

# Metropolitan Water Reclamation District of Greater Chicago

## Stormwater Management Program

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Annual Report for 2009

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## Overview

The Metropolitan Water Reclamation District of Greater Chicago (District) assumed responsibility for stormwater management for Cook County with the passage of Public Act 93-1049 (Act) in November 2004. The Cook County Stormwater Management Plan (CCSMP) serves as a framework document for the District's countywide stormwater program and was adopted by the District's Board of Commissioners (Board) in February 2007.

In the past year, the District made significant progress with its ongoing efforts in the development of Detailed Watershed Plans (DWPs) for the six established watersheds of Cook County. DWPs for the Calumet-Sag Channel and Upper Salt Creek were completed in 2009 and the Little Calumet River DWP was completed in January 2010. DWPs are studies that provide an assessment of current conditions, identification of stormwater problems, and recommendations of capital projects to help mitigate identified regional issues. The District continued its successful Small Streams Maintenance Program (SSMP) which provides debris removal to all streams within the District's service area, released a draft of the countywide Watershed Management Ordinance (WMO) for public review and comment, and continued its Rain Barrel Program.

The year 2010 looks to be another productive year for the District's Stormwater Management Program as all DWPs are expected to be completed and preliminary engineering will begin on capital improvement projects selected by the Board. The District will also continue work on the SSMP, WMO, and the Rain Barrel Program.

## 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. The goals of the program are included in the Cook County Stormwater Management Plan, which can be found at [www.mwr.org](http://www.mwr.org)

## 2009 Activities

The District's primary activities in 2009 were focused on the continued development of the DWPs, the SSMP, and the WMO. Highlights of these activities and other 2009 accomplishments are provided in the following paragraphs.

### **Detailed Watershed Plans**

The District continued its efforts in developing DWPs for each of the six watersheds in Cook County. The six watersheds to be studied were established in the Act and are as follows: Calumet-Sag Channel, Upper Salt Creek, Little Calumet River, Poplar Creek, North Branch of the Chicago River and Lower Des Plaines River. Work on the Little Calumet River, Calumet-Sag Channel, and Upper Salt Creek watersheds has been completed. The Poplar Creek, North Branch of the Chicago River, and Lower Des Plaines River DWPs are expected to be complete in 2010. 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 most effective in addressing the watershed's

needs. DWPs provide a summary of the watershed's areas of concern and a listing of potential regional capital improvement projects to address those concerns.

The watershed planning process consists of several steps:

1. Gathering, analyzing, and assessing existing information available for the watershed.
2. Determining additional information needed and obtaining it.
3. Developing hydraulic and hydrologic models of the watershed, using or updating existing models when possible.
4. Identifying potential projects to address stormwater related issues such as streambank stabilization and flooding.
5. Quantifying benefits and estimating costs of potential projects, as well as determining other non-cost factors to allow evaluation of alternative projects.

### **Small Streams Maintenance Program**

In 2009, the SSMP successfully concluded its third full year of operation. This program was established in 2006 with the mission to reduce flooding in urbanized areas by removing debris in waterways impeding the natural drainage of Cook County's small streams and rivers. As part of the SSMP, the District relies on hired contractors to assist staff with its stream maintenance operations. In 2009, the District paid contractors \$2,732,810.20 for their assistance.

Stream blockages are reported to the SSMP by contacting the SSMP program coordinator or online through the District's website. In 2009, 80 requests for small stream cleaning were submitted using the District's website. District staff evaluated each obstruction and prioritized it based on its potential to cause flooding near businesses, residences and roads. The District was able to address 70 of the website requests in 2009, with the remaining requests to be addressed in 2010.

District crews and contractors removed approximately 41,395 cubic yards of debris in 2009. In addition, the District's debris and pontoon boat crews removed another 3,370 cubic yards of river and canal debris. The table on the following page is a summary of the debris cleared from each watershed for each complete year of the program:

<b>Watershed</b>	<b>2007 Cubic Yards Removed</b>	<b>2008 Cubic Yards Removed</b>	<b>2009 Cubic Yards Removed</b>
Little Calumet River	7,640	10,310	9,330
Calumet-Sag Channel	5,260	7,910	9,890
Lower Des Plaines River	3,160	5,290	11,065
North Branch Chicago River	1,730	2,170	11,460
Upper Salt Creek	0	3,300	370
Poplar Creek	0	2,320	2,650
<b>Total</b>	<b>17,790</b>	<b>31,300</b>	<b>44,765</b>

Local municipalities provided valuable assistance to the SSMP by contributing personnel, equipment, right-of-way, and approximately 4,684 cubic yards of debris disposal, thus allowing the District to provide an extra \$285,000 of SSMP services.

The total 2009 expenditure for the SSMP program was \$4,741,893.33; the average cost per cubic yard was \$106.

### **Watershed Management Ordinance**

The District continued development of the WMO in 2009. The intent of the WMO is to establish uniform, minimum countywide stormwater management regulations. Components that may be regulated under the WMO include: drainage and detention, floodplain management, wetland and riparian area protection, soil erosion and sediment control, and water quality.

To obtain and incorporate stakeholder input, the District formed two stakeholder committees, the Technical Advisory Committee (TAC) and Public and Private Organizations Advisory Committee (PPOAC). The TAC membership is comprised of village engineers, public works directors, and agencies with regulatory authority and the PPOAC membership includes environmental groups and ecosystem partnerships. During development of the WMO, nine meetings were conducted with the TAC and four meetings were conducted with the PPOAC. There were two joint TAC and PPOAC meetings held in 2009.

The District released a draft WMO for public review and comment on September 24, 2009; the public review period concluded on December 31, 2009. The public review included six public meetings held throughout Cook County, where stakeholders voiced their concerns regarding the draft WMO.

The public review draft of the WMO along with written comments received during the public review period are available on the District's website, [www.mwrd.org](http://www.mwrd.org).

## **Rain Barrel Program**

The District introduced a Rain Barrel Program in 2007 and continued to sell rain barrels and distribute them throughout the summer months at the Stickney Water Reclamation Plant (WRP), Calumet WRP, and North Side WRP in 2009. The cost per rain barrel was \$40. Individuals are able to order up to two rain barrels per household. Municipalities within the District boundaries are also able to purchase up to 40 rain barrels, which are then sold to their residents. An advertising campaign alerted potential customers that the District is selling rain barrels. As a result, the District sold over 3,600 rain barrels in 2009.

## **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 gages located within Cook County:

1. North Branch of the Chicago River at Deerfield
2. Salt Creek at Elk Grove Village
3. Salt Creek at Western Springs
4. Salt Creek at Rolling Meadows
5. Deer Creek at Chicago Heights
6. Butterfield Creek at Flossmoor
7. Midlothian Creek at Oak Forest
8. Tinley Creek near Palos Park

The streamflow data collected at these sites by the USGS will be added to USGS streamflow data collected at other sites that are funded by the United States Army Corps of Engineers (USACE) and other agencies under joint funding agreements. The District's participation in this USGS program will help in the development of valuable historical records at the gage locations. The data from the streamflow gaging stations has proven useful for the District's DWPs. In addition to the streamflow gages, this agreement also funds a rain gage on Salt Creek near Rolling Meadows. Real time data from these gages is available on the USGS's website at [www.usgs.gov](http://www.usgs.gov).

## **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. For this study, the USGS performed a cursory review of potential sites that may be able to provide passive induced-infiltration that may help reduce stormflow problems and increase infiltration and enhance recharge of aquifers. The study was completed in 2009 and the USGS published Open-File Report 2009-1212 entitled "Preliminary Assessment of the Potential for Inducing Stormwater Infiltration in Cook County, Illinois." The report can be downloaded at

<http://pubs.usgs.gov/of/2009/1212/pdf/ofr2009-1212.pdf>.

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

The construction of a permeable pavement parking lot at the Stickney WRP was completed in Spring 2009. The District's Monitoring and Research Department has begun collecting water quality and runoff data for evaluation. Reports will be made available to the public after sufficient information has been gathered. The monitoring program will continue into future years. The results will be used to provide insight into the use of permeable pavement systems as a stormwater management tool.

### **Chicago Department of Transportation Blue Island Avenue Sustainable Streetscape Demonstration Project**

The District is participating in the Blue Island Avenue Sustainable Streetscape Demonstration Project initiated by the Chicago Department of Transportation (CDOT). The objectives of this project are to evaluate the performance of green infrastructure (GI) and create a model within the public right-of-way for future projects throughout the city. The types of GI utilized in the Sustainable Streetscape Project include permeable pavers, infiltration basins, planters, and bioswales. The District in partnership with CDOT and USGS, developed a long-term monitoring plan to assess the performance, effectiveness, and efficiency of GI relative to stormwater flow and pollutant load reduction.

In 2009, the background monitoring evaluation was initiated, and included stormwater and combined sewer wastewater flow measurements, groundwater levels and water quality. Monitoring was achieved for rainfall at three locations, combined sewer flow at two locations, and groundwater levels at four locations in the project area.

### **Development and Implementation of a Geographic Information System (GIS)**

The District completed the implementation of a GIS to internally support the Stormwater Management Program in 2009. 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 allow for analysis of regional watershed problems and their associated solutions, and will track information based on geographic position. Some examples of the information that is tracked in the system include modeled water surface elevations, floodplain boundaries, and regional stormwater projects recommended by the DWPs.

### **Coordination with Watershed Planning Councils (WPCs)**

The Act required the formation of WPCs, which serve as advisory bodies to the District for its 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 municipal conferences with assistance from the District established WPCs for the watersheds of the North Branch of the Chicago River, the Lower Des Plaines River, the Calumet-Sag Channel, the Little Calumet River, Poplar Creek, and Upper Salt Creek.

Since 2005, each of the WPCs has met at least quarterly, as required by the Act. WPC meetings serve as a mechanism for representatives of municipalities and townships to learn about the progress of the DWPs, SSMP, and WMO, and to communicate concerns of the public to the District.

The Act states that the following Councils of Government (COGs) are responsible for coordination of the WPCs: Northwest Municipal Conference, West Central Municipal

Conference, South Suburban Mayors and Managers Association, and Southwest Conference of Mayors. 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. New agreements were approved at the end of 2009 for 2010 and 2011.

In 2009, the 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.

### **Public Affairs**

District 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.

In 2009, the District introduced two additional methods for public outreach: a newsletter and an effort to encourage local volunteerism. "Small Streams, BIG Accomplishments", is a new District newsletter that focuses on the operation of the SSMP, while providing additional information on other stormwater related issues at the District. Watershed Action Volunteer Efforts (WAVES) is a District supported initiative that encourages individuals to learn about and assist in improving the quality of the county's waterways. The newsletter and information on WAVES can be found on the District's website at [www.mwrd.org](http://www.mwrd.org).

## **Anticipated Activities for 2010**

In 2010, the District plans to complete all of the six DWPs and continue work on the WMO. Among other efforts, the District will continue the Rain Barrel Program and the SSMP. Some key activities forecasted for 2010 are as follows:

### **Detailed Watershed Plans**

DWPs for the Poplar Creek, North Branch of the Chicago River, and Lower Des Plaines River watersheds are expected to be completed in 2010. Workshops with representatives from municipalities and townships in these watersheds will be conducted to present results of the hydrologic and hydraulic models and discuss potential alternative capital improvement projects.

### **Capital Improvements Program**

With the completion of the Upper Salt Creek, Calumet-Sag Channel, and Little Calumet River DWPs, the District will begin to prioritize recommended capital improvement projects. Critical streambank stabilization projects where structures and/or infrastructure are in immediate danger will receive the highest priority for funding under the Capital Improvement Program. Flood control projects identified by the DWPs will receive the next highest priority for funding. The District will pursue preliminary engineering for the projects selected by the



Board of Commissioners, to be followed by project design should the projects be determined feasible.

The District intends to provide compensatory storage required for the USACE's Levee 37 project to become operational. In 2009, the District concluded the feasibility study for a compensatory storage facility in Wheeling and will move forward with final design in 2010.

### **Small Streams Maintenance Program**

The SSMP will continue in 2010 and it is anticipated that 35,000 cubic yards of debris will be removed from streams and rivers in 2010. Major goals include standardizing procedures, identifying critical stream areas, scheduling critical inspections and introducing the District's Small Stream crews to local governments to increase the public's awareness of the District's presence and execution of the SSMP. The District will retain a contractor for assistance in debris removal and the contract value is estimated to be \$2.5 million.

### **Watershed Management Ordinance**

The District will continue work on the WMO in 2010. As part of its development, the District will conduct an economic impact study to identify and analyze issues related to the implementation of the WMO. Upon completion of the economic impact study, if necessary, the District will revise portions of the WMO and present it to the District's Board of Commissioners for consideration for adoption.

### **Rain Barrel Program**

The rain barrel program will continue in 2010 and the price of a rain barrel will increase to \$50. Rain barrel pick-up events at our WRPs will resume in March 2010 and continue once a month until November 2010. The District is anticipating an increase in sales to approximately 4,000 barrels.

### **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 were performed in 2009 to provide consistency across the gages countywide. The District plans to renew an agreement to jointly fund gages with the USACE, the IDNR-OWR, and the USGS in the fall of 2010 for the 2010/2011 year.

### **Permeable Pavement Parking Lot at Stickney WRP**

Data will continue to be collected and analyzed by the District's Monitoring and Research Department, and after sufficient information is gathered, reports will be made available to the public. The monitoring program will continue into subsequent years and will be used to provide insight into the use of permeable pavement systems as a stormwater measure.

### **Chicago Department of Transportation Blue Island Avenue Sustainable Streetscape Demonstration Project**

In 2010, background monitoring evaluation for water quality will be extended to include three additional catch basins and two other combined sewer locations. In June 2010, CDOT will begin construction of the Sustainable Streetscape Project located on W. Cermak Road between S. Halsted Street and S. Ashland Avenue, and S. Blue Island Avenue between S. Ashland Avenue and S. Western Avenue. Upon the project's implementation, the post construction monitoring evaluation will provide data for performance assessment. The project, as designed, is expected to prevent runoff from a two-year storm event from entering the District sewer system.

### **Public Affairs**

The District will continue participating in all WPC meetings to communicate progress on all stormwater initiatives and to receive input from the public. In addition, the District will continue to provide information about the Stormwater Management program at various events including the 2010 Annual Conference of the Illinois Association for Floodplain and Stormwater Management.

## Expenditures

Category	Description	2009 Expenditures
Personal Services: Consultant	<b>Fees paid to consultants for professional services rendered, including the following projects:</b>	\$5,234,917
	Regulatory Ordinance Development	\$ 181,769
	Detailed Watershed Plans	\$ 5,050,348
	Professional Services Consultant for GIS	\$ 2,800
Personal Services: In House	<b>Salaries and associated costs related to District personnel:</b>	\$4,380,048
	General Administration Department	\$ 160,838
	Engineering Department	\$ 1,559,804
	Maintenance and Operations Department	\$ 2,659,406
Contractual Services	<b>Fees paid for services provided by COGs, agencies or companies, including the following:</b>	\$3,084,402
	COGs Administrative Contracts:	
	Northwest Municipal Conference	\$ 8,242
	South Suburban Mayors and Managers Association	\$ 7,598
	Southwest Conference of Mayors	\$ 50,000
	West Central Municipal Conference	\$ 9,311
	Small Streams Maintenance Program	\$ 2,732,810
	Court Reporting Services	\$ 10,552
	USGS Joint Funding Agreement for Stream Gaging Stations in Cook County	\$ 49,804
	Streetscape and Sustainability Design Program	\$ 60,000
	Miscellaneous Contractual Services	\$ 156,085
Administrative Expenses	<b>Materials, equipment and supplies:</b>	\$197,524

Total 2009 Expenditures	\$12,896,891
2009 Appropriation	\$33,807,000
Net Assets Appropriable for 2010	\$20,910,109

## Acronyms

Act	Public Act 93-1049
CDOT	Chicago Department of Transportation
COG	Council of Government
DWP	Detailed Watershed Plan
GI	Green Infrastructure
GIS	Geographic Information System
IDNR-OWR	Illinois Department of Natural Resources – Office of Water Resources
PPOAC	Public and Private Organization Advisory Committee
SSMP	Small Streams Maintenance Program
TAC	Technical Advisory Committee
USACE	United States Army Corps of Engineers
USGS	United States Geological Survey
WAVEs	Watershed Action Volunteer Efforts
WMO	Watershed Management Ordinance
WPC	Watershed Planning Council
WRP	Water Reclamation Plant