Before

After

National Pollutant Discharge Elimination System Permits Consent Decree

2016 Annual Report

Metropolitan Water Reclamation District of Greater Chicago
This report is being submitted to comply with the District’s Consent Decree entered on January 6, 2014. Per the Consent Decree, this required Annual Report is for calendar year 2016 and is due March 31, 2017.

Per Section XII.44.a of the District’s Consent Decree, this pre-TARP completion annual report transmits the following information:

1. Status of Design and Construction Activities (Consent Decree Section V) and Reservoir Mining Progress for Thornton Composite and McCook Reservoirs.
2. Combined Sewer Overflow (CSO) Quarterly Discharge Reports submitted to the Illinois Environmental Protection Agency (IEPA) for calendar year 2016.
4. Record of Floatable Control Activities (Consent Decree Paragraph 18 and Appendix B).
5. Green Infrastructure (GI) Activities (Consent Decree Section V of Appendix E).

This Annual Report for calendar year 2016 is intended to demonstrate satisfactory compliance with the Annual Reporting obligation of the District per the Consent Decree entered on January 6, 2014.

In addition to the above, the District would like to note that it is in compliance with Section II, Paragraph 5 of the Consent Decree, which requires the District to transmit copies of the Consent Decree to its officers, employees, and agents, as well as to CSO municipalities and its contractors. Letters were transmitted to all of the parties and a copy of the Consent Decree has been posted on the District’s website. Language regarding the Consent Decree continues to be included in all contracts where the required work may impact the ability of the District to comply with the terms and conditions of the Consent Decree.

Also, as required in Section V of the Consent Decree, the District remitted the civil penalty to both the IEPA and USEPA within 30 days from the date the Court entered the Consent Decree.
An aerial view of McCook Reservoir from June 2016 with the Chicago skyline visible in the distance. Two waterways that will be protected by the reservoir, the Des Plaines River (left) and Chicago Sanitary and Ship Canal (right), flow on either side of it.
This report provides an update on the progress of the McCook and Thornton Composite Reservoirs as required in the Consent Decree paragraphs 21 and 44.

McCook Reservoir

The District owns the land for the McCook Reservoir, which is being built within the Lelandale Avenue Solids Management Area (LASMA). A Project Cooperation Agreement (PCA) with the US Army Corps of Engineers (Corps) to construct, operate, and maintain the reservoir was signed on May 10, 1999. Under the PCA, the Corps is responsible for designing and constructing the reservoir features, and the District is responsible for mining the land necessary for constructing the reservoir.

WILLOW SPRINGS BERM (96-169-2P): Approximately 300,000 cubic yards of reservoir overburden was hauled off site in a test project and placed as a berm along the reservoir footprint.

SITE PREPARATION (73-161-BH): Sludge lines that cut through the reservoir footprint were relocated, and earthwork was performed to drain the reservoir footprint to facilitate future work. This work commenced in July, 1999 and was the start of construction work for the McCook Reservoir.

73RD STREET TUNNEL Realocation (97-156-2P): The existing 73rd Street TARP Tunnel was relocated to cut through the future reservoir footprint. This work was completed in June 2015.

CONVEYANCE TUNNEL (73-161-AH): This tunnel was constructed to convey LASMA to Vulcan’s McCook Quarry and is used to transport the crushed rock to the processing plant.

STAGES 1 AND 2 OVERBURDEN REMOVAL (73-161-CH): Approximately 7.5 million cubic yards of overburden was removed from the footprint of the original Stage 1 and 2 McCook Reservoir sites to expose the top of rock for mining.

MISCELLANEOUS OVERBURDEN REMOVAL (73-161-JH): An additional 450,000 cubic yards of overburden was removed from the site under this contract.

EXPANDED STAGE 2 OVERBURDEN REMOVAL (73-161-DH): The remaining 1.8 million cubic yards of overburden overlying the rock in the expanded Stage 2 portion of the reservoir was removed in 2015, fulfilling the District’s obligations from Paragraph 17.a. of the Consent Decree, which required that the Stage 1 mining be completed by December 31, 2015.

VULCAN CONVEYANCE SYSTEM AND MAINTENANCE FACILITIES (73-161-FH): Mining facilities were constructed to crush and transport the rock from the reservoir site to the existing Vulcan Quarry. The contract included construction of the conveyance system, the office and maintenance buildings, installation of a rock crusher, relocation of the LASMA access road and sludge lines, and miscellaneous site work (access ramp, parking area, site lighting). The crusher was purchased separately in advance due to the long lead time.

VULCAN MINING EQUIPMENT (73-161-GH AND 73-161-IH): A fleet of mining trucks and other mining equipment were procured to facilitate mining of the reservoir.

MINING (73-161-CH): The District entered into an agreement with Vulcan on October 1, 2003, to mine the rock to create the storage capacity required for the original two-stage reservoir. Terms of the Agreement require Vulcan to mine at the same production rates they would have achieved at the existing quarry to meet the market demand.

MISCELLANEOUS REPAIRS (73-161-KH): Corroded equipment in the distribution system was replaced. Two additional 330 cubic feet per second pumps were installed at the Mainstream Pumping Station to provide adequate pumping capacity to dewater the reservoir to the Stickney Water Reclamation Plant.

Based on the performance of the test grout curtain, a grout curtain was constructed around the north and west sides of the reservoir perimeter to create a full hydraulic barrier between the reservoir rock walls and surrounding groundwater.

STAGE 1 ROCKWALL STABILITY CONTRACTS: As the final vertical rock faces of the reservoir are exposed, scaling, rock bolting, or other ground support will be installed to make the permanent walls stable.

STAGE 2 OVERBURDEN RetAINING WALL: A retaining wall was constructed in several areas to hold back the overburden and allow the footprint of the reservoir to be mined.

STAGE 2 MISCELLANEOUS FLOOR FEATURES: Drainage improvements to the reservoir floor and reservoir aeration provisions will be provided after the mining is completed. Two tunnels will be constructed through the weir to allow water to pass between Stages 1 and 2.

Corps Work

The following projects have been completed or are being pursued by the Corps for the Stage 1 McCook Reservoir:

TEST GROUT CURTAIN: A test grout curtain was constructed along 400 linear feet of the reservoir perimeter to test the effectiveness of a grout curtain to prevent polluted water in the reservoir from migrating into the ground water.

STAGE 1 GROUT CURTAIN: Based on the performance of the test grout curtain, a grout curtain was constructed around the north and west sides of the reservoir perimeter to create a full hydraulic barrier between the reservoir rock walls and surrounding groundwater.

STAGE 1 GROUNDWATER CUTOFF WALL: A bentonite slurry wall was constructed through the overburden, around the perimeter of Stage 1 of the reservoir, to prevent migration of groundwater into the reservoir.

Addition of Pumps and Motors: Two additional 330 cubic feet per second pumps were installed at the Mainstream Pumping Station to provide adequate pumping capacity to dewater the reservoir to the Stickney Water Reclamation Plant.

Distribution Tunnel System: Tunnels and an underground control chamber were installed to connect the future reservoir to the Mainstream Pumping Station.

Distribution Tunnels Emergency Work: Due to excessive infiltration in the new distribution chamber from the distribution tunnels, emergency leakage investigation and repair work was completed.

Two additional 330 cubic feet per second pumps were installed at the Mainstream Pumping Station to provide adequate pumping capacity to dewater the reservoir to the Stickney Water Reclamation Plant.

STAGE 1 ROCKWALL Stability CONTRACTS: As the final vertical rock faces of the reservoir are exposed, scaling, rock bolting, or other ground support will be installed to make the permanent walls stable.

STAGE 2 OVERBURDEN RetAINING WALL: A retaining wall was constructed in several areas to hold back the overburden and allow the footprint of the reservoir to be mined.

STAGE 2 MISCELLANEOUS FLOOR FEATURES: Drainage improvements to the reservoir floor and reservoir aeration provisions will be provided after the mining is completed. Two tunnels will be constructed through the weir to allow water to pass between Stages 1 and 2.

STAGE 1A AND 1B ROCKWALL STABILITY CONTRACTS: As the final vertical rock faces of the reservoir are exposed, scaling, rock bolting, and other ground support is installed as required to make the permanent walls stable. This work was completed under two separate contracts for Stage 1 of the reservoir.

STAGE 1 OVERBURDEN RetAINING WALL: Retaining walls were constructed in several areas of Stage 1 where the top of rock is lower than expected, in order to allow the footprint of the reservoir to be mined due to topographic constraints. The District did part of this work. This work is completed.

Main Tunnels and Gates: The Main tunnel will be connected to the reservoir by a new set of tunnels and control gates. This work was split among three contracts: one to excavate the main tunnel, and the third to complete the tunnels and install the gates in the shaft. The fabrication of the gates and the main shaft excavation are completed, and the third contract to complete the tunnels and install the gates is underway with completion expected in 2017.

Final Reservoir Prep: Final connection to the reservoir will be made, including completion of the Distribution Tunnel and Outlet Structure. Floor drainage, reservoir aeration, ramps, roads, and other miscellaneous work will be completed under this contract which was awarded in 2015 and is scheduled for completion in 2017.

Instrumentation and groundwater monitoring wells: Groundwater monitoring wells, piezometers, instruments, and other instrumentation will be provided to monitor the reservoir under several different contracts. The groundwater monitoring wells and instrumentation for Stage 1 have been installed and are now functioning.

Engineers inspect a portion of the completed McCook Connecting Tunnel, which will connect McCook Reservoir to the existing Mainstream TARP Tunnel.
The Thornton Composite Reservoir currently provides 7.9 billion gallons of storage for combined sewage from the Calumet TARP Service Area. In the future, flood waters from Thorn Creek will also be diverted to the Thornton Composite Reservoir when the Thornton Transitional Reservoir is decommissioned. Design and construction of the Thornton Composite Reservoir was planned to be a joint venture between the Corps and the District. However, due to uncertainties in federal funding that threatened to deprive the Corps of appropriations sufficient to work on both the McCook and Thornton projects simultaneously, the District committed to proceed with the Corps work on the Thornton Composite Reservoir using the District’s own resources in 2004 at a total cost of approximately $420 million. The following projects were completed as part of construction of Thornton Composite Reservoir:

VINCENNES AVENUE RELOCATION (77-235-AF): Approximately 2,500 feet of roadway that cut through the footprint of the reservoir was relocated in order to provide the required storage volume.

THORNTON TRANSITIONAL RESERVOIR (77-235-BF): This temporary reservoir was constructed to provide floodwater storage for Thorn Creek while the Thornton Composite Reservoir was being constructed. At the end of 2020, the Thorn Creek flood water will be rerouted to the composite reservoir and the transitional reservoir will be decommissioned and turned back over to the quarry. At that time, the reservoir volume allocated for capturing CSOs will be 4.8 billion gallons while the remaining 3.1 billion gallons will be allocated for floodwater storage from Thorn Creek. Many of the facilities constructed for the transitional reservoir will be reused at the composite reservoir.

MINING (77-235-2F): The District entered into an agreement with Material Service Corporation (MSC) to purchase a portion of its existing rock quarry to be used for the reservoir. Under the agreement, MSC expanded their existing quarry to neighboring lands purchased by the District in order to achieve the required storage volume. Design for the Thornton Composite Reservoir was completed in 2013, in fulfillment of the requirements outlined in Paragraph 16.a. of the Consent Decree.

TOLLWAY DAM, GROUT CURTAIN AND QUARRY PLUGS (04-201-4F): The south side of the reservoir is a rock dam that separates the reservoir from the rest of the quarry and carries the I-80/294 Tollway. A large opening and two haul tunnels in this wall were plugged to hydraulically isolate the reservoir from the quarry. Also, as part of this contract, a grout curtain was constructed around the entire reservoir perimeter, creating a hydraulic barrier and providing stability to the rock dam. This contract was completed in 2015 as required in Paragraph 16.b. of the Consent Decree.

CONNECTING TUNNELS AND GATES (04-202-4F): The existing TARP tunnels were extended to connect to the reservoir. A large gate chamber was constructed to allow for isolation of the tunnels from the reservoir. This contract work was completed in 2015 as required in Paragraph 16.c. of the Consent Decree.

SURFACE AERATION (04-203-AF): Floating solar aerators were installed in the reservoir to mitigate odors that may come from the reservoir. This contract was completed in 2015. An additional thirteen floating solar aerators are currently being installed in the reservoir.

Final Reservoir Preparation (04-203-4F): All remaining items required for operation of the Thornton Composite Reservoir such as the future Thorn Creek tunnel connection, live connections to the existing Thorn Creek tunnel, creating a drainage conduit in the Thorn Creek tunnel, site landscaping and stabilization of the finished reservoir walls were completed under this contract in 2015, and the reservoir was placed in operation as required in Paragraph 16.d. of the Consent Decree.

The Thornton Composite Reservoir officially became operational January 1, 2016, although it took water for the first time on November 26 and 27, 2015, before the gates were operational. Since that time and throughout the duration of 2016, the reservoir captured a total of 4.5 BGS of combined sewage during 15 storms events. A table showing the dates and respective volumes captured by the Thornton Composite Reservoir is provided on the enclosed CD. During 2016, there was only one CSO from the Calumet TARP System; this occurred on August 20, 2016 at C1 and CDS-45 on the Little Calumet Leg. The storm on that day resulted in an average rainfall over the south area in the amount of 1.24 inches; however, the capacity of the TARP System had not been exceeded. Subsequent investigations revealed that the weir elevation at these locations was too low, resulting in a CSO. Once this problem was discovered, the District made an adjustment to the weir elevations to prevent future discharges.
Combined Sewer Overflow Quarterly Discharge Reports submitted to the IEPA for Calendar Year 2016

A group of canoers on the North Branch of the Chicago River in the summer of 2016.
CSO Monitoring

The District utilizes its approved CSO Representative Monitoring and Reporting Plans for the North, Central, and South Areas to track the frequency, duration, and volume of individual CSOs within the Des Plaines River and Chicago Area Waterway System (Plans on the enclosed CD). In summary, the District monitors 221 (28 permitted to the District; 193 permitted to the City of Chicago and Suburbs) of the 394 (39 permitted to the District; 355 permitted to the City of Chicago and Suburbs) total outfalls within its service area. Most of the monitored outfalls have tide gates with telemetry; however, there are six monitored outfall locations permitted to the District that are pump stations. Unmonitored outfalls are assumed to discharge when select monitored ones discharge because of similar invert elevations. Signals are transmitted to the Stickney and Calumet Water Reclamation Plants (WRPs) when the outfall tide gate is open and assumed to be discharging. Plant staff are notified when the pumps are activated at the six pump stations. Volume estimates at six pump station locations are based on pump ratings and run times while volume estimates at the other outfall locations are performed via a conservative method which assumes that all rainfall that falls during the period that a tide gate is open is being discharged to the waterway. These discharge volumes are then compared to two boundary conditions: (1) total area rainfall volume and (2) outfall pipe capacity. The minimum of these three values are used as the final discharge volumes.

CSO Quarterly Discharge Reports submitted to the IEPA for calendar year 2016 are on the enclosed CD.
2016 Water Quality Data for Waterway Systems within the District’s Jurisdiction
The District conducts Ambient Water Quality Monitoring (AWQM) and Continuous Dissolved Oxygen Monitoring (CDOM) on the Chicago Area Waterway System (CAWS).

In 2016, AWQM was conducted monthly at fifteen locations (weekly at Lockport) on the CAWS in accordance with the attached Quality Assurance Project Plan (See Appendix A on the enclosed CD). A spreadsheet containing the water quality data generated from this monitoring is submitted as Attachment 1 on the enclosed CD.

The CAWS Use Attainability Analysis (PCB Rulemaking R08-009) resulted in more stringent water quality standards for the CAWS, effective July 1, 2015, based on new CAWS A and CAWS B Aquatic Life Use designations. The CAWS exhibited high compliance with water quality standards. Of the parameters analyzed that had applicable water quality standards, only dissolved oxygen (DO), fecal coliform, and low-level mercury (human health criteria) were exceeded more than once at any station.

In 2016, CDOM was conducted at fifteen locations on the CAWS in accordance with the attached Quality Assurance Project Plan (See Appendix B on the enclosed CD). A spreadsheet containing the hourly dissolved oxygen data generated from this monitoring is submitted as Attachment 2 on the enclosed CD.

The District submitted a petition for variance related to the more stringent DO water quality standards for the CAWS, resulting in a stay of the DO standards that would otherwise have been effective July 1, 2015. As such, most CAWS waterways were subject to the Secondary Contact and Indigenous Aquatic Life Use DO water quality standard of 4.0 mg/L, with the exception of the Cal-Sag Channel, which had a DO standard of 3.0 mg/L, anytime, and the Chicago River, which was subject to General Use Standards. The DO concentration was greater than the applicable water quality standard over 95 percent of the time on an annual basis at 9 out of 15 stations on the CAWS.

A draft of the Calumet TARP System Post Construction Monitoring Plan was submitted to the required agencies on November 7, 2014 in accordance with Section IX, paragraph 35a of the Consent Decree. Discussions regarding the plan continued in 2016 and a revised plan was submitted to the required agencies on September 30, 2016 (copy on enclosed CD). This plan was approved by the USEPA in a letter dated October 7, 2016 (copy on enclosed CD). The sampling and monitoring required in this plan will occur during 2017 and 2018, with the final report scheduled for submission by June 30, 2019.

“CSO monitoring reports and other CSO-related reports submitted to Illinois EPA including, but not limited to, all documentation of water quality data for the waterway systems within MWRD’s jurisdiction, as required by the Calumet, North Side, and Stickney NPDES Permits.” (44(a)(iii))
Record of Floatable Control Activities

Floating debris in the sights of the MWRD’s Skimmy Dipper skimmer boat on the Main Stem of the Chicago River.
The following is a record of floatable control activities undertaken pursuant to the Consent Decree Paragraph 18 and Appendix B:

**Dates of purchase and commencement of operations of each skimmer boat:**
- The two skimmer boats were procured under Contract 13-611-21, “Furnish and Deliver Trash Collection Boats to the Stickney Water Reclamation Plant.” The boats were delivered on January 2, 2015 and commenced operations on April 6, 2015. These boats continued operations during 2016.

**The dates on which each skimmer boat, pontoon boat, or other piece of equipment was operated:**
- A spreadsheet on the enclosed CD, entitled Summary of 2016 Floatable Control Activities, is a summary of data collected for debris, skimmer and pontoon boat operations.
- Additionally, scanned copies of the log for each day a boat was in operation is also transmitted on the enclosed CD. (2016 Debris and Skimmer Boats Floatable Control Logs.pdf)

**Status of Combined Sewer Overflow Floatables Control in Addison Creek:**
- The final design of the floatables control boom is complete, and the District continues the process of obtaining the three necessary easements. The boom will be installed upon acquisition of the easements. The necessary permits from the regulatory authorities have been obtained. The following is the summary of activities:
  - In late September 2014, the District spoke to the Village of Broadview and the two private property owners regarding the proposed installation of the debris boom.
  - On November 14, 2014, the District received a Letter of No Objection (LONO) from the United States Army Corps of Engineers (USACE) (on the enclosed CD).
  - On January 8, 2015, the District Board adopted an ordinance establishing the right-of-way in the installation, operation, and maintenance of the containment boom.
  - On July 7, 2015, the District received Permit No. NE2015032 from the Illinois Department of Natural Resources (IDNR) (on the enclosed CD) authorizing the project.
  - On February 19, 2016, the District purchased the floatables control boom, which will be installed upon acquisition of all three easements (See copy of Purchase Order on CD).
  - It is expected that the District will obtain the two additional easements in the first half of 2017.
Daniel J. Corkery Elementary School students participate in a Space To Grow planting event, helping to transform the grounds of their school with native plants and green infrastructure.
The following is a report on Green Infrastructure activities undertaken pursuant to Consent Decree Section V of Appendix E:

**Introduction**

The Consent Decree required the District to submit a Green Infrastructure Program (GIPP) to the EPA and IEPA for approval within one year of the effective date. A Draft of the District’s GIPP was submitted to the EPA and IEPA on December 23, 2014 and ultimately approved on October 7, 2015. (See Green Infrastructure Program) Going forward, the Consent Decree (Appendix E, Section VI), requires the District to include Green Infrastructure reporting in its Annual Report.

**2016 Rain Barrel Program Annual Report (Appendix E.IIA)**

**Enhanced Rain Barrel Program**

In May 2015, the District revised and expanded the rain barrel distribution program that offered free rain barrels to Cook County residents and organizations to increase the number of barrels disseminated. (See revised Rain Barrel Policy Program on the enclosed CD.) The District delivered free rain barrels through three distribution networks: municipalities; campus-type facilities; and non-government organizations, planning groups, or community groups. This free program continued through 2016 and ended on November 31, 2016.

To participate in this free program, municipalities were required to sign an intergovernmental agreement (IGA) with the District. Once registered residents living in those municipalities were able to order up to four 55-gallon rain barrels per address. The District offered a black, cotta-coated and gray and were delivered directly to residents’ homes in 2016. 88 municipalities were enrolled as partners. (See complete list of participating and a summary of benefits on the enclosed CD.) The District also provided free rain barrels to campus-type facilities that committed to being a community partner and good steward of stormwater. These types of facilities included: schools, municipal properties (e.g. town halls, libraries, parks, parking garages, and outbuildings), churches, community centers, senior centers, hospitals and clinics. The facility representatives were able to request rain barrels by contacting the District and including information about the location of where the rain barrels would be installed.

Non-government organizations (NGO), planning groups, or community groups throughout Cook County also had access to the District’s Rain Barrel Program by signing a Memorandum of Understanding. These entities were required to submit a detailed plan describing how they would distribute barrels and provide an educational outreach component regarding how to use rain barrels. In 2016, 23 NGO partners were enrolled in the rain barrel distribution program. (See template for an NGO/Community Rain Barrel Agreement on the enclosed CD.)

For Cook County residents who did not have access to the District’s free rain barrel program, the District sold and delivered barrels for $47 each via mail order.

**Marketing Activities**

The District vigorously marketed rain barrels through multiple channels in 2016. (See list of all media mentions on the enclosed CD.)

Our marketing materials introduced rain barrels to those unfamiliar with them and emphasized their utility in preventing flooding and improving water quality. The marketing efforts also counseled common barriers to acceptance of rain barrels: to address concerns about the difficulty of installation, simple installation instructions were included in every barrel and a link to an installation video developed by the District in partnership with Openlands (a non-for-profit organization that unites people and resources around the goal of land and water protection) was available with an easy to follow demonstration; concerns that rain barrels would have a negative impact on the appearance of a property were countered by using rain barrels in beautiful landscapes. The District entitled the help of municipalities participating in the enhanced rain barrel program to help market them to their residents.

**Publications**

The District updated and printed a rain barrel brochure that municipalities participating in the enhanced rain barrel program could use in their communities. (See Long Rain Barrel Brochure on the enclosed CD.) In addition to the marketing messages described above, the brochure provided specific details for ordering. The District customized those brochures for each participating municipality with the municipal logo and specific order instructions unique to each municipality. 5,000 brochures were produced for 15 participating municipalities in 2016. 1,000 brochures were produced for 15 participating municipalities in 2016. 16,000 brochures were produced for 15 participating municipalities in 2016. The District produced and distributed a version of this brochure to promote the rain barrels that are available from the District for $47. (See MWRD Rain Barrel Brochure on the enclosed CD.)

The District continued to print an installation, use and maintenance instructional guide for rain barrels which were distributed with our rain barrels and available at mwrd.org. (See MWRD Rain Barrel Instructions on the enclosed CD.)

**Social Media**

The District promoted rain barrels throughout the year via social media. In 2016, 33 organizations were enrolled in the rain barrel distribution program. (See template for an NGO/Community Rain Barrel Agreement on the enclosed CD.)

For Cook County residents who did not have access to the District’s free rain barrel program, the District sold and delivered barrels for $47 each via mail order.

**Early Monitoring, Evaluation & Knowledge Building (Appendix E.IIB)**

The Consent Decree also required the District to implement one or more GI projects and dedicate a minimum of $325,000 towards such projects prior to January 1, 2016, within one year of the effective date of the Consent Decree. The Enhanced Rain Barrel Program (ERB) was one of the projects (as described below, the District satisfied this requirement in 2014 through collaboration with the Chicago Public Schools (CPS), the City of Chicago Department of Transportation (CDOT), and the Chicago Department of Water Management (CDWM), Openlands, and CPS through the Historic Chicago Bungalow Association for the highest number of rain barrels (12,000+) distributed in 2016, and we also held neighborhood events around the goal of land and water protection) was available with Openlands (a not-for-profit organization that unites people and resources around the goal of land and water protection) was available with Openlands (a not-for-profit organization that unites people and resources around the goal of land and water protection) was available with Openlands (a not-for-profit organization that unites people and resources around the goal of land and water protection) was available with Openlands (a not-for-profit organization that unites people and resources around the goal of land and water protection) was available with Openlands (a not-for-profit organization that unites people and resources around the goal of land and water protection) was available with Openlands (a not-for-profit organization that unites people and resources around the goal of land and water protection) was available with Openlands (a not-for-profit organization that unites people and resources around the goal of land and water protection) was available with Openlands (a not-for-profit organization that unites people and resources around the goal of land and water protection) was available with Openlands (a not-for-profit organization that unites people and resources around the goal of land and water protection) was available with Openlands (a not-for-profit organization that unites people and resources around the goal of land and water protection) was available with Openlands (a not-for-profit organization that unites people and resources around the goal of land and water protection) was available with Openlands (a not-for-profit organization that unites people and resources around the goal of land and water protection) was available with Openlands (a not-for-profit organization that unites people and resources around the goal of land and water protection) was available with Openlands (a not-for-profit organization that unites people and resources around the goal of land and water protection) was available with Openlands (a not-for-profit organization that unites people and resources around the goal of land and water protection) was available with Openlands (a not-for-profit organization that unites people and resources around the goal of land and water protection) was available with Openlands (a not-for-profit organization that unites people and resources around the goal of land and water protection) was available with Openlands (a not-for-profit organization that unites people and resources around the goal of land and water protection) was available with Openlands (a not-for-profit organization that unites people and resources around the goal of land and water protection) was available with Openlands (a not-for-profit organization that unites people and resources around the goal of land and water protection) was available with Openlands (a not-for-profit organization that unites people and resources around the goal of land and water protection) was available with Openlands (a not-for-profit organization that unites people and resources around the goal of land and water protection) was available with Openlands (a not-for-profit organization that unites people and resources around the goal of land and water protection) was available with Openlands (a not-for-profit organization that unites people and resources around the goal of land and water protection) was available with Openlands (a not-for-profit organization that unites people and resources around the goal of land and water protection) was available with

**Phase I Space to Grow Program – Financial Partnership between the District, CPS & DWM**

Space to Grow is an innovative public-private partnership with a mission of transforming Chicago’s public schools into green infrastructure learning labs. These learning labs are designed to prevent flooding and water pollution via rainfall-capturing green infrastructure features such as permeable surfaces, native plants and rain gardens.

The program is co-managed by the Healthy Schools Campaign and Openlands with capital funding, leadership and expertise from the District, CPS and the DWM. The District also provides technical support for green infrastructure elements to ensure that the new schools provide optimal stormwater capture benefits.

Each Space to Grow schoolyard is unique, and the architectural landscape designs incorporate input from neighborhood residents, students, families, staff and faculty. Prior to renovations, many of the schoolyards were little more than asphalt parking lots with aging, or in many cases a lack of, rain gardens.

In 2016, the press releases detailed various green initiatives and commitments that were undertaken. The press release highlighted an award that was given to a local NGO for most rain barrels distributed. (See complete list of press releases on the enclosed CD.)

**Outreach Events and Rain Barrel Drawings**

The District heavily promoted rain barrels at public outreach events by tying in a rain barrel to the theme of the event. For example, in 2016, event attendees were required to fill out a “Water Environment Pledge” detailing water conservation actions. One hundred thirteen rain barrels were distributed at each event. The District also advertised at events (see list of outreach events on the enclosed CD.) These outreach efforts were established to educate the public on the value of rain barrels and other green infrastructure for the pursuit of water quality improvements and flooding solutions. The benefits of rain barrels were also marketed through the Space to Grow program, which works to transform Chicago Public Schools’ playgrounds into vibrant outdoor spaces that better absorb rain water. For more information on this program, please see the Green Infrastructure Section of this document. At our Fourth Annual Sustainability Summit (see press release on enclosed CD), we presented an award to the Historic Chicago Bungalow Association for the highest number of rain barrels (12,000+) distributed in 2016, and we also held neighborhood events on December 31, 2016.

**Potential Voluntary use**

Rain barrels distributed through December 31, 2016 were properly utilized during the entire year, the volume of rainwater kept out of the sewer system in 2016 would be 447,448,320 gallons. 123,264 free rain barrels × 55 gallons × 66 average annual days of rain = 447,448,320 gallons.

**Number of Barrels Distributed**

The District distributed 123,264 rain barrels in 2014, 39,758 barrels in 2015, and 92,981 barrels in 2016, for a total of 123,264 free rain barrels. The cost to the District to provide the rain barrels in 2014, 2015, and 2016 was $17,458.00, $1,520,817.55, and $4,417,121.69, respectively.

**Technical Assistance**

The District provided free instruction on how to install a rain barrel with each order. As previously mentioned, we worked with Opalands to create a YouTube video that shows how to install a rain barrel (See video on the enclosed CD.)

**WATER ENVIRONMENT PLEDGE MAILING LIST**

The Consent Decree maintained an email list of potential donors. (See email address on the enclosed CD.) These individuals have a demonstrated interest in rain barrels and may be targeted in future marketing efforts. Over 1000 addresses were added to this database in 2016.
Gunsaulus Elementary Scholastic Academy students make use of their newly completed athletic field, one component of the transformation of the school’s grounds under the Space To Grow program.

The Space to Grow program continues to be recognized by numerous awards, including:
- The 2014 Silver Ribbon Award, Friends of the Chicago River
- The 2015 Active Design Excellence Award, Honorable Mention: This was the only submission from Chicago to be recognized this year. Fellow award recipients span the globe.
- The 2015 New Champions Award from the National Physical Activity Plan Alliance (NPAPA).
- The 2015 Sustainability Award from the Illinois Association for Floodplain and Stormwater Management (IAFSM), which recognizes excellence in stormwater management across the state of Illinois.
- Top 10 Finalist for the 2015 Chicago Innovation Awards.
- Best of Green Schools 2016 – Collaborator, Green Schools National Network.
- First Place - Large Population Green Infrastructure, 2016, National Association of Flood and Stormwater Management Agencies (NAFSMA).
- The 2016 Special Achievement Award to Primera Engineers, Ltd. for Morrill Elementary - American Council of Engineering Companies (ACEC) of Illinois.

The District is proud to be a part of the Space to Grow program as it successfully brings communities together, enhances the educational experience for children throughout Chicago, connects people to nature and encourages physical activity while reducing the risk of flooding and water pollution. This program is highlighted in the report, Green Schoolyards: A Growing Movement Supporting Health, Education and Connection with Nature (See enclosed CD).

**Green Infrastructure Program (Appendix E)**

**Phase II Space to Grow Program – Partnership between the District, CPS & DWM**

Given the success of the Phase I Space to Grow Program, the District’s Board of Commissioners authorized expansion of the program to fund GI at up to thirty schools, which started in 2015, through 2020, with a total investment by the District of approximately $15 million. These projects will not only address localized flooding but will also serve to educate students, parents, and school staff about the benefits of GI. The District will also invest up to $1,000,000 to fund project design at ten schools.

In 2015, plans and specifications were prepared for six schools and construction completed for two schools: Willa Cather (Cather) Elementary School, located at 2908 W. Washington Boulevard, and the Orozco Fine Arts and Sciences (Orozco) Elementary School, located at 1940 W. 18th Street. Both of these elementary schools are located in low income neighborhoods in the City. The combined DRC for these two schools is an estimated 364,504 gallons per rain event. The District contributed a total of $898,477.66 for the work at Cather and Orozco.

In 2016, Space to Grow projects were completed at three additional schools, also located in low-income neighborhoods: Daniel J. Corkery Elementary School, located at 2510 S. Kildare Avenue; Frank W. Gunsaulus Elementary Scholastic Academy, located at 4420 S. Sacramento Avenue, and the James Wadsworth Elementary School, located at 6650 S. Ellis Avenue. The District will contribute almost $1,500,000 towards the work at these three schools, which will provide a combined DRC of 388,648 gallons per rain event.
Item 5

In 2016, the total DRC installed at CPS, the District-sponsored projects at Northbrook and Kenilworth, and due to the requirements of the WMO was $1,871,401 gallons.

The District’s WMO requires GI for new development and redevelopment projects. As can be seen in the table below, the WMO’s GI requirements will lead to the eventual installation of nearly 20 million gallons of DRC through 2020. This number will continue to grow significantly in future years. The District’s permit reviewers provide input to design consultants to monitor the use and progress during the permitting process.

2014 2015 2016

Total DRC (Gallons) Permitted 248,950 276,845 614,309 Total DRC (Gallons) Installed 248,950 605,169 1,836,159

Cumulative Total 19,941,007

The District intends to use the GI Authority Fund to further GI projects. The District’s budget, which includes the GI Authority, is being driven by the dedicated funding through the GI Authority Fund, which will allow the District to continue to develop innovative ways to harvest and reuse stormwater.

The District continues to pursue additional projects that will exceed the goals set in the WMO. These goals include repurposing existing buildings, streets, and parks into green infrastructure, as well as creating new parks and pedestrian access to public transportation systems. The District is also committed to exploring innovative ways to harvest and reuse stormwater, which will help to reduce the impact of stormwater on the environment and improve the quality of life for residents. The District is committed to continuing its efforts to reduce the impact of stormwater and improve the quality of life for residents.

In 2016, the District constructed additional GI projects that conform to the criteria established in the GI District’s WMO. Numerous public hearings were held on the WMO in order to receive input from the public and ensure that the GI projects were developed in a way that was beneficial to the community.

The District initiated a buyout program for properties in Glenview and Skokie resulting in a purchase of 17 homes that were subsequently demolished and restored to open space. These 17 properties were developed by the Glenview and Skokie Community Development Authority, which has an estimated DRC of $1,871,401 gallons.

The District is committed to continuing its efforts to reduce the impact of stormwater and improve the quality of life for residents. The District is committed to exploring innovative ways to harvest and reuse stormwater, which will help to reduce the impact of stormwater on the environment and improve the quality of life for residents. The District is committed to continuing its efforts to reduce the impact of stormwater and improve the quality of life for residents.
Green Infrastructure Comprehensive Land Use Policy (Appendix E.II.C)

As part of the GI Plan, the District has also developed a Comprehensive Land Use Policy. The District's Comprehensive Land Use Policy was approved by the District's Board of Commissioners on August 6, 2015 and approved by the USEPA on October 7, 2015 (see Appendix B of the GIP on the enclosed CD). The Comprehensive Land Use Policy requires public entities leasing property at a nominal fee from the District to provide GI based on the size of the leasehold and the desired use. For any new/renewed lease, the public lessee must now pay for and include GI on its leasehold. Private entities leasing District land are provided incentives to implement and maintain GI for development projects based on the size and type of use of the property. Private entities installing GI will receive a credit equal to $0.50 on the $1.00 up to 10% of the leasehold cost, capped at 10 years, for GI improvements in excess of WMO requirements. The District will seek credit towards the DRC requirements outlined in Section III of this plan for any GI installed by leaseholders of District property due to GI installed as a result of the requirements of the Comprehensive Land Use Policy. Additionally, the District is in the process of implementing a Geographical Information System (GIS), allowing it, among other things, to input and track the type of GI on its various leaseholds as well as such information as GI stormwater capture rate. In 2016, one lease was issued under this policy. The lessee, the Chicago Park District, will install greenways on a parcel of the District’s land that will provide a Design Retention Capacity (DRC) of 14,293 gallons, which is greater than the 9,005 gallons required under the terms of the lease.

Green Infrastructure Project Log (Appendix E.III)

<table>
<thead>
<tr>
<th>Year</th>
<th>School Name</th>
<th>Project Type</th>
<th>Location</th>
<th>Design Retention Capacity</th>
<th>Total Retention</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>CPS Schools</td>
<td>Rain Gardens, Permeable Surfaces, Bioswales</td>
<td>Village of Northbrook</td>
<td>162,506 gallons</td>
<td>1,422,715 gallons</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Village of Kenilworth</td>
<td>1,276,827 gallons</td>
<td></td>
</tr>
<tr>
<td>2016</td>
<td>2016 Log of Green Infrastructure Capture Volume</td>
<td>Watershed Management Ordinance Permits</td>
<td>Soil Permeability Construction Complete</td>
<td>6,094,478 gallons</td>
<td></td>
</tr>
</tbody>
</table>

2016 Log of Green Infrastructure Capture Volume

GI Permitted Construction Complete

<table>
<thead>
<tr>
<th>CPS School Retention</th>
<th>District Partnership Projects</th>
<th>Total WWMD GI Permitted</th>
</tr>
</thead>
<tbody>
<tr>
<td>306,048 gallons</td>
<td>19,941,007 gallons</td>
<td>20,037,055 gallons</td>
</tr>
</tbody>
</table>

2016 Log of Green Infrastructure Capture Volume

<table>
<thead>
<tr>
<th>2016 District-Sponsored Projects</th>
<th>Project</th>
<th>Design Retention Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Village of Northbrook</td>
<td>162,506 gallons</td>
<td></td>
</tr>
<tr>
<td>Village of Kenilworth</td>
<td>1,276,827 gallons</td>
<td></td>
</tr>
<tr>
<td>Total Retention</td>
<td>1,422,715 gallons</td>
<td></td>
</tr>
</tbody>
</table>

Watershed Management Ordinance Permits

<table>
<thead>
<tr>
<th>996 WMO Permits Issued Requiring Green Infrastructure</th>
<th>Construction Status</th>
<th>Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil Permeability Construction Complete</td>
<td>6,094,478 gallons</td>
<td></td>
</tr>
</tbody>
</table>

CD Table of Contents

- Attachments for Item 1 - TARP Reservoirs
- Purchase Order Addendum Creek Control Boom.pdf
- List of Rain Barrel Program Participants.pdf
- Intergovernmental Rain Barrel Agreement.pdf
- 2016 MARD Rain Barrel Media Coverage.pdf
- Lansing Rain Barrel Brochure.pdf
- MWRD Rain Barrel Instructions.pdf
- Lansing Rain Barrel Brochure.pdf
- NGO/Community Rain Barrel Agreement.pdf
- Intergovernmental Rain Barrel Agreement.pdf
- MWRD Rain Barrel Media Coverage.pdf
- Lansing Rain Barrel Brochure.pdf
- MWRD Rain Barrel Instructions.pdf
- Rain Barrel Press Releases.pdf
- 2016 Rain Barrel Drawing Events.pdf
- Sustainability Summit Press Release.pdf
- 2016 Rain Barrel Outreach Events.pdf
- Rain Barrel Install Storyboard.pdf
- Green Schools sand Report.pdf
- Time-Lapse Video – Wadsworth Elementary Space to Grow Project.pdf
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Cover: The MWRD-funded Space to Grow program transformed the grounds of James Wadsworth Elementary School from an impervious asphalt lot with a small play structure to a new play yard including an athletic field, a running track, a basketball court, a playground with poured-in-place rubberized surface, a community kitchen garden area, native landscaping and green infrastructure technology capable of holding 133,393 gallons per rain event.