laws.

2008 Activities

The District's primary activities in 2008 were focused on the development of the DWPs as well as development of a countywide WMO. Highlights of these activities and others accomplished in 2008 are listed below.

Detailed Watershed Plans

DWPs are being developed for each of the six established watersheds in Cook County. The purpose of each DWP is to identify the stormwater related problems in a watershed, develop alternative solutions to those problems, and then evaluate the alternatives to determine those that are most effective in addressing the watershed's needs. When finalized, a DWP will contain a summary of the watershed's areas of concern, and a listing of proposed regional capital improvement projects to address those concerns.

The watershed planning process consists of several steps:

1. Gathering existing information on current watershed conditions, as well as past analyses that have been conducted.
2. Analyzing the suitability of existing information.
3. Determining what additional information is necessary but currently missing, and outlining procedures for obtaining this information.
4. Obtaining the required new data.
5. Developing hydraulic and hydrologic models of the watershed, using or updating existing models when possible.

6. Identifying potential projects to address stormwater related issues such as flooding and erosion.
7. Quantifying benefits and estimating costs of potential projects, as well as determining other non-cost factors to allow evaluation of alternative projects.

The first three steps, involving data gathering and analysis, must be completed in order to arrive at a reasonable estimate as to the scope of work and level of effort required for the remaining steps. Therefore, the watershed planning process is broken into two phases. Phase A primarily involves the information gathering tasks necessary to delineate the scope of work for Phase B, in which the generation of new data, modeling, and project development and evaluation will take place.

Work on Phase B of the first three DWPs (Little Calumet River, Calumet-Sag Channel, and Upper Salt Creek watersheds) began in 2007 and continued in 2008. Phase A of the remaining DWPs (for the Poplar Creek, North Branch of the Chicago River, and Lower Des Plaines River watersheds) was completed in the Spring of 2008 and work on Phase B began in the Summer of 2008. Throughout 2008, the District conducted a series of workshops with representatives from municipalities and townships in the Little Calumet River, Calumet-Sag Channel and Upper Salt Creek watersheds to present results of the hydrologic and hydraulic models, discuss proposed alternative capital improvement projects and solicit feedback on land availability and proposed projects. Where possible, comments received have been incorporated into the plans. While the draft DWP reports for these watersheds will not be available until 2009, these workshops mark the beginning of the watershed planning council review process of the first three DWPs.

The District has incorporated a technical review of the hydrologic and hydraulic models developed for the watersheds into the DWP development process. This review is being performed by an experienced engineering consulting firm that is not associated with the firms developing the watershed models. An example of the type of recommendations resulting from the technical review is to calibrate the models to the significant storm event of September 13-16, 2008, which occurred after the models were developed for the Calumet-Sag Channel, Upper Salt Creek, and Little Calumet River watersheds. Findings of the outside technical reviews are being incorporated into the hydrologic and hydraulic models.

Watershed Management Ordinance

The District continued development of the WMO in 2008, which commenced mid year of 2007. The intent of the WMO is to establish uniform, minimum countywide stormwater management regulations. Components likely to be regulated under the WMO include: drainage and detention, floodplain management, wetland and riparian area protection, soil erosion and sediment control, and water quality. Further information related to the WMO can be found on the District's website, www.mwrd.org.

Two stakeholder committees, the Technical Advisory Committee (TAC) and Public and Private Organizations Advisory Committee (PPOAC), were formed to assist the District in the development of the WMO. TAC membership is comprised of village engineers, public works directors, and agencies with regulatory authority. PPOAC membership included environmental groups and ecosystem partnerships. Since 2007, the District has met with the TAC ten times and the PPOAC five times. A joint TAC/PPOAC meeting was held on December 11, 2008 to discuss the technical provisions of the WMO. The District is grateful

for the valuable insight and input provided by the two committees and for their assistance in this endeavor.

Small Streams Maintenance Program

In 2008, the Small Streams Maintenance Program (SSMP) successfully concluded the second full year of operation. The program was established in 2006 in an effort to reduce flooding in urbanized areas. The objective of the program is to remove obstructions and debris in the waterways that impede the natural drainage of Cook County’s small streams and rivers.

The SSMP is advertised on the District’s website and includes a log where requests for small stream cleaning can be entered. During 2008, 232 requests for small stream cleaning were received via the District’s website, of which 205 were completed. The remaining requests were investigated and work will be completed in 2009. Obstructions were evaluated for their potential to cause local flooding and their proximity to population, with the most critical being removed first. Either the District crews or a contractor removed the blockages.

District crews and contractors removed approximately 31,000 cubic yards of debris from small streams in 2008. In addition, the District’s debris and pontoon boat crews removed another 3,700 cubic yards of river and canal debris. The following table is a summary of the stream-miles inspected and cleared in each watershed during 2008.

	Little Calumet River	North Branch of Chicago River	Des Plaines River	Poplar Creek	Upper Salt Creek	Calumet-Sag Channel
Miles	82	37	70	6	22	35

The District paid over \$2,000,000 to contractors in 2008 to remove blockages.

Capital Improvements Program

As indicated above, the prime objective of the DWPs is the determination of capital improvement projects to alleviate existing regional stormwater management concerns. The District will prioritize, for funding purposes, potential projects arising from the DWPs on a countywide basis. Completion of the DWPs will enable the District to begin the Stormwater Fund Capital Improvements Program and allow for the development of a more detailed schedule of expenditures for design, post award and construction contracts. The District may provide funding for projects that provide regional benefits which have been studied and approved for funding by regional agencies such as the Illinois Department of Natural Resources/Office of Water Resources (IDNR-OWR) and the United States Army Corps of Engineers (USACE).

One capital improvement project under consideration by the District is a compensatory storage facility for a proposed levee along the Des Plaines River. In 1999, the USACE approved a study for the Upper Des Plaines River from the Wisconsin/Illinois State line to Riverside, Illinois. Known as the Des Plaines River Phase I Study, its purpose is to identify solutions to flooding along the main stem of the river. The approved plan recommends the construction of four storage facilities and two levees, including the Buffalo Creek Reservoir Expansion and Levee 37. It was later determined that flood heights downstream of Levee

37 will be increased if compensatory storage is not provided upstream of the levee. The proposed expansion of the Buffalo Creek Reservoir could have provided the necessary compensatory storage required to mitigate the downstream effects of Levee 37.

Throughout 2007 and the first half of 2008, the District continued working with the land owner of the Buffalo Creek Reservoir site, the Lake County Forest Preserve District (LCFPD), and with the National Park Service, which issued a grant for improvements at the site in 1993 that also placed restrictions on use of the site. However, in light of the anticipated cost associated with meeting LCFPD's requirements for use of the site, the District suspended negotiations with LCFPD in June 2008. Subsequently, the District began negotiations with Wheeling Park District and the Village of Wheeling for use of Heritage Park in Wheeling as the site of the compensatory storage required for Levee 37. Services of an engineering consulting firm were enlisted to conduct a feasibility study for use of the site.

Joint Funding Agreement with the United States Geological Survey (USGS) for Stream Gaging Stations in Cook County

The District entered into a Joint Funding Agreement with the USGS in 2006 and has renewed the agreement annually to fund the maintenance and operation of the following eight stream gauges located within Cook County:

- North Branch of the Chicago River at Deerfield
- Salt Creek at Elk Grove Village
- Salt Creek at Western Springs
- Salt Creek at Rolling Meadows
- Deer Creek at Chicago Heights
- Butterfield Creek at Flossmoor
- Midlothian Creek at Oak Forest
- Tinley Creek at Palos Park

The agreement for federal fiscal year 2009 includes the addition of a rain gauge on Salt Creek near Rolling Meadows. These stream gauges will be funded jointly by the District, USACE, IDNR-OWR and USGS into 2009.

The streamflow data collected at these sites by the USGS will be used in conjunction with USGS streamflow data at other sites funded by the USACE and other agencies under joint funding agreements. The District's participation in this USGS program will protect the integrity of data and will help in the development of valuable historical records at the gauge locations. All of the streamflow gaging stations will provide data that the District will use as it develops DWPs as part of the Stormwater Management Program.

Joint Funding Agreement with the USGS for Groundwater Infiltration Study

The District entered into a Joint Funding Agreement with the USGS in October 2008 to fund a study to determine the location and extent of areas in Cook County that have hydrologic characteristics amenable to passive recharge of groundwater.

The investigation will provide a preliminary indication of sites that may be suitable for locating stormwater best management practices (BMP) to reduce surface runoff and enhance recharge of aquifers.

Rain Barrel Program

The District continued to sell rain barrels and distributed them on a monthly basis at each of our three major treatment plants in 2008. An advertising campaign alerted potential customers that the District is now selling rain barrels. In addition, the program was promoted at Earth Day events and at the Hazardous Household Materials pickups. As a result, over 2,000 rain barrels were sold in 2008.

Individuals are allowed to order up to two rain barrels per household each year. Municipalities within District boundaries are also allowed to purchase up to 40 rain barrels. Rain barrels are offered at a discounted price of \$40 in order to encourage their purchase and use.

Permeable Pavement Parking Lot at Stickney Water Reclamation Plant (WRP)

The District completed the design for the Permeable Pavement Installation at the Stickney WRP, and awarded a contract for its construction. Three different permeable pavements were included in the design: permeable concrete, porous asphalt and permeable pavers. Sampling devices and flow meters were also included to be used to monitor and compare the water quality and quantity impacts of the permeable pavement systems. Construction began in August, and by the end of December was approximately 90% complete.

Cook County Advanced Identification (ADID) Wetland Study

After having met with several regional agencies in 2007, and then assessing available preliminary data to determine the necessary level of effort by all potential partners, the District decided to evaluate an alternative process for developing a countywide wetland inventory. A review of the pros and cons for developing an ADID study versus a countywide wetland inventory was performed, and information from neighboring counties that have gone through with ADIDs and/or countywide wetland inventories was gathered to enable the District to determine which process would be best for protecting wetlands in Cook County.

Development and Implementation of a Geographic Information System (GIS)

The District continued the implementation of a GIS in 2008 to support the Stormwater Management Program. A GIS is a computer system that links databases with geographical features (spatial data) to provide detailed information about the area. The GIS tool will facilitate analysis of regional watershed problems and their associated solutions, and will track information based on geographic position. Some examples of the information that will be tracked in the system include modeled water surface elevations, floodplain boundaries, and regional stormwater problem history. Completion of GIS implementation is anticipated in 2009.

Coordination with Watershed Planning Councils (WPCs)

The Act required the formation of WPCs, which serve as advisory bodies to the District for the stormwater management program. Membership of WPCs includes the chief elected official, or his or her designee, for municipalities and townships, and the Cook County Board President, or his or her designee, for unincorporated areas. In 2005, the District established WPCs for the watersheds of the North Branch of the Chicago River, the Lower Des Plaines

River Tributaries, the Calumet-Sag Channel, the Little Calumet River, Poplar Creek, and Upper Salt Creek.

Since 2005, each of the aforementioned WPCs have met at least once each quarter, as required by the Act. WPC meetings have been used as a way for representatives of municipalities and townships to learn about the progress of the DWPs, WMO, and SSMP and to communicate concerns of the public to the District. As work on the WMO and DWPs continues, the District anticipates continuing to rely on the WPCs for input from the public on these key aspects of the stormwater management program.

The Act states that the following Councils of Government (COGs) shall be responsible for coordination of the WPCs: Northwest Municipal Conference (NWMC), West Central Municipal Conference (WCMC), South Suburban Mayors and Managers Association (SSMMA), and Southwest Conference of Mayors (SWCM). In 2006, the District negotiated agreements with each of the COGs to provide administrative assistance related to coordination with the WPCs for a three-year period from 2007 through 2009. In 2008, COGs assisted the District by arranging meeting schedules, drafting and distributing meeting agendas, distributing information from the District to WPC members, assembling contact information for WPC representatives, and forwarding information about stormwater management problems from the WPC members to the District.

High School Rain Garden Program

The District initiated a High School Rain Garden Program that will be managed by the Engineering Department and funded through the Stormwater Management Fund. This community outreach program will be designed to educate the public on the benefits of rain gardens, as a stormwater management practice that can be applied at a local level. Under the proposed program, the District will fund the design and construction of rain gardens at high schools within Cook County.

Rain gardens are a type of green infrastructure that helps reduce the amount of stormwater runoff that enters conventional stormwater conveyance systems. These gardens are established in depressional areas, usually planted with native vegetation, and are designed to capture and infiltrate stormwater. The vegetation in the garden helps improve water quality in local streams by filtering pollutants from stormwater runoff and also provides habitat for birds and beneficial insects.

The program will fund the construction of up to 50 rain gardens over a three-year period. The installation cost of each rain garden is planned to be less than \$10,000. High schools are expected to incorporate the rain garden into their curriculum, making the project an educational opportunity for the students. The District will enlist the assistance of a landscape architecture design firm during the implementation of the program.

In 2008, the Engineering Department outlined the specifics of the program, met with school districts to discuss implementation details, and started the consultant selection process. The first rain gardens are intended to be installed in 2009.

Public Information

District Engineering Department staff provided information about the Stormwater Management Program at various public events in communities throughout the region and at various technical conferences. The District attends all WPC meetings to provide updates on watershed planning efforts, development of the WMO and stream maintenance activities.

These meetings are open to the public and provide an opportunity for concerns of the public to be communicated to the District.

Anticipated Activities for 2009

In 2009, the District plans to complete three of the six DWPs in addition to continuing the work on the WMO. Among other efforts, the District will continue the Rain Barrel Program and the SSMP.

Some key activities forecasted for 2009 are as follows:

Detailed Watershed Plans

DWPs for the Upper Salt Creek, Calumet-Sag Channel and Little Calumet River watersheds are expected to be completed in 2009. Work on the Poplar Creek, North Branch of the Chicago River, and Lower Des Plaines River DWPs will continue throughout 2009 and completion of all three is expected in 2010. Workshops will be held to solicit feedback from WPC members in the Poplar Creek, North Branch of the Chicago River, and Lower Des Plaines River watersheds in 2009.

Watershed Management Ordinance

The District anticipates release of a draft WMO for a formal public review period, which will include several public hearings, in 2009. Upon completion of the public review period and subsequent revisions, the WMO will be presented to the District's Board of Commissioners for consideration for adoption.

Further information on the WMO can be found within the WMO discussion located under 2008 activities and on the District's website.

Capital Improvements Program

As DWPs for three watersheds are completed in 2009, the District anticipates prioritizing recommended capital improvement projects and commencing design work on selected projects. In addition, the District will continue work on terms of an intergovernmental agreement with the Village of Wheeling and Wheeling Park District for use of Heritage Park as a possible site for compensatory storage for Levee 37. It is anticipated that agreement between all parties will be reached and final design of the project will begin in 2009.

Small Streams Maintenance Program

The SSMP contract will continue in 2009 at an expanded value of \$2,500,000. It is anticipated that 35,000 cubic yards of debris will be removed from streams and rivers in 2009.

Joint Funding Agreement with USGS for Stream Gaging Stations in Cook County

As part of the District's continued support of the maintenance and operation of eight streamflow gaging stations and one rain gage in Cook County through a joint funding agreement with USGS, some physical upgrades are being performed to provide consistency

across the gages countywide. The District plans to renew this agreement in the fall of 2009 for the 2009/2010 year.

Joint Funding Agreement with USGS for Groundwater Infiltration Study

The study of the areas with hydrologic characteristics amenable to passive recharge of groundwater in Cook County will continue. The District anticipates receiving the study in early 2009.

High School Rain Garden Program

The installation of the first rain gardens under the High School Rain Garden Program is anticipated to start in 2009. This program is expected to install up to 50 rain gardens over three years.

Rain Barrel Program

After the success of the rain barrel program in 2008, the District will continue selling rain barrels in 2009. Distribution will begin again in March and continue to the end of the year. The District will have 3,000 rain barrels available for sale, with a provision to order more if needed. An updated rain barrel brochure will be included with each barrel.

Permeable Pavement Parking Lot at Stickney WRP

The construction of the permeable pavement parking lot at the Stickney WRP will be completed in Spring 2009. Monitoring of the water quality and runoff data will be performed by the District's Monitoring and Research Department. Data will be collected and evaluated, and reports will be made available to the public after sufficient information can be gathered. The monitoring program will be continued forward into subsequent years and will be used to provide insight into the use of permeable pavement systems as a stormwater BMP, and will also provide a basis for recommending alternative paving materials for use on District-funded projects.

Cook County ADID Wetland Study

The analysis of the ADID process as well as the alternative countywide wetland inventory will continue in 2009. Depending on the outcome of that comparative evaluation, one of the processes is expected to be implemented, which will include developing maps and other information on existing wetlands to be used as planning tools by local municipalities and developers, and for the protection of wetlands in conjunction with the District's WMO.

Development and Implementation of GIS

The completion of the GIS implementation is anticipated in 2009, after which it will be used for tracking information based on geographic position.

Public Information

The District will continue participating in all WPC meetings to communicate progress on all stormwater initiatives and to receive input from the public. The District's Public Affairs Office and Information Technology Department will enlist the assistance of a consultant to update and improve the District's website, including the Stormwater Management web page. As part of the High School Rain Garden Demonstration Program, the District will develop brochures describing the benefits of rain gardens and guidance for installation. Schools at which rain gardens are installed will be asked to have brochures available to the public. The District will continue to provide information about the Stormwater Management program at various events including the 2009 Annual Conference of the Illinois Association for Floodplain and Stormwater Management and the 2009 Universities Council on Water Resources / The National Institutes for Water Resources annual conference.

Expenditures

Category	Description	2008 Expenditures
Personal Services: Consultant	Fees paid to consultants for professional services rendered, including the following projects: Regulatory Ordinance Development Detailed Watershed Plans Professional Services Consultant for GIS	\$6,044,869 \$ 1,252,404 \$ 4,482,184 \$ 310,280
Personal Services: In House	Salaries and associated costs related to District personnel: General Administration Department Engineering Department Maintenance and Operations Department	\$3,853,173 \$ 60,593 \$ 1,412,625 \$ 2,379,955
Contractual Services	Fees paid for services provided by COGs, agencies or companies, including the following: COGs Administrative Contracts: Northwest Municipal Conference South Suburban Mayors and Managers Association Southwest Conference of Mayors West Central Municipal Conference Small Streams Maintenance Program Court Reporting Services USGS Joint Funding Agreement for Stream Gaging Stations in Cook County Streetscape and Sustainability Design Program Miscellaneous Contractual Services	\$2,495,621 \$ 5,144 \$ 10,244 \$ 50,000 \$ 7,551 \$ 2,152,852 \$ 31,200 \$ 58,605 \$ 20,000 \$ 160,025
Administrative Expenses	Materials, equipment and supplies:	\$234,979

Total 2008 Expenditures	\$12,628,642
2008 Appropriation	\$34,924,000
Net Assets Appropriable for 2009	\$22,295,358

Acronyms

Act	Public Act 93-1049
ADID	Advanced Identification
BMP	Best Management Practice
COG	Council of Government
DWP	Detailed Watershed Plan
GIS	Geographic Information System
IDNR-OWR	Illinois Department of Natural Resources – Office of Water Resources
LCFPD	Lake County Forest Preserve District
NWMC	Northwest Municipal Conference
PPOAC	Public and Private Organization Advisory Committee
SSMMA	South Suburban Mayors and Managers Association
SSMP	Small Streams Maintenance Program
SWCM	Southwest Conference of Mayors
TAC	Technical Advisory Committee
USACE	United States Army Corps of Engineers
USGS	United States Geological Survey
WCMC	West Central Municipal Conference
WMO	Watershed Management Ordinance
WPC	Watershed Planning Council
WRP	Water Reclamation Plant