

GREAT LAKES WATER AUTHORITY

2017 YEAR IN REVIEW



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Letter from the CEO



Sue McCormick
Chief Executive Officer

The completion of the Great Lakes Water Authority's (GLWA) second year of operations marks a shift in focus from the standup of the Authority to establishing steady and sustainable operations.

In 2017, this focus on sustainability saw the completion of a sewer conveyance system condition assessment, the beginning of comprehensive assessments of water transmission assets, enhancements to the WRAP program to provide member partners with options to best meet the specific needs of their communities, kickoff of the regional Wastewater Master Plan effort, the launch of the Authority's first Apprenticeship Program and last, but certainly not least, the signing of the first *One Water Partnering Agreement*.

This focus has been well received throughout our service sector, earning the Authority recognition from its peers, including the Gold Award for Exceptional Utility Performance from the Association of Metropolitan Water Agencies – which organizations generally do not win on their first attempt! None of this could have been accomplished without the dedication, innovation and knowledge of our team members.

This year's *Year in Review* is being broken down into three meaningful themes:

- 1 One Water:** Our system and operations;
- 2 One Team:** Collaboration between our team members, member partners and other stakeholders; and,
- 3 One Mission:** Water of unquestionable quality and effective and efficient services.

These three themes represent the pillars around which our organization operates, and in the following pages you will find not just a list of our accomplishments, but a deeper dive into who we are as a regional authority, as well as comments from our member partners, team members and other stakeholders.

By all accounts, our second year was a strong year for GLWA. I want to personally thank everyone involved for their contributions to this success – from our team members to our member partners to our vendors and other stakeholders. It is your commitment to partnership and collaboration that has made us stronger and allowed GLWA to become a leader in the water service sector.

We look forward to our continued partnership.

A handwritten signature in cursive script that reads "Sue McCormick". The signature is written in a dark blue or black ink.

Sincerely,
Sue McCormick
Chief Executive Officer



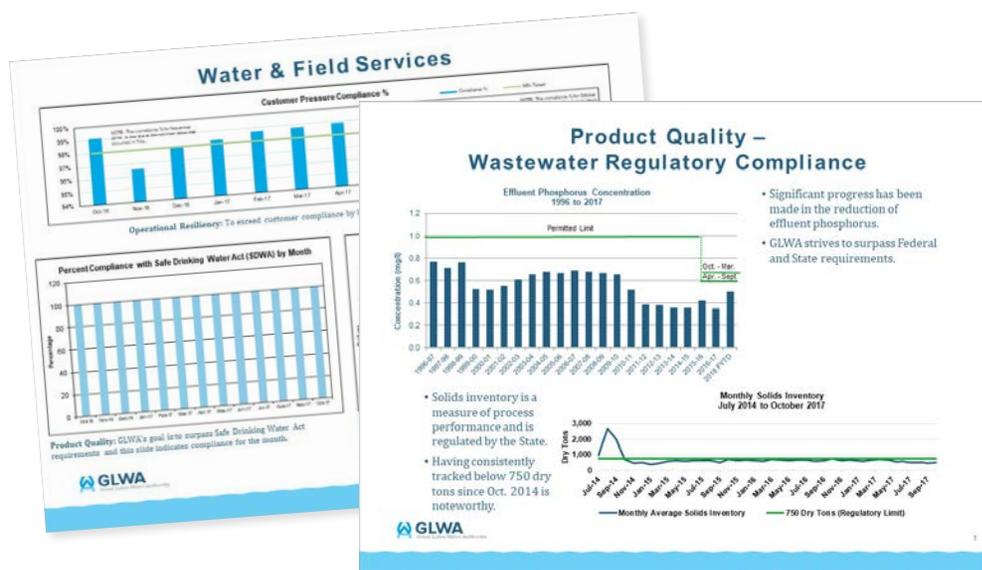
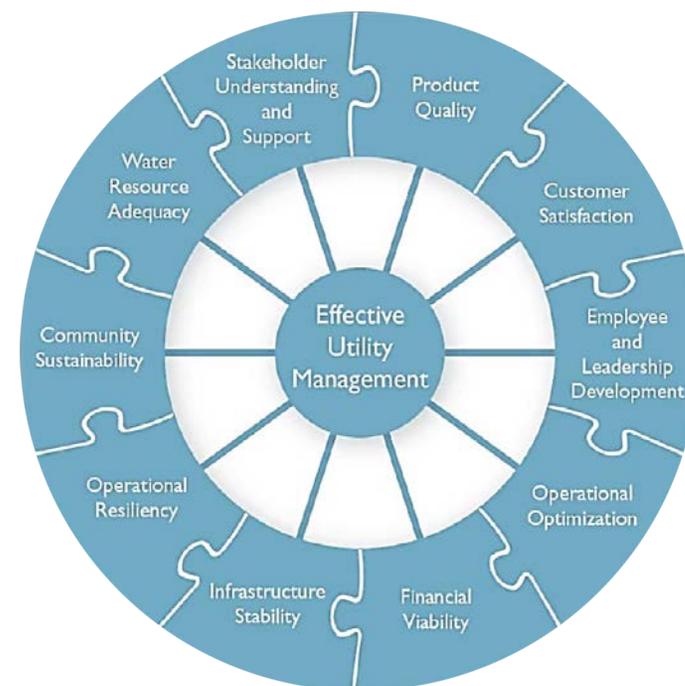
One Water
Our System and Operations

Measuring Success

“Coming together is a beginning; keeping together is progress; working together is success.” — Henry Ford

Since its inception in 2016, GLWA has focused on becoming the provider of choice for water and wastewater services in southeast Michigan. At the start of its second year of operations, the Authority began using Effective Utility Management (EUM) and its 10 Attributes of an Effectively Managed Utility to guide its path toward effective and sustainable operations. These 10 attributes are:

GLWA’s commitment to EUM bears out in the development of a series of Key Performance Indicators (KPIs) for each operating area. These monthly and quarterly KPIs measure progress on everything from cash reserves to product quality to the retention of team members and followers on GLWA’s social media channels. In the interest of transparency and accountability, a full report is given to the GLWA Board of Directors by CEO Sue McCormick during their workshop meeting, which is held on the second Wednesday of every month.





“As more people continue to recognize how vital adequate, reliable supplies of safe, clean drinking water are to public health and community sustainability, AMWA is pleased to spotlight the impressive achievements of public drinking water utilities that are leading the nation in their efforts toward sustainability through innovative management practices, executive leadership and employee engagement. Our 2017 management award winners are a credit to their communities, and we salute their formidable accomplishments.”

— Scott Potter, President, AMWA

GLWA received acknowledgement of its EUM efforts in November 2017 when the Association of Metropolitan Water Agencies (AMWA) honored the Authority with its annual Gold Award for Exceptional Utility Performance. AMWA is an organization of the largest publicly owned drinking water systems in the United States, and is the only policy-making organization solely for metropolitan drinking water suppliers. The Gold Award recognizes drinking water systems that exhibit high levels of performance in the 10 EUM Attributes. It was a tremendous accomplishment to be one of only three recipients in the country, made even more special in that it was our first submission and just our second year of operations.

GLWA’s achievement of the following milestones contributed to its selection for the AMWA Gold Award:

- ◆ Two upgrades of its bond ratings and the execution of an inaugural \$1.3 billion bond sale, which included a refinancing of nearly \$1.1 billion for a \$309 million savings over the life of the bonds;
- ◆ Launch of its Water Residential Assistance Program (WRAP), Michigan’s first sustainable water assistance program;
- ◆ Inauguration of the Authority’s first-ever apprenticeship program, which focuses on training for Electrical Instrumentation Control Technicians;
- ◆ Creation of a leadership training academy to build employees’ leadership skills;
- ◆ Development of an asset management governance structure; and,
- ◆ Continued focus on its environmental impact with the operation of its new Biosolids Dryer Facility.

Financial Sustainability: Five-Year Financial Plan

In a further nod to GLWA's commitment to sustainability, GLWA has established a five-year financial plan to communicate its stewardship of the system's assets and commitment to cost control, transparency and strong financial management.

The five-year plan provides the Authority and its member partners with a roadmap for the future, and lessens the risk of events beyond the organization's control. Moving forward, the plan will be extended to 10 years for even greater benefit.

Updated annually as part of the budget process, the plan encompasses several critical commitments:

- ◆ Keeping any annual increase to the revenue requirement to less than four percent;
- ◆ Working with its partners to achieve both equity and stability in charges moving forward;
- ◆ Continuing to build revenue-financed capital to optimize the use of long-term debt;
- ◆ Engaging, empowering and developing staff; a record number of cross-functional teams and operational staff at all levels of the organization were involved in the development of this plan;
- ◆ Attracting and retaining talented staff;
- ◆ Strengthening financial planning for improved strategy and timing for future debt issuances;
- ◆ Improving senior lien debt service coverage to achieve a lower cost of capital for our customers;
- ◆ Creating supplemental schedules and analysis that address questions from the our member partners, as well as provide the baseline information for an expanded KPI effort.

“The five-year financial plan document is a first of its kind for GLWA, and an example of a culture that embraces continuous improvement and innovation in everything that it does.”

— Nicolette Bateson, Chief Financial Officer/Treasurer

FY 2017-18 Budget and Charge Highlights

FY 2017-18 is a clear example of achieving, and in some cases surpassing, the commitments the Authority made at its formation.

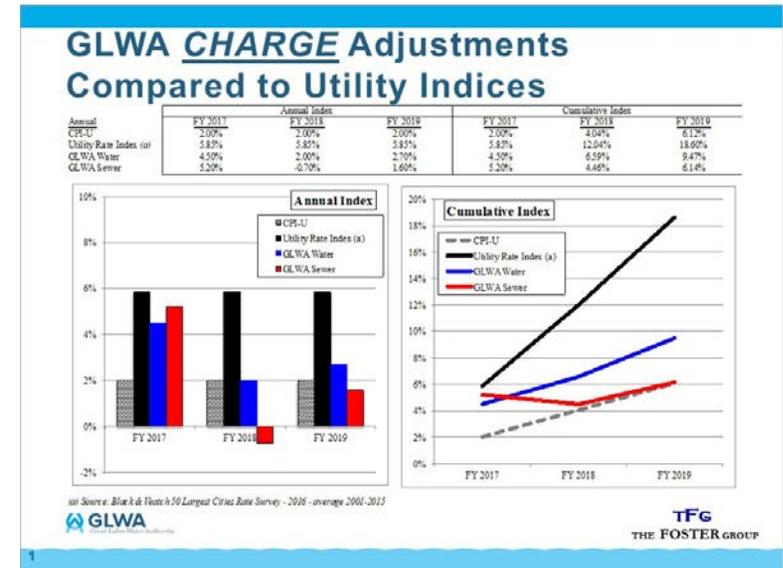
In FY 2017-18, GLWA fulfilled its commitment to:

- ◆ Keep its budget increase to less than four percent, with an approved drinking water system budget that decreased by one percent and an approved sewer system budget that increased by less than one percent (0.3 percent);
- ◆ Lower the cost of debt through its October 2016 bond refunding, which provides \$27 million of savings in FY 2018 (representing a portion of the \$309 million in savings over the life of the bonds);
- ◆ Continue to optimize the system, invest in technology, advance asset management expand energy management, and assure appropriate resources to operate the system effectively.

GLWA also achieved its four goals for member partner charges:

- 1. Moderate the average drinking water charges adjustment:** GLWA reduced the average charge adjustment to two percent from an initially proposed four percent;
- 2. Moderate the average sewer charges adjustment:** GLWA reduced charges to a 1.9 percent increase from an initially proposed 4.7 percent increase;
- 3. Explore regional collaboration and new customers for the water system:** GLWA signed a long-term contract with Flint, resulting in an increase in revenue from Genesee County in the first quarter of FY 2018 to offset charges to other water system customers;
- 4. Revisit the sewer shares allocation:** GLWA worked with its member partners to implement amended sewer shares for FY 2017-18 charges, which are based on strength of flow (SOF) and will be phased-in over a two-year period. This outcome was the result of a year-long data collection and research study by a technical team comprised of GLWA and its sewer customers.

It is also important to note that over the last three years, GLWA charge increases are less than half of that indicated for its peers in a Utility Rate Index published in 2016 by Black & Veatch. Further, GLWA charge increases (particularly for the wastewater system) are closer to inflationary indices than peer utility averages. This is notable for a highly capital and maintenance-intensive utility enterprise. *(See graph to the right)*



Operational Sustainability

Utility of the Future

This year, the Authority began the process of transitioning its Wastewater Treatment Plant (WWTP) to a Water Resource Recovery Facility (WRRF), which will ultimately operate on renewable energy. At the end of this process, the WRRF will be energy neutral, meaning that the facility will create enough energy to power its own operations, and possibly even become energy positive with the ability to generate enough energy to feed power to the power grid.

The transition reflects the organization's focus on more sustainable, innovative practices leading to its transformation into a Utility of the Future. This is a designation given by the National Association of Clean Water Agencies (NACWA) to utilities pioneering innovative technologies and cutting-edge practices with a focus on resource recovery.

The decades-long process for the Authority to become a full-fledged Utility of the Future will be completed through four overlapping phases:

Phase 1

The first phase included the start of operations of the Authority's Biosolids Dryer Facility (BDF), the second largest in the world. Through this facility, the Authority is now turning solids from the WRRF into environmentally friendly, nutrient-rich organic fertilizer. Additionally, the operation of the BDF has allowed the Authority to retire six of its oldest incinerators, dramatically improving air quality through reduced emissions. The BDF produces nearly 56 percent less carbon dioxide emissions than incineration, and also reduces air pollution, decreasing particulate emissions by 51 percent, nitrogen oxides by 87 percent, and carbon monoxide emissions by 95 percent;

Phase 2

The second phase of the transition began in the summer of 2017, as the Authority partnered with the University of Michigan and Michigan State University to study energy reduction practices. This will also include a full energy audit and exploration of renewable energy options;

Phase 3

The third phase will focus on phosphorus recovery, an essential and limited resource, and energy creation;

Phase 4

The fourth and final phase will take a deeper dive into resource recovery from sources beyond phosphorus, such as nitrogen.

Wastewater Master Plan

GLWA began a Comprehensive Regional Wastewater Master Plan (WWMP) in April 2017 that looked at the needs of the regional collection system and the WRRF over the next 40 years. Key to this planning process is the philosophy that the pipes in the system really know no boundaries and that we must review the public investment that has already been made, making sure that it is leveraged as new investments are considered.

The WWMP will develop capital improvement project recommendations for the first 20 years, and will propose strategies for the second 20 years. Importantly, the WWMP will build on past improvements in Combined Sewer Overflow (CSO) control, green infrastructure, resource recovery, and regulatory compliance over the last 10 years, and will identify operational and capital improvements to achieve the following outcomes:

- ◆ Protect Public Health and Safety;
- ◆ Preserve Natural Resources and a Healthy Environment;
- ◆ Maintain Reliable, High Quality Service;
- ◆ Assure Value of Investment;
- ◆ Contribute to Economic Prosperity.

A Steering Team, made up of GLWA member partners, GLWA team members, MDEQ, MDOT and other stakeholders collaborated to establish these four outcomes, along with performance measures for implementation of the WWMP. The Steering Team will also tap into the knowledge and ideas of other work groups, such as the Wastewater Best Practices Work Group, the Wastewater Analytics Task Force, Public Education Work Group, as well as reaching out to watershed groups and the public as the plan progresses.

The work for the WWMP is structured in two principal areas: the Regional Collection System and the WRRF.

- ◆ Regional Collection System: Reduction in basement flooding, expansion of green storm water infrastructure, and optimization to improve capacity are short term priorities for the WWMP. Longer term, the WWMP will identify the most cost-effective and affordable approaches to achieving regulatory compliance for remaining uncontrolled discharges from the system.
- ◆ Water Resource Recovery Facility: Short-term recommendations for the WWMP will identify optimization opportunities, as well as provide hydraulic and process models. Long-term strategies will be developed for disinfection and biosolids handling.

“We are pleased that GLWA is undertaking a comprehensive study, including input from around the region for this Wastewater Master Plan. This plan is a tool that can guide our region for many years and provide a road map for GLWA to maximize the performance of the system. As local communities are developing their own plans, it makes the most economic sense that they are not doing so in a vacuum, but rather that they are able to coordinate work with their neighbors and within the region as a whole. Ultimately, this can be a tool to help us work together to protect our magnificent Great Lakes for future generations.”

— Evans Bantios, P.E., Construction and Maintenance Manager, Macomb County Public Works

Five-Year Capital Improvement Plan

A robust Capital Improvement Plan (CIP) is critical given that GLWA is an asset-centric organization with an aging infrastructure. The Authority's infrastructure is one of the largest in the United States, supplying water and wastewater services to a population of nearly four million people using a vast array of highly technical and costly assets. Constructing, operating, maintaining and renewing these assets are at the core of achieving our mission,

“...to provide the nation's best water and sewer services to our customers.”

After nine months of hard work and dedication by more than 30 team members from across GLWA, a number of significant modifications and enhancements have been added to GLWA's five-year planning document.

These enhancements have occurred based upon two overarching strategies:

1. Development of a new Business Case Evaluation (BCE) database; and
2. Updating of the CIP based on significant stakeholder input and recommended changes.

While previous CIP's were based upon a combination of spreadsheets and word documents, now the core data collection effort is being performed using this newly developed BCE database. This new system has provided efficient collaboration of information, functionality and reporting capabilities.

CIP enhancements include:

- ◆ Expansion of the project prioritization and risk matrix;
- ◆ Cost estimation classification ratings;
- ◆ Projects identified by physical jurisdiction;
- ◆ Project year-to-year comparison tables; and
- ◆ Project schedules by phase.

“Overall, I think the plan looks really good with an amazing amount of detail. It shows that a lot of thought, time and effort has been put into its development, and I believe it's much more realistic as to how much work will actually get done.”

— Jeff McKeen, General Manager,
SOCWA & Co-Chair, GLWA One
Water Partnership

The process, information and database will continue to improve as new needs and enhancements are identified.



One Team

*Collaboration with our Member Partners, Team Members
and Other Stakeholders*

Member Partner/ Stakeholder Collaboration

The Authority's collaborative relationship with its member partners is the bedrock of its operating philosophy, strengthened through the development of various common projects and numerous meetings.

83

meetings
were held with
member partners
throughout 2017

One Water Partnership Agreement

In September 2017, the first *One Water Partnership Agreement* was signed by GLWA and its member partners. This historic agreement outlines the mutual commitments to working together for the greater good of the region, and details the responsibilities of all parties to moving the agreement forward. A critical addition to the agreement is the development of a multi-jurisdictional, multi-agency approach to infrastructure renewal and investment.

Perhaps just as important as the signing of the One Water Partnership Agreement, was the roll out of a new scorecard that will evaluate the partnership by metrics derived specifically from the "voice of the customer." This is a first of its kind measurement tool being used by a utility in the nation, and GLWA is committed to ensuring that all aspects of its operation understand the important feedback garnered from its member partners through this unique tool and use it to make the appropriate ongoing improvements.

One Water Partnership Mission Statement

To collaboratively ensure a One Water system approach to our regional water and wastewater system that will be economically, socially and environmentally responsible and sustainable.



GLWA member partners signing the first One Water Partnership Agreement on September 28, 2017.

Collaboration on a New Third Party Member Outreach Facilitator

With the impending retirement of GLWA's member outreach program's long-time facilitator, Project Innovations, scheduled to occur in 2018, the Authority collaborated with its member partners to draft and issue a request for proposal for a new facilitator to move the program forward. Thanks to the feedback and insights of a number of member partners, as well as a cross section of GLWA team members, Bridgeport Consulting was selected to fill this crucial role.

We look forward to working with them and expect great things. They certainly have big shoes to fill. The team at Project Innovations will be missed!



The Project Innovations and Bridgeport Consulting teams have worked seamlessly to transition the facilitation of the GLWA Member Partner Outreach Program. From the center moving left, is Bridgeport Consulting, and from the center moving right is Project Innovations.

Value Added Offerings

As member partners of Michigan's largest regional water authority, GLWA's customers receive special benefits that can only be recognized through membership. The Authority serves as a service-sector leader both regionally and nationally, and provides its member partners with access to the most innovative treatment processes, emerging contaminant monitoring, cutting-edge research and guidance on new regulatory requirements.

In addition to the above benefits, the Authority works hard to ensure its member partners are protected. For example, this past summer when an out-of-state company began distributing misleading mailers about water quality to several of GLWA's member partners, the Authority's Office of the General Counsel sprung to action immediately issuing a cease and desist letter to the company. Within seven days, GLWA was assured by the Missouri-based firm, that no more mailers would be distributed.

The Authority works to leverage its resources for the benefit of its member partners. For example, GLWA's Public Affairs Team launched an initiative to develop engaging video and social media content surrounding water and wastewater topics relevant to all member partners. One highly successful campaign, produced in conjunction with Oakland and Macomb Counties, focused on the serious issue of "flushables" and the damage they are doing to our sewer infrastructure.

GLWA has also begun investigating how it can leverage its extensive procurement power into a cooperative purchasing program for its member partners. After requests from member partners to extend our training and staff development programs, the Authority is developing a training academy to meet these needs. Stay tuned in 2018 for more on these value added opportunities.



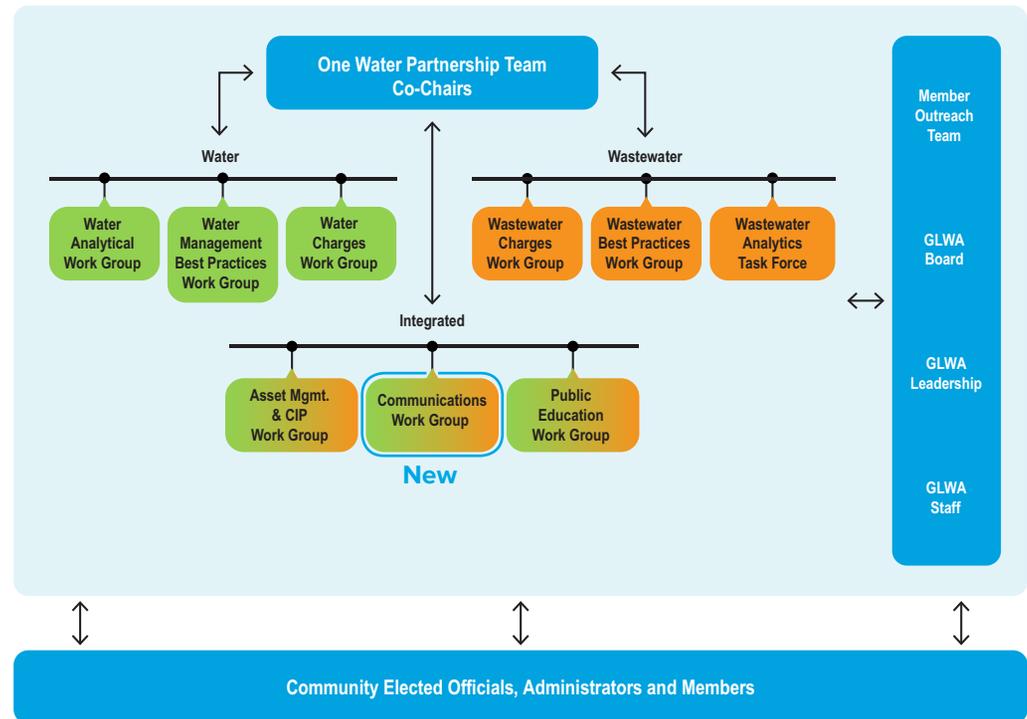
A real-life example of the damage "flushables" can do to our regional sewer infrastructure. Video can be viewed here: <http://bit.ly/GLWAflushables>

Communications Work Group

In January 2017, GLWA experienced an issue with taste and odor in the water treated by the Authority's Southwest (SW) Water Treatment Facility, which serves a number of Downriver communities. Although water quality remained safe and in compliance with the EPA's Safe Drinking Water Act regulatory standards (except for taste and odor), member partners served by the facility nevertheless experienced water that had either a cloudy appearance or a mildly sulfuric odor for several days.

As GLWA does with all events of this nature, an after-action report was completed. A key finding of this report was the need for improved communication. As a result, a new work group was formed to develop communication processes between the Authority and its member partners.

GLWA One Water Partnership Structure



The Communications Work Group is new to the Member Outreach portfolio of work groups.

“In January 2017, an issue arose with water taste and odor in the Downriver Area. I contacted GLWA CEO Sue McCormick to see if it was possible for her to attend a meeting with the Downriver elected officials. Sue was onboard with the idea, and even had COO Cheryl Porter and many staff members from GLWA and the Southwest Plant in attendance. GLWA stepped up and faced a crowd that wanted answers for their constituents. Years ago, they may have stayed away from such a meeting and relied on press releases to explain the situation. But not this GLWA Team! They are front and center to address any issues. Shortly after that Downriver meeting, the Communications Work Group was formed. I am proud to be part of the Communications Work Group and the work that we have been able to accomplish with standardizing the various documents that are released by GLWA or member partners. I am a strong believer that GLWA hears the concerns of its members, and does its best to come up with a solution that works for all those involved.”

— Mark Kibby, City Administrator, Allen Park, MI

14 Mile Transmission Main Break in Oakland County – Regional Collaboration in Action

Improved communications processes developed by the Communications Work Group, as well as close collaboration with member partners were instrumental in helping GLWA to address a 48-inch transmission main break that affected 11 communities and more than 300,000 people in Oakland County in October 2017.

Working in partnership with its member partners, the Authority was able to restore service as quickly as possible – in approximately one week – to affected communities. Through the coordination and assistance of many, the impacts were minimized to the extent possible and thorough and consistent communication kept member partners and the general public advised of our activities and the precautions they should take.

Kudos to all GLWA team members who worked tirelessly to complete this speedy, but quality repair. Given the size of the transmission main, the fact that it was buried 12 feet under the road and the special nuances of the repair, it is remarkable that it was completed in less than one week.

GLWA also wants to acknowledge the leadership of Oakland County for immediately opening its Emergency Operations Center to help coordinate response to the incident. A special thank you goes out to the residents and businesses of the 11 impacted communities for their patience and goodwill during this difficult time.

“Communication and cooperation between GLWA, the Oakland County Water Resources Commissioner, Oakland County Homeland Security and Health Division, as well as the affected communities was an example of exceptional regional collaboration. When regional and local agencies work together focusing on our common goals, there is a great deal that we can achieve together.”

— Robbert J. Dadow, Deputy Oakland County Executive and
GLWA Board Member



GLWA and City of Romulus Collaboration Wins Award

What a return on investment! GLWA received the 2017 Project of the Year from the American Public Works Association (APWA) Downriver Chapter for its Wick Road reconstruction, 48-inch water transmission main installation and resurfacing of Vining Road with the city of Romulus. This project is the perfect example of collaboration and project coordination between GLWA and its member partner, Romulus, which allowed for the successful completion of more than one-half mile of road construction, a quarter mile of road resurfacing and nearly 4,000 linear feet of large diameter water transmission main installation in a single coordinated effort.

Romulus had the option of doing the road project without coordinating with GLWA. GLWA would have then been required to replace the impacted portion of the road when the water main project was complete, which would have resulted in multiple disruptions to the corridor and would have been a poor use of public funds. Instead, Romulus entered into an intergovernmental agreement with GLWA to complete the water main installation as a part of the road project.

Coordinated projects such as this exemplify the spirit of regional collaboration on which GLWA was founded, and is embodied in our *One Water Partnership Agreement*.

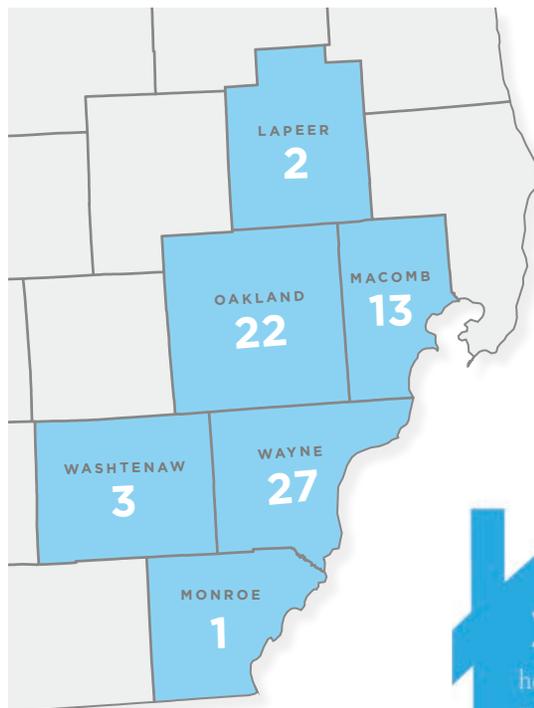
Khader Hamad (left), engineer and project leader for the Romulus project, and Kamil Jumaa (right), inspector on the project. Thanks to the hard work of their team and the city of Romulus, the project was the embodiment of collaboration.



WRAP

The first of its kind, sustainable program in Michigan, GLWA's WRAP (Water Residential Assistance Program) continues to be a hallmark of regional collaboration. Unlike assistance programs in the past that relied on outside sources for funding, WRAP has a dedicated source, with a half-percent of all GLWA revenue dedicated to the program annually.

As of December 31, 2017, 68 of 103 eligible communities have opted into the WRAP program.



WRAP continued to assist qualified households in member partner service areas throughout southeast Michigan in 2017. In addition to payment assistance, the program assists participants with home water audits, as well as repairs for leaky plumbing and fixtures that can contribute to a higher water bill. Training classes and water saving kits are also available.



WRAP Program Enhancements

WRAP's mission is to administer the distribution of WRAP funding to eligible, low-income households in GLWA's regional system with a vision to create a transformative water utility assistance program focusing on bill assistance, conservation and self-sufficiency initiatives. Three program options are available for GLWA member communities:



OPTION 1

- One-time home water audit for households above 120% average water usage
- Minor plumbing repairs (up to \$1,000 per household)
- Monthly bill credits (up to \$300 per year)
- Arrearage assistance (up to \$700 per year)

OPTION 2

- One-time home water audit for households above 120% average water usage
- Minor plumbing repairs (up to \$1,000 per household)
- Monthly bill credits (up to \$300 per year)

OPTION 3

- One-time home water audit for households above 120% average water usage
- Minor plumbing repairs (up to \$1,000 per household)

Although WRAP has been extremely successful since its inception in 2016, to make the program more user-friendly for member partners that are already enrolled, and to recruit new members to enroll, communities can now choose which WRAP financial assistance features meet the specific needs of their community. All options include home water audits for households above 120 percent average water used and minor plumbing repairs, including replacement of bathroom and kitchen faucets that predate the lead-free plumbing code changes.

Those interested can learn more about WRAP by visiting www.waynemetrol.org/WRAP or by calling 313-386-9727.

“I am so pleased to bring WRAP to Melvindale and I encourage residents who qualify to take full advantage of all the program benefits. Bill payment assistance is just one component of the program. There is also education, conservation and home repair services that can help residents lower their bills.”

— Melvindale Mayor Stacy Bazman
(Enrolled in 2017)

One Water One Team

Apprenticeship Program



GLWA's inaugural apprenticeship program officially launched on June 12, 2017, with an objective to close a gap in the availability of highly trained talent to adequately fill skilled trade roles that are imperative to its operations. The program is a three-year partnership between GLWA, Focus: HOPE and Henry Ford College to educate and train 20 apprentices culminating in:

- ◆ The completion of 32 course credits;
- ◆ Industry Certification from Henry Ford College;
- ◆ A U.S. Department of Labor journeyman card;
- ◆ Full-time employment with GLWA.

The GLWA Apprenticeship Program, designed to hire and train Electrical Instrumentation Control Technicians (EICT-I), has successfully passed the six-month mark, and has maintained 20 registered apprentices since it began.

The apprentices left a variety of jobs and positions, from general manager for a commercial janitorial company, to valet attendant for a parking service, to a pizzeria driver and cook. Three of the successful candidates were current GLWA team members who were seeking new opportunities for growth and development.

The EICT-I Apprentices are working within various areas of our water and wastewater operations. The Apprentices are paired one-on-one with a journey worker mentor, and will rotate within their initial assignment to gain experience in repairing, testing, calibrating and installing instruments and control systems.

Collectively the EICT-I Apprentices have completed 17 percent or 18,129 hours of required on-the-job training. Most have accomplished four credit hours and 62 contact hours of related classroom training by completing a customized core class (ELEC 103 Basic Electricity) at Henry Ford College.

In 2017, GLWA received a grant from ApprenticeshipUSA, a Department of Labor-funded grant partnership between Automation Alley and the state of Michigan to provide supplemental funding for its apprenticeship program. To date, the Authority has received \$11,000 of a possible \$40,000 available for its use under the grant.

“The Authority’s program provides a crucial opportunity for students to train for an in-demand skilled position through hands-on learning experiences, customized courses and mentorship with a GLWA team member who is also a journey worker. We are also able to provide job security with the guarantee of a position with GLWA upon completion of the program. This is a win for everyone—the Authority is able to strengthen its workforce through apprenticeships while filling a skilled-trades gap, and we can also strengthen our community by providing training for jobs with family-sustaining wages.”



— Stephanie Stevenson, Director,
Organizational Development, GLWA

One Water One Team – Making Big Waves

2017 was an amazing year for the Authority and its team members. Our One Water *One Team* is definitely making big waves in the water service sector and their communities.

2017 Buyer of the Year Award

Joan Byrne, Procurement Management Professional, was named the 2017 Buyer of the Year by The Michigan Public Purchasing Officers Association (MPPOA). The award recognizes individuals who have successfully completed a unique project or have been outstanding employees.



American Public Works Association Downriver Chapter — New Director.

WRRF Maintenance Manager Mark Ragsdale has been elected to the Board of Directors, serving a six-year term, during which he will progress from 3rd director to president of the board.



Edward Dunbar Rich Service Award

Congratulations to GLWA Team Leader Annie Philip and Chemist Kendarp Trivedi, both from the Northeast Water Treatment Facility, on their recognition by the Michigan Department of Environmental Quality as recipients of the 2017 Edward Dunbar Rich Service Award. This award recognizes water utility professionals for completing 25 or more years of meritorious and faithful service in providing and maintaining safe, dependable and adequate public water supply. Annie and Kendarp, thank you for your service!



2017 Outstanding Public Service Award

The Detroit Metropolitan Chapter of the American Society for Public Administration (ASPA) presented GLWA CEO Sue McCormick with the 2017 Outstanding Public Service Award in the executive official category. The award is in recognition of her outstanding achievements as the CEO of the GLWA and her commitment to public service demonstrated through numerous contributions to local and state government agencies in the Detroit metropolitan area.

Chair-Elect MI-AWWA

The Michigan Section of the American Water Works Association (MI-AWWA) elected Asset Management and Capital Improvement Planning team member Bill Fritz as the organization's Chair-Elect. Fritz is on track to becoming MI-AWWA Chairman in 2018.



2017 Bond Buyer Midwest Deal of the Year Award

GLWA was awarded the Bond Buyer Magazine Midwest Deal of the Year Award because as one of the most sizable water and sewer systems in North America, its \$1.3 billion inaugural bond sale in 2017 unlocked substantial debt service savings for member partners and provided necessary funds for water system capital projects at an attractive borrowing rate.



Michigan Public Service Institute Graduates

Ronald Hayes, Manager, Southwest Water Treatment Facility, and Clemon Beverly, Team Leader Field Services, graduated from the fall 2017 session of the 25th Annual Michigan Public Service Institute (MPSI), a three-year training program providing operations leadership of various organizations with the tools necessary to impact change in diverse climates by offering essential training in service excellence, leadership development and supervisory skills.



Top Scores on State of Michigan F-4 Licensing Exam

Two GLWA chemists, Jessica Vachon, Lake Huron Water Treatment Facility, and Robin George, Northeast Water Treatment Facility, received the highest scores on the F-4 Licensing exam for the state of Michigan. The F-4 licensing exam, which is the first level of four licenses for water operators, is conducted by the MDEQ, must be obtained by water operators within the first two years of employment. Both attribute their success to their team members, whose mentorship and guidance helped them prepare for the exam.

2017 Public Administrator of the Year

GLWA's Chief Financial Officer and Treasurer, Nicolette Bateson, an Eastern Michigan alumnus and a veteran Michigan administrator in the field of water supply management, was awarded the EMU Master of Public Administration Program's Public Administrator of the Year.



One Mission

*Water of Unquestionable Quality;
Effective and Efficient Services*

Water Quality

The treatment of safe and reliable water of unquestionable quality is at the heart of GLWA operations. Through its team of certified chemists, engineers and team members, the Authority is able to deliver water of unquestionable quality to approximately 40 percent of the state of Michigan.

Providing Water of Unquestionable Quality to Flint, Michigan

In December 2017, GLWA, the city of Flint, the Genesee County Drain Commissioner's Office (GCDC), the state of Michigan and the Karegnondi Water Authority (KWA) finalized an agreement that will provide the city of Flint with source water of unquestionable quality. It will also ensure that there is system redundancy for GLWA's member partners west of its Imlay City pump station through the leveraging of already made public investments – which is an ongoing goal of GLWA throughout its system.

Highlights of the regional agreement include:

- ◆ GLWA partnering with the KWA and the GCDC for backup service for the city of Flint, as well as for customers of the GCDC and GLWA's member partners west of its Imlay City pump station;
- ◆ Flint receiving approximately \$1.8 million in annual savings as a result of entering into GLWA's 30-year model contract. This is compared to what Flint had been paying on a monthly emergency services agreement;
- ◆ GLWA's providing contract credits to Flint in like amounts to debt paid for KWA bonds (approximately \$7 million annually), as long as Flint keeps current on its debt service payments. As a result, GLWA will receive the raw water capacity rights that Flint has through the KWA;
- ◆ Qualified Flint households will be able to participate in GLWA's WRAP program.

Most importantly, Flint residents will receive stability through a long-term agreement with GLWA for treated drinking water from a trusted source. The Authority is pleased to retain Flint as a customer, and also to use this opportunity to build further redundancies throughout the regional system.



“After months of research, analysis and collaboration, I believe staying with GLWA as the city’s primary water source is the best option when you consider factors related to public health and when it comes to being fiscally responsible.”

— Flint Mayor Karen Weaver, in an April 18, 2017 news release

Addressing changing regulations

As technology advances and the water service sector becomes more capable of detecting health threats the U.S. Environmental Protection Agency (EPA) and the Michigan Department of Environmental Quality (MDEQ) are studying emerging contaminants, that appear both naturally and not, throughout drinking water sources and treatment systems.

GLWA also understands the importance of monitoring and research into emerging contaminants and has already taken steps to do this on its own.

Perfluorooctanoic Acid (PFOA) and Perfluorooctanesulfonic Acid (PFOS)

Based on new research, last year the EPA released health advisories for PFOA and PFOS. These are manmade compounds used in the manufacturing of carpets, clothing, fabrics for furniture, paper packages for food and other materials that are resistant to water, grease or stains. They are also found in products such as firefighting foams, cleaners, cosmetics, paints, adhesives and insecticides.

The Authority takes its responsibility to public health and safety seriously and through its research can confirm that these chemicals are not a threat to its system, or to GLWA's ability to continue to provide water of unsurpassed safety and quality to the region.

Lead and Copper

The U.S. Environmental Protection Agency (EPA) and the Michigan Department of Environmental Quality (MDEQ) have been considering revisions to their regulations governing lead and copper in drinking water. GLWA's CEO Sue McCormick and Chief Operating Officer-Water and Field Services Cheryl Porter have taken an active role in these discussions, bringing the voice of the Authority's member partners to the table.



Lake Huron and Lake Erie Monitoring System

Delivering safe, quality and reliable water means taking a proactive approach to treatment and monitoring. To ensure public health, GLWA proactively monitors source water through numerous tests and systems, including the Lake Huron and Lake Erie monitoring system. This early warning system uses high-tech sensor equipment to provide real-time information about source water and helps detect changes in source water. It can also identify oil spills or chemical leaks from upstream industrial plants or other contaminants.



System Resiliency

Regional Wastewater Collection System Inspection and Condition Assessment

GLWA operates and maintains a Regional Wastewater Collection System mostly in the city limits of Detroit. The sewer system is comprised of 183 total miles of sewer pipe. The average age of the sewer infrastructure operated and maintained by GLWA is nearly 80 years.

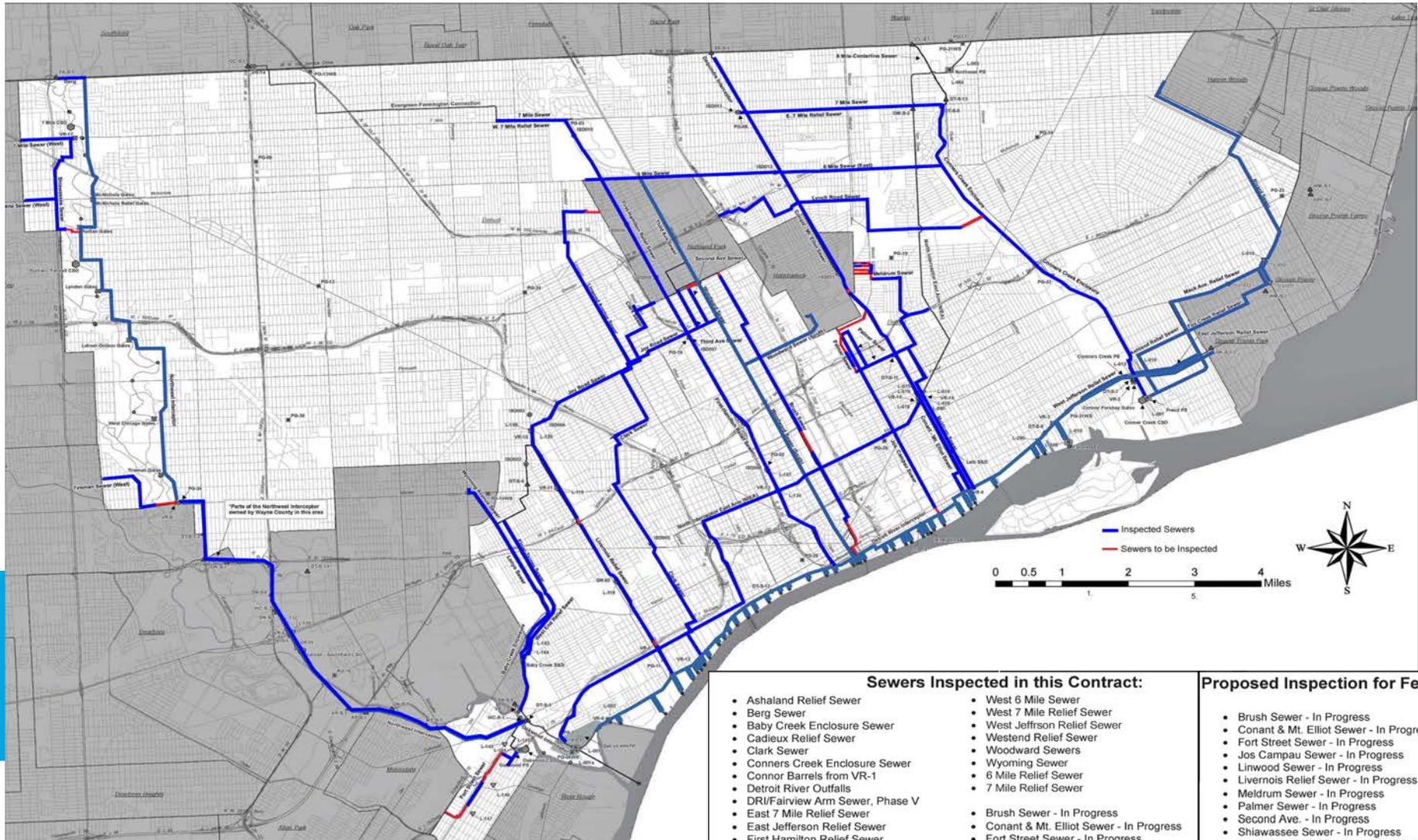
While portions of the system may have been inspected in the past, no systemic operations, maintenance and rehabilitation program existed. In 2016, GLWA began an accelerated sewer inspection program. As of December 31, 2017, more than 873,000 linear feet of sewer pipe has been inspected using Closed Circuit Television (CCTV). There is approximately 27,000 linear feet remaining, which is expected to be completed by April 2018.

GLWA is now in the process of coding the CCTV structural inspection data using the Pipeline Assessment Certification Program, which codes the defects found on both type and severity. Structural pipe defects, Operations and Maintenance (O&M) issues, and hydraulic restrictions discovered during the inspection are being ranked by severity based on the potential to impact the system's proper operation, effective maintenance and hydraulic capacity.

This process was originally expected to take seven years. However, it will be completed in just over two years, which is a clear testament to GLWA's commitment to system resiliency.

Approximately 900,000 linear feet of sewer pipe has been inspected during GLWA's first two years of operation.

The Regional Sewer Collection System



Sewers Inspected in this Contract:

- Ashland Relief Sewer
- Berg Sewer
- Baby Creek Enclosure Sewer
- Cadieux Relief Sewer
- Clark Sewer
- Conners Creek Enclosure Sewer
- Connor Barrels from VR-1
- Detroit River Outfalls
- DRI/Fairview Arm Sewer, Phase V
- East 7 Mile Relief Sewer
- East Jefferson Relief Sewer
- First Hamilton Relief Sewer
- Fox Creek Relief Sewer
- Joy Road Sewer
- Linch Sewer!
- Lonyo Sewer
- Mack Ave. Relief Sewer
- Northwest Interceptor Sewer
- North Interceptor East Arm Sewer (NIEA)
- Rivard Sewer
- Third Ave. Sewer
- West 6 Mile Sewer
- West 7 Mile Relief Sewer
- West Jefferson Relief Sewer
- Westend Relief Sewer
- Woodward Sewers
- Wyoming Sewer
- 6 Mile Relief Sewer
- 7 Mile Relief Sewer
- Brush Sewer - In Progress
- Conant & Mt. Elliot Sewer - In Progress
- Fort Street Sewer - In Progress
- Jos Campau Sewer - In Progress
- Linwood Sewer - In Progress
- Livernois Relief Sewer - In Progress
- Meldrum Sewer - In Progress
- Palmer Sewer - In Progress
- Second Ave. Sewer - In Progress
- Shiawassee Sewer - In Progress
- West Tireman Sewer - In Progress

Proposed Inspection for February 2018:

- Brush Sewer - In Progress
- Conant & Mt. Elliot Sewer - In Progress
- Fort Street Sewer - In Progress
- Jos Campau Sewer - In Progress
- Linwood Sewer - In Progress
- Livernois Relief Sewer - In Progress
- Meldrum Sewer - In Progress
- Palmer Sewer - In Progress
- Second Ave. - In Progress
- Shiawassee Sewer - In Progress
- West Tiremans Sewer - In Progress

Water Main Transmission System Inspection and Condition Assessment

GLWA is currently developing a plan for a full condition assessment of all of its 803 miles of water transmission mains, which range in size from 24-inches to 120-inches. The condition assessment will identify opportunities for proactive and preventative maintenance to enhance the resiliency and reliability of the water transmission system. This follows GLWA's Water Master Plan.

Conducting inspections and/or condition assessments of water transmission mains is much more difficult than on sewer mains because water and sewer systems are vastly different in nature. A sewer system can be opened for inspections and maintenance. However, the water system is pressurized and closed to ensure water quality. There are relatively new inspection methods in place for this type of water transmission system that can be used while in-service. GLWA is investigating these methods for application with its water system.

Infrastructure Investment

Capital improvement projects are identified through an extensive research and study process, as well as engagement with our member partners, which work together to help GLWA determine and prioritize infrastructure needs. These projects allow GLWA to keep a close eye on its system and ensure needed upgrades are made on a consistent and timely basis. The Authority does this through the development of its CIP, a planning document used to prioritize and plan long-term investments to maintain the level of service its member partners require.

A summary of the approved 2018-2022 five-year CIP is shown to the right by overall cost center. Because the CIP is annually updated, and because significant effort has been made in the 2019-2023 CIP to evaluate project sequencing, scheduling and implementation, it is expected that the projected expenses will change significantly in the 2019 CIP.

2018-2022 CIP	2018-2022 Projected Expenses (\$1,000's)
Water System	
Treatment Plants & Facilities	\$295,662
Field Services (transmission mains and valves)	\$267,234
Systems Control Center (booster pump stations and reservoirs)	\$24,805
General Purpose (programs)	\$197,550
Centralized Services (engineering, fleet and facilities)	\$15,357
Total	\$800,608
Wastewater System	
Water Resource Recovery Facility (WRRF & combined sewer overflow facilities)	\$363,808
Field Services (interceptors and manholes)	\$117,960
Systems Control Center (sewer pump stations)	\$85,439
Metering	\$5,862
General Purpose (programs)	\$169,500
Centralized Services (engineering, fleet and facilities)	\$10,156
Total	\$752,725

Innovation

Continuous Process Improvement

GLWA undertook a new approach to its LEAN program in 2017. The goal of the new strategy is to impact the organization from the bottom up, while simultaneously working with the Authority's Executive Leadership Team from the top down. This more balanced approach allows GLWA to link strategic goals to day-to-day operations – which is important for an organization having completed only two years of operations.

The framework of the new LEAN approach includes:

- ◆ Value-Driven Purpose – What problems are we trying to solve?
- ◆ Process Improvement – How will the work get done?
- ◆ Capability Development – Invaluable training for all employees
- ◆ Basic Thinking, Mindset and Assumptions – Transforming the Culture

With the empowerment of team members through collaboration and information sharing, the program is focused on improved safety outcomes, hard dollar savings and improved capital spending.

GLWA's Transformation Team launched two projects under its new approach this year in partnership with GLWA's Financial Services and Wastewater Operating Services Areas. Both use the 5S Workplace Organization Methodology, which includes the following steps: sort, shine, set in order, standardize and sustain. The Financial Services project focuses on three floors in the Authority's main office building, and the Wastewater Operating Services project concentrates on its Water Resource Recovery's #1 pump station and its rack and grit area.

Desired outcomes of the two projects include:

- ◆ Reduced non-value adding activity;
- ◆ Reduced mistakes from team members and vendors;
- ◆ Reduced search time in navigating the facility and locating tools, parts and supplies;
- ◆ Reduced parts stored in inventory, and associated inventory carrying costs;
- ◆ Reduced unnecessary human motion and transportation of goods;
- ◆ Improved floor space utilization;
- ◆ Improved team member safety and morale;
- ◆ Improved product quality;
- ◆ Extended equipment life through more frequent cleaning and inspection.



Left to right: Transformation Team Members Steve Vesschemoet, Carla Fagan, Debra Anderson and Lucreitia Dove.

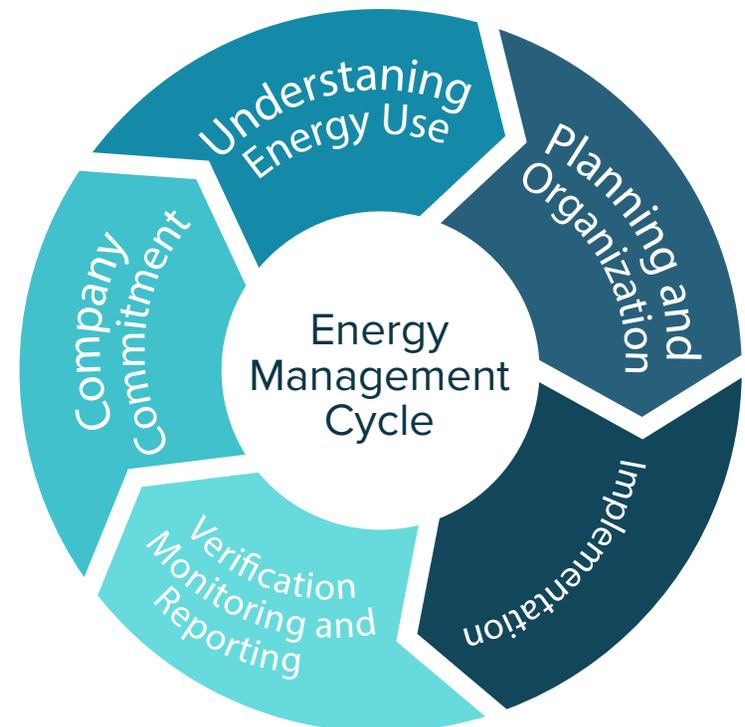
Energy Management and Savings

Through the continuous review of GLWA's utility bills, the Authority has saved nearly \$140,000 in incorrect payments. One bill correction alone resulted in a savings of nearly \$12,000! GLWA is saving an additional \$20,000 annually by moving 17 natural gas accounts from DTE Energy to the state of Michigan Consortium.

Energy Management also compiled energy consumption and corresponding billing data for our water and wastewater facilities. This data will allow GLWA to accurately forecast energy costs for annual budgets, determine the proper rate structure for each facility, develop, track and trend KPIs to improve operational performance and understand the impact of future upgrades before implementation.

From an innovation perspective, GLWA began two projects with Aquasight, a real-time intelligence platform designed specifically for water and wastewater municipalities.

- ◆ The first project is a one-year pilot taking place at the Adams Road booster pump station. The value of the pilot is in two distinct areas. First, it fully equipped Adams with electric meters and pressure gauges. Second, the Authority will be able to process the data collected to determine savings in three areas: operational, maintenance and capital. This pilot will verify the importance of this equipment across our system.
- ◆ The second project is located at the WRRF. It is a three-year program developed by the Department of Energy to encourage wastewater facilities to adopt best-practices and cutting-edge approaches to manage data, technology and improve the energy efficiency of wastewater facilities by 30 percent. A key deliverable, in addition to the 30 percent energy reduction plan, is a guaranteed five percent, or \$600,000 in low/no-cost energy savings by the completion of the program.



University Research and Partnerships

This year, GLWA continued its focus on research and innovation through renewed partnerships with three world-class universities; University of Michigan, Wayne State University and Michigan State University.

The research focuses on a cross section of projects, including:

Dynamic Collection System Control (University of Michigan)

This project will examine the feasibility of using sensors to send real-time data to GLWA operators, who will then be able to use that data to control stormwater flow in the system. This will assist the Authority in avoiding discharges to the environment and water backups during large storms.

Energy Generation from Biosolids (Michigan State University)

The Authority is working with researchers to understand how it can repurpose biosolids, along with organic waste to generate energy which could potentially help GLWA's WRRF, perhaps meeting all of its energy needs.

Drinking Water Monitoring System Enhancement (Wayne State University)

This project will enhance an existing system that captures data on water quality from Lake Huron to Lake Erie. There are 15 utility systems, including GLWA, that draw source water from the 80-mile stretch of these connected waterways to serve people in various communities. This research will be compiled into one central database and will be available to all water utilities involved to monitor changing water quality along the waterways. The results of this project will help to better pinpoint where water quality may shift along the route, and serve as an early warning system. The enhancements being made via this research further leverage an investment by the state of Michigan which will provide updated equipment for the monitoring system.

Contaminants of Emerging Concern Regarding Drinking Water Treatment (Wayne State University)

The EPA periodically publishes contaminants of emerging concern in drinking water due to occurrence data across the country. This project will evaluate the GLWA drinking water treatment process if exposed to these harmful chemicals, and assess the efficiency of the removal of selected chemicals at each water treatment process step under various conditions.



Video can be viewed here: <http://bit.ly/GLWApilotplant>

“The purpose of these partnerships is to continue improving GLWA’s water treatment processes, discover solutions for unanticipated risks and reduce energy consumption, thereby reducing polluting emissions, among other things. This innovative new approach to water and sewerage treatment is also anticipated to help GLWA attract and retain top talent in the state of Michigan, and provide a hands-on learning experience to students.”

— Cheryl Porter, Chief Operating Officer, Water and Field Services

Vendor Outreach and Engagement

In its second year of operations, the Authority increased its focus on vendor outreach and improving procurement processes.

In September, GLWA had nearly 200 vendors from across Michigan, Indiana, Illinois and Ohio attend its second annual vendor outreach event; 49 percent of which had never before done business with GLWA. The number of new attendees shows a clear interest by vendors in working with the Authority. In addition to a presentation providing updates on GLWA and its operations, vendors were given the opportunity to meet one-on-one with Supply Chain Operations, Logistics and Materials, Construction and Contract Services, Accounts Payable, Engineering and Transformation team members to discuss their successes and challenges in working with GLWA. This year's event also included a "voice of the vendor" survey to garner feedback on how GLWA can improve its relationship with the vendor community.



What's next for GLWA?

2017 was a strong year for GLWA. While much was accomplished, the team is not planning to rest on its laurels. Moving into year three, GLWA and its Board of Directors, being chaired in 2018 by Freman Hendrix, is committed to:

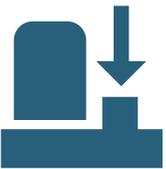
- ◆ Improving the resiliency of the regional system to benefit member partners through a focus on driving asset management and condition assessments;
- ◆ Strengthening and enhancing the success of our member partner outreach program through execution of the One Water Partnership Agreement and the full engagement of the Authority's new-third party facilitator, Bridgeport Consulting;
- ◆ Creating new programs that allow member partners to leverage GLWA resources for their benefit. This includes the development of a new Training Academy, as well as a Cooperative Purchasing program;
- ◆ Using Effective Utility Management and its 10 Attributes of an Effectively Managed Utility to continue to guide GLWA's path toward effective and sustainable operations;
- ◆ Continuing a strong financial focus through the execution of GLWA's five-year financial plan, with an extension of the plan for a 10-year outlook to assist in lessening the risk of events beyond the Authority's control. An emphasis will also be placed on working with member partners to achieve both equity and stability in charges.

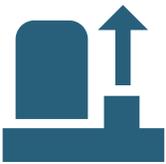


About GLWA

Water System

5 
water treatment
plants

3 
water intakes

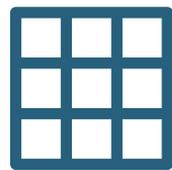
19 
booster pump
stations



3.9million
approx. people served



1.72billion
gallons of treatment capacity per day



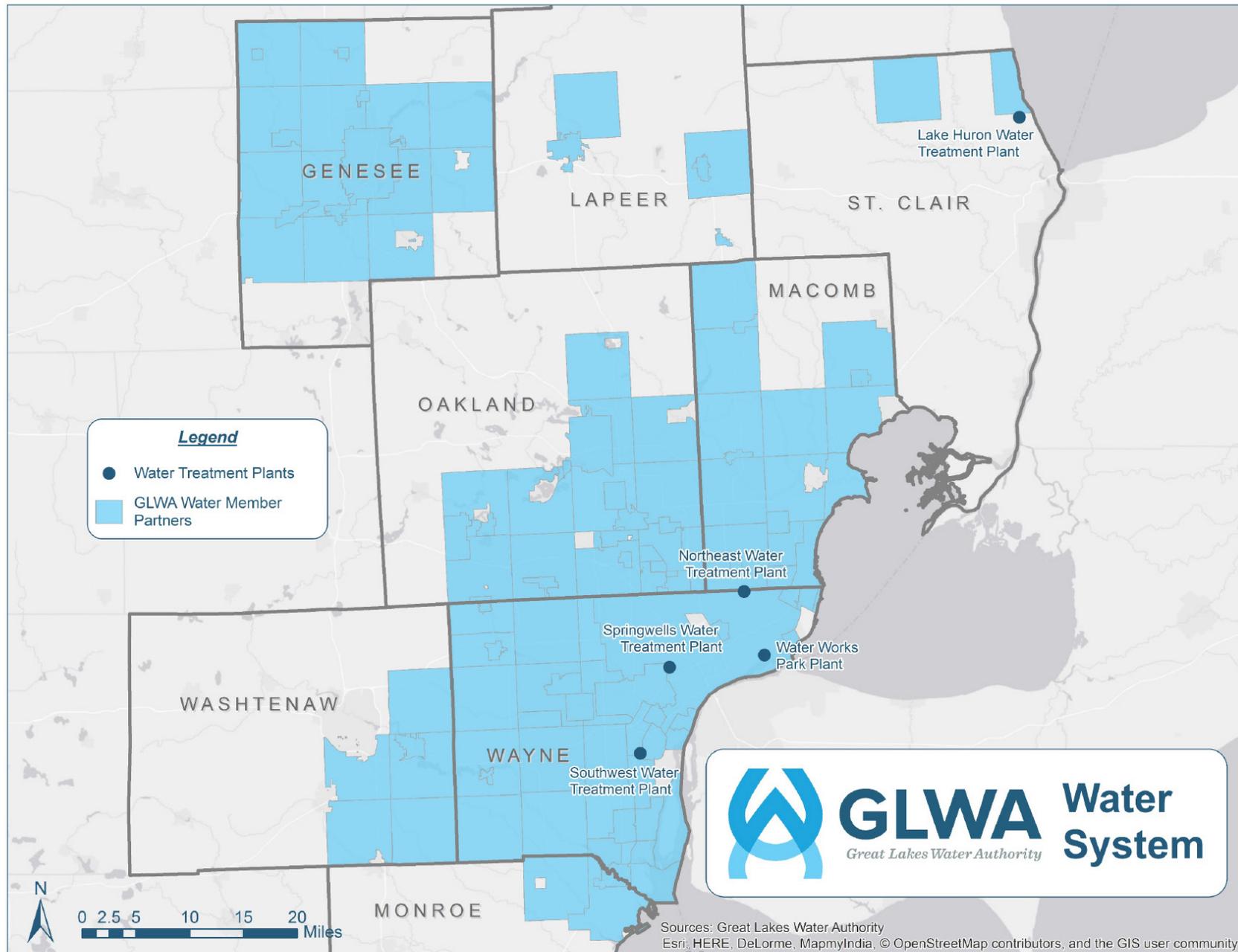
1,069
square mile service area



127
member partners



803
miles of transmission main



About GLWA

Wastewater System

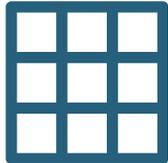
3 
interceptors

8 
CSO
Facilities

5 
pump stations

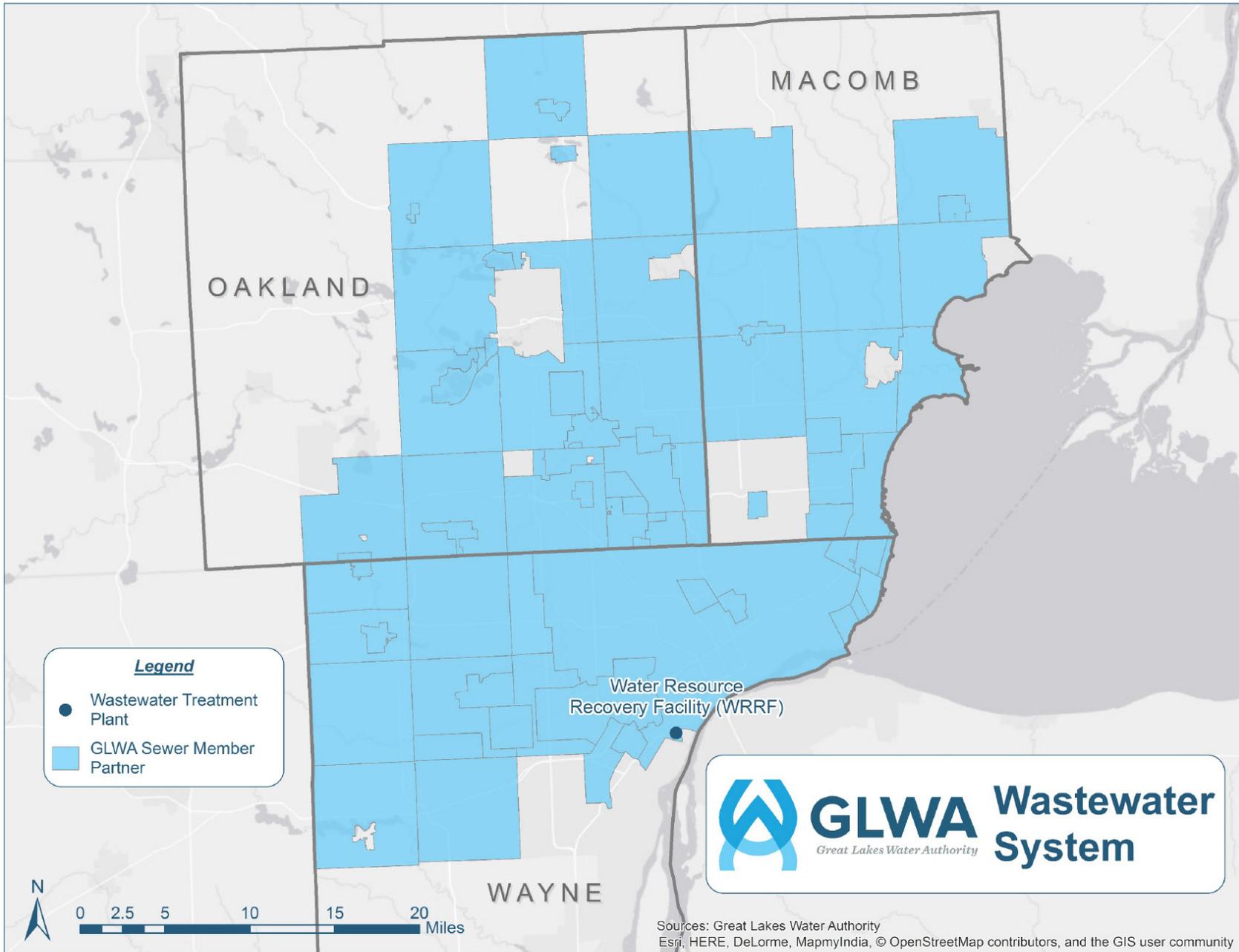
 2.9million
approx. people served

 1,700million
gallons of treatment capacity per day

 988
square mile service area

181 
mile conveyance system with
trunk sewers and interceptors

87 
member partners
serving 76 individual
communities



Sources: Great Lakes Water Authority
Esri, HERE, DeLorme, MapmyIndia, © OpenStreetMap contributors, and the GIS user community

Board of Directors (2017)

Robert J. Daddow

GLWA Board Chairman; Representative for
Oakland County

Gary A. Brown

Representative for the City of Detroit

*Freman Hendrix**

GLWA Board Vice Chairman; GLWA Board
Representative for the City of Detroit

Craig Hupy

GLWA Board Representative for the State of
Michigan

Brian Baker

GLWA Board Secretary; GLWA Board
Representative for Macomb County

Abe Munfakh, P.E.

GLWA Board Representative for Wayne County

*Freman Hendrix was elected by the Board to serve as its chairman for 2018.



Left to right - Gary Brown, Brian Baker, Robert Daddow, Freman Hendrix, Craig Hupy, Abe Munfakh

Executive Leadership Team

Sue McCormick

Chief Executive Officer

William Wolfson

Chief Administrative and Compliance Officer

Nicolette Bateson, CPA

Chief Financial Officer and Treasurer

Cheryl Porter

Chief Operating Officer, Water

Terri Tabor Conerway

Chief Organizational Development Officer

Suzanne Coffey, P.E.

Chief Planning Officer and Interim Chief Operating Officer, Wastewater

W. Barnett Jones

Chief Security and Integrity Officer

Michelle Zdrodowski

Chief Public Affairs Officer

Jeffrey Small

Chief Information Officer

Randal Brown

General Counsel



One Team



One Mission



Our Vision

Through regional collaboration, GLWA strives to be the provider of choice dedicated to efficiently delivering the nation's best water and wastewater services in partnership with our member partners.

Our Mission

To exceed our member partners' expectations by utilizing best practices in the treatment and transmission of water and wastewater, while promoting healthy communities and economic growth.