

# Metropolitan Water Reclamation District of Greater Chicago

## Stormwater Management Program

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2016 Annual Report



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## Overview

The Metropolitan Water Reclamation District of Greater Chicago (MWRD) was granted stormwater management authority for Cook County with the passage of Public Act 93-1049 (Act) in November 2004. The framework of the MWRD's Stormwater Management Program, including its mission, goals, and program elements, is presented in the Cook County Stormwater Management Plan (CCSMP), which was adopted by the MWRD's Board of Commissioners in February 2007. The CCSMP was amended on July 10, 2014 to be consistent with P.A. 98-0652, which amends the MWRD's statutory authority to allow for acquisition of flood-prone properties and to plan, implement, finance, and operate local stormwater management projects.

During 2016, the MWRD continued preliminary engineering and design work for several of the alternatives recommended in Detailed Watershed Plans (DWPs), continued work on the Small Streams Maintenance Program (SSMP), administered the Watershed Management Ordinance (WMO), which was adopted by the MWRD Board of Commissioners on October 3, 2013 and became effective May 1, 2014, and continued the rain barrel program. New activities for 2016 were undertaking a pilot study with the City of Chicago to explore the effectiveness of various technologies aimed at reducing basement backup at private sites, and expanding the online content related to the Chicago Area Waterway System and the SSMP to provide educational materials, as well as general information regarding the management of the system before, during, and after a storm. Further details concerning these items and other stormwater management activities are provided in this Annual Report.

## Mission and Goals

### Stormwater Management Mission Statement

The mission of the Stormwater Management Program is to protect the safety of Cook County's residents and minimize flooding damage by coordinating, planning, implementing, financing, and operating regional stormwater management projects, and to develop and enforce reasonable rules with respect to watershed development. The framework of the MWRD's countywide stormwater management program is presented in the Cook County Stormwater Management Plan (CCSMP).

### 2016 Accomplishments for the Stormwater Management Program include the following:

- Continued design of recommended stormwater improvements, or alternatives, identified in the DWPs that were completed in 2011, including projects summarized in the Stormwater Management Activities section of the Annual Report;
- Continued design for the following projects:
  - Streambank stabilization projects on reaches of Tinley Creek, Midlothian Creek, I&M Canal Tributary, Melvina Ditch, Oak Lawn Creek, Calumet Union Drainage Ditch, Middle Fork and the West Fork of the North Branch of the Chicago River, Addison Creek, Higgins Creek, and McDonald Creek;
  - Flood control projects on reaches of Upper Salt Creek, Deer Creek, Tinley Creek, Navajo Creek, Cherry Creek East Branch, Addison Creek, Des Plaines River, Buffalo Creek, Main Stem and the West Fork of the North Branch of the Chicago River, Skokie River and Farmers Prairie Creek;
- Administered the WMO to ensure new development does not exacerbate flooding issues;

- Continued the removal of debris and blockages from the 532 miles of small streams within the MWRD's service area as part of the Small Streams Maintenance Program (SSMP).
- Adoption of a policy on the selection and prioritization of projects for acquiring flood-prone property.
- Completed construction of one streambank stabilization and one flood control project originally identified in the DWP;
- Awarded four flood control and streambank stabilization projects;
- Entered into five Intergovernmental Agreements (IGAs) for Stormwater Management Phase II projects to allow for construction of local flood control projects;
- Continued design of Phase I regional projects recommended from the DWPs, including streambank stabilization projects on reaches of nine waterways and flood control projects on reaches of ten waterways;
- Continued design of Phase II conceptual flood control projects identified by local municipalities, townships, and agencies including the Cities of Blue Island, Burbank, and Palos Heights, the Villages of Crestwood, Midlothian, Robbins, and Worth, the Town of Cicero, Bremen Township, the Illinois Department of Transportation, and the Cook County Department of Transportation and Highways;
- Completed Stormwater Master Plan Pilot Studies in five locations recommended by the four Cook County Councils of Government and the City of Chicago;
- Negotiated and/or entered into IGAs for acquisition of flood-prone properties with six communities and the Cook County Land Bank Authority;
- Continued the SSMP with the objective of removing debris and blockages from 532 miles of small streams and rivers;
- Entered into IGAs with the City of Berwyn and the Villages of Niles and Skokie to partially fund green infrastructure projects;
- Completed design of a green infrastructure control system at Dearborn Homes in Chicago;
- Partnered with the Chicago Public Schools and the Chicago Department of Water Management for construction and monitoring (through the United States Geological Survey) of green infrastructure.

## Stormwater Management Activities

### Stormwater Management Capital Improvement Program

Capital improvement projects recommended for implementation by DWPs are separated into two categories: streambank stabilization and flood control. Projects given the highest priority for implementation are streambank stabilization projects which address streambank erosion posing an imminent threat to public safety and/or structures. Flood control projects will address regional flooding issues through traditional measures, such as stormwater detention reservoirs, levees, and conveyance improvements. Preliminary engineering and design of projects approved by the Board of Commissioners are underway and will continue into the future.

In 2016, the following Streambank Stabilization Projects were awarded for construction:

- OLCR-3 (Oak Lawn Creek)
- TICR-5 (Tinley Creek)
- WF-03 (West Fork of the North Branch of Chicago River)

The above projects awarded in 2016 are scheduled to be substantially completed in 2017.

### Streambank Stabilization Projects

The following is a detailed list of streambank stabilization projects. Streambank stabilization project locations are shown in Appendix A.

- **OLCR-3 (Oak Lawn Creek)**



Watershed: Calumet-Sag Channel

Location: Oak Lawn

Description: Stabilize approximately 1,200 LF of Oak Lawn Creek using soldier piles and precast concrete panels.

Estimated Construction Cost: \$3,035,000

Status: Under Construction

- **CUDD-G3 (Calumet Union Drainage Ditch)**

Watershed: Little Calumet River

Location: Markham

Description: Stabilize approximately 3,559 LF of Calumet Union Drainage Ditch using bioengineering techniques and provide conveyance improvements.

Estimated Construction Cost: \$1,839,000

Status: Final Design. Working on acquiring required easements.

- **MTCR-G2 (Midlothian Creek)**

Watershed: Little Calumet River

Location: Tinley Park

Description: This project will stabilize approximately 495 linear feet of Midlothian Creek from 66<sup>th</sup> Court, north of 173<sup>rd</sup> Street, extending east approximately 300 feet, in the Village of Tinley Park.

Estimated Construction Cost: \$392,000

Status: Final Design

- **MEDT-1 (Melvina Ditch)**



Watershed: Calumet-Sag Channel

Location: Chicago Ridge, Oak Lawn

Description: This project involves streambank stabilization along Melvina Ditch, from 95<sup>th</sup> Street to 99<sup>th</sup> Street. Approximately 150 linear feet of the ditch at the north end of the project will be stabilized with twin box culverts. The remaining 2,500 linear feet of the ditch will be stabilized with a precast concrete modular block retaining wall system.

Estimated Construction Cost: \$8,800,000

Status: Finalizing easements and permits.

- **WF-03 (West Fork of the North Branch of the Chicago River)**



Watershed: North Branch of the Chicago River

Location: Northbrook

Description: Stabilize the eastern streambank along the West Fork of the North Branch of the Chicago River through construction of a 155-foot gravity retaining wall.

Estimated Construction Cost: \$413,000

Status: Under Construction

- **ADCR-7/ADCR-9 (Addison Creek)**



Watershed: Lower Des Plaines River

Location: Northlake

Description: Stabilization of approximately 750 feet of Addison Creek adjacent to Fullerton Avenue in Northlake and 410 linear feet of streambank adjacent to 19<sup>th</sup> Avenue in the Village of North Riverside.

Estimated Construction Cost: \$995,000

Status: Final Design. Preparing bid documents.

- **TICR-7 (Tinley Creek)**

Watershed: Calumet-Sag Channel

Location: Orland Park

Description: Stabilize approximately 2,200 LF of Tinley Creek using a combination of retaining walls and bioengineering techniques.

Estimated Construction Cost: \$1,463,000

Status: Final Design. Working on acquiring required easements.

- **TICR-8 (Tinley Creek)**

Watershed: Calumet-Sag Channel

Location: Orland Park

Description: Stabilize approximately 1,803 LF of Tinley Creek using a combination of retaining walls and bioengineering techniques.

Estimated Construction Cost: \$2,343,000

Status: Final Design. Working on acquiring required easements

## **Flood Control Projects**

The following is a detailed list of flood control projects. Flood control project locations are shown in Appendix B.

- **CHEB-G3 (Cherry Creek)**

Watershed: Little Calumet River

Location: Flossmoor

Description: Construction of an overflow channel on Homewood-Flossmoor High School's property, west of Governors Highway. It will also replace two collapsed culverts and create shelf storage on Cherry Creek.

Estimated Construction Cost: \$4,860,000

Status: Final Design

- **TICR-5 (Tinley Creek)**



Watershed: Calumet-Sag Channel

Location: Orland Hills, Orland Park

Description: This project will provide naturalized channel stabilization/flood control on Tinley Creek, from Lake Lorin to 88<sup>th</sup> Avenue in Orland Hills.

Estimated Construction Cost: \$664,000

Status: Under Construction

- **NVCR-3 (Navajo Creek)**

Watershed: Calumet-Sag Channel

Location: Palos Heights

Description: Raise bike trail 3 ft to provide additional storage in Lake Arrowhead.

Estimated Construction Cost: \$1,200,000

Status: Final Design. Finalizing IGAs with the Forest Preserve District of Cook County and the City of Palos Heights.

- **DRCR-G1 (Deer Creek)**



Watershed: Little Calumet River

Location: Ford Heights

Description: Increase channel conveyance and raise berm for 3,000 LF.

Estimated Construction Cost: \$3,440,000

Status: Final Design - 98%.

- **FRCR-12 (Farmers Prairie Creek).**



Watershed: Lower Des Plaines River

Location: Park Ridge, Des Plaines, Niles, and Maine Township

Description: Construct conveyance improvements, pump station, additional storage, and a new force main.

Estimated Construction Cost: \$14,100,000

Status: Final Design

- **BUCR-3 (Buffalo Creek Reservoir Expansion)**

Watershed: Lower Des Plaines River

Location: Buffalo Creek Forest Preserve

Description: Expansion of existing Buffalo Creek Reservoir and prairie enhancement

Estimated Construction Cost: \$21,130,700

Status: Finalizing IGA for construction of the project with the Lake County Forest Preserve District and the Village of Buffalo Grove.

- **ADCR-6B (Addison Creek)**



Watershed: Lower Des Plaines River

Location: Northlake, Stone Park, Melrose Park, Bellwood, and Westchester

Description: This project will create an approximately 600 acre-foot flood control reservoir in Bellwood just north of Washington Boulevard and east of Addison Creek.

Estimated Construction Cost: \$109,542,000

Status: Final Design

- **DPR-14D (Lyons Levee)**



Watershed: Lower Des Plaines River

Location: Lyons

Description: Restoration and improvement of the levee to a condition that will elevate the levee to modern design standards, provide flood protection, and prevent overtopping by events up to a 100-year design flood.

Estimated Construction Cost: \$6,500,000

Status: Final Design

- **WF-06 (West Fork of the North Branch of the Chicago River)**

Watershed: North Branch of the Chicago River

Location: Glenview

Description: Construct 80 ac-ft of storage, a floodwall, pump station, and a new storm sewer

Conceptual Cost Estimate: \$6,600,000

Status: Preliminary Engineering

- **MDRE (Melvina Ditch)**



Watershed: Calumet

Location: Burbank

Description: Expanding the existing Melvina Ditch Reservoir by up to 195 acre-feet to increase its storage capacity, modifying the pumping station, and installing a new emergency overflow weir.

Estimated Construction Cost: \$21,452,000

Status: Final Design

- **Midlothian-1 (Natalie Creek)**

Watershed: Calumet

Location: Oak Forest and Midlothian

Description: Install flood control measures for an estimated 15,800 linear feet along Natalie Creek from 157<sup>th</sup> and Central Park in Oak Forest to 146<sup>th</sup> and Pulaski in Midlothian.

Estimated Construction Cost: \$8,300,000

Status: Final Design

## **Phase II Stormwater Management Program**

Based on the direction provided by MWRD's Board of Commissioners on April 18, 2013, the MWRD initiated Phase II of its Stormwater Management Program to address local drainage problems, develop stormwater master plans across Cook County, and set up a program for purchasing flood prone and flood damaged property on a voluntary basis.

Based on stormwater problem and potential project information solicited from each municipality, township and regional agency having jurisdiction in Cook County a total of 38 projects have been approved by the Board of Commissioners (on September 19, 2013 and October 16, 2014) authorizing the MWRD assist local communities and agencies in the furtherance of these projects in the form of funding, engineering, and/or other assistance to be defined through negotiations with these entities. The approved projects are distributed across Cook County and include green infrastructure improvements, localized detention, upsizing critical storm sewers/culverts, pump stations, and establishing drainage ways.

In addition to assisting the local communities with the projects as described above, the MWRD initiated five Stormwater Master Plan pilot studies in 2015 to begin putting together a Cook County green and gray infrastructure plan that will better protect the community against severe weather events. The goal of these pilot studies is to identify solutions to 100-year flooding of structures and basement backups which involve green and gray infrastructure located in publicly and privately owned properties. To achieve this goal, it will be necessary to demonstrate to the general public that no agency alone can solve the flooding woes plaguing our region. Through extensive public outreach and education, MWRD will work to educate the public as to the magnitude of the flooding issues faced by our region. Based on input from each of the four Councils of Government and the City of Chicago, the five pilot locations are: 1) the Little Calumet River/Calumet-Sag Channel drainage areas, 2) Northbrook, 3) Roberts Road drainage area, 4) Village of Harwood Heights, and 5) the City of Chicago's 8<sup>th</sup> Ward and surrounding area (on the southeast side). After completing the pilot Stormwater Master Plans, MWRDGC will continue to develop additional wet weather plans for other areas in Cook County over the next several years following the process to be defined through the pilot studies.

On August 7, 2014, the Board of Commissioners adopted a policy on the selection and prioritization of projects for acquiring flood-prone property. This program is comprised of three distinct components:

1. Local Sponsor Assistance Program - The MWRD's top priority will be to facilitate the Illinois Emergency Management Agency's federally funded program by assisting Local Sponsor communities in providing their share of the cost for property acquisition.
2. District Initiated Program - In communities where the MWRD's Board of Commissioners approved capital projects from the MWRD's Detailed Watershed Plans for further study, should the cost of a property acquisition alternative be less for equivalent benefits, the acquisition alternative will be pursued.

3. Local Government Application Program - The MWRD will consider applications directly from local governments requesting property acquisition of specific flood-prone structures.

In 2016, the MWRD partnered with Cook County to acquire flood-prone homes in unincorporated Riverside lawn, prioritized municipal applications to the District for assistance with the acquisition of flood-prone structures located throughout Cook County, and negotiated IGAs to partner with the Cities of Des Plaines and Northlake, the Villages of Flossmoor, Franklin Park, and Stone Park, and Wheeling Township to acquire 132 flood-prone residential structures that will occur over the next two years. In 2017, the MWRD will continue to perform outreach to all communities in Cook County to provide information about the Local Sponsor Assistance and Local Government Application Programs, and seek applications for assistance with acquisitions.

The MWRD entered into five Intergovernmental Agreements (IGAs) for Stormwater Management Phase II projects to allow for construction of local flood control projects. The following is a list of these phase II projects.

- **15-IGA-16**  
Service Area: Stickney  
Location: Brookfield  
Description: This is a cost sharing agreement with the Village of Brookfield. The Village of Brookfield proposes to install a new pumping station and back-up generator, a box culvert, a new detention pond, and other miscellaneous storm sewer improvements and restorations for the public benefit of reducing flooding in the general area. The Village is responsible for design, construction, operation, and maintenance.  
Estimated Construction Cost: \$815,633  
Status: Under Construction
- **15-IGA-17**  
Service Area: Lemont  
Location: Lemont  
Description: Replacement of existing culverts with three 6'x10' concrete box culverts. The culverts will be located under a roadway near the confluence of the Illinois & Michigan Canal with the Chicago Sanitary & Ship Canal and should alleviate localized flooding in the area.  
Estimated Construction Cost: \$270,499  
Status: Under Construction
- **14-263-3F**  
Service Area: Calumet  
Location: Burbank  
Description: The project consists of expanding the existing Melvina Ditch Reservoir by up to 195 acre-feet, modifying the pumping station to accommodate the expansion, and installing a new emergency overflow weir to reduce the likelihood of reservoir overtopping.  
Estimated Construction Cost: \$4,245,000  
Status: Project to be advertised in 2017
- **16-IGA-04**  
Service Area: Stickney  
Location: Village of Berkeley  
Description: Construct two new storm sewers along McDermott Drive and Morris Avenue, expand the existing detention basin, and construct a stormwater pumping facility at the southwest corner of the existing detention basin to adequately convey a 100-year storm event. This is a cost sharing agreement with the Village of Berkeley.  
Estimated Construction Cost: \$2,696,000

- Status: Phase I under construction
- **16-IGA-05**  
 Service Area: North  
 Location: Village of Glenco  
 Description: Upsize Skokie Ridge Basin storm sewers and upsize Terrace Court Basin storm sewers to adequately convey a 100 year storm event. Add a stormwater treatment system to treat discharges into Lake Michigan.  
 Estimated Construction Cost: \$190,000  
 Status: Under Construction

**Small Streams Maintenance Program (SSMP)**

The 2016 Small Streams Maintenance Program (SSMP) successfully concluded the tenth full year of operation. The program, conceived and established in 2006, follows the MWRD’s stormwater management mission to improve flooding in urbanized areas through immediate and relatively simple remedies. 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 with the potential for flooding urban areas.

The SSMP staff also attended meetings of the Watershed Planning Councils (WPCs), Councils of Governments (COGs) and local public works meetings to provide an overview of the program’s purpose, objectives and goals. The local municipalities enthusiastically assisted in identifying blockages, stream deficiencies and sensitive areas within their jurisdictions. The partnership with the MWRD is important to the success of the program.

The SSMP is advertised on the MWRD’s website and includes a link to allow citizens to report stream blockages. The MWRD also implemented a new citizen incident reporting system, in which, the public can report stream blockages as well as other waterway issues at mwrdd.org and on their Apple IOS devices. This new system is a GIS based system that allows SSMP staff to view incidents on a desktop and mobile application. All inspections and work orders are now documented on the SSMP application.

MWRD and contractor crews removed approximately 23,438 cubic yards of debris in 2016. In addition 1,270 cubic yards of river and canal debris was removed by the MWRD’s debris and pontoon boat crews along the Chicago Area Waterways (CAWS). In 2016, the District continued to utilize a two-year stream maintenance contract. The District paid a total of \$2,180,414 in 2016 to contractors to provide stream maintenance. Listed in the table below are the debris amounts removed in each watershed.

<b>Watershed</b>	<b>2013 Cubic Yards Removed</b>	<b>2014 Cubic Yards Removed</b>	<b>2015 Cubic Yards Removed</b>	<b>2016 Cubic Yards Removed</b>
Little Cal	<b>7,405</b>	<b>3,615</b>	<b>6,545</b>	<b>7,550</b>
Cal Sag	<b>8,115</b>	<b>5,200</b>	<b>5,860</b>	<b>8,605</b>
Lower Des Plaines	<b>10,038</b>	<b>9,939</b>	<b>8,691</b>	<b>8,285</b>

<b>Watershed</b>	<b>2013 Cubic Yards Removed</b>	<b>2014 Cubic Yards Removed</b>	<b>2015 Cubic Yards Removed</b>	<b>2016 Cubic Yards Removed</b>
North Branch	<b>4,533</b>	<b>1,896</b>	<b>1,606</b>	<b>3,774</b>
Upper Salt Creek	<b>480</b>	<b>1,095</b>	<b>491</b>	<b>629</b>
Poplar Creek	<b>250</b>	<b>150</b>	<b>380</b>	<b>140</b>
<b>Total</b>	<b>30,821</b>	<b>21,895</b>	<b>23,573</b>	<b>28,983</b>

Other major accomplishments of the SSMP in 2016 include the following:

- Tinley Creek, near 130<sup>th</sup> and Central Avenue, Palos Heights. Approximately 260 feet of rip rap stabilization.
- Butterfield Creek, 1413 Dartmouth Road, Flossmoor. Approximately 350 feet of rip rap stabilization.
- Middle Fork North Branch of the Chicago River, Willow Park, Northfield. Approximately 150 feet of rip rap stabilization.
- Higgins Creek, O'Hare Reservoir, Des Plaines. Approximately 300 feet of rip rap stabilization.

The SSMP will continue in 2017 at a contract budget value of \$2,500,000. It is anticipated that 30,000 cubic yards of debris will be removed from streams and rivers in 2017. Major goals include standardizing procedures, identifying critical stream areas, scheduling critical inspections and continuing to introduce the MWRD's Small Stream crews to local governments to increase the public's awareness of the MWRD's presence and execution of the SSMP.

The 2016 expenditure for the SSMP program (Functional Area 4332) was \$4,860,584. Therefore, the average cost per cubic yard was \$167.70.

### **Watershed Management Ordinance**

The Watershed Management Ordinance (WMO) establishes uniform, minimum, countywide stormwater management regulations throughout Cook County. Components which are regulated under the WMO include drainage and detention, volume control, floodplain management, isolated wetland protection, riparian environment protection, and soil erosion and sediment control. The MWRD's Board of Commissioners adopted the Watershed Management Ordinance on October 3, 2013, which became effective on May 1, 2014. The WMO was amended by MWRD's Board of Commissioners on July 10, 2014, to incorporate the Infiltration/Inflow Control Program (Article 8). In 2016, the Board of Commissioners authorized amending the WMO, and the public comment period for the proposed changes is ongoing. The MWRD continues to develop the Technical Guidance Manual (TGM), which serves as a technical reference to the WMO. The WMO webpage, [wmo.mwrcl.org](http://wmo.mwrcl.org), contains more information on both the WMO and the TGM.

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

The MWRD entered into a Joint Funding Agreement (JFA) with the USGS beginning in 2006 and has since renewed the agreement annually to fund the continued maintenance and operation of various stream gages and rain gages within Cook County. Under the 2015–2016 JFA, the MWRD is funding the following nine stream gages:

- Salt Creek at Rolling Meadows
- Salt Creek near Elk Grove Village
- Salt Creek at Western Springs
- Des Plaines River at Lyons
- North Branch of the Chicago River at Deerfield
- North Shore Channel at Wilmette
- Deer Creek near Chicago Heights
- Natalie Creek at Midlothian
- Tinley Creek near Palos Park

and two rain gages located on Salt Creek near Rolling Meadows and on Natalie Creek at Midlothian, respectively. The data from the streamflow gaging stations have proven useful for the MWRD with calibration of the hydrologic and hydraulic models in the DWP development, and MWRD will continue to use data from these stations in ongoing and future planning and design of stormwater improvements. Real time data from the stream gages are available on the USGS's website at <https://waterdata.usgs.gov/nwis>. Precipitation data are available at <http://il.water.usgs.gov/gmaps/precip/index.php>. A map showing the location of the gages is presented in Appendix D.

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

The Act required the formation of WPCs, which serve as advisory bodies to the MWRD for its stormwater management program. Membership in the 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 MWRD, 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 be updated on the progress of the DWPs, SSMP, WMO, and capital projects, as well as to communicate concerns of the public to the MWRD.

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. The MWRD negotiated agreements with each of the COGs to provide administrative assistance related to coordination of the WPCs; the current agreement was renewed for 2013, 2014 and 2015. In 2013, the COGs assisted the MWRD by arranging meeting schedules, drafting and distributing meeting agendas, distributing information from the MWRD to WPC members, assembling contact information for

WPC representatives, and forwarding information about stormwater management concerns from the WPC members to the MWRD.

### **Green Infrastructure Program**

The MWRD entered into a Federal Consent Decree (CD) with USEPA and IEPA on January 6, 2014. Appendix E of the CD requires MWRD to create a Green Infrastructure Plan to guide the goals of its Green Infrastructure Program. The Plan was submitted to the USEPA and IEPA in December 2014.

Elements of the Green Infrastructure Program include an expanded rain barrel program, land use policy for property owned by MWRD, community technical assistance, a reporting schedule, and a plan for early monitoring, evaluation, and knowledge building.

The MWRD has partnered with organizations with similar goals. One such example is with the Chicago Public Schools, which did a major rehabilitation of the grounds of four elementary schools, with Stormwater Green Infrastructure (GI) as a major design component of each project. MWRD contributed to the design process, and contributed close to \$500,000 to each of the four schools, for a total of approximately \$1,907,000, specifically on GI measures that will reduce local flooding, while reducing the amount of rainwater entering the local combined sewer systems. As a part of the inter-governmental partnership, City of Chicago Department of Water Management also provided close to \$2,000,000 for GI at the schools. Each project included various amounts of permeable pavement, rain gardens, native landscaping, stormwater trees, bioswales, and bioretention areas greenways to store and infiltrate stormwater generated from the site. The four elementary schools, Grissom, Leland, Morrill and Schmid, are all in low income areas that experience basement backups throughout the City. The four sites have been constructed using a high degree of community involvement, and all employ educational components to inform students and the surrounding community about the benefits of Green Infrastructure. All four projects were completed in the fall of 2014.

Due to the success of the school projects, the MWRD committed to fund up to \$500,000 per school, for a total of 30 schools, for the period 2015-2020. The Chicago Department of Water Management has committed to contributing a similar amount of money. Two more schools; Willa Cather Elementary School and Jose Clemente Orozco Elementary School were built in 2015. Three more schools were constructed in 2016; Daniel J. Corkery Elementary School, Frank W. Gunsaulus Elementary Scholastic Academy and James Wadsworth Elementary School. The MWRD has agreed to fund the design of ten additional schools in 2017. Five of these schools; John W. Cook Elementary School, Nathan S. Davis Elementary School, Fernwood Elementary School, Eugene Field Elementary School and Morton Elementary Career Academy, along with the previously designed Oliver S. Westcott Elementary School, are anticipated to be built in 2017.

MWRD is keeping records of, and investigating funding the GI components of other projects throughout the service area. For calendar year 2016, MWRD partnered with agencies within its service area to develop flood mitigation projects that incorporate GI. The designated areas have developed projects that will reduce local flooding. The MWRD has committed a total of approximately \$1,675,000 to fund the GI components of these projects.

The Village of Kenilworth partnered with MWRD to construct green infrastructure components as part of the Village's Phase I Infrastructure Program. The Village installed permeable asphalt pavement and native landscaping to help reduce flooding in the combined sewer area of the

Village. The Village identified 105 homes which will directly benefit from the project. The project will provide approximately 1.3 million gallons of Stormwater storage. The cost to the MWRD is anticipated to be \$1,200,000.

The MWRD will fund a control system for an approximately 7,500,000 gallon underground detention vault constructed by the Village of Northbrook at Wescott Park in 2016. The cost of the Control System is \$475,000. The project was started and completed in 2016. Northbrook will pay an estimated 9.2 million dollars to construct the vault.

MWRD is funding a project at the Chicago Housing Authority's Dearborn Homes, where an existing 290,000 gallon storage tank will be retrofitted with a control system in order to capture and store stormwater that can be used for irrigation of the local grounds and a nearby park. The design cost of this project is \$327,695, and was started in February, 2015. Construction, which is expected to begin and end in 2017, will cost the MWRD an additional estimated \$1,220,000.

Besides the Dearborn Homes Project, at least three other projects are anticipated to be designed and built in 2017. The projects would be constructed in Berwyn, Crestwood, Niles and Skokie. All of the above community projects are using various Green Infrastructure technologies to augment grey projects that are meant to reduce local flooding. Besides assistance in flood reduction, GI will also keep stormwater out of the stressed combined sewer systems. The MWRD is already investigating similar potential projects to be funded in 2017 and beyond.

The Village of Berwyn will partner with the MWRD to construct ten green alleys within the Village. The MWRD agreed to pay the difference between using conventional pavement and pervious pavement which provides an estimated DRC of 679,122 gallons. The rainwater that previously would run off to the local sewer system will now be absorbed into the ground. The project has been designed and will be started and completed in 2017. The cost to the MWRD is anticipated to be \$666,700.

The Village of Niles will partner with the MWRD to construct a bioswales and permeable pavement parking lot at Oak Park. The project will reduce flooding and reduce the load to the local sewer system, and provide a DRC of 53,811 gallons. The project has been designed and started, and will be completed in 2017. The cost to the MWRD is anticipated to be \$200,000.

The Village of Skokie will partner with the MWRD to construct a rain garden at Devonshire Park and a naturalized detention area at the Police Headquarters within the Village. The project will reduce local flooding and will provide a DRC of 46,424 gallons. The project has been designed and will be started and completed in 2017. The cost to the MWRD is anticipated to be \$200,000.

### **Rain Barrel Program**

To minimize basement backups, combined sewer overflow volume, and flooding, the MWRD introduced a new rain barrel distribution program that offers free rain barrels to Cook County residents and organizations that meet certain qualifications. The MWRD will deliver free rain barrels through three distribution networks: municipalities; campus-type facilities; and non-government organizations, planning groups, or community groups.

Municipalities must sign an intergovernmental agreement with the MWRD to participate. Once registered, the village or city can make barrels available to residents who meet certain requirements:

- The resident must have property that has downspouts that are directly connected to the sewer system;

- The homeowner must agree to disconnect all downspouts from the sewer system;
- The homeowner must place rain barrels on each downspout, where feasible.

The MWRD will also provide free rain barrels to campus-type facilities that are committed to being a community partner and good steward of stormwater. These types of facilities include: schools, municipal properties (i.e. town halls, libraries, park district buildings, fire and police stations, garage/outbuildings), churches, community centers, senior centers, hospitals and clinics.

Non-government organizations, planning groups, or community groups throughout Cook County will also have access to the MWRD's Rain Barrel Program for well thought out regional plans. These entities must submit a detailed plan and assure that there will be proper installation, education, care and maintenance of the barrels.

For those who do not qualify for the free barrels, the MWRD will continue to sell and deliver them for \$58 plus tax via [www.mwrdd.org](http://www.mwrdd.org). The MWRD distributed 98,067 rain barrels in 2016.

### **Public Affairs**

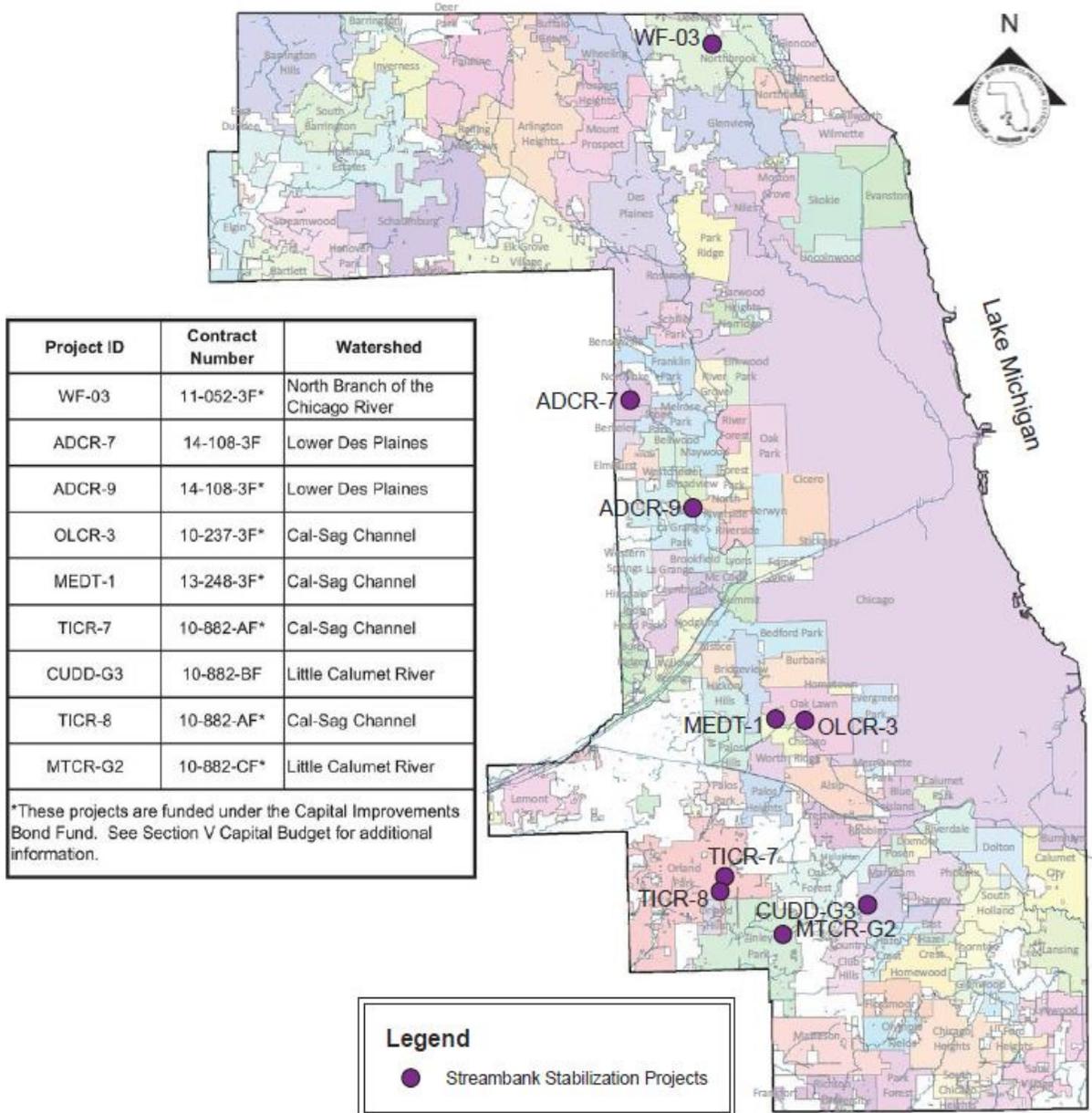
In 2016, MWRD staff provided information about the MWRD and the Stormwater Management Program at various public events in communities throughout the region and at various technical conferences. The MWRD attends all WPC meetings to provide updates on watershed planning efforts, changes to the WMO, and stream maintenance activities. These meetings are open to the public and provide an opportunity for concerns of the public to be communicated to the MWRD. The projects that MWRD is partnering with Chicago Public Schools and Department of Water Management also have a large public affairs component, including community meetings to recommend design elements, community planting days, and ribbon cutting ceremonies, where the value of green stormwater infrastructure is presented and demonstrated. The MWRD also worked to educate the general public on their water footprint by attending numerous community and environmental fairs. The 2016 Stormwater Management related press releases are listed in Appendix F.

MWRD Staff will continue to participate in community outreach events and provide rain barrel giveaways through the Water Environment Pledge initiative in 2016. The MWRD will continue to participate in Watershed Planning Council meetings, and continue to promote the MWRD stormwater management efforts using press releases and other media outlets.

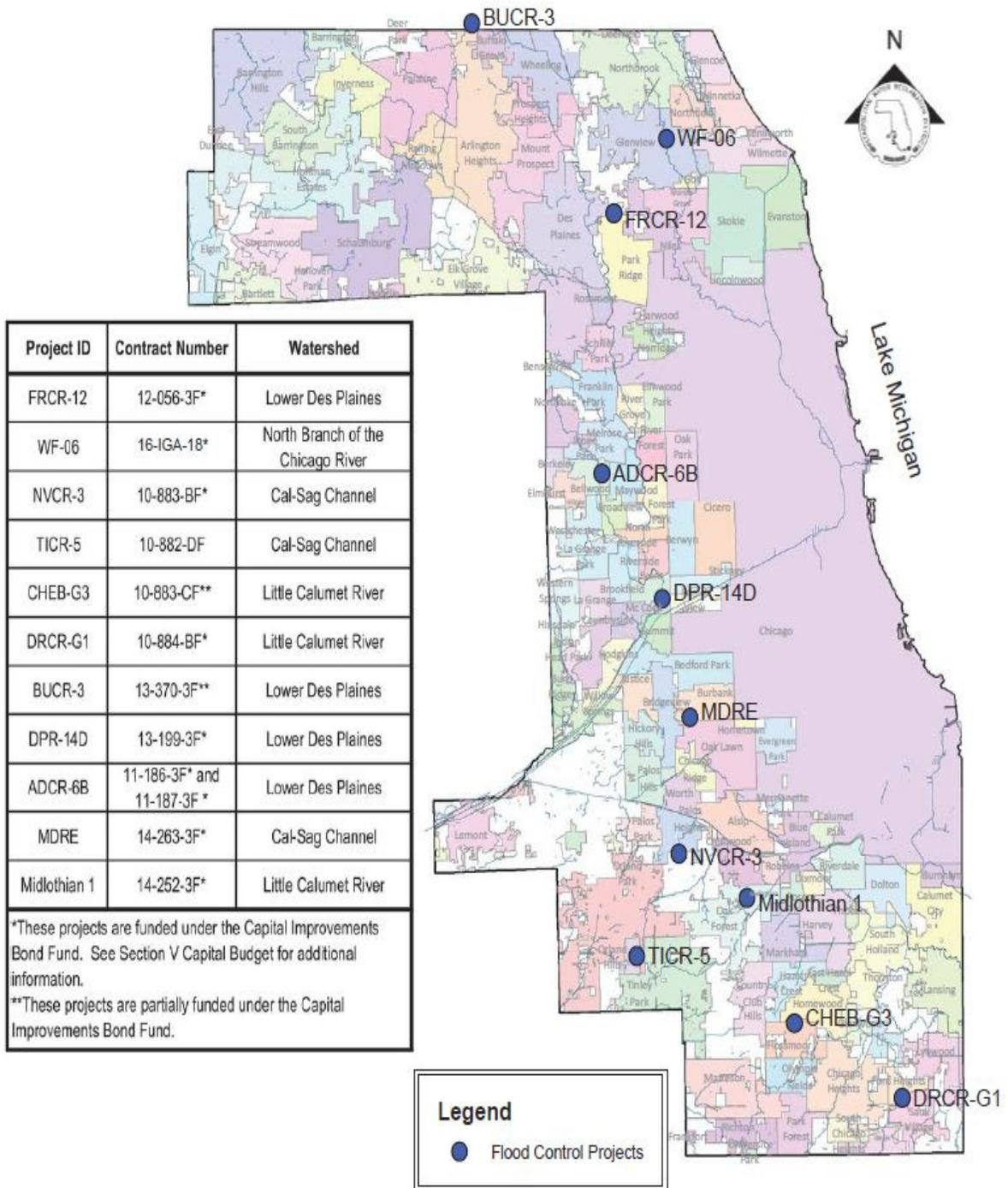
## Appendices

Appendix A	Streambank Stabilization Projects
Appendix B	Flood Control Projects
Appendix C	Completed Projects
Appendix D	MWRD and USGS Joint Funded Stream Gages
Appendix E	Committed Expenditures
Appendix F	Stormwater Management Related Press Releases

# Appendix A - Stream Bank Stabilization Projects



# Appendix B - Flood Control Projects



## Appendix C – Completed Projects

Contract:	09-365-5F	(Heritage Park Flood control Facility)
Construction Cost:	\$29,475,000	
Construction Duration:	1,497	
Location:	Wheeling	
Description:		
Completed:	5/25/16	
Contract:	10-884-AF	(Flood Control Project for Upper Salt Creek)
Construction Cost:	\$1,349,940	
Construction Duration:	386	
Location:	Palatine	
Description:		Reduce flooding damage by bypassing flow from an inundated area south of Dundee Road to an outfall into Upper Salt Creek. Will include 1,100 feet of new storm sewer, an engineered berm, and backflow preventers.
Completed:	9/23/16	
Contract:	15-IGA-15	(Glenwood Relief Sewer)
Construction Cost:	\$1,589,734	
MWRD Funding:	\$820,000	
Duration:	239	
Location:	Glenwood	
Description:		This project will provide a new relief storm sewer along Glenwood Avenue and outfall to Thron Creek.
Completed:	11/30/16	
Contract:	15-IGA-09	(Stony Island Avenue Ditch)
Construction Cost:	\$1,385,485	
MWRD Funding:	\$1,172,500	
Duration:	446	
Location:	Lansing	
Description:		Regrade ditch in Stony Island Avenue, upgrade existing pumping station, modify a detention pond, and reroute a storm sewer.
Completed:	5/8/16	
Contract:	15-IGA-10	(Northbrook Storm Sewers)
Construction Cost:	\$2,100,000	

MWRD Funding: \$1,050,000  
Duration: 240  
Location: Northbrook  
New storm sewers on Shermer Road and Cherry Lane,  
ranging from 24" to 72" in diameter. Village of  
Description: Northbrook to design, construct, operate and maintain.  
Completed: 5/1/16

Contract: 15-IGA-03 (Roberts Road Storm Sewers)

Construction

Cost: \$2,385,294  
MWRD Funding: \$1,250,000  
Duration: 180  
Location: Hickory Hills and Bridgeview  
Install a new trunk storm sewer under Roberts Road,  
varying in diameter from 30" to 60" and a 24" restrictor  
at 79<sup>th</sup> Street to maintain existing flows into the 71<sup>st</sup>  
Description: Street Ditch.  
Completed: 3/1/16

Contract: 15-IGA-07 (Channel Improvements on Silver Creek)

Construction

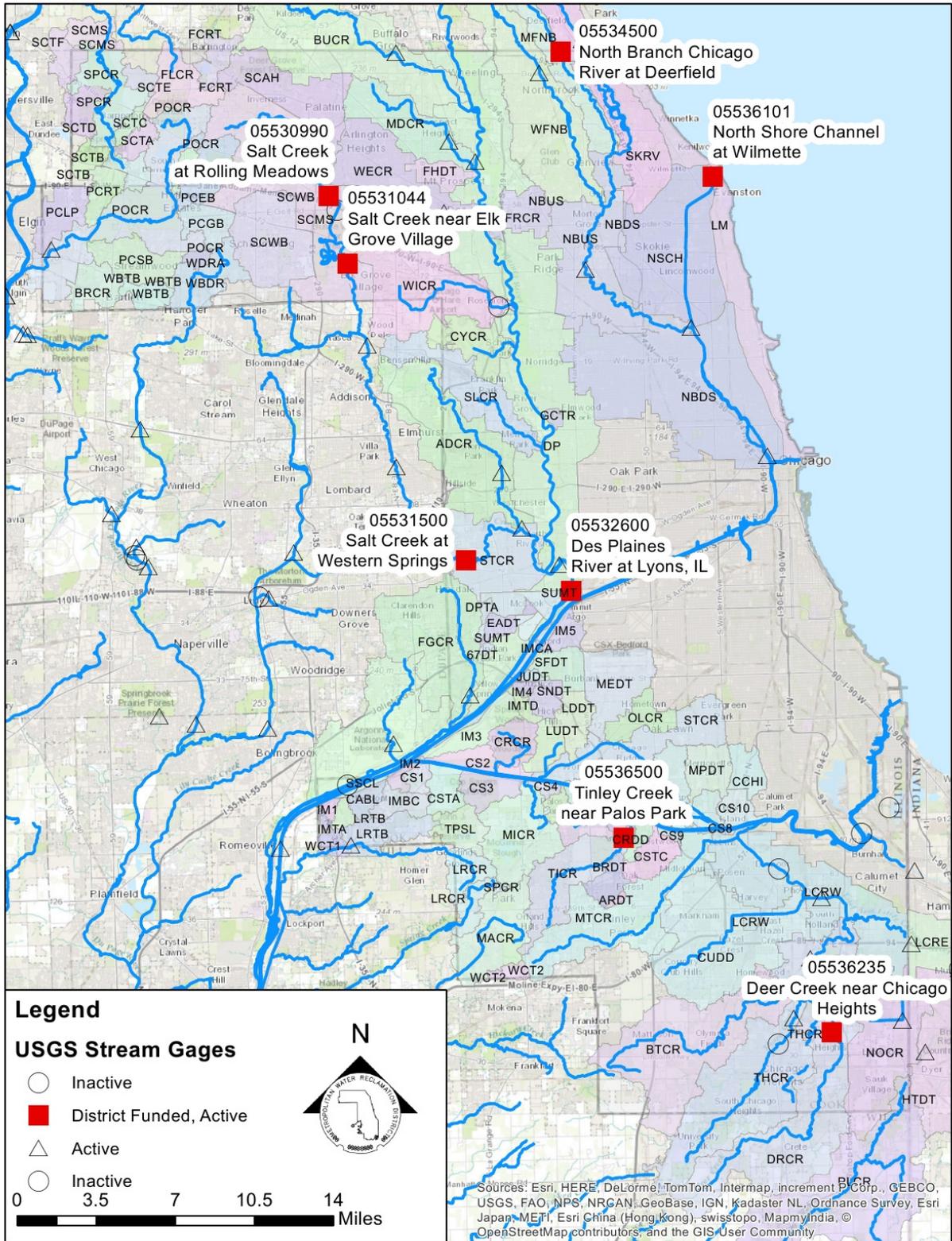
Cost: \$4,175,771  
MWRD Funding: \$2,272,731  
Duration: 180  
Location: Franklin Park  
Channel Improvements on Silver Creek from Riverside  
Description: Drive to Scott Street. Village is responsible for the  
design, construction, operation, and maintenance.  
Completed: 12/1/16

Contract: 15-IGA-06 (Reservoir)

Construction

Cost: \$2,736,750  
MWRD Funding: \$1,125,000  
Duration: 150  
Location: Elk Grove Village  
Replace the fixed concrete weir with a pair of hinged gates  
that can be raised and lowered in order to keep the reservoir  
at its normal water surface elevation until outflow reaches a  
Description: critical value downstream of Salt Creek.  
Completed: 2/15/16

# Appendix D - MWRD and USGS Joint Funded Stream Gages



## Appendix E – Committed Expenditures

Category	Description	2016 Committed Expenditures
<b>Personal Services: Consultants</b>	<b>Fees paid to consultants for professional services rendered, including the following projects:</b>	<b>\$ 4,018,868</b>
	Preliminary Engineering	\$ 3,556,430
	Final Engineering	\$ 447,140
	Post Award	5,298
<b>Personal Services: In-House</b>	<b>Salaries and associated costs related to MWRD personnel:</b>	<b>\$ 6,090,353</b>
<b>Contractual Services</b>	<b>Fees paid for services provided by COGs, agencies or companies, including the following:</b>	<b>\$ 19,535,210</b>
	COGs Administrative Contracts:	\$ 79,911
	Small Streams Maintenance Program	\$ 6,629,123
	Small Streams Maintenance Program Waste Disposal	\$ 33,920
	Court Reporting Services	\$ 8,191
	USGS Joint Funding Agreement for Stream Gauging Stations in Cook County	\$ 114,297
	Streetscape and Sustainability Design Program	\$ 0
	Flood Control Facility Land Acquisition and Appraisals	\$ 0
	Waterways Facilities Structures (Construction)	\$ 6,947,540
	Repairs to Collection Facilities	\$ 0
	Permit Review	\$ 66,567
	IGAs	\$ 2,354,982
	Equity Transfer to B&I Fund	\$ 3,272,650
	Payments for Easements	\$ 1,710
	Miscellaneous Contractual Services	\$ 26,319
<b>Administrative Expenses</b>	<b>Materials, equipment, supplies:</b>	<b>\$ 6,582</b>
	<b>Total 2015 Committed Expenditures</b>	<b>\$ 29,651,013</b>

## Appendix F - 2016 Stormwater Management Related Press Releases

Jan. 7	New Report: Clean Water Projects Employed 19,443 In 2014; Chicago Federation of Labor, Sierra Club Present Findings at MWRD Board Meeting “A Flowing Economy” Details Clean Water Benefits to Workers & Regional Economy
Feb. 4	Construction Industry Service Organization awards MWRD
Feb. 11	MWRD tax reduction saves Cook County property owners money
Feb. 17	MWRD to host two meetings in Northbrook to discuss flooding study
Mar. 7	Student Congress inspires future protection of Chicago River
Mar. 17	Thornton Composite Reservoir to receive Project of the Year award from American Public Works Association
Mar. 24	Innovation of traditional technology sparks MWRD to channel cleaner Chicago waterways
Mar. 30	Floodlothers, Midlothian representatives, CNT visit MWRD Board of Commissioners to support stormwater project
Apr. 11	Collaboration for green schools earns Space to Grow national award
Apr. 22	MWRD hosts stormwater expo as part of flooding study in southwest suburbs
Apr. 27	NOAA’s Chief Scientist to Speak at Great Water Cities: Rainfall to Results in Action
Apr. 28	Preventing flooding through new partnerships explored during MWRD’s annual visit to the Illinois General Assembly
Apr. 29	MWRD’s Thornton Composite Reservoir bestowed with national recognition
May 23	Mayor Emanuel, President Mariyana Spyropoulos Help Break Ground For Albany Park Stormwater Diversion Tunnel
May 27	Flood relief from MWRD to help shelter Niles from storms
May 31	Chicago Wilderness milestone earns MWRD distinction
July 12	Surpassing 10,000 milestone in tree distribution, MWRD working to restore canopy
July 25	Storm Summary July 24, 2016
Aug. 30	Center for Neighborhood Technology, community advocate and MWRD partner, ensures homes are rain ready
Sept. 12	Space to Grow partners win national Green Infrastructure Award
Sept. 23	Growing MWRD tree program shelters region from storms
Sept. 29	Congressman Mike Quigley receives federal commitment to expedite MWRD’s McCook Reservoir
Oct. 14	MWRD's 4th Annual Sustainability Summit honors green landscaping, biosolids users

- Oct. 31 MWRD receives Chicago Region Trees Initiative award
- Nov. 7 MWRD and Northbrook unveil unique stormwater facility to prevent flooding and protect area homes
- Nov. 8 Space to Grow transforms campuses at three Chicago Public Schools
- Nov. 15 Northbrook and MWRD unveil unique park facility to prevent flooding
- Dec. 6 President's Annual Message 2016
- Dec. 21 President Obama signs Water Infrastructure Improvements for the Nation (WIIN) Act to support MWRD's McCook Reservoir
- Dec. 22 Comments accepted through March 31, 2017 on MWRD's watershed management ordinance