



DEPARTMENT OF PUBLIC UTILITIES

Annual Report

2015



City of Toledo

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Meet DPU

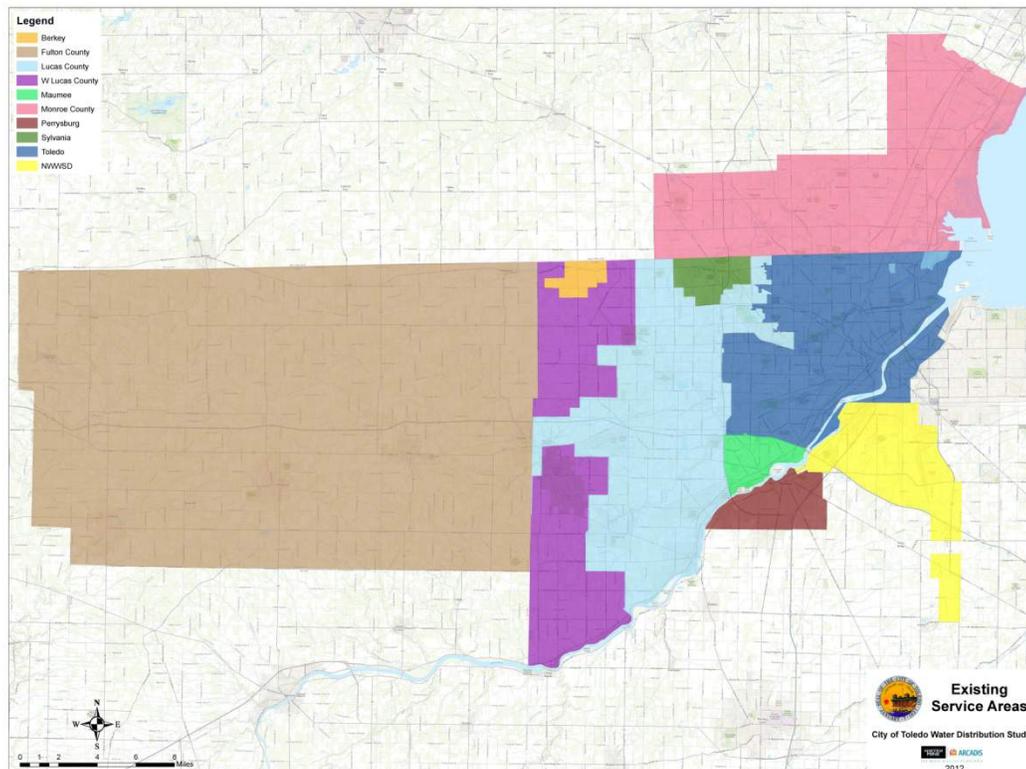
Who we are, What we do

As a customer-service organization, the Department of Public Utilities provides services which strives to exceed expectations in regards to safe, economical and superior drinking water, drainage and waste water services, and an environmentally safe community.

The City owns and operates a waterworks system as a self-supporting enterprise that in 2015 produced an average of 69.3 million gallons of water per day, with a peak flow of 102.8 million gallons of water per day, for approximately 122,000 residential, commercial/institutional and industrial customers in the City and certain surrounding areas in Northwest Ohio and Southeast Michigan. The City estimates that approximately 500,000 people are served by the Water System. Water is drawn from Lake Erie, treated at the City's Collins Park Water Treatment Plant, which has a capacity of 120 million gallons of water per day, and then distributed through approximately 1,165 miles of water lines, over 50% of which were installed before 1930.

The City also owns and operates a sanitary sewage collection and treatment system as a self-supporting enterprise that in 2015 collected and treated approximately 67.9 million gallons of wastewater per day from approximately 94,497 residential, commercial, institutional and industrial customers in the City and approximately 5,285 such customers outside of the City.

The City estimates that approximately 320,000 people are served by the Sewer System. Wastewater is collected by 1027 miles of local and interceptor sanitary sewers owned by the City. The local sewers serving 72% of the City's sewer area carry only sanitary sewage, while the remaining 18% of the City's sewer area is served by combined sewers that carry sanitary sewage and, in wet weather, storm water.



2015 Overview

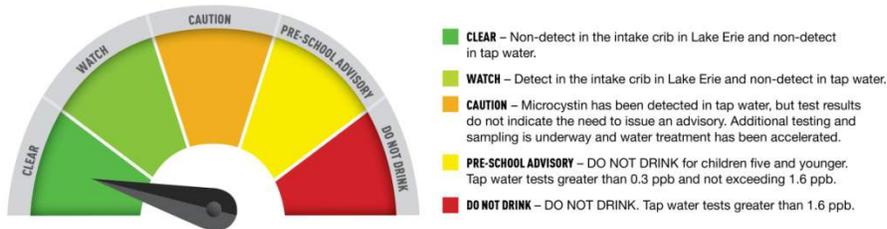
2015 HAB Season

Following the “Do Not Drink” event in 2014 the City of Toledo designed, awarded and constructed carbon silos and a chlorination disinfection facility prior to the 2015 HAB season. Project was completed in less than 9 months to be ready in time for HAB season.

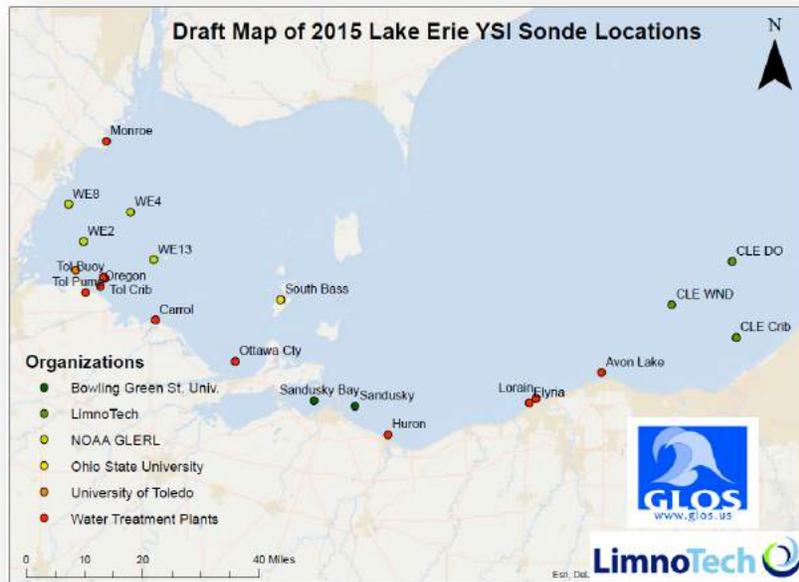
The Division of Water Treatment installed an early warning system for Algal Blooms, increased the capacity for carbon, and installed a dashboard on the City website to update customers daily on the status of the water in Lake Erie and at the tap.

Water Quality

Toledo tests raw and treated water regularly for the presence of toxins, including microcystin created by algae blooms. See scale below for the current status of drinking water quality according to Ohio EPA guidelines.



The City of Toledo partnered with various agencies and universities to install buoys and sondes blanketed throughout Lake Erie to take temperature, pH, and detect the presence of blue-green algae in the water. Data from those buoys are updated to the website every 10 minutes to act as an early warning system. Locations:



Online Billing

On April 20, 2015 the Department of Public Utilities launched “Online Billing”. Online Billing has two components; for Account Holders and Quick Pay for everyone. Online Billing for account holders means the owner of the home can register for an account with online billing, sign up for paperless billing and view invoices.

For Quick Pay anyone can look up their address or account number, view past due balances, payments made in 2015 and view the voluntary monthly budget.

www.toledo.oh.gov/onlinewaterbill

Performance Audit

In January of 2015 Shumaker & Company presented a thorough audit of the Department of Public Utilities. Our desire was for a report that would help facilitate operational and process improvements. This report compares the performance of the Department of Public Utilities against many industry standards. Shumaker & Company worked with the Department of Public Utilities to create a 2015 Strategic Plan that will be replicated on an annual basis. The Audit Report makes it clear that DPU must refocus its efforts on improving its safety culture so that the men and women, who perform the needed work to keep our utility services flowing return home safely each night. It also set into motion processes that will help the Department to establish new performance objectives to measure and report out on its progress.

Engage Toledo

The City of Toledo launched Engage Toledo in late 2015. Engage Toledo is a citizen focused, 24/7 call center to handle requests for city services. Engage Toledo was rebranded from Call City Hall and service level agreements (Internal MOU’s) were created to improve the level of service delivered to citizens.

www.toledo.oh.gov/engage-toledo

Engineering Services

The Division of Engineering Services is responsible to replace and upgrade the public utility distribution and transportation systems, including: water lines, sanitary sewers, and storm facilities, public sidewalks, pedestrian ramps, streets and alleys. In addition, the division is responsible for processing street lighting requests, private plan reviews, subspace inspections, inspection of construction within the public rights of way, and open space planning. The offices for Engineering Services are at One Lake Erie Center, located at 600 Jefferson Avenue.

Engineering Services 2015 Highlights

- Received Federal Safety Funds in the amount of \$849,600 for Central Avenue from Manchester to Secor
- Received Federal CMAQ Funds in the amount of \$1,048,000 for the Central and Talmadge Intersection Improvements Project
- Received Federal CMAQ Funds in the amount of \$2,507,000 for Detroit Avenue from the Anthony Wayne Trail to Copland
- Received Federal CMAQ Funds to purchase right-of-way in the amount of \$2,600,000 and \$5,837,000 for the reconstruction of Secor Road from Bancroft to Hughes
- Received Federal CMAQ Funds in the amount of \$1,420,000 for 3 miles of the Chessie Circle Trail from Bowman Park to the University of Toledo
- Received Ohio Public Works Commission funding in the amount of \$6,659,000 for 10 various roadway and utility projects.

Roadway Projects

Completed the reconstruction of the following major roadways:

- Detroit and Cherry Roundabouts Project including the relocation of Collingwood
- Bancroft Reconstruction Project from Monroe to Ashland

Completed pavement repair, mill, widening, and resurfacing of the following major roads:

- Airport Highway from South to Ralph
- Western Avenue from Ralph to Broadway
- Detroit Avenue from Copland to Sherwood
- Dorr Street Safety Project from Byrne to Bowlus
- Talmadge Road Pavement and Joint Repair Project from Central to I-475

Engineering Services 2016 Objectives and Goals

- Jackman Rd. 24" Steel Water Main (4th qtr)
- Implement subspace program under ORC (3rd qtr)
- Complete the 2016 Matches and Planning Program (4th qtr)
- Complete the construction of a Water Main Replacement Program (4th qtr)
- Complete the construction of a Steel Main Replacement Program (4th qtr)
- Complete the construction of a Water Main Loop Closure Program (4th qtr)
- Provide construction project updates on the Engineering Services webpage. 4th quarter
- Conduct six district community forums to educate the citizens on Engineering Services capital projects. 2nd quarter
- Actively pursue grants and zero interest loans for infrastructure improvements (4th Quarter)
- Complete the development of the Roadway Pavement Management Information System (PMIS). 4th quarter
- Input all existing storm water billing data using existing practices and procedures into CityWorks so that continued data maintenance can be done in City works. 4th quarter
- Host a "Training Week" for Engineering Services employees involved in the design and construction of infrastructure projects prior to the 2016 construction season. 1st quarter
- Explore and create a report on a preferred option to provide year round online training for construction management and inspection personnel. 4th quarter
- Provide opportunities for the continuing education of licensed engineers and surveyors through the attendance of external training courses and seminars to maintain their licensure. 4th quarter
- Participate at the Toledo Metropolitan Area Council of Governments. 4th Quarter

Environmental Services

Environmental Services is committed to continuing to provide balanced, responsible environmental protection for the Toledo metropolitan area. Offices are located at 348 S. Erie Street.

The Division of Environmental Services is a unique City Division:

1. Its jurisdiction covers all of Lucas County for air quality issues.
2. We receive direct funding in excess of \$1 million annually from the Ohio EPA to act as contractual agents for the Ohio EPA to specifically monitor and regulate air emissions in Lucas County.
3. We have the ability to enforce the Ohio Revised Code, Ohio Administrative Code and the Toledo Municipal Code.

Environmental Services operates within six sections - Administration, Water Resources, Central Laboratory, Air Resources, Emergency Response and Brownfield Redevelopment.

Responsibilities of the Division include:

1. Provide permitting and regulatory oversight to approximately 600 facilities in Lucas County.
2. Respond to 100% of all citizen complaints and emergency response incidents on a 24/7 basis. In 2015 we responded to approximately 405 citizen complaints.
3. Maintain compliance with the two National Pollution Discharge Elimination Permits (NPDES) issued to the City of Toledo – Bay View Wastewater Treatment and Stormwater.
4. Assess and cleanup all Brownfield sites.
5. Ancillary duties – provide communitywide environmental education & outreach, continue to champion sustainability in City operations and provide support for other environmental organizations in the community.
- 6.

Environmental Services 2015 Highlights

Air Resources Section

- In 2015, 40 air permits were issued and 21 permits by rule were issued.

Emergency Response Section

- Emergency Response has responded to 405 complaints and/or spills as of December 31, 2015.
- Emergency Response provided the Household Hazardous Waste Collection for three Council District Cleanups. HHW Program collected well over 11,000 pounds of non-hazardous and hazardous waste.

- Environmental Services and the Toledo Fire Department were awarded a Public Utilities Commission of Ohio (PUCO) Grant for Hazardous Waste Material Training in the amount of \$42,200 for a number of training courses to train our first responders in Lucas County.

Central Laboratory Section

- Gas Cap Testing and Replacement was conducted to educate the general public on the importance of a functioning gas cap and its impact on ground level ozone or smog. In 2015, 687 gas caps were tested at 27 sites. A total of 76 faulty or missing caps were replaced. This prevented approximately 15,124 pounds of evaporative emissions from entering the air.
- A total of 388 sampling events resulted in 1798 samples being checked into the lab. These samples required over 4535 separate analyses and 4440 analyses have been completed.

Water Resources Section

- Issued over 66 discharge order renewals.
- Inspected with the Health Department to complete the inspection of 43 Home Sewage Treatment Systems in the City of Toledo.
- Completed the Cullen Park Green Infrastructure \$300,000 grant funded project to include the installation of, vernal pools, boardwalks, vegetated filter strips and swales, and naturalized prairie and tree plantings.

Brownfield Redevelopment Section

- Awarded U.S. EPA Brownfield Coalition Assessment Grant for \$500,000.00. Funding will be used to conduct environmental assessments, remedial action plans, and update brownfield inventory.
- Awarded a U.S. Forest Service Urban Tree Canopy for \$50,000.00. Funding will be used to plant approximately 100 trees along the Detroit Ave. corridor and 30 trees at the former Arbors Nursing Home (2920 Cherry St.). Tree plantings will occur in 2016.
- Completed U.S. EPA Brownfield Cleanup Grant at the former Chevy Transmission (3199 Maplewood Ave.). In summary, the removal and disposal of 2 underground storage tanks, 532 tons of petroleum impacted soil and 1,300 gallons of oily wastewater occurred last year. Final report was submitted to U.S. EPA in December 2015.

Environmental Services 2016 Goals & Objectives

- Review and update standard operating procedures (SOP's). Add different formats such as photos and/or video as needed to improve clarity and increase consistencies of training.
- Working through the statewide Technical Services Operators (TSO), request comprehensive training sessions on monitoring techniques and instrumentation.

- Continue coordinating HAZWOPER 8 hour refresher for City of Toledo employees and other Local agencies.
- Establish a 2016 Quarterly Training Schedule for Emergency Response.
- Apply for Public Utilities Commission of Ohio Hazardous Materials Training Grant to provide training for employees of the City of Toledo, Toledo Fire, and other agencies within Lucas County.
- Complete the Great Lakes Restoration Initiative Shoreline Cities Green Infrastructure Grant award for Green Infrastructure in the Silver Creek Watershed and in Cullen Park.
- Assist Bay View Wastewater Treatment Plant with negotiation of the Pretreatment and Mercury section of the NPDES permit.
- Successfully negotiate the Municipal Separate Storm Sewer System (MS4) NPDES permit with the Ohio Environmental Protection Agency.
- Begin to assess Brownfield properties throughout the City utilizing the 2015 U.S. EPA Coalition Assessment grant. Apply for next round of U.S. EPA Brownfield Cleanup funding for the former Champion Spark Plug property.
- Start landfill closure work for the Unitcast Foundry Landfill.
- Submit applications for petroleum contaminated properties to BUSTR to obtain Class C status, then apply for petroleum cleanup funding through BUSTR.
- Expend funding from the FY 15 USFS GLRI to plant trees along Detroit Avenue and 2920 Cherry Street.



Cullen Park Improvements

Sewer and Drainage Services

Sewer and Drainage Services (SDS) operates and maintains the sanitary sewer, storm sewer and ditch drainage systems, providing innovative, cost effective, and uninterrupted services to the City of Toledo. The Division operates from facilities located at 4032 Creekside Drive.

Foremen at SDS continue to utilize Cityworks in the field to provide real time information to crews and citizens.

Sewer & Drainage Services 2015 Highlights

Cleaning – Responsible for maintaining the sanitary and storm sewer drainage system by routinely cleaning the system’s sewer lines, cross-overs, catch basins and inlets in the public right of way.

- Sanitary footage – **1,490,276** linear feet cleaned
- Storm footage – **59,869** linear feet cleaned
- Basins, Inlets and Manholes cleaned – **1,585**
- Basement Flooding Private - **714**
- Basement Flooding Main Plugged - **269**
- Basement Flooding Overload - **705**

Construction – Responsible for the repair of the sanitary and storm sewer drainage system located within the public right of way. This section replaces and rebuilds damaged lines, catch basins and inlets.

- Sanitary Repairs Main – **87**
- Sanitary Repairs Lateral – **281**
- Storm Repairs Main – **60**
- Inlet Repairs – **160**



Ditch Maintenance – Maintains the proper flow of the City’s open ditch drainage system. This section removes blockages and trees and repairs erosion and obstructions from storm inlets, basins and cross-overs in the public right of way.

- Major Dredging Projects: Friendship Baptist Church, Nebraska Ave. – re-established the channel

Engineering & Inspection – Provides direct support to field personnel engaged in the cleaning and repair of storm and sanitary sewers. The section also does CCTV inspection of the system, which assists in the diagnosis of problems and maintenance of the system. The section inspects private and contractual city repairs as well as water and sewer taps and kills.

- New Sanitary Sewer Taps – **6**
- New Storm Sewer Taps – **10**
- City Sewer Kills – **48**
- Private Sewer Kills – **125**
- City Water Kills – **58**
- Private Water Kills – **130**
- Land Bank Kills – **327**
- Private Repairs – **356**
- City Repairs – **158**
- Sewer Tapper Tests given – **3**
- Sewer Tapper Tests passed – **0**

Sewer & Drainage Services 2016 Goals

- Pipe patch/Grouting Crew – improve our non-destructive methods of sewer infrastructure repair.
- Improve backfill and restoration methods and procedures through training and use of varying materials.
- Revise the Heavy Rain Event Protocol document and execute when necessary.
- Review budget to actual with Utilities Administration on a monthly basis.
- Work with ICT on providing crews with on-board computers to update jobs in real time in CityWorks.
- Continue to meet consent decree of cleaning 333 miles and 50 miles of CCTV footage of sewers.
- Provide adequate training for new employees and for existing employees interested in advancing within the organization.
- Fill funded vacancies through promotions and hiring.
- Review equipment and supply purchases to identify and implement new environmentally friendly ways of operating the division.

Water Distribution

The Division of Water Distribution is comprised of five different sections and has a budgeted staffing level of 139 employees. A satellite maintenance section from Fleet and Facilities is also housed at Water Distribution.

The division's professional employees are responsible for the maintenance and repair of 1,188 miles of water mains and 10,430 fire hydrants located in the City of Toledo water distribution system. Additionally they read approximately 132,000 meters on a quarterly or monthly basis; and repair, replace and install water meters daily. (Note: Some accounts have multiple meters.)

Water Distribution 2015 Highlights

- Water Distribution revamped its Freeze Prevention and Customer Restoration Plan so that standardized procedures are set in place to handle no water and frozen service calls. Two additional thaw machines were purchased allowing us to thaw customers faster when no water or frozen service issues arise.
- The inspection of the two 72" water main river crossings for potential leaks was completed with no disruptions to service.
- The Backflow Prevention Program was updated utilizing a web based data management company.
- Hazwoper training was completed for Water Distribution and Sewer Maintenance Crews.
- Job classifications and duties were combined in the Field Services and Tapping and Construction areas to improve services to our customers.
- Water Distribution participated in customer awareness programs at COSI and Home Depot.

Tapping & Construction

The Tapping and Construction Section is responsible for the maintenance of the City of Toledo water distribution system including the Village of Berkey. This includes main repairs, service repairs, valve repairs and replacements and hydrant maintenance and replacements. They perform any new private development connections to the distribution system along with the connections and re-tapping of service lines on new water line installations. They also perform

service repairs, new service taps and re-taps in Lucas County. Also included with the maintenance of the system, is the surveying of the water lines for possible leaks and breaks that do not surface.

Tapping & Construction Section’s statistics:

	2013*	2014	2015
Water Main Breaks	291	418	297
Valves Operated	1636	2446	1524
Landscaping	358	847	869
Repair Hydrant	198	143	162
Curb Box Dug Up & Put in Shape	518	705	589
Large/Fire Taps	14	37	31
Small Taps	136	297	935
Services Killed	64	29	30
Valves Replaced	16	13	37
Surveyed Water Lines for Leaks (in miles)	148.9	158.75	146.72
Hydrants Operated	10,829	14,028	12,899
Water Emergency Responses	5,967	8,189	6590

*2013 figures are through 11/19/13



Main break Ketukkee and Mayport



Main break at Washington & St. Clair with shoring protection being utilized



Brownfield training attendees from Water Distribution and Sewer Division



24 "Water main repair Manhattan Ave. August 2015

Engineering

The Engineering Section is responsible for inspection of private water line installations, large meter settings (3" and above), and backflow preventers. They also perform hydrant flow tests to determine the pressure and amount of flow in various areas of the distribution system and are in charge of the Boil Advisory Program and Backflow Prevention Program.

The Section is also responsible for maintaining the existing distribution system to the Ohio EPA standards. This includes working with the Division of Engineering Services on water construction standards and new water line construction projects. The engineering staff serves as the liaison between large project contractors and the division's Tapping and Construction Section.

Engineering Section statistics:

	2013*	2014	2015
Projects Completed	19	25	35
Private Waterline Installations	25	28	39
Large Meter and Backflow Preventer Inspections	19	21	31
Hydrant Flow Tests	39	22	23
Boil Advisories	193	244	216

*2013 figures are through 11/19/13

Field Services - Meter Shop

The Meter Shop is responsible for the installation, replacement and removal of water meters within the water distribution system. Additionally, employees performs the duties of turning on, turning off of water services and making repairs to City of Toledo equipment that may already be installed at a customer's location.

Meter Shop statistics:

	2013*	2014	2015
Radio Transmitters Installed	7,184	6,623	9031
Completed Work Orders	17,654	16,980	21,444
Water Meters Tested to AWWA Standards	1,152	983	1224
Hydrant Meters Rented	141	148	114
Collections Turn Offs	213	131	930

*2013 figures are through 11/19/13

Field Services - Meter Reading & Inspection

The Meter Reading and Inspection Section is responsible for all data collection, both manual and automated for approximately 135,000 residential and commercial water meters located throughout the City of Toledo's water distribution system including Lucas County and the Village of Berkey. (Note: Some accounts have multiple meters.)

This section responds to all customer inquiries, complaints and concerns with regard to water meters. Additionally, Meter Reading and Inspection is responsible for enforcing the Departments of Public Utilities' Rules and Regulations inclusive of small and large meter regulations, domestic, irrigation and process metering regulations and new service line installations.

Meter Reading & Inspection statistics:

	2013*	2014	2015
# of Reads	395,140	459,326	442,992
Inspection Performed	2,757	3,736	3,450

*2013 figures are through 11/19/13



Example of frozen Water Meter

Water Distribution 2016 Goals

- Implement plan for calibration of all 2" and larger water meters.
- Secure mobile devices for a paperless work order system in the Field Services Section.
- Increase miles of waterline surveyed by 10%
- Update backflow prevention devices for hydrant meters.
- Implement plan to increase the number of water meters installed annually.
- Implement a customer service satisfaction survey.
- Update and improve website to provide better customer education on services that are provided by Water Distribution.
- Replace 42 inch valve at Galena and Champlain.
- Train additional personnel on backflow prevention.
- Update Job Classification Specifications.
- Implement yearly training calendar for Water Distribution employees.
- Renovate secondary material storage yard.



24" main break Manhattan Ave. 2015

Water Reclamation

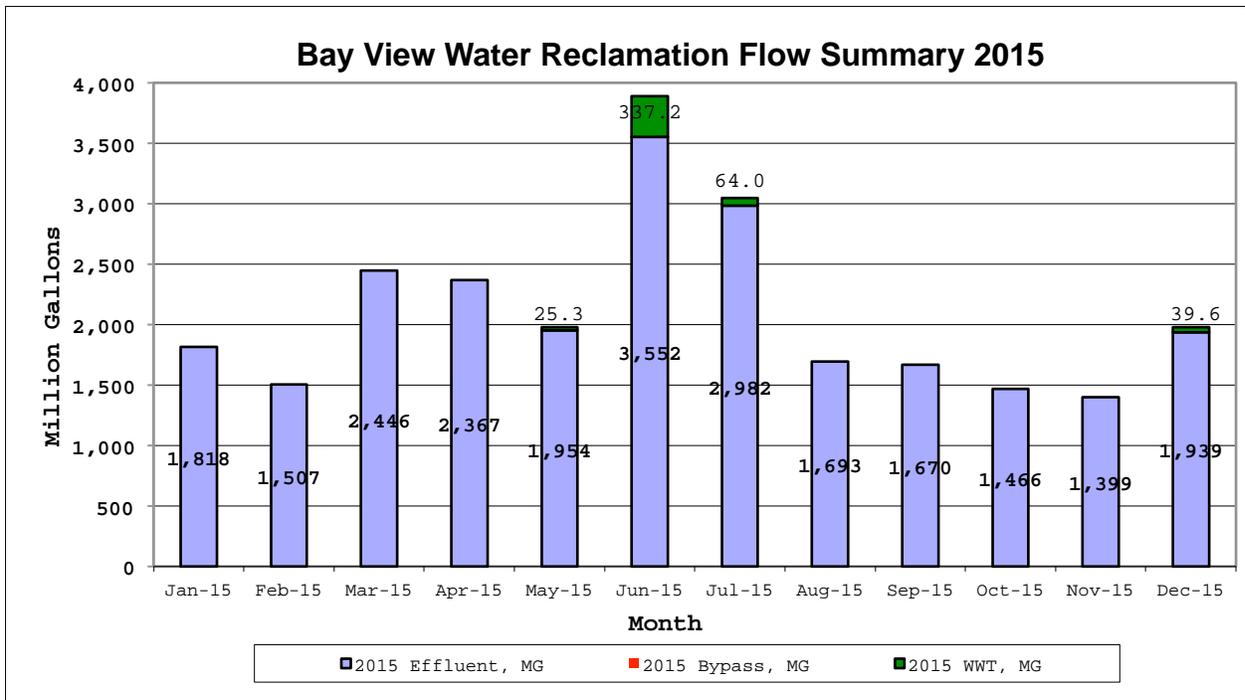
The mission of Water Reclamation is to protect and enhance public health, property and the environment through the efficient and progressive treatment of wastewater in compliance with the State of Ohio and National Standards.

The Bay View Wastewater Treatment plant is located at 3900 N. Summit Street.

2015 Highlights

Plant Operations

- The Division was in compliance with all but two Ohio Environmental Protection Agency discharge parameters required in the NPDES permit that allows the city to discharge final effluent (treated wastewater) to the Maumee River. This accomplishment has qualified the City of Toledo to receive a Silver Award from the National Association of Clean Water Agencies (NACWA) for 2015.
- The Division is required to perform a US EPA test on both the main Plant and Wet Weather Facility simultaneously during a storm event. The Division performed the 4th of 10 events scheduled over a 10 year period. The 4th test, which was performed on May 31, 2015 indicated the similarities and differences in the disinfection process between the main Plant and the Wet Weather Facility.
- Eliminated all Plant bypasses in 2015 by operating the Wet Weather Facility that is capable of chemically treating over 200 million gallons of sewage per day during heavy rain events. The graph below show the wastewater treated, in million gallons, by the months in 2015. The month of June was recorded as the 4th wettest month in history which can also be acknowledged in the graph below. The Division fully treated 24.8 billion gallons of wastewater received in 2015.



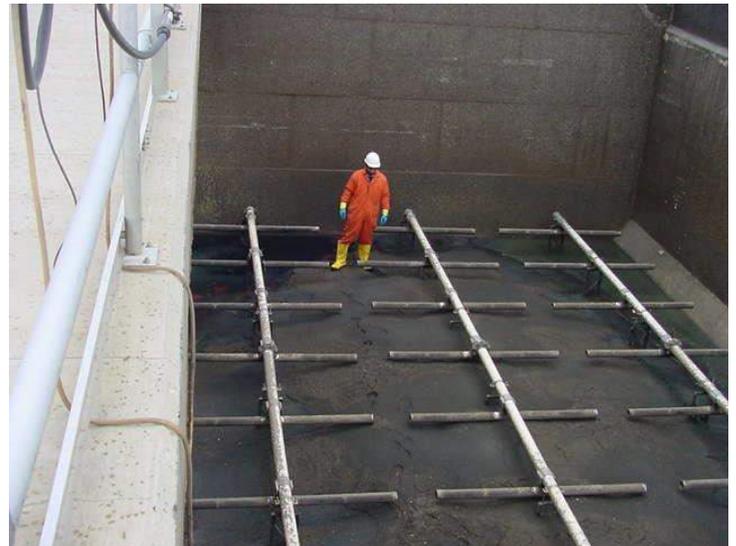
- Utilized the methane gas produced in the anaerobic digesters to generate electricity by using two reciprocating engine generators. The two generators generated about 5.5 Million Kilowatt-Hours, or about 20% of the 2015 electric power requirement for the Bay View Plant. The gas production is directly related to the amount of sludge collected from the influent sewage flows. This generation can equate to about \$300,000/year in savings that would have otherwise been paid to the electrical utility company.

Plant Maintenance

- Completed major repairs and refurbishments for Digesters #3, 4, 5 and 6 and placed them in service. The improvements included cleaning the digesters from accumulated grit, replacing pumps and mixers, and installing new electrical power supply. The improvements resulted in a 200% increase in methane gas production. This allowed the plant to use methane gas and produce in-house electricity (green power) resulting in about \$300,000 savings.
- Upgraded several sanitary pump stations located in the City in order to maintain reliable operation and avert any sanitary flooding problems. The upgrade work included the following pump stations: North Cross located in the Northcross Industrial Park, Burkglenn located off Dorr Street, Garden Road and Holland-Sylvania located in southwest Toledo, and York located in East Toledo.
- Replaced 1200 air diffusers in Aeration Tank #1, and rebuilt a cascade pump in order to maintain the operation of the biological treatment process. The air diffusers consist of

rubber tube membranes with fine perforations that supply metered amounts of air to the biological treatment process. They are typically replaced every four years.

- Upgraded part of the ferrous chloride feed system by replacing two variable speed drives and installing a backup pump. An electric power bump during a storm damaged the two variable speed drives for the ferrous chloride pumps. The ferrous chloride system is important and is used to remove dissolved phosphorous from the wastewater in the preliminary treatment area. Plant staff acted quickly by designing, installing and placing in operation a new system to prevent process interruptions.
- Completed most of the planned preventive maintenance for the Bay View Plant which included cleaning skimming; primary and final tanks; placing the chlorine system in and out of service; greasing and oiling equipment in and outside of the plant; internal inspection of the water tower; rebuilding of several pumps and conveyors; inspection of sanitary and storm pump stations; vibration survey of major rotating equipment and load testing of emergency engine generators and the power grid at the Bay View Plant.



Plant Engineering

- Highland Park Phase II Project: Completed the design of the project and advertised for construction bids. The City awarded the construction work to Ed Kelly & Sons in 2015. The project includes the installation of approximately 2,800 lineal feet of 4-inch HDPE sanitary force main beginning near the intersection of Hill Avenue and Fearing Boulevard to the end of Shasta Drive at Highland Park. The project also includes the construction of a pump station consisting of a 6 foot diameter wet well and valve vault, electrical and controls work, site improvements, and approximately 400 feet of roadway.
- Oakdale Storage Basin Project: Completed the construction of the project and placed the storage basin and associated pump station in service in early 2015. The storage basin has a storage capacity of 8 million gallons. The project is part of the Toledo Waterways Initiative (TWI) program and captures overflows from the Oakdale Regulator and route it to the Oakdale Basin, rather than to the Maumee River. The storage basin was constructed to reduce combined sewer overflows from an average of 25 per year to no more than 2.6 per year as per the TWI Long Term Control Plan.
- International Park Storage Basin Project: Completed the design of the project in late 2015 / early 2016. The project is part of the TWI program and is designed to capture combined sewer overflows from the Nevada Regulator and the Main Street Regulator in east Toledo, and routes flows to the International Park Storage Basin, rather than to the Maumee River. The project was designed to reduce overflows to no more than 3 per year. Construction of the storage basin and associated pump station is expected to begin in August 2016.
- Ottawa River Storage Basin Project: Started the construction of the project in early 2015. The construction work was awarded to Kokosing for the amount of \$67,977,000. The construction work is expected to be completed by the end of 2017. The project includes the construction of a 36 million gallon storage basin, 172 million gallons per day pump station, and five intercepting structures along with conveyance sewers. The project was designed to limit the number of combined sewer overflows to 2 over a five year period. The following activities were completed in 2015:
 - Approximately 1225 lineal feet of a 72-inch brick sewer installed in 1921 was replaced.
 - Rebuilt Windermere Blvd. from Lagrange to Manhattan.
 - Approximately 78% of the diversion structures were completed.
 - Approximately 85% of the intercepting and conveyance sewers were completed.
 - Approximately 96% of the basin excavation was completed.
 - Approximately 38% of the basin base concrete slabs were completed.

- Approximately 22% of the basin concrete walls and columns were completed.



Sewer #34 Diversion Chamber



Cell 4 Base Slab

Plant Systems

- Used Ubiquity Networks equipment to convert data communications to 900 MHz Ethernet Wireless data communications at Benore, North Cross and 299th Street Pump Stations. Eliminated AT&T monthly charges.
- Used Phoenix Contact equipment to convert data communications to 900 MHz Ethernet Wireless data communications at Columbus and York Pump Stations, and at Nevada and Fassett Regulators. Eliminated AT&T monthly charges.
- Installed a new rain gauge at the Oakdale Storage Basin to obtain additional rain data from east Toledo. Moved the rain gauge from Secor Road at Ottawa to the TWI Parkside Storage Basin. Also, moved the rain gauge from Fire Station #23 to the Dellwood Pump Station. Ensured proper operation of the two rain gauges, and eliminated AT&T monthly charges.
- Upgraded AT&T wired communications to T1 1.54 Mbps at Burk Glen, Creekwood, Dellwood, Glenbriar, Holland-Sylvania, and Pine Ridge Pump Stations.
- Upgraded the programmable logic controller (PLC) to ControlLogix at the Point Place Relief Pump Station. Also, rerouted all PLC and HMI data to upgraded facilities for the Plant's Water Tower and CO1 in the basement of the Main Equipment Building.

- Installed a new Aluma antenna tower at the CSO 1&2 Pump Station for future data communication connections with the TWI Dearborn Storage Tunnel and the International Park Storage Basin.
- Installed the first phase of WIFI data communications and PLC systems at One Government Center to supplement or replace the existing 220 MHz radio telemetry system.
- Made significant improvements to the Final Effluent flow metering system at the Plant. Calibrated and documented flow metering systems at various locations (601, 602, and 603) at the Plant, as required by the Ohio EPA.

Plant Energy

- Completed and advertised for a request for proposal (RFP) for the operation and maintenance and management of the co-generation facilities at the Bay View Plant and the Hoffman Road Landfill. The RFP included options for the management of the facilities as well as for the purchase of the co-generation equipment or the co-generation facilities. Five proposals were provided by DTE Energy, Veolia Energy, ProEnergy, PureEnergy, and North American Biofuels. Only DTE Energy and Veolia Energy complied with the requirements of the RFP. Both companies have been notified, and will be presenting their proposals and cost analyses to the City's evaluation committee in May 2016.

Water Reclamation 2016 Major Goals

- Meet all NPDES Permit effluent discharge parameters issued by the Ohio Environmental Protection Agency.
- Meet all Title V Permit air pollution parameters issued by the Ohio Environmental Protection Agency.
- Make improvements to the anaerobic digester system to increase gas production and to maximize generation of electricity.
- Make improvements to the ferrous chloride system to reduce phosphorous in the final effluent.
- Make improvements to various sanitary and storm pump stations to ensure equipment reliability and pumping capabilities.
- Expand and enhance the data collection and monitoring capabilities of the Plant's SCADA system.
- Complete design and construction phases of Toledo Waterways Initiative projects to meet Consent Decree deadlines.

- Offer tours to student groups from nursing and environmental programs from local colleges and high schools.
- Conduct quarterly Community Program Advisory Council (CPAC) meetings to discuss progress of Toledo Waterways Initiative projects.
- Pursue and implement the latest practices in plant maintenance and reliability to achieve 100% asset availability.
- Satisfy the USEPA required Pathogen Study by providing sampling data of the main Plant and Wet Weather Facility during simultaneous discharges. (3rd Q)
- Ensure effluent discharges meet Ohio Environmental Protection Agency limitations.



Water Treatment

Water Treatment Mission Statement

To provide safe, high quality drinking water in sufficient quantity to our customers in Toledo and the surrounding community at the lowest cost by operating and maintaining the best water plant in the United States to be in compliance with the Safe Drinking Water Act requirements.

Water Treatment personnel manage a system which produces 26 billion gallons of high quality drinking water per year for an estimated 500,000 people in the greater metropolitan Toledo area including Lucas County, and portions of Wood, Fulton and Monroe Counties. The Collins Park Water Treatment Plant, located at 3040 York Street, uses surface water drawn from Lake Erie as its source. Plant operations purify and transport an average of 73 million gallons per day (MGD) with a capacity of 120 MGD to enhance the lives of residents and support business and industry.

Water Treatment 2015 Highlights

Chlorination Disinfection Facilities

In May of 2015, the Department of Public Utilities installed new Chlorination facilities and carbon silos at the Collins Park Water Treatment Plant.



2015 HAB season

Following the “Do Not Drink” event in 2014 the Department of Public Utilities designed, awarded and constructed carbon silos and a chlorination disinfection facility prior to the 2015 HAB season. Project was completed in less than 9 months to be ready in time for HAB season.

The Division of Water Treatment installed an early warning system for Algal Blooms, increased the capacity for carbon, and installed a dashboard on the City website to update customers daily on the status of the water in Lake Erie and at the tap.

The Department of Public Utilities partnered with various agencies and universities to install buoys and sondes blanketed throughout Lake Erie to take temperature, pH, and detect the presence of blue-green algae in the water. Data from those buoys are updated to the website every 10 minutes to act as an early warning system. Locations:

Water Treatment 2016 Major Goals

- Meet all drinking water regulations required by the OEPA.
- Provide informative presentations as requested on Toledo Water Treatment Plant operations, harmful algal bloom barriers and capital improvements programs.
- Refine implementation of Cityworks plan to evaluate planned/proactive vs. corrective/reactive maintenance.
- Encourage participation in operator training and assist with departmental license incentive program.
- Participate in TMACOG Water Quality Program and Lucas County Source Water Protection Plan; also the Regional Water Feasibility Study.
- Maintain NPDES permits for lagoons.
- Comply with the findings of our PERP risk reduction program.

Water Treatment

By TOM HENRY
BLADE STAFF WRITER

The modern science of creating safe drinking water varies from one community to the next. But the fundamental concepts date back to ancient Rome. Toledo actually benefits from geography more than most communities. Several hours pass from the time raw Lake Erie water is drawn into the city's intake crib and it reaches the Collins Park Water Treatment Plant. That's important, operators say, because it gives them time to pretreat the water before it arrives at the main facility for full treatment.

It's not all about how many chemicals are added along the way. Contact time also makes a difference.

Once that partially treated water arrives at the plant, a series of steps are taken over several more hours before the water is clean enough to come out of your faucet.

First, operators try to get the big stuff — the particles — out. That removes a lot of the algal toxins right off the bat, including microcystin.

Chemicals such as alum help particles bind together and settle to the bottom. That clumping action is enhanced by paddles that gently stir slow-moving water like spoons mixing cake batter — not too fast and not too slow.

Once the big stuff is removed, the water is filtered, removing even finer particles.

Adjustments are made to the water chemistry along the way.

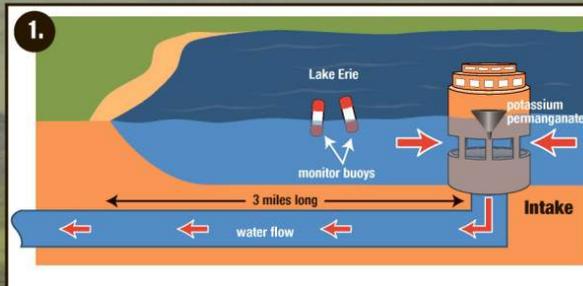
Toledo's current water treatment operation at the Collins Park Water Treatment Plant is 74 years old. It was dedicated by President Franklin D. Roosevelt.

But, as Ed Moore, Toledo's public utilities director, told councilmen on Aug. 4, 2014 — the day last year's Toledo water crisis ended — it doesn't matter if it's a two-year-old plant or a 200-year-old plant. The source of the problem — the nutrients that grow algae in western Lake Erie — need to be reduced.

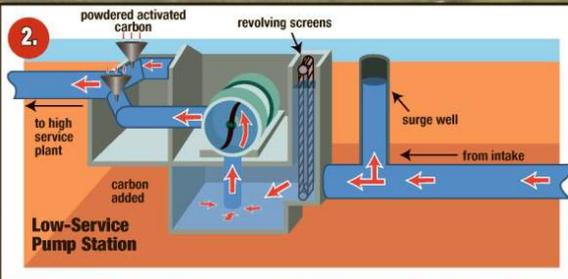


1. Water Intake

Raw Lake Erie water is drawn into the city of Toledo's water-intake crib three miles offshore, in Lake Erie's Maumee Bay. The water is drawn well below the surface, pretreated with potassium permanganate, and sent to the city's low-service pump station onshore. Buoys and sensors give operators more time to adjust treatment this year.



2. Low-Service Pump Station



2. Low-Service Pump Station

The low-service pump station's main purpose is to move the raw lake water along to the Collins Park Water Treatment Plant for full treatment. While at the low-service pump station, powdered activated carbon is added to the water. It's important to note those two pretreatments — potassium permanganate and powdered activated carbon — make it much easier for the city to clean and disinfect the water when it reaches the Collins Park Water Treatment Plant because of the hours of contact time before it gets there.

3. Collins Park Water Treatment Plant

The Collins Park Water Treatment Plant in East Toledo is where most of the action occurs.

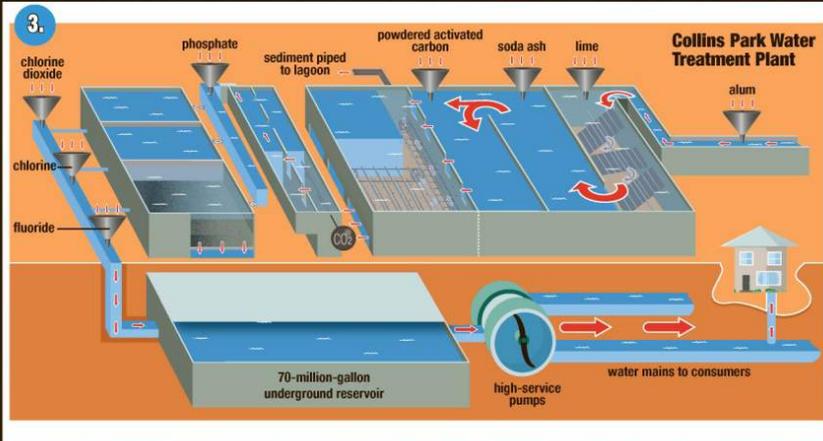
Alum is added to water when it first enters the plant to help particles bind together. That's called "flocculation."

Getting particles to bind together helps operators remove a lot of toxin from the water because it settles out.

Lime, soda ash, polyphosphate, chlorine dioxide, chlorine, carbon dioxide, and fluoride are added at various stages of the process, as is carbon. Each of them plays a role in softening, improving taste, removing odors, cleaning, and disinfecting the water.

Once particles are removed, the water is filtered before ending up in a 70-million-gallon underground reservoir, where it sits for several hours to give the chlorine more time to ensure the water is disinfected.

Massive pumps in another building, known as high-service pumps, are the plant's workhorses. They push the finished water out to the public water lines with incredible force. The water then passes through a network of pipes that lead to homes in the Greater Toledo area.



Chemicals at work

Here is a list of chemicals added to the city's water and the function they perform in water treatment.

Aluminum sulfate (alum): coagulation and algal toxin removal
Lime and soda: softening (removes hardness)
Polyphosphate: corrosion control
Potassium permanganate: zebra mussel control
Powdered activated carbon: taste and odor control and algal toxin removal

Chlorine: disinfection and algal toxin removal
Chlorine dioxide: disinfection
Fluoride: dental health
Carbon dioxide: helps stabilize water to prevent pipe damage

BLADE GRAPHIC

Utilities Administration

Utilities Administration provides the primary administrative fiscal and operational control functions for the Department of Public Utilities. It consists of the Sections of Accounting, Billing, Customer Service, Legal, DPU/SAP Support, Records, and Administrative Support.

Utilities Administration provides services to approximately 122,000 customers estimated to represent some 500,000 people. The offices are located at 420 Madison Avenue in Toledo.

Highlights for 2015

In 2015 Utilities Administration continued to improve the quality of Customer Service delivered through outreach, training and formal call monitoring. A focus was also on financial responsibility through regular budget monitoring and improving billing and collection practices.

- In September of 2015 Call City Hall was merged with Water Customer Service to form a unified Customer Service Call Center, reporting to one management structure.
 - Call City Hall was rebranded as Engage Toledo
 - Service Level Agreements (Internal MOU's) between the Call Center and City of Toledo Departments were created to improve the level of service delivered to citizens.
- Launched Online Billing and registered 4,457 customers by year end.
- Initiated a customer outreach program and reached over 6,000 customers at over 150 events.
- Water Customer Service assisted over 140,000 customers in person and over the phone during 2015.
- Implemented a formal call monitoring program to ensure excellent customer service and assist representatives grow their skills.
- Customer Service Representatives were given one training hour per week and completed 1,433 modules of soft skill training to improve their skills.
- Worked with community partners to implement the process for the new Senior-Water Volume Discount program.
- Assisted in the creation of the Utility Appeals Board and revised procedures for bill disputes to simplify the process for customers.
- Worked with the real estate community implement the Account Certification Form and process for communicating delinquent charges at the time of sale.
- Created the Residential Property Owner Checklist to assist in educating our customers.
- Participated in National Drinking Water Week and Customer Service Week to educate employees and the public.
- Courtesy calls were initiated in the legal unit to give customers the opportunity to address outstanding balances prior to the account being sent to outside collections, and incurring additional charges.

- Over \$1 million was collected through various legal processes such as property tax liens, collection agencies, collection calls, sheriff sales, bankruptcies, and Theft of Service prosecutions.
- 378 property tax liens were certified to the Lucas County Auditor
- The billing unit processed 20,354 work orders in 2015.
- The billing unit identified 8,158 accounts through exception reporting. They were reviewed and processed to ensure an accurate bill was sent to the customer.
- 74,053 customer payments were processed in the walk-in customer service center.
- The DPU/SAP unit eliminated a consultant contract and assisted in the negotiation of a revised hosting contract, resulting in major budgetary savings.



Utilities Administration Major Goals for 2016

1. Explore conversion to monthly billing and updated bill design.
 2. Improve website in an effort to assist customers with their bills and locate helpful information.
 3. Improve billing accuracy and timeliness through process improvements and automated work orders.
 4. Expand our customer outreach program.
 5. Establish service level agreements. Implement a follow up program to keep customers informed of service request status.
 6. Implement a customer satisfaction survey.
 7. Establish a business desk for streamlined communication with business customers.
- Continue to work with water distribution to enhance the customer experience in the field.

8. Increase revenue and collection through a more efficient billing process and amended collection process.
9. Implement a formal write off policy.
10. Continue to aggressively monitor budget to actual reports monthly.



**City of Toledo
Department of Public Utilities
420 Madison Ave.**

**Customer Service: 419-245-1800
Engage Toledo: 419-936-2020**

www.toledo.oh.gov/services/public-utilities

City of Toledo, Ohio
Statement of Net Position
Proprietary Funds
December 31, 2014
(Amounts in Thousands)

	Business-type Activities - Enterprise Funds				Governmental Activities	
	Water	Sewer	Utility Administrative Services	Nonmajor Enterprise	Total Enterprise Funds	Internal Service Funds
ASSETS						
<u>Current:</u>						
Cash and Equivalents with Treasury	\$ 108	\$ 14	\$ 10,925	\$ 6	\$ 11,053	\$ -
Cash and Equivalents Held by Escrow	1,086	173	-	3	1,262	-
Cash and Equivalents Other	2	-	160	1	163	-
Investments	3,007	1,360	66,518	9,889	80,774	-
Restricted Investments	224,318	3,533	-	5,330	233,181	15
Receivables (Net of Allowance)	10,707	16,784	318	8,524	36,333	958
Due From Other:						
Funds	6,955	45,356	-	6,901	59,212	33,275
Inventory of Supplies	4,769	873	26	-	5,668	803
Total Current Assets	250,952	68,093	77,947	30,654	427,646	35,051
<u>Noncurrent:</u>						
Land and Construction in Progress	66,050	172,030	-	8,868	246,948	465
Other Capital Assets, net of Accumulated Depreciation	174,928	392,819	157	32,901	600,805	21,103
Total Noncurrent Assets	240,978	564,849	157	41,769	847,753	21,568
Total assets	491,930	632,942	78,104	72,423	1,275,399	56,619
DEFERRED OUTFLOWS OF RESOURCES						
Unamortized Bond Insurance	137	21	-	-	158	-
LIABILITIES						
<u>Current:</u>						
Accounts Payable	5,986	3,216	118	278	9,598	1,678
Customer Deposits	2,684	558	1	421	3,664	317
Retainage	383	2,390	-	153	2,926	-
Due to Other:						
Funds	-	-	74,961	5,920	80,881	-
Governments	16	49	-	11	76	-
Other Current Liabilities	-	-	-	-	-	17,758
Accrued Interest Payable	1,869	4,074	-	61	6,004	-
Accrued Wages and Benefits	747	1,004	444	192	2,387	487
Current Portion of:						
Compensated Absences Payable	17	8	-	5	30	-
Bonds, Loans and Notes Payable, net	7,906	18,359	-	1,476	27,741	4,500
Total Current Liabilities	19,608	29,658	75,524	8,517	133,307	24,740
<u>Noncurrent:</u>						
Compensated Absences Payable	1,396	2,034	1,011	338	4,779	-
Bonds, Loans and Notes Payable, net	308,826	322,598	-	18,231	649,655	-
Total Noncurrent Liabilities	310,222	324,632	1,011	18,569	654,434	-
Total Liabilities	329,830	354,290	76,535	27,086	787,741	24,740
NET POSITION						
Net Investment in Capital Assets	127,754	224,832	157	39,005	391,748	17,083
Restricted:						
Debt Service	3,456	6,500	-	22	9,978	-
Replacement	21,319	41,077	-	16,472	78,868	-
Improvement	100	100	-	100	300	-
Unrestricted	9,608	6,164	1,412	(10,262)	6,922	14,796
Total Net Position	\$ 162,237	\$ 278,673	\$ 1,569	\$ 45,337	\$ 487,816	\$ 31,879

The notes to the financial statements are an integral part of this statement.

City of Toledo, Ohio
Statement of Revenues, Expenses, and Changes in Fund Net Position
Proprietary Funds
For the Year ended December 31, 2014
(Amounts in Thousands)

	Business-type Activities - Enterprise Funds					Governmental
	Water	Sewer	Utility Administrative Services	Nonmajor Enterprise	Total Enterprise Funds	Internal Service Funds
OPERATING REVENUES						
Charges for Services	\$ 57,205	\$ 69,688	\$ 12,163	\$ 12,282	\$ 151,338	\$ 28,590
Other Revenue	-	202	-	3,964	4,166	430
Total Operating Revenue	<u>57,205</u>	<u>69,890</u>	<u>12,163</u>	<u>16,246</u>	<u>155,504</u>	<u>29,020</u>
OPERATING EXPENSES						
Personnel Services	13,564	17,503	7,879	3,431	42,377	7,495
Contractual Services	10,351	13,994	3,640	2,553	30,538	9,639
Materials and Supplies	8,739	2,604	602	466	12,411	8,010
Utilities	2,646	3,301	38	732	6,717	1,853
Depreciation	5,471	14,800	17	1,387	21,675	2,221
Total Operating Expenses	<u>40,771</u>	<u>52,202</u>	<u>12,176</u>	<u>8,569</u>	<u>113,718</u>	<u>29,218</u>
Operating Income (Loss)	<u>16,434</u>	<u>17,688</u>	<u>(13)</u>	<u>7,677</u>	<u>41,786</u>	<u>(198)</u>
NONOPERATING REVENUES (EXPENSES)						
Investment Earnings	1,367	13	281	157	1,818	-
Interest Expense and Fiscal Charges	(12,701)	(10,972)	-	(723)	(24,396)	(37)
Gain (Loss) on Sale of Capital Assets	17	-	-	656	673	(3)
Total Nonoperating Revenues (Expenses)	<u>(11,317)</u>	<u>(10,959)</u>	<u>281</u>	<u>90</u>	<u>(21,905)</u>	<u>(40)</u>
Income (Loss) Before Transfers and Contributions	5,117	6,729	268	7,767	19,881	(238)
Capital Contributions	-	1,611	-	872	2,483	-
Transfers In	-	-	-	1,624	1,624	-
Transfers Out	(75)	(75)	-	(2,674)	(2,824)	-
Change in Net Position	5,042	8,265	268	7,589	21,164	(238)
Net Position at January 1	157,195	270,408	1,301	37,748	466,652	32,117
Net Position at December 31	<u>\$ 162,237</u>	<u>\$ 278,673</u>	<u>\$ 1,569</u>	<u>\$ 45,337</u>	<u>\$ 487,816</u>	<u>\$ 31,879</u>

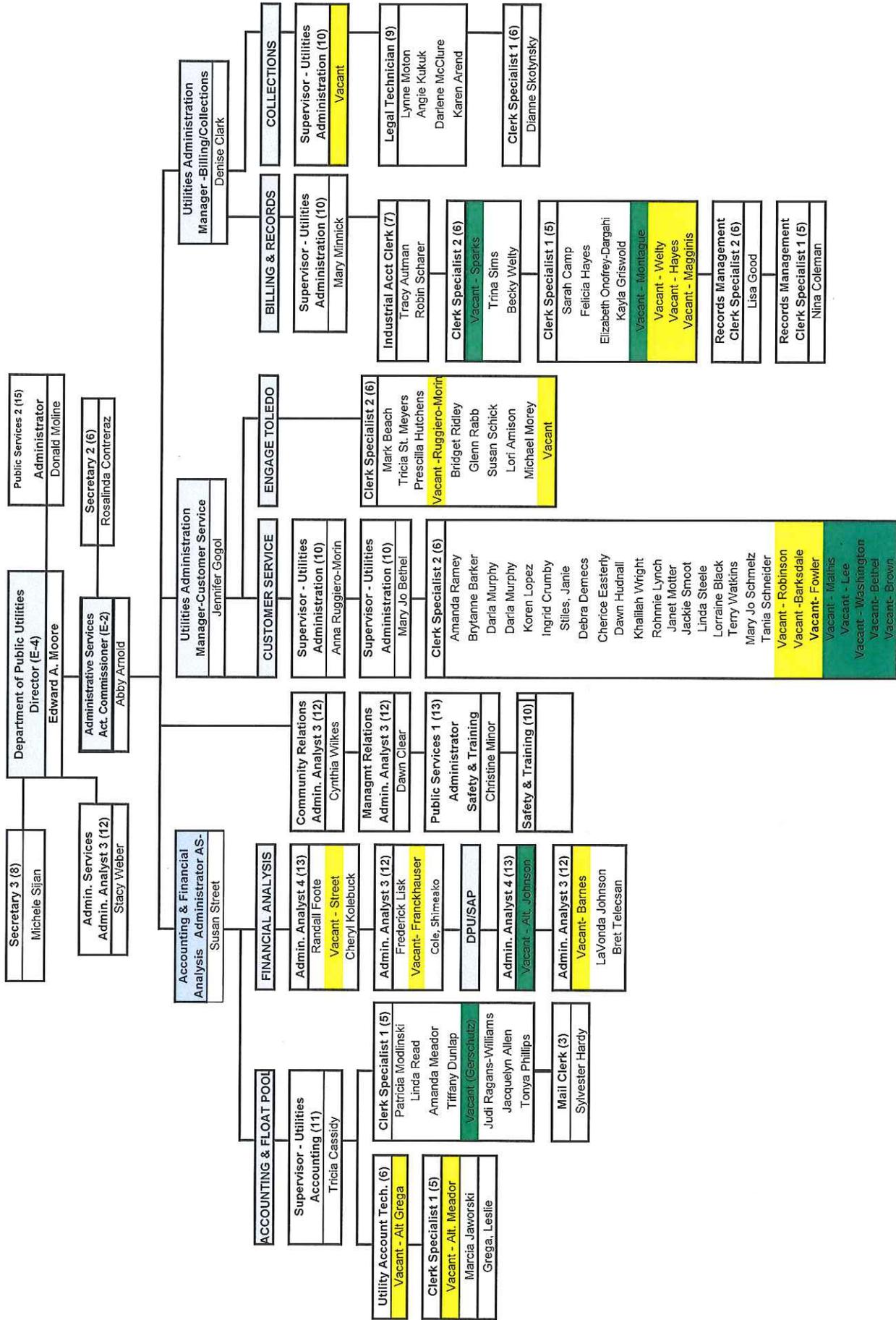
The notes to the financial statements are an integral part of this statement.

City of Toledo, Ohio
Statement of Cash Flows
Proprietary Funds
For the Year Ended December 31, 2014
(Amounts in Thousands)

	Business-Type Activities - Enterprise Funds					Governmental Activities - Internal Service Funds
	Water	Sewer	Utility Administrative Services	Nonmajor	Total	
Operating activities:						
Cash received from customers	\$ 56,253	\$ 69,605	\$ 28,060	\$ 17,086	\$ 171,004	\$ 28,479
Cash paid to employees	(14,008)	(18,098)	(7,925)	(3,553)	(43,584)	(7,344)
Cash paid to suppliers	(26,033)	(22,890)	(4,502)	(3,884)	(57,309)	(21,606)
Other receipts	-	202	-	3,964	4,166	430
Net cash provided by (used by) operating activities	16,212	28,819	15,633	13,613	74,277	(41)
Noncapital financial activities:						
Transfers in	-	-	-	1,624	1,624	-
Transfers out	(75)	(75)	-	(2,674)	(2,824)	-
Net cash provided by (used by) noncapital financing activities	(75)	(75)	-	(1,050)	(1,200)	-
Capital and related financing activities:						
Proceeds from capital grants and contributions	-	1,611	-	872	2,483	-
Proceeds from the sales of assets	17	-	-	1,511	1,528	-
Purchases of property, plant and equipment	(31,601)	(30,300)	(1)	(9,119)	(71,021)	(892)
Principal payments	(8,836)	(18,650)	-	(1,262)	(28,748)	(275)
Proceeds from the issuance of bonds, loans, and notes	18,600	27,953	-	43	46,596	1,245
Interest and fiscal charges paid on bonds, loans and notes	(12,708)	(10,888)	-	(736)	(24,332)	(37)
Net cash provided by (used by) capital and related financing activities	(34,528)	(30,274)	(1)	(8,691)	(73,494)	41
Investing activities:						
Proceeds from sales and maturities of investments	129,877	1,374	46,710	6,584	184,545	-
Purchase of investments	(130,411)	(3,500)	(60,661)	(10,635)	(205,207)	-
Investment income received on investments	1,325	13	194	156	1,688	-
Net cash provided by (used by) investing activities	791	(2,113)	(13,757)	(3,895)	(18,974)	-
Increase (decrease) in cash and cash equivalents	(17,600)	(3,643)	1,875	(23)	(19,391)	-
Cash and cash equivalents at beginning of year	18,796	3,830	9,210	33	31,869	-
Cash and cash equivalents at end of year	<u>\$ 1,196</u>	<u>\$ 187</u>	<u>\$ 11,085</u>	<u>\$ 10</u>	<u>\$ 12,478</u>	<u>\$ -</u>
Reconciliation of net operating income (loss) to net cash provided by (used by) operating activities:						
Operating income (loss)	\$ 16,434	\$ 17,688	\$ (13)	\$ 7,677	\$ 41,786	\$ (198)
Adjustments to reconcile operating income (loss) to net cash provided by (used by) operating activities:						
Depreciation	5,471	14,800	17	1,387	21,675	2,221
Increase (decrease) in allowance for doubtful accounts	421	(166)	-	437	692	-
Changes in assets and liabilities:						
Receivables	(1,373)	83	(190)	(345)	(1,825)	(426)
Due to (from) other:						
Funds	(6,883)	(4,828)	16,087	4,330	8,706	(3,177)
Governments	16	49	-	11	76	-
Inventory of supplies	(353)	(288)	49	-	(592)	480
Accounts payable	3,539	1,176	56	159	4,930	908
Customer deposits	(726)	(132)	(327)	3	(1,182)	-
Retainage	110	1,032	-	76	1,218	-
Accrued wages and benefits	10	43	37	(16)	74	183
Compensated absences	(454)	(638)	(83)	(106)	(1,281)	(32)
Net cash provided by (used by) operating activities	<u>\$ 16,212</u>	<u>\$ 28,819</u>	<u>\$ 15,633</u>	<u>\$ 13,613</u>	<u>\$ 74,277</u>	<u>\$ (41)</u>

The notes to the financial statements are an integral part of this statement.

UTILITIES ADMINISTRATION
2016 ORGANIZATIONAL CHART





TOLEDO DEPARTMENT OF PUBLIC UTILITIES: OVERCOMING OBSTACLES





Toledo Department of Public Utilities

Overcoming obstacles

*Facing major infrastructure problems, including a national
Director Ed Moore discusses how he and his team were able to
quality of life for citizens moving forward.*

Written by: Robert Spence Produced by: Tom Venturo



t

*ly covered drinking water advisory,
ble to right the ship to improve the*



Ottawa River storage facility

What a difference a year makes: In August 2014, the Toledo DPU advised half a million people in the area to not drink their tap water due to a toxin detected in the water supply. A state of emergency was declared and residents were without drinking water for nearly three days.

“The do-not-drink advisory is a big

part of our story, because it became a catalyst for change,” said Toledo’s DPU Director Ed Moore.

While residents have since returned to normalcy, it’s been a different story for the utilities department. Over the past year, DPU has launched a slew of programs and initiatives to upgrade infrastructure in order to ensure the contamination

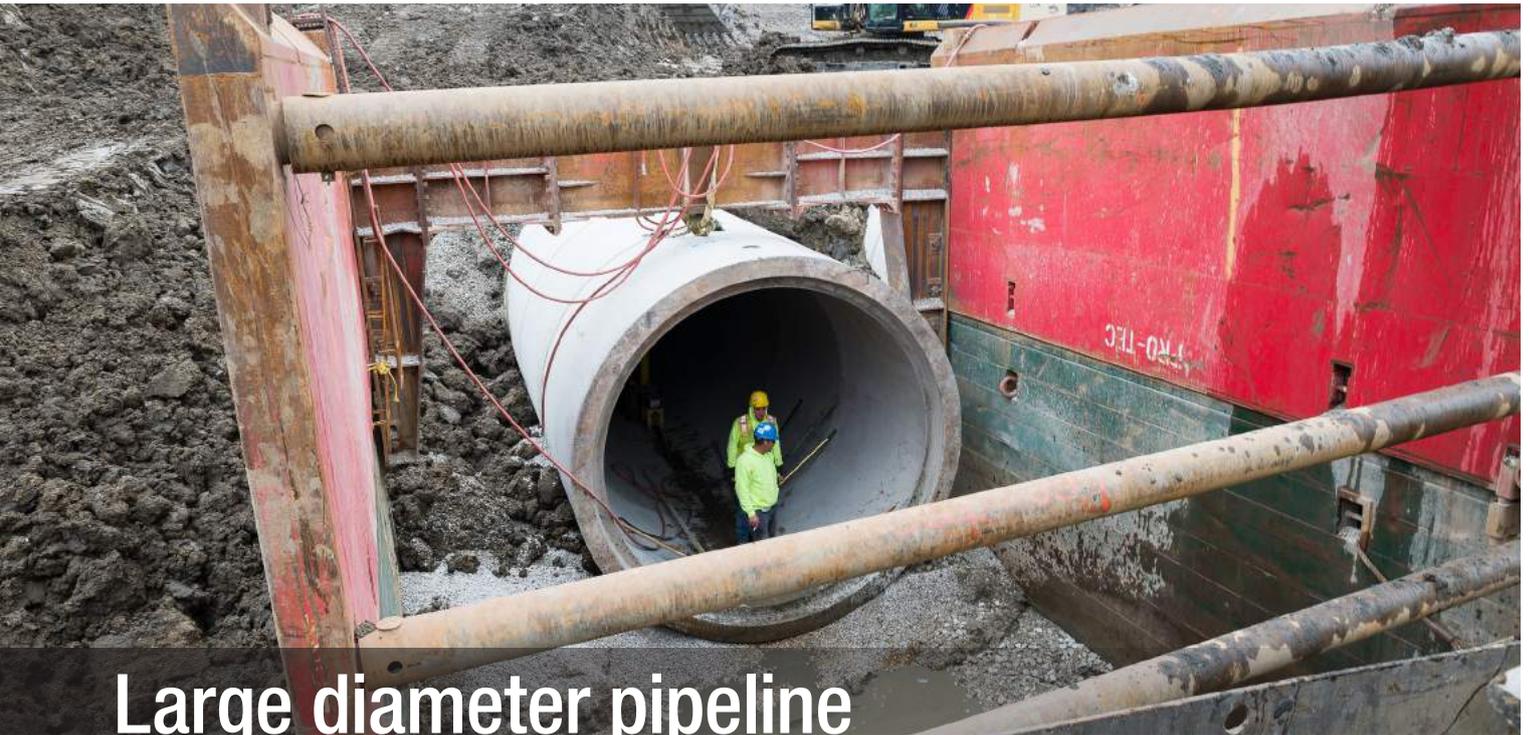


issue never occurs again.

Plan of attack

According to Moore, the utilities department in Toledo had been falling on hard times in recent years, with decreased funding for capital projects and infrastructure. This resulted in a significant amount of deferred maintenance.

“In 2013, with the help of the Ohio Environmental Protection Agency, we went to the city council and received a water rate increase for capital improvements. We initiated \$314 million in bonds through the rate increase, assigned \$264 million for the drinking water plant, and the other \$50 million to the water distribution system,” said Moore.



Large diameter pipeline

“The original plan was to stretch all the improvements over a 20-year period, but the Ohio EPA was seriously concerned about the condition of the drinking water plant and condensed the plan down to five years.”

Faced with this quick turnaround, DPU needed to be highly organized and efficient to meet its goals.

“That’s why we hired Warren Henry to lead the water treatment improvements program,” said Moore. “He basically quarterbacked this initiative and turned things around, including our relationship with the Ohio EPA.”

“He called me after the drinking

water advisory and offered to help. When a guy like Warren calls, you get him started working right away. Warren played a big part in what we did and I give him a lot of credit,” Moore said.

Implementing change

While plans may have been in the works, the do-not-drink advisory threw into sharp relief how critically Toledo needed these vital upgrades to improve the quality of life for the community. The first step toward change for DPU was getting the do-not-drink advisory lifted.

Since then, it has been a beehive of activity with almost as



Dearborn project

many contractor personnel as city employees at the water treatment plant. The department immediately updated its treatment protocol using a combination of chemicals to treat Lake Erie water. “We quadrupled our powder active carbon, quadrupled the potassium intake and activated an early warning system with a buoy that serves as a floating weather system,” said Moore.

DPU also convened a Blue Ribbon Panel of nine national experts to review long-term plant improvements to remove algae toxins. The panel recommended a process that pushed the City of Toledo into the future of water treatment. “They

came in and validated everything we were planning to do. Additionally, the panel recommended we add ozone to our plant, which is the big gun for the microcystin toxin. It’s basically creating lightning in a bottle and electrifying our water. It’s been around but it’s very expensive.”

Taking it a step further, the department has invested approximately \$12 million in a new chlorination facility at the treatment plant that will allow more chlorine to be stored on site and injected in more locations along the treatment process, which should prevent future undesired scenarios from happening again.



5177 Richmond Avenue Suite 530, Houston, TX 77056

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a better world**



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Program Manager
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www.aecom.com



MAKING OUR WATERS CLEANER

Since the Toledo Waterways Initiative began in 2002, much progress has been made to protect and preserve our local water bodies.

We're proud to partner with the City of Toledo to deliver social, economic and environmental benefits to the community for years to come.



Jones & Henry Engineers, Ltd.



In the end, the do-not-drink advisory was a major learning experience for all of the agencies involved. The silver lining of the ordeal is the department has an established protocol for procuring consistent sampling, which is now being used as a model statewide.

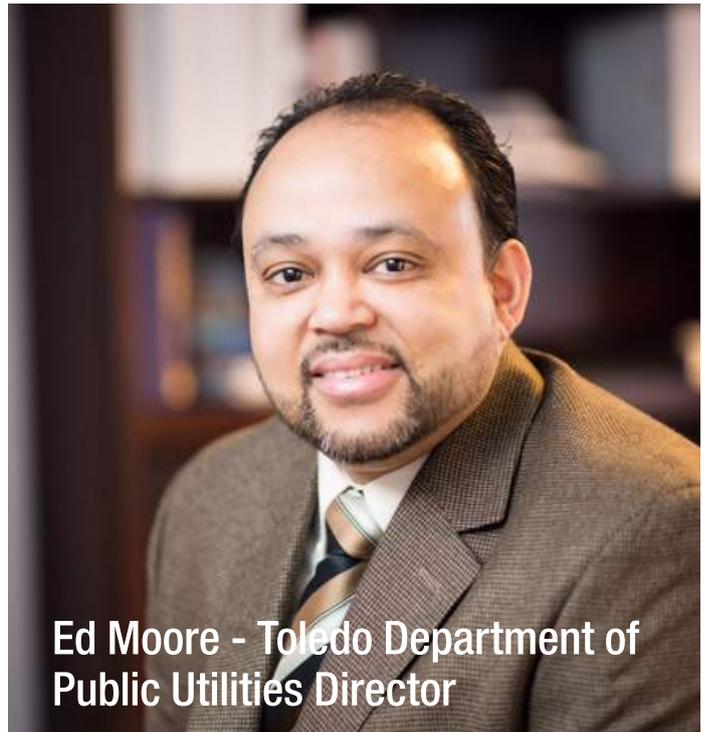
Toledo Waterways Initiative

Upon citizen approval in 2002, and in compliance with the city's consent decree, DPU is in the midst of the Toledo Waterways Initiative (TWI), a massive water pollution control project to upgrade sewer infrastructure and reduce overflows into area waterways that will cost in excess of \$500 million.

Led by Julie Cousino, Program Administrator of TWI, the initiative is nearing completion after more than a decade since its inauguration.

TWI aims to reduce contaminants in local rivers, streams and Lake Erie by building several types of structures to hold, separate or divert storm and waste water during periods of heavy rain. This water is then funneled for treatment before being returned to the waterways.

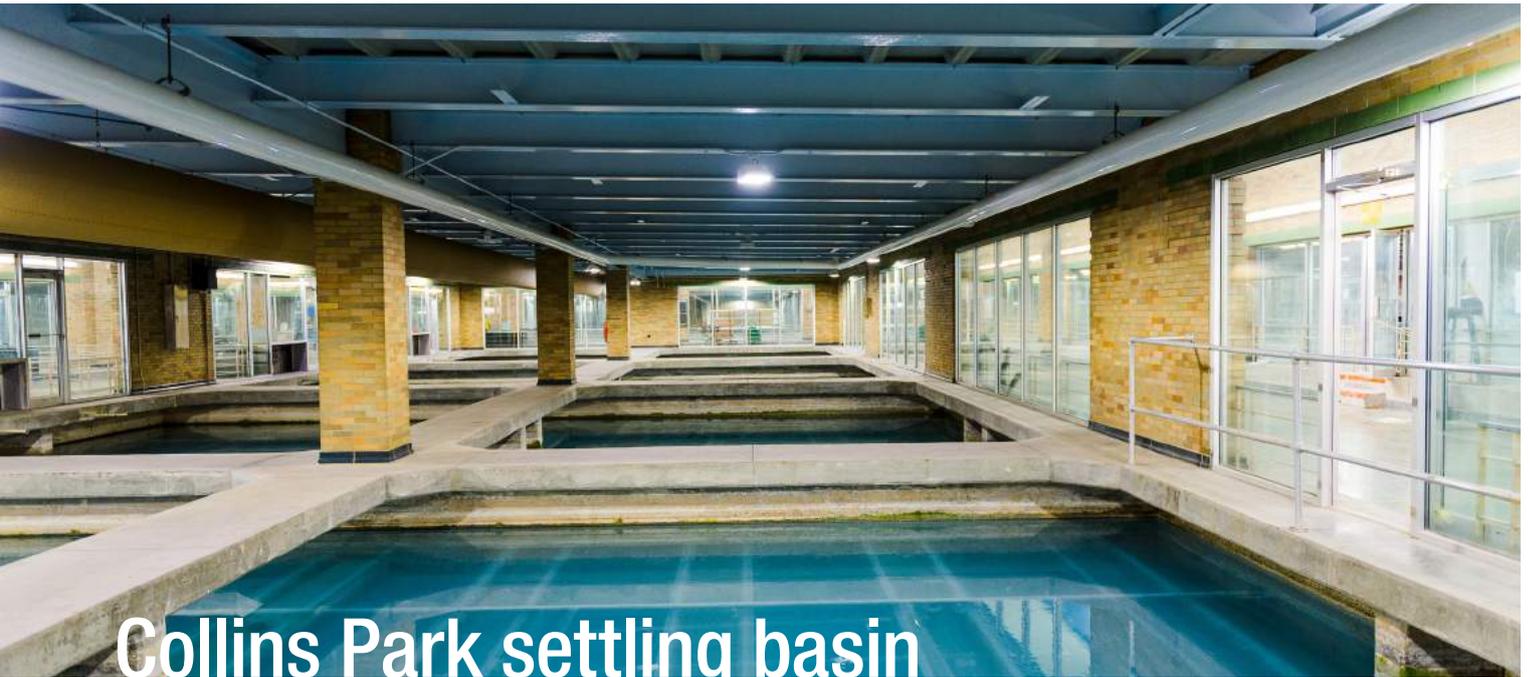
Completed in 2006, phase one of



Ed Moore - Toledo Department of Public Utilities Director

TWI consisted of improvements to the water reclamation plant with the addition of a wet weather facility with cutting-edge technology, including a 25 MG equalization basin that doubled the capacity of the plant. Phase two was completed in 2014 and included the elimination of all known sanitary sewer overflows. The third portion of the program, which is currently underway, involves the reduction of combined sewer overflows. The largest project for this portion of TWI includes a 36 MG underground storage basin.

“The Toledo Waterways Initiative is one of the most innovative initiatives I’ve been a part of,” said Moore. “This program will allow us to have



Collins Park settling basin

a platform to build upon and set the stage for continuous improvements down the road.”

With the completion of construction in 2020, Cousino said, “TWI will eliminate approximately 650 MG of untreated sewage from entering Toledo’s waterways annually. That’s an 80 percent reduction in overflow volume.”

“Julie Cousino has been paramount for us and has ensured that all portions of the project are completed on time and on budget,” Moore said.

Moving forward

“Since the advisory, there have not only been massive capital

upgrades and investments” said Henry, “but the City has improved communications with the public using social media and the City’s website.” To ensure transparency among residents, earlier this year DPU began implementing a real-time dashboard posted on the city’s website that closely monitors water conditions in the intake crib in Lake Erie.

“One of the biggest benefits of the water-quality dashboard is that it dispelled rumors about drinking water conditions on a daily basis,” said Moore.

The system records the current status of drinking water quality based on Ohio EPA guidelines. The

scale consist of:

- **CLEAR:** not detected in the intake crib in Lake Erie and in tap water
- **WATCH:** microcystin detected in the intake crib in Lake Erie but not detected in tap water
- **CAUTION:** microcystin detected in tap water, but test results do not indicate the need to issue an advisory; additional testing and sampling underway and water treatment has been accelerated
- **PRE-SCHOOL ADVISORY:** do not drink for children five and younger.
- **DO NOT DRINK ADVISORY:** do not drink for all citizens

“We have an advanced warning system for early detection with buoys and sondes that allows us to implement operational changes, prior to the microcystin reaching the Collins Park Water Treatment Plant,” said Moore.

In addition, the drinking water advisory also revealed a lack of communication with interdepartmental agencies. Therefore, DPU has developed a text message and email system that links all regional community partners with instant communication.

DPU brought in industry experts, business community members and academia to brainstorm together. “All the ideas and recommendations came out of the stakeholder group. This group will continue to play a vital role in restoring the public’s confidence in our water system,” Moore concluded.

Company Information

INDUSTRY

Municipal Water and Sewer Utility

HEADQUARTERS

420 Madison Avenue,
Suite 100, Toledo, Ohio,
United States, 43604

FOUNDED

1873

EMPLOYEES

Approximately 600

REVENUE

Approximately \$150
million annually



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**City of Toledo
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420 Madison Ave.**

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www.toledo.oh.gov/services/public-utilities