



Metropolitan Water Reclamation District of Greater Chicago

A UTILITY OF THE FUTURE

2022

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RECOVERING RESOURCES, TRANSFORMING WATER AND PROTECTING THE ENVIRONMENT



The Utility for the Future You Can Rely On Every Day

Since 1889, the Metropolitan Water Reclamation District of Greater Chicago (MWRD) has established an illustrious record of reliability and ingenuity in protecting public health, area waterways and the planet. That essential work took on new meaning during a global pandemic. Despite obstacles, our staff rose to the occasion to keep the water flowing, our water environment intact and services humming. We even discovered new ways to increase our resourcefulness during these unimagined times.

Throughout its history, the MWRD has made an indelible imprint on the Chicago area and the quality of life for all our residents. The MWRD established this reputation for unfaltering dependability and innovative leadership treating the region's wastewater, managing stormwater and protecting our water resources. While our generations of service are historically significant, there are many more exciting chapters on the horizon. Since undertaking the extraordinary task of reversing the flow of the Chicago River to protect Lake Michigan, the MWRD engaged in more than a century of progress and continuous innovation to care for our water environment. Those early commitments were aimed at protecting the public's health and water resources, and while the MWRD maintains that same level of excellence at an exceptional

value to taxpayers, we also pride ourselves in cleaning water in the face of an evolving system of water treatment. Today, we are met with a changing climate, record rain events and an increased use in impervious pavement across our flat terrain. As a result, we are continuously challenged to find comprehensive solutions to manage stormwater and prevent flooding, all while grasping emerging technologies to improve local water quality and protect a river that is soaring in popularity. To meet this demand, we are developing new systems to reduce nutrients in our water, decreasing greenhouse gas emissions, conserving and reusing water, recovering renewable resources, and maintaining a tradition of reliability and resourcefulness that has become a hallmark for our agency across the region.

As a utility of the future, the MWRD is also educating the communities it serves and working with stakeholders to create awareness for our water environment. By actively forming new partnerships, engaging the public and urging our communities to consider the countless ways we can all contribute to improving our water environment, we are taking a role of leadership, fostering collaboration, broadening our reach and magnifying our impact.

The perseverance of the MWRD is shown in the resiliency of Cook County. The MWRD continues to rise to the challenge to effectively manage stormwater and mitigate flooding, and that commitment is expected to continue for generations to come. This publication will highlight the many ways the MWRD has grown to become the utility of the future you can rely on every day. ★



In its daily role of recovering resources and transforming water, the MWRD is protecting the regional water environment and mitigating flooding through its 110 miles of tunnels serving the Tunnel and Reservoir Plan (above), recovering nutrients from water to be reused as fertilizer (above right) and processing biosolids to be reused as compost and other soil amendments to help grow plant life (bottom right).



The MWRD not only transforms the region's wastewater into clean water, but also protects the surface of the water from pollution. The MWRD's skimmer boats collect nearly 200 yards of debris each year. These debris collection boats improve water quality and the recreational experience for thousands of people canoeing, kayaking, boating, and enjoying the waterways.



MWRD staff have stayed on the job throughout the pandemic to test and analyze water quality, ensuring a safe and healthy environment. They also collected samples from all seven water reclamation plants to support studies on sewage surveillance monitoring for COVID-19. Traces of viral RNA in the wastewater can offer retrospective insight to local and national research institutions, universities and public health departments on the spread of the virus.

Financial Summary

The MWRD maintains a strong financial position with a AAA bond rating from Fitch Ratings and an AA bond rating from S & P Global.

Turbulent economic times have not wavered the MWRD's stable financial outlook. To maintain our critical services at affordable rates for area taxpayers, the MWRD Board of Commissioners approved a \$1.3-billion budget for 2022. This supports day-to-day operations and general expenditures, bond redemption and interest, the MWRD's Retirement Fund, stormwater management activities, insurance and a Capital Improvement Program (CIP) for designated projects and pay-as-you-go capital projects. The MWRD's current operations are funded primarily through property tax receipts. Other revenue sources include user charge revenues, personal property replacement tax receipts and land rentals. The CIP is funded primarily through State Revolving Fund loans, grants and general obligation bond sales.

Low interest rates have yielded long-term savings, but the MWRD is not immune to economic volatility, inflation and supply chain concerns. Rising costs to procure chemicals and electricity influenced budget cost estimates in both operating needs of the MWRD's Corporate Fund (\$438.5 million) and the CIP (\$313.9 million). We shouldered these increases through higher-than-expected personal property replacement tax collections, position vacancy management, reduction in discretionary spending and delays in other operational spending due to the pandemic slowdown.

There has been little sign of pandemic slowdown in our work. MWRD staff has reported to water reclamation plants (WRPs) around the clock, responded to assignments in the field to survey local waterways, mitigate flooding, monitor for industrial waste and keep projects moving. In remote settings, staff established an online payment system, managed contracts and permits, assessed water samples, managed real estate, convened virtual meetings, designed new infrastructure and systems, and protected our citizens and the water environment. We also participated in studies to help researchers analyze sewage samples to gain understanding of how COVID-19 spread in communities might be detected in sewers. These critical samples have ushered in key data and raised

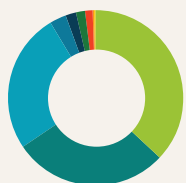
the potential of wastewater-based epidemiology. We have prevailed during these extraordinary times.

During this time, MWRD commissioners and staff also prepared a new five-year Strategic Plan outlining the mission, vision and goals of the agency through 2025. The planning process gathered input from leadership, staff, community representatives, engineering and consulting firms, professional organizations, regional planning organizations, and local, state and federal governments. This ambitious roadmap guides our efforts on climate change, water resource protection, and protects the regional water environment through a renewed focus on diversity, equity and inclusion to engage across all Cook County communities.

The MWRD Corporate Fund invests in Strategic Plan initiatives and key treatment operations, including new WRP technology and projects. The CIP will help the MWRD rehabilitate and modernize aging infrastructure, complete TARP and implement wastewater treatment innovation. The Stormwater Management Fund Budget (\$97.0 million) supports the MWRD's flood reduction initiatives and stormwater management projects that include the Addison Creek Channel improvements, the Crestwood Flood Control Project, the Robbins Stormwater Park and Midlothian Creek Restoration Project and dozens of local green infrastructure projects.

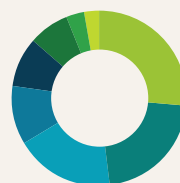
We are also making a commitment to strengthen our long-term finances by addressing our pension system. After receiving statutory authority to contribute additional revenues to the pension fund, the MWRD committed \$30 million in Corporate Fund budgetary reserves to the Retirement Fund to promote a 65-percent funded ratio goal by the end of 2026. The MWRD will also continue to fund \$5 million annually to the OPEB (Other Postemployment Benefits) Trust Fund, which is projected to be fully funded by 2026 to ensure retiree benefits. This proactive financial management affords the MWRD the flexibility to protect our water environment. ★

WHERE MWRD MONEY COMES FROM



| | | |
|--------------------|---------------|--|
| \$478.8 M | 37.0% | Net Assets Appropriated |
| \$371.9 M | 28.7% | Net Tax Sources |
| \$334.6 M | 25.9% | State Revolving Fund Loans & Future Bond Sales |
| \$38.0 M | 2.9% | User Charge Income |
| \$25.0 M | 1.9% | Land Rentals |
| \$22.8 M | 1.8% | Miscellaneous |
| \$19.1 M | 1.5% | Grants |
| \$2.9 M | 0.2% | Investment Income |
| \$0.6 M | 0.1% | Sewer Permit Fees |
| \$1,293.7 M | 100.0% | TOTAL |

WHERE MWRD MONEY GOES



| | | |
|--------------------|---------------|---------------------------------|
| \$341.1 M | 26.4% | Construction & Design |
| \$281.1 M | 21.7% | Bond Redemption & Interest Fund |
| \$239.6 M | 18.5% | Plant Operations & Maintenance |
| \$137.8 M | 10.7% | Staff Services |
| \$118.7 M | 9.2% | MWRD Retirement Fund |
| \$97.0 M | 7.5% | Stormwater Management |
| \$44.5 M | 3.4% | Claims & Judgments |
| \$33.9 M | 2.6% | Monitoring & Research |
| \$1,293.7 M | 100.0% | TOTAL |

FOR A \$100,000 HOME, THE 2021 ESTIMATED MWRD TAX IS \$120.78.

OUR HISTORY

Reversing the Chicago River, Revitalizing a Community

Although the MWRD's name has changed a few times and the scope of our work has expanded, the quality of service remains the same. Today's projects are as ambitious as they were more than 100 years ago, making profound impacts both locally and across the entire region.

Managing today's water invokes an incredible need for the expertise of the MWRD, but it was the dire conditions of the local water environment in the 19th century that first demanded our services.

As a response to a public health crisis coupled with the city's exponential growth, the MWRD was originally organized as the Sanitary District of Chicago in 1889 under an act of the Illinois General Assembly. The enabling act was in direct response to contamination of the Lake Michigan water supply and nuisance conditions of the rivers. During that time, a polluted river flowed directly into the lake and caused waterborne illnesses. The Sanitary District's first priority became reversing the flow of the Chicago and Calumet River Systems to prevent the discharge of sewage into Lake Michigan. The water instead discharged into the Des Plaines River, where it could dilute as it flowed into the Illinois River and eventually the Mississippi River. To make this happen, the Sanitary District's dedicated staff constructed a 61.3-mile-system of canals and waterway improvements. The canals cut through the sub-continental dividing ridge, allowing the river to flow by gravity away from the lake and down a steeper slope. Workers blasted, dug and hauled heavy rock and deepened, straightened and widened waterways to convey sewage and stormwater to improve the quality of area waters.

The agency's first projects, reversal of the Chicago and then the Calumet River, were engineering marvels that not only improved environmental conditions but also helped to distinguish the agency around the

world. The monumental achievements set a tone of impressive environmental engineering accomplishments and scientific breakthroughs. From there, the Sanitary District built intercepting sewers, pumping stations and water reclamation plants to clean water. The agency's mission grew from protecting the lake to creating a new flourishing waterway system. These early advancements were followed by a century of innovation in water treatment technology. These early projects were effective and also well documented. The engineers surveying the property and construction activities also photographed their work, leaving behind an archive of 14,000 images.

From 1955 through 1988, the District was called the Metropolitan Sanitary District of Greater Chicago. In order to provide a more accurate perception of functions and responsibilities, the name was changed again in 1989 to the Metropolitan Water Reclamation District of Greater Chicago. Over that time, we went on to construct tunnels and reservoirs, aeration stations, nutrient recovery facilities and green infrastructure projects. We now operate the world's largest water reclamation facility, the world's largest nutrient recovery facility, the world's largest wastewater treatment ultra-violet (UV) installation, and the world's largest combined sewer reservoir.

The MWRD serves an equivalent population of 12.72-million people each day, including 5.16-million residents of Chicago and 128 suburban communities, an equivalent of 5.32 million in the commercial and industrial sector, and a combined sewer overflow equivalent of 2.24-million people. ★



The year 2022 marks the centennial anniversary of the MWRD's Calumet Water Reclamation Plant and completion of the Cal-Sag Channel. These two manmade systems constructed by the MWRD are intrinsically linked through the MWRD's work to transform wastewater into clean water and return it to the environment to enhance our region. In addition to building the plant and digging the 16-mile Cal-Sag Channel, the MWRD built 560 miles of intercepting sewers to convey water from local sewers to its treatment plants.



Workers load rock for removal during excavation of the Chicago Sanitary and Ship Canal in September 1894. Reversing the flow of the Chicago and Calumet River systems required significant manual labor and digging. There were more than 5,000 workers assigned to this task in September of 1894.

ESSENTIAL SERVICES

Treating Water and Protecting a Region's Health

The MWRD treats about 1.3 billion gallons of water per day, or close to 500 billion gallons per year, after it flows down drains, leaves households and industrial and commercial facilities, and runs off streets and sidewalks.

With a total treatment capacity of more than 2 billion gallons, the MWRD collects, cleans and returns that water to the environment in a matter of hours. The efficient manner in which the MWRD works is a crowning achievement in a rich history that strives to protect public health and the environment. Annually the National Association of Clean Water Agencies (NACWA) honors MWRD water reclamation plants for meeting decades of compliance in National Pollutant Discharge Elimination System (NPDES) permit requirements and federal Clean Water Act standards.

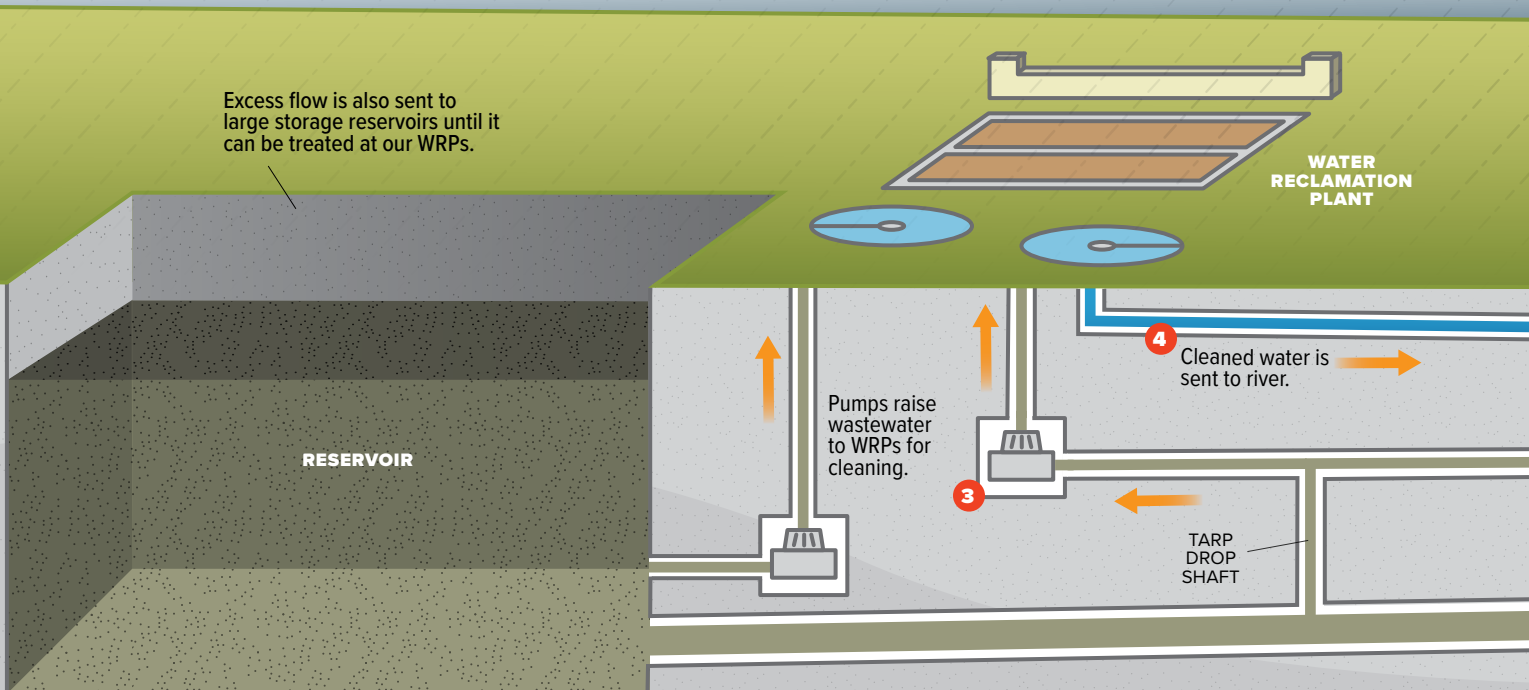
The MWRD owns and operates seven WRPs. One of these is the Stickney WRP, the world's largest for full secondary treatment by volume. The MWRD also owns and operates 560 miles of intercepting sewers, which are larger sewers that receive flow

from approximately 10,000 local sewer system connections, and force mains, which are pipes that move water under pressure by using pumps or compressors. The WRPs mimic the purification process that occurs naturally in rivers, condensing what would take one or two weeks to less than 12 hours. Once considered waste, the discarded water that flows to our plants for treatment is now considered a collection of resources to be recovered and reused beneficially. In addition to cleaning water for reuse and discharge into our waterways, the process works to recover solids and nutrients that are beneficially returned to the environment. The process also strives for energy efficiency, energy generation and recovery to reduce greenhouse gas emissions, promote a more sustainable society, generate savings for taxpayers and enhance our water treatment operation. ★

How Sewers Work

Local municipal sewers carry wastewater to MWRD's larger intercepting sewers, which flows into one of seven WRPs across Cook County. If the intercepting sewers, water reclamation plants and reservoirs reach capacity during heavy rain, the local sewer continues to drain, or "overflow," to a waterway. This is known as combined sewer overflow, which is happening less thanks to TARP expansion.

Illustration is for explanatory purposes only and is not drawn to scale.



CURRENT MAX FLOW TO WATER RECLAMATION PLANTS

Stickney
Cicero
1,440 MGD

Calumet
Chicago
450 MGD

O'Brien
Skokie
430 MGD

Kirie
Des Plaines
110 MGD

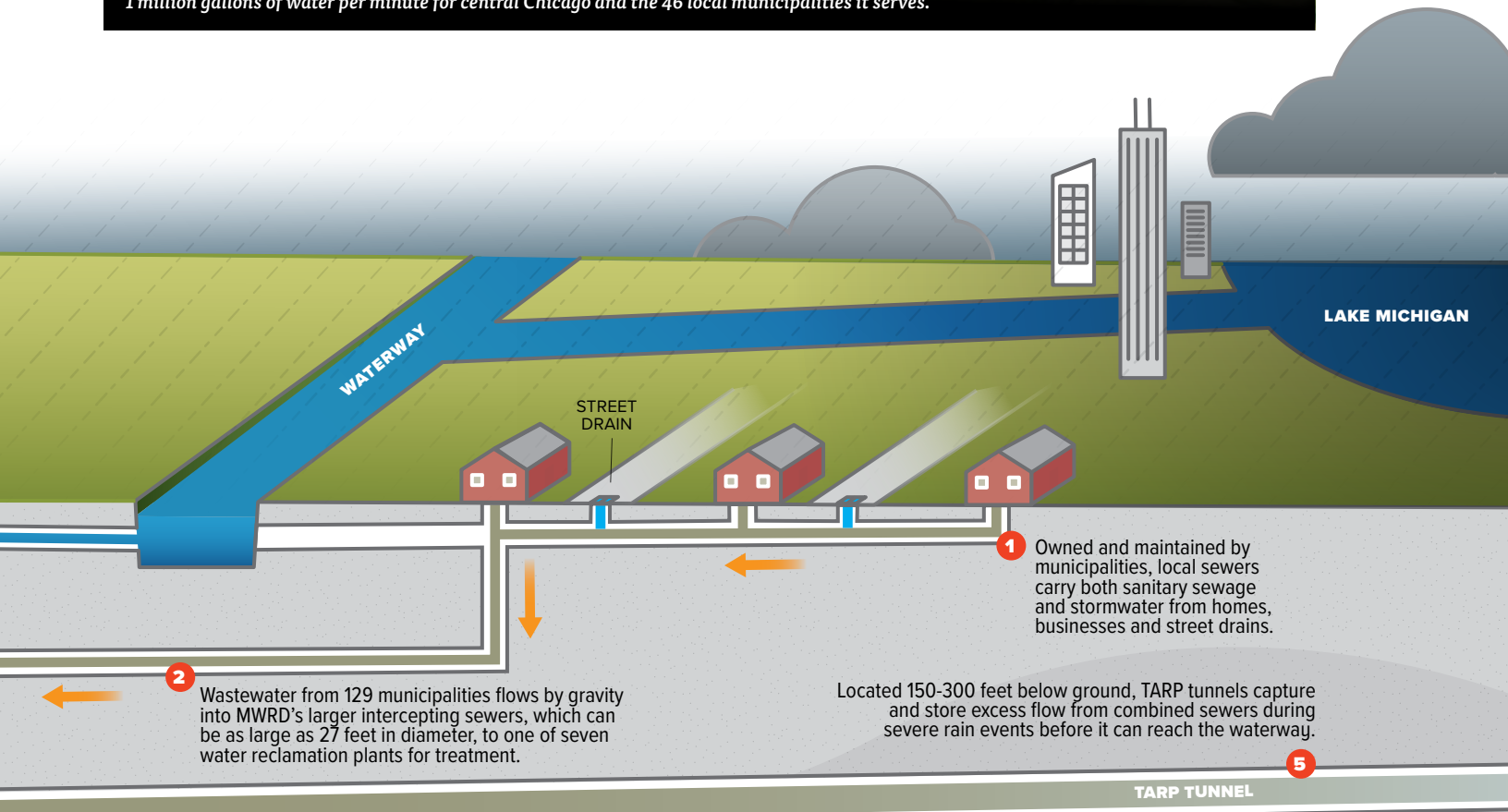
Egan
Schaumburg
50 MGD

Hanover Park
Hanover Park
22 MGD

Lemont
Lemont
4 MGD



PERMIT
COMPLIANCE
100%



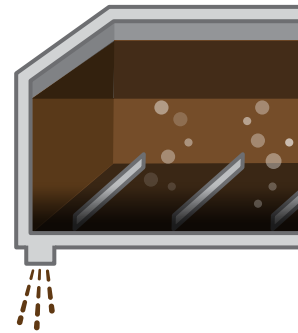
Water Treatment Process

The WRPs mimic the purification process that occurs naturally in rivers, condensing what would take one or two weeks to less than 12 hours.



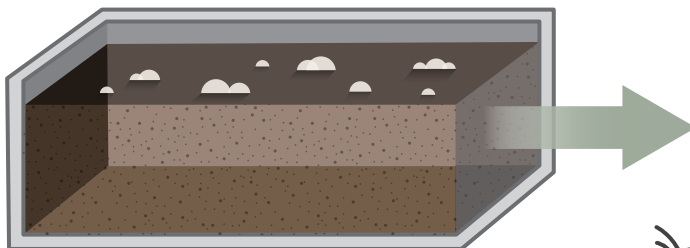
1. PRELIMINARY TREATMENT: COARSE SCREEN

A screening process utilizes large combs that rake through coarse screens to remove large objects which are deposited on conveyor belts and taken to landfills. The screens are a first line of defense to protect pumps from items that range from unwanted trash to huge tree limbs.



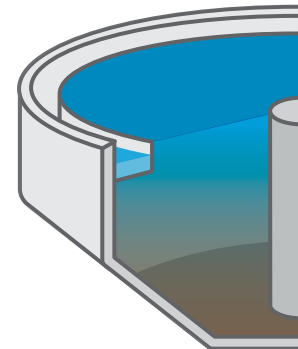
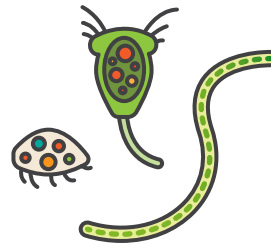
2. AERATED GRIT TANK

Next, pumps move water to aerated grit tanks where suspended materials are aerated, while grit, sand and other heavy materials settle. A conveyor scrapes the larger material on the bottom and takes it to a landfill.



4. SECONDARY TREATMENT

Next, water enters the aeration tanks that receive pumped, filtered air and a carefully maintained population of microorganisms, collectively called "activated sludge." These organisms break down the remaining suspended solids and remove soluble organics, ammonia, and, at some WRPs, phosphorus, and aggregate themselves to settle in the final settling tank.



5. FINAL SETTLING TANK

In the final settling tanks, liquid from aeration tanks flows into the center of the tank. Solids sink to the bottom and are sent to a drain. About 97 percent of the solids are removed in the settling tanks, while the remainder is sent to solidification and dewatering. The top of the tank is now clean and ready for tertiary treatment.

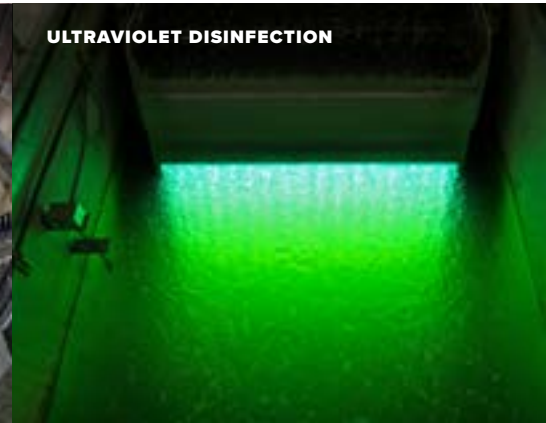
ACTIVATED SLUDGE TANK

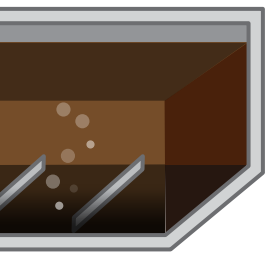


SETTLING TANK

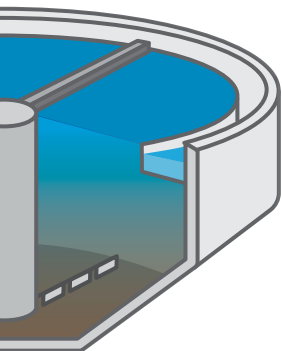


ULTRAVIOLET DISINFECTION

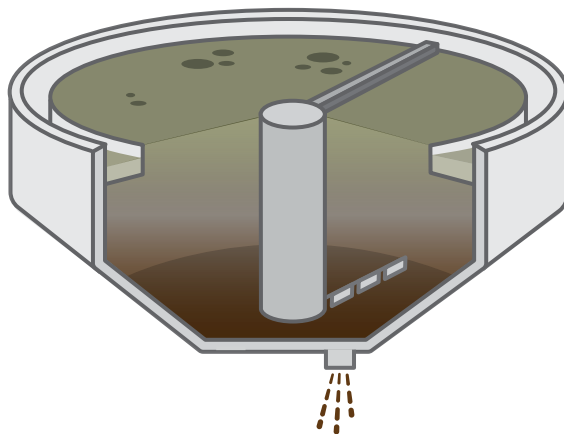




tanks. The air bubbles keep lighter
d gravel sink to the bottom. A
the bottom into a drain. It is then

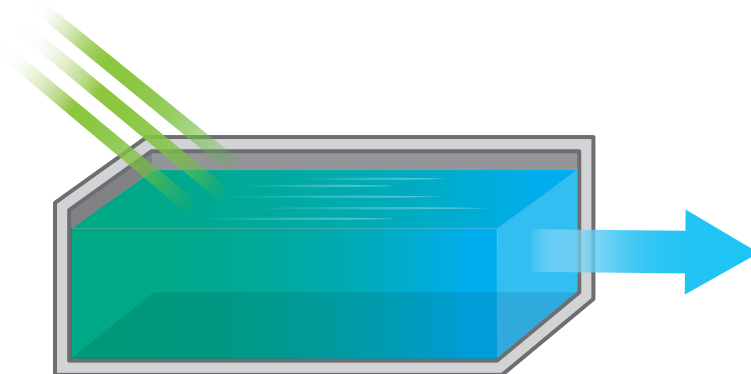


ation tanks flows by gravity through
bottom where revolving blades scrape
e solids are sent back to aeration
ds treatment process. The water at
ly for discharging to the waterway or



3. PRIMARY TREATMENT

The water now flows into primary settling tanks. A revolving conveyor with slats skims off the floating fats and oils while solids settle to bottom. The slats push the solids to a drain so that they can be conveyed to a solids treatment process. The floating fats and oils are moved to a drain and then they are sent to a landfill.



6. TERTIARY TREATMENT

During disinfection, the MWRD uses a variety of measures at different WRPs to add a final layer of treatment before water is released into neighboring waterways. The DNA of microbes are deactivated using a chlorination/de-chlorination application process or an ultraviolet (UV) light disinfection system that prevents them from reproducing or growing. These disinfection processes drastically improve the microbial quality of the water produced by the MWRD.



WEST SIDE PRIMARY SETTLING TANKS

In 2018, the MWRD constructed nine 160-foot diameter primary settling tanks (PST) and six 132-foot long aerated grit tanks, associated support facilities, service tunnels and conduits at the Stickney WRP. These new tanks and treatment equipment replaced labor-intensive tanks that had been in use since 1928. This major upgrade provides a significant increase in digester gas production that will cover energy costs. The new tanks also increase and improve grit removal, protecting downstream piping and equipment, and reduce water recycling as well as odors that will be better captured and removed to support our goal of being a responsive neighbor to the communities we serve.

Recovering Resources, Transforming Water and Protecting the Environment

Since 1889, the MWRD has protected the water environment, but our view of the treatment process has evolved, as new technology and new challenges have emerged.

We now see this transformation as a collection of raw resources that we can sustainably recover and reuse, while reducing our carbon footprint and improving the water environment to protect our communities from climate change. Resource recovery presents a new frontier that provides a return on investment that benefits taxpayers and the environment. To protect future generations, the MWRD also developed a Climate Action Plan that prioritizes carbon reduction in support of the MWRD's Strategic Plan.



WATER

The MWRD returns treated water to the water cycle for reuse in many forms. In the future, changing economics may make it beneficial to distribute treated water for industrial use, cooling, or irrigation. When used appropriately, recycled water can satisfy many water demands. It presents financial savings while promoting water conservation resulting in the decrease of water withdrawals from Lake Michigan. In addition to being harnessed, water itself is also reused directly throughout the MWRD treatment process. Every day, 15.1 million gallons are reused in pipeline flushing, blower motor cooling, post-centrifuge centrate flushing and tank cleaning. The MWRD is producing cleaner water for reuse than previous generations, thanks to new MWRD innovation and the MWRD's Industrial Waste Division that controls pollutants, such as metals, that were formerly discharged back into the environment due to industrial uses.

ENERGY

Water is a meaningful source of energy. At our Lockport Powerhouse where the Chicago Sanitary and Ship Canal drops 38 feet into the Des Plaines River, hydroelectric power is generated and converted to clean, renewable electricity. It is one of dozens of measures that the MWRD is taking to control our energy future. For decades, we have been creating clean, renewable energy from organic material removed from the wastewater. Biogas that is produced in anaerobic digesters is used to fuel boilers which produce steam or hot water to heat buildings and processes at the WRPs. This renewable biogas offsets the need to purchase about 6 million therms of natural gas each year. We have been pursuing energy reduction activities, including complete building energy assessments, and optimizing the aeration processes through implementation of new sensor and computerized control technology.

PHOTOS (left to right): Water flows over a weir during treatment; the MWRD's Lockport Powerhouse has been generating hydroelectric power since 1907; MWRD solids are blended with windrow turners to create a premium quality compost product; a MWRD lab technician experiments with algae at the O'Brien Water Reclamation Plant.

FULTON COUNTY

Although the MWRD's daily service area is confined to Cook County, we actively work with the agricultural community and other stakeholders throughout the state to ensure water leaving our communities is not negatively impacting communities downstream. In keeping with our mission, and to be a good neighbor, the MWRD makes land it owns in Fulton County available to the agricultural sector, Illinois Farm Bureau and University of Illinois. The land serves as a live laboratory for conducting research and demonstrations for farmers to see best management practices and strategies to reduce nutrient loss on land that closely resembles actual farming operations. Point sources of nutrient discharge, like WRPs, and non-point sources, like the farming community, must work together to help the state meet national reduction goals for nutrient loss contributing to the hypoxic zone in the Gulf of Mexico, where oxygen levels are being depleted from the excess nutrients. The MWRD initially purchased the 13,500-site in 1970 to convert the former strip-mined land from a brownfield to a fertile farmland, as part of the award winning "Prairie Plan."



BIOSOLIDS

The recovery of biosolids also presents a savings in energy costs, especially if we can reuse the soil amendment locally, cutting down on energy costs and carbon emissions to haul the product hundreds of miles away to what were formerly landfills. As the dried organic matter that is settled out of the treatment process, biosolids can be recycled and used as an alternative to chemicals and applied to improve and maintain productive soils and stimulate plant growth. The MWRD produces approximately 145,000 tons of biosolids annually, and 99 percent of all biosolids products are beneficially reused. The MWRD's composted biosolids and air-dried biosolids meet the USEPA's Exceptional Quality (EQ) standard. The MWRD makes the EQ Compost available to the public and has provided biosolids to area golf courses, parks and athletic fields for decades. The savings from transportation costs through distribution of biosolids has allowed us to supply this beneficial compost for free.

NUTRIENTS

Recovering nutrients like phosphorus and nitrogen can make them available for reuse while protecting our waterways from contamination. In 2016, our Stickney WRP opened the world's largest nutrient recovery facility that helps protect waterways by removing phosphorus previously released into the waterways. The facility recovers phosphorus and ammonia in the form of a slow-release, environmentally friendly fertilizer. The MWRD is committed to meeting new phosphorus discharge requirements at our three major plants and developing a phosphorus assessment and reduction plan to identify unnatural plant or algae growth that could be caused by phosphorus in the Chicago Area Waterway System. In addition, we are researching the sustainability of growing algae in a "vertical revolving" fashion to recover nutrients; this reduces the footprint to grow an equivalent algae biomass in a surface pond and simplifies the harvesting process. ★



A solar-powered aerator floats to the surface of water stored in the Thornton Composite Reservoir. Since becoming operational in 2015, the reservoir has prevented more than 33 billion gallons of combined sewage from entering the waterways. In 2018, there were no overflows in the Calumet River System, thanks to the reservoir.

Tunnel and Reservoir Plan (TARP) Mitigates Flooding and Improves Water Quality

The MWRD does nothing small. We are heading into the final decade of the nation's largest public works project for improving water quality.

The Tunnel and Reservoir Plan (TARP) works to mitigate flooding and reduce pollution in area waterways by providing storage for billions of gallons of water that formerly overwhelmed our streets, basements and riverbanks. It is needed now more than ever.

The MWRD and partners devised TARP in the late 1960s to capture combined sewer overflows (CSOs) that harm the environment and adversely impact water quality. CSOs occur when the MWRD's intercepting sewers and WRPs reach capacity during heavy rain, causing local sewers to drain to waterways. On schedule to be completed by 2029, TARP will provide more than 17.5 billion gallons of storage capacity for combined sewer systems in a 375-square-mile-area covering Chicago and 51 suburbs. As a result of TARP and other water quality enhancements, aquatic life is thriving in Chicago area waterways and area residents now see the river system as a major asset. TARP was the first system of its kind to address pollution and flooding problems and is now being emulated by cities around the US and the world, in places such as London, Singapore, and Vienna.

The TARP system, commonly known by Chicago area residents as "Deep Tunnel," is comprised of a network of four tunnel systems and three cavernous reservoirs designed to hold untreated water until it can be cleaned at MWRD water reclamation plants. The 109 miles of tunnels, which were completed in 2006, can be as wide as 33 feet in diameter and 240 to 300 feet below ground. In 2015, the MWRD completed the world's largest combined sewer reservoir at the 7.9-billion-gallon Thornton Composite Reservoir. It will be surpassed in size when the 10-billion-gallon McCook Reservoir is completed in 2029.

The Grand Canyon of the south suburbs, the Thornton Composite Reservoir

is so large that it could store 144 million rain barrels, enough to circle the earth 3.64 times when laid end to end. When completed, the McCook Reservoir will be able to hold another 182 million rain barrels, 55 gallons each. McCook Reservoir will be large enough to cover every square foot of the Loop in nearly 10 feet of standing water.

While the sheer size of these reservoirs and tunnels is impressive, so too is the impact of this infrastructure on area water quality and flood prevention. After the tunnels were brought into service, the average number of yearly combined sewer overflows were cut in half. The Thornton Composite Reservoir and the 350-million-gallon Majewski Reservoir in the northwest suburbs have gone a step further and nearly eliminated CSOs. The Calumet TARP system has captured billions of gallons of CSO volume, more than 99 percent of the volume of water that enters the system since the reservoir was placed into service. Stage I of McCook Reservoir, completed in 2017, is fully operational and can take on 3.5 billion gallons of water that previously overflowed throughout its massive 255-square-mile area. In its first four years of operations, McCook captured nearly 82 billion gallons of water.

Since 1998, the Majewski Reservoir and the related TARP system have yielded more than \$500 million in flood damage reduction benefits to the three communities it serves. The Thornton Reservoir and Calumet TARP system provide an estimated \$40 million per year in benefits to 556,000 people in 14 communities. Stage I of McCook is estimated to provide an average of \$114 million per year in flood reduction benefits to 3.1 million people. Stage II of McCook Reservoir will provide another 6.5 billion gallons of storage, delivering an estimated total of \$143 million per year in flood reduction benefits. ★

MCCOOK RESERVOIR

Stage I of TARP's McCook Reservoir can hold up to 3.5 billion gallons of water during major storms to save the MWRD from having to reverse water back out to Lake Michigan and save on energy costs that accrue when pumping water during heavy rains. The McCook Reservoir protects Chicago and 36 suburban communities from flooding and relieves each municipality of the burden of designing, building and operating its own system to capture and treat combined sewer overflows. Providing an outlet for two tunnel systems known as Mainstream and Des Plaines, the McCook Reservoir covers a wide footprint of protection from Kenilworth on the north and southwest to Bedford Park. The stored water is pumped from the reservoir to the Stickney Water Reclamation Plant to be cleaned and released.





FINDING RELIEF

The MWRD Delivers Solutions for Managing Stormwater and Building a Resilient Cook County

Water can be elusive and destructive. Before the MWRD can clean it, this water must first be collected. In recent years, the Chicago region has experienced historic weather patterns consisting of rain bursts that overwhelm local collection systems, making flooding a priority issue at the MWRD.

Given the region's flat terrain, impervious pavement, large population and history of flooding, our role in stormwater management has intensified. The MWRD's expertise in water pollution control and drainage led us to assume a flood control leadership role in the metropolitan area. After designing and constructing more than 30 flood control storage reservoirs and dozens of stream improvement projects, the MWRD became a natural fit to lead this charge against flooding. In 2004, the Illinois General Assembly enacted legislation formalizing and expanding the MWRD's role as the regional stormwater management agency for Cook County. Through this authority, the MWRD began planning design, construc-

tion, operation and maintenance of flood control facilities and related stormwater management projects. The new countywide authority required the MWRD to form six watershed planning councils and develop the Cook County Stormwater Management Plan. Approved by the MWRD's Board of Commissioners in 2007, this plan identifies the goals of the program, the guidelines for the detailed watershed plans, the parameters of the countywide program, and plan implementation. It also introduces regulatory concepts later addressed in the Watershed Management Ordinance (WMO). Adopted in 2013, the WMO regulates sewer con-

struction within MWRD's service area and development within suburban Cook County. The WMO provides guidelines for improving stormwater drainage and detention conditions for new development. It also ensures protection of wetlands and riparian areas, reduces soil erosion and prevents future development projects from exacerbating flooding.

Stormwater management allows the MWRD to look at projects holistically, like in Robbins where a community partnership has leveraged new opportunities for economic, social, environmental and recreational growth. It has also spawned collaborative efforts

An underground storage facility below Marvin Parkway in Park Ridge stores more water and keeps the community dry. The MWRD's Local Stormwater Partnership project also included landscaping and sewer infrastructure improvements.

between the MWRD and local partners through major projects, such as the Addison Creek Reservoir and Channel improvements that will benefit Northlake, Melrose Park, Stone Park, Bellwood, Westchester and Broadview by reducing flooding to approximately 2,200 structures along Addison Creek. Other projects such as expansions of Buffalo Creek Reservoir near Buffalo Grove and Melvina Ditch Reservoir in Burbank will benefit hundreds of homes and businesses, much like the impacts experienced from the MWRD's Heritage Park Flood Control Facility in Wheeling. Flood control and streambank stabilization projects at Natalie Creek in Midlothian and Oak Forest, Cherry Creek in Flossmoor and Tinley Creek in Crestwood will improve conveyance and protect communities, while the Albany Park Stormwater Diversion Tunnel will relieve this Chicago neighborhood from the threat of catastrophic 100-year flood events that occur with more regularity.

The MWRD's Stormwater Management Program also expedites smaller conceptual and shovel-ready projects to protect Cook County communities from flooding. Each year we hold a call for projects as part of the Local Stormwater Partnership Program to fund work that address flooding and drainage concerns.



Space To Grow

These projects utilize a variety of traditional engineered solutions such as localized detention, upsizing critical storm sewers and culverts, pumping stations, and establishing drainage ways, alongside green infrastructure.

In addition, the MWRD is working with local communities to provide partial funding towards the construction of green infrastructure (GI) installations on public property. GI projects are designed to use natural landscaping to manage water and provide environmental and community benefits. Each year we select GI projects to invest in through our call for projects. These projects vary in size and scope and can include roadside bioswales and rain gardens, green roofs, permeable pavement alleys, green street-scapes, and eco-orchards. Design and construction of each installation are monitored by MWRD to optimize benefits.

The MWRD has more than 200 projects in some phase of design or construction aimed at flood reduction and community resilience, and the totality of these projects are protecting or removing more than 16,000 structures. These projects include local and regional stormwater management projects and green infrastructure partnerships among other flooding mitigation initiatives. Other ambitious programs include improving Chicago schoolyards to better manage water through a partnership known as Space to Grow and a flood-prone property acquisition program that removes homes built in the floodplain. We have also distributed more than 140,000 rain barrels and 100,000 tree saplings to offset the regional loss of ash trees and soak up more stormwater. We realize that we each can play a role diminishing our stormwater challenges. ★



The MWRD promotes green infrastructure projects that use natural landscaping to manage water.



Skokie Police Station Headquarters can now retain 33,000 gallons of stormwater thanks to support from the MWRD.



Rain barrels can be ordered on the MWRD website and delivered to your door.

A Neighbor You Can Count On

Protecting our water environment requires commitment, expertise, innovation and a relentless drive to be the best in the industry, but the MWRD cannot accomplish this alone.

That is why we also strive to be a responsive neighbor that engages with the public on several critical water-related issues that improve the quality of life for all. A hallmark of the MWRD's Strategic Plan is to engage with the community to position the MWRD as a critical community asset and to ensure that the MWRD is a responsive and inclusive business partner. In this role, we are expanding partnerships and increasing diverse participation in MWRD contracts. Here are only a few actions we take throughout the year to add value to the daily integral services we provide as a utility of the future.



COMMUNITY OUTREACH

We hope to one day soon host tours at our water reclamation plants and facilities again, but the pandemic did not halt our commitment to educate and encourage the public's participation in helping us protect our water environment. We turned our platform to a virtual experience in the meantime, reaching thousands of new visitors and inquiring minds across the world. Our talented commissioners and staff of scientists, engineers and water experts returned to the communities to perform outreach, speak in classrooms and take

leadership roles in professional organizations. To reach younger audiences and educate them on our roles protecting our water, we completed an award-winning children's book entitled "Where Does IT Go?" We are also out in the community removing debris from waterways and maintaining small streams. We provide



free compost and biosolids, tree saplings, discounted rain barrels, and milkweed seeds to support endangered monarch butterflies and encourage native plant growth to absorb more stormwater. We have also planted milkweed throughout our landscaping and earned monarch waystation certification.

UNWANTED MEDICATION AND CONTAMINANTS

Throughout the year, the MWRD collects unwanted medicine to prevent it from entering our water environment. Working with the medical community, government agencies and the general public, the MWRD has sought ways to reduce the release of pharmaceutical waste into the environment and issue reminders not to flush unused medications down the drain, nor toss expired drugs in the garbage. We also coordinate a stakeholder group to address chloride levels in area

Watch a virtual tour or register for a free live presentation at mwrdd.org/facility-and-virtual-tours.



The MWRD is planting and distributing deep-rooted milkweed and other native plants to absorb more stormwater and help restore the monarch butterfly population.



waterways and educate the public on the damaging effects of microbeads, pesticides and waste runoff that can harm our water environment.

PARTNERSHIP AND COLLABORATION

We improve public recreation spaces on MWRD-owned land to draw more people closer to the waterfront. We also provide ample open spaces next door to our plants and at the site of stormwater management projects that work to manage excessive stormwater and increase recreational opportunities. We lease large parcels of land to park districts, municipalities and forest preserve districts for a nominal fee to enhance public access to waterways, develop parks, hiking and bicycle trails and passive recreational use along the waterways, including the new 312 RiverRun on the North Side, Cal-Sag Trail in the south suburbs and Centennial

Trail near Willow Springs. To complete the hilly 11-mile segment of the Centennial Trail, the MWRD contributed 1.8 million cubic yards of overburden (dirt) excavated from the neighboring McCook Reservoir. In total, the MWRD makes more than 8,000 acres of land available for recreation and green space. Our impressive real estate portfolio also ushers in a financial return for taxpayers while addressing our mission of stormwater management and riverfront access.

SERVICE EXCELLENCE

We alert the public to combined sewer overflows and encourage citizens to minimize water use on rainy days to reserve space in the sewers. We are responsive and have a sense of urgency when the public informs us of waterway pollution, dumping, blockages and odors through our online Citizen Incident Reporting (CIR) System and our 1-800-332-3867 CIR hotline that also caters to Spanish speakers at 1-855-323-4801. The MWRD is investing millions of dollars in new odor control technologies and training staff to better address odor control. We are working with environmental partners to establish new goals in reducing nutrients to create cleaner waterways locally and downstream to the Gulf of Mexico. We are also increasing the recovery of valuable nutri-

ents like phosphorus that has grown scarce throughout the world. We are documenting and analyzing an increasing diversity of fish species in the waterways. We are planting native prairie landscaping to show strong land stewardship, reduce the long-term cost of grounds maintenance, and serve as an example of a best management practice to infiltrate stormwater, increase biodiversity and wildlife habitat, and sequester carbon. We maintain this land through prescribed burns and enlist goats and sheep to trim back overgrowth and reduce our reliance on lawn mowers, herbicides and fuels. We are offering affordable rain barrels that capture rainwater and prevent it from entering and overwhelming our collection systems. We are distributing free oak tree saplings to help restore the canopy of trees that has been threatened in recent years.

Water can be taken for granted. When it is poured down drains, it can be forgotten. But water plays a vital role in all of our lives, so the MWRD works around the clock to make a better environment now and for future generations. Sometimes it is our actions that speak louder than words, and it is these actions that make the MWRD the utility of the future you can rely on every day. ★



MWRD aquatic biologists and research technicians survey the Chicago Area Waterways to study fish populations.

BOARD OF COMMISSIONERS

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Metropolitan Water Reclamation District of Greater Chicago

100 East Erie Street • Chicago, Illinois 60611-3154



Established in 1889, the MWRD is an award-winning, special purpose government agency responsible for wastewater treatment and stormwater management in Cook County, Illinois.

Help protect our waterways and sewer systems.

Call our **1 (800) 332-3867** Citizen Incident Reporting hotline to report:

- Dead fish or other aquatic species
- Foul or suspicious odors
- Illegal or suspicious dumping to waterways or sewers
- Waterway blockages

(En Español: **1 (855) 323-4801**)

All calls are logged and routed 24/7.

Submit reports online using our Citizen Incident Reporting (CIR) form at mwrdd.org. From the homepage, select the "Incident Reporting" icon.

Get mobile Download our free CIR app for iOS devices from iTunes to submit an incident from your mobile phone. Search for **MWRD CIR** or visit: <https://apple.co/2LTtEa8>.

Think Inside the Box for unused medication disposal.

Never flush medications down the toilet or a drain. Instead, use one of our safe collection sites:

Main Office Building

100 E. Erie St., Chicago
Open Monday - Friday:
9 a.m. to 6 p.m.

Calumet WRP

400 E. 130th St., Chicago
Open seven days a week:
9 a.m. to 6 p.m.

O'Brien WRP

3500 Howard St., Skokie
Open seven days a week:
9 a.m. to 6 p.m.

Stickney WRP

6001 W. Pershing Rd., Cicero
Open seven days a week:
9 a.m. to 6 p.m.

Visit our website for a listing of medication collection sites located throughout Cook County.

