

DOWNRIVER UTILITY WASTEWATER AUTHORITY FOURTH YEAR IN REVIEW

CALENDAR YEAR 2022



INTRODUCTION

DUWA has now completed its fourth full year of ownership since taking over from Wayne County. These annual reports provide an opportunity to reflect on the accomplishments over the past year and to look forward towards upcoming challenges. Year 4 is most notable for DUWA's navigation of the challenges brought about by high inflation as increased chemical and utility costs significantly impacted wastewater treatment costs. The teamwork between DUWA's representatives, Veolia, and DUWA's professionals helped to minimize the budgetary impacts while continuing to provide a high level of wastewater collection and treatment service for DUWA's member communities.



DUWA MEMBER COMMUNITY	PRIMARY COMMISSIONER	ALTERNATE COMMISSIONER
City of Allen Park	Gail McLeod, Mayor	Felice (Tony) Lalli, Mayor Pro Tem
City of Belleville	Kerreen Conley, Mayor	Rick Rutherford, DPW Director
Township of Brownstown	Justin Danosky, DPW Director	Patrick Killian, Twp. Trustee; Roxie Fairchild, DPW Office Administrator
City of Dearborn Heights	Bill Bazzi, Mayor	Ali Dib, City Engineer
City of Ecorse	Tim Sadowski, City Controller	Eugene Anderson, DPW Director
City of Lincoln Park	James Krizan, City Manager	Lisa Griggs, Director of Finance & Operations
City of River Rouge	William Campbell, Mayor	David Bower, City Attorney
City of Riverview	Jeff Dobek, Assistant City Manager	Dean Workman, Council Member
City of Romulus	Roberto Scappaticci, DPW Director	Robert McCraight, Mayor
City of Southgate	Joseph Kuspa, Mayor	Dan Marsh, City Administrator
City of Taylor	Tim Woolley, Mayor	Ralph Richard, DPW Director
Township of Van Buren	Kevin McNamara, Twp. Supervisor	Kevin Lawrence, Director of Water and Sewer Dept.
City of Wyandotte	Todd Drysdale, City Administrator	Greg Mayhew, City Engineer

FOURTH YEAR MAJOR HIGHLIGHTS

- At the end of 2022, the Downriver System has achieved 49 consecutive months of National Pollutant Discharge Elimination System (NPDES) permit compliance.
- Blending Reduction Control Measure A, implemented in 2021, added 10% additional secondary treatment capacity by optimizing the existing facilities. This improvement, combined with a relatively dry year, resulted in zero blending (secondary bypass) events in 2022. This is viewed as favorable by the Michigan Department of Environment, Great Lakes, and Energy (EGLE), the State regulatory agency, who desires to see continued reductions in the number of annual blending events. DUWA's permit currently establishes a goal of limiting the number of blending events to six per year.

Historical Bypasses

	Date	Secondary Bypass MG	Primary Bypass MG	Plant Total Daily Flow (Avg) MGD
Veolia	2022 ----> 0 Total Bypasses			
	2021 ----> 6 Total Bypasses			
	Oct 25-27	55.917	31.291	134.209
	Sept 22-25	115.250	37.167	145.432
	Aug 12-13	65.834	52.959	137.848
	July 25	18.625	11.417	142.401
	July 16 - July 18	89.042	56.667	131.583
	June 26 - June 27	16.458	8.375	115.724
	2020 ----> 4 Total Bypasses			
	Aug 28-29	35.500	0.000	114.353
	May 19-20	16.166	0.000	136.014
	Mar 28-30	61.188	22.208	163.616
	Jan 11 - 13	131.458	75.667	161.817
	2019 ----> 2 Total Bypasses			
	May 1 - 4	243.625	181.542	188.906
	Apr 20	11.215	0.000	116.950
	2018 ----> 10 Total Bypasses (9 Wayne County)			
	Nov 1	1.500	1.500	105.684
	Wayne County	2017 ----> 7 Total Bypasses		
2016 ----> 6 Total Bypasses				
2015 ----> 7 Total Bypasses				
2014 ----> 10 Total Bypasses				
2013 ----> 8 Total Bypasses				
2012 ----> 6 Total Bypasses				
2011 ----> 21 Total Bypasses				
2010 ----> 3 Total Bypasses				
2009 ----> 12 Total Bypasses				
2008 ----> 14 Total Bypasses				

2 - No Blending Events in 2022

- The difficult task of developing a new Rate Methodology was completed and the new Rate Methodology was adopted by the Board. The existing methodology was developed many years ago and there was no historical information available on the reasoning for the details in these procedures (from previous system Owners). The existing methodology

was evaluated and suggestions for revised procedures were provided by Raftelis, DUWA's rate methodology consultant. The new methodology makes much better use of the flow metering data that was already being collected by DUWA as there is now less unmetred flow to be allocated amongst the communities. The new methodology improves upon the base flow calculation by utilizing data from the winter period only, and the excess flow is determined by utilizing a weighted combination of length of collection system in miles and number of footing drains. While some communities will experience an increase in their cost share during implementation of the new methodology, these rate methodology improvements will provide a more accurate and equitable methodology that will allow for a continued level of excellence in the operation, maintenance, and management of the collection system and DWTF. The new Rate Methodology will be phased in over a period of five years beginning on July 1, 2023.

- Despite supplier challenges due to COVID-19, key capital improvement projects completed in 2022 are as follows:
 - The Fordline Interceptor grouting project was completed, which involved patching areas of infiltration in one of DUWA's major sewer interceptors. The areas of interest were located at a critical crossing under the I-75 overpass where the interceptor is very deep.
 - DUWA's signature project, the biosolids dryer facility, has experienced commissioning delays for a variety of reasons. Some of these issues included equipment manufacturing errors, bridging in the cake bin, and cake pump and leveling screw malfunctions. One of the initial issues involved the reheating of the biosolids after drying. Upon investigation, it was determined that the iron content within the biosolids needed to be reduced to prevent future reheating events. This project is expected to be substantially complete in 2023. This project addresses a long-term need for beneficial reuse of the biosolids, addresses the increasingly unavailable option of directly landfilling un-stabilized biosolids, and creates a cost-effective solution that is

FOURTH YEAR MAJOR HIGHLIGHTS - CONTINUED

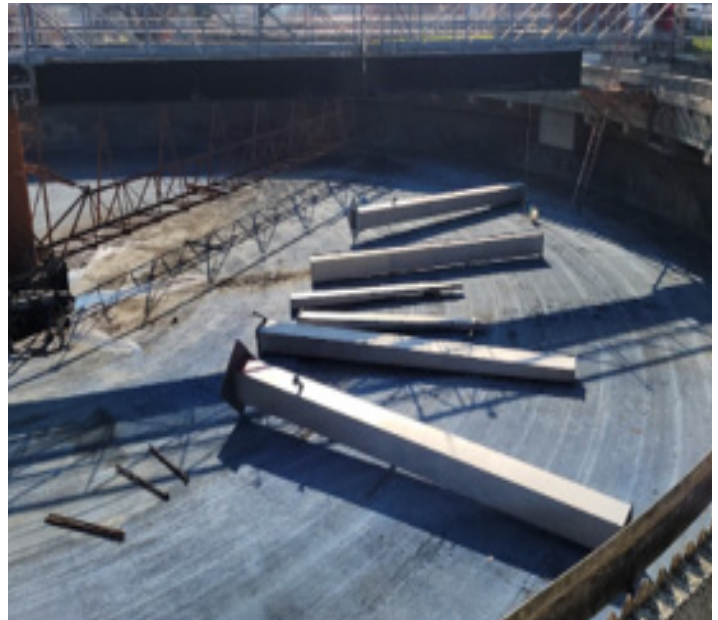
affordable for DUWA's rate payers. The unique financing using the federal WIFIA program, the first in Michigan and the first for a facility with privatized operations and maintenance, has resulted in a very favorable interest rate (1.730%) that is financed over the life of the project (36 years), minimizing the rate impact.

- C. The short-term capital improvement/asset maintenance program (with a budget of \$1.9 million annually) implemented several critical improvements, including replacement of two of the secondary clarifier towbros, critical repairs of water mains, piping, and pumps at the Downriver Wastewater Treatment Facility (DWTF), replacement of a flow meter, upgrades to the PLCs, purchase of a spare soft starter for the pumps, and repairs of several manholes throughout the collection system that posed a safety risk to the public.
- D. Flow metering equipment was upgraded to improve the efficiency of the flow metering program. The flow data is now being pushed to the H2Ometrics platform which provides the opportunity for Veolia staff and member communities to obtain flow and depth data throughout the collection system in near real-time, which is particularly important during large rain events. H2Ometrics is an online software platform that provides access to near real-time flow meter data and provides numerous, user-friendly tools to facilitate data analysis efforts.
5. Due to the lingering effects of the COVID-19 pandemic on the supply chain markets as well as high inflation, costs for chemicals significantly increased in early 2022, thus increasing the operation and maintenance costs of the DWTF. This resulted in a budget shortfall. Upon recognition of these increased costs, multiple efforts to minimize the budget shortfall were implemented and included the following:

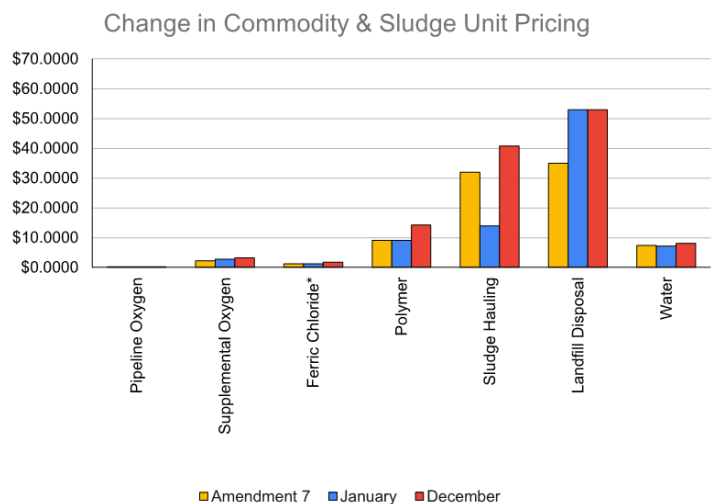
- A. Short-term small capital improvement spending was paused for the remainder of 2022.



4C - Manhole Needing Repair



4C - Replacement of Secondary Clarifier Towbros



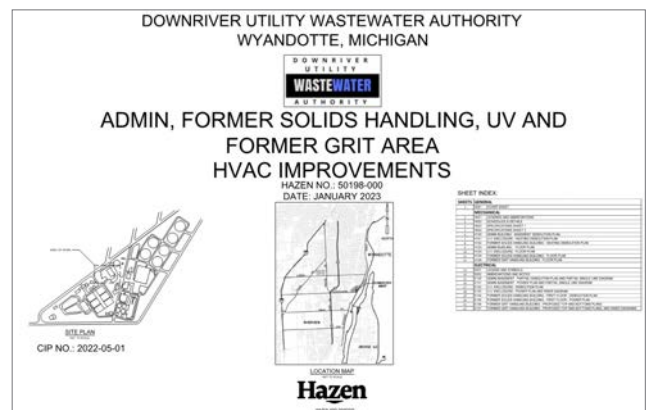
5 - Chemical Pricing Increases

FOURTH YEAR MAJOR HIGHLIGHTS - CONTINUED

- B. The rate setting effort for RY2022-2023 recognized some of the commodity cost increases, thus the increased rates that took effect on July 1, 2022 generated additional revenue through the end of 2022.
 - C. Surcharge rates charged to industrial users were increased to align with increased plant operating costs.
 - D. Veolia prepared a Memorandum of Understanding demonstrating that they would waive their 10% markup on commodity costs above the limits set forth in the contract through the end of 2023.
 - E. DUWA had originally budgeted a natural gas demand based on the expectation that the biosolids dryer facility would be operational in early 2022. Since the biosolids dryers were not yet continuously online, excess natural gas in storage was sold back to the market at a higher price than the original purchase price. Additionally, DUWA continues to sell a portion of the unused natural gas back to the market on a monthly basis based on the estimated demand for each month until the dryers are continuously online.
6. A number of programmatic updates and engineering studies were completed. Although the results are not as dramatic as seeing completion of a new construction project, these tasks can be very impactful in making sure the system is performing optimally. Examples are as follows:
- A. One of DUWA's three as-needed engineers performed a remaining useful life analysis and condition assessment on the UV disinfection system at the DWTF. It was determined that the UV disinfection system has a remaining useful life of approximately 20 months, as of September 2021, due to the limited inventory of original equipment manufactured spare parts. The manufacturer has also ceased providing technical support for disinfection systems of this make and model.
 - B. The steam heating systems throughout the DWTF are in need of repair or replacement. Veolia's capital project experts identified a three-phase approach to implement HVAC improvements. Phase 1 involved servicing the two existing steam boilers to restore steam heat, and this work was completed several years ago. One of DUWA's as-needed engineers completed the design for Phase 2 which involves replacing the existing steam boiler system with a natural gas hot water boiler to serve the Administration Building, UV Building, and former Solids Handling Building. With the design of Phase 2 complete, construction of Phase 2 is expected in future years.
 - C. There were concerns of corrosion from hydrogen sulfide (H₂S) in the electrical room at the DWTF. Veolia had previously sealed conduits into the electrical room, but still had concern that H₂S was present. One of DUWA's as-needed engineers performed an analysis of the air quality within the room and determined that there was no evidence of



6A - Condition Assessment Report of the UV Disinfection System



6B - HVAC Phase 2 Design

FOURTH YEAR MAJOR HIGHLIGHTS - CONTINUED

ongoing corrosion. If there is concern about corrosion in the future, Veolia could install copper corrosion test strips in the electrical room for monitoring. The engineer also performed an evaluation of the adequacy of the egress from the Control Room and determined that the egress was in compliance with applicable building codes. Several suggestions were offered to further improve egress.

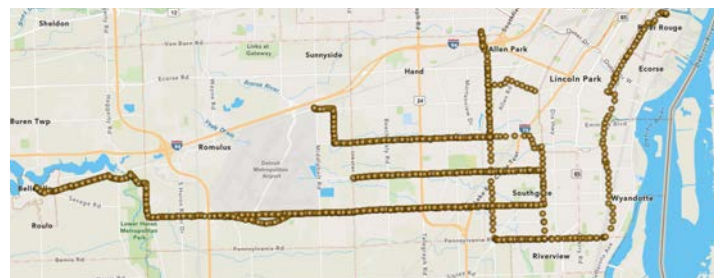
- D. The existing Screened Final Effluent (SFE) piping is showing signs of deterioration that may impact its structural integrity. The SFE header is also oversized for the current demand. One of DUWA's as-needed engineers performed a visual assessment of the header piping and provided recommendations for piping replacements as well as a construction scope of work that can be performed in-house by Veolia staff. The construction effort will be scheduled in the future.
- E. The variable frequency drives (VFDs) on Influent Pump Station pumps 5 and 6 have failed and one of the soft starters has also failed. The VFDs will not be replaced due to their high cost. As such, one of DUWA's as-needed engineers developed a design to

provide redundant soft starters to each of the pumps to improve system resiliency. Veolia's electrical team will utilize this design to perform the construction work in-house. This work is expected to be completed in 2023.

- F. GIS software licenses were purchased to allow Veolia to continue to maintain and update DUWA's GIS database which contains all the information related to the regional collection system assets.
 - G. An ASHRAE Level 2 Energy Audit was performed by Franklin Energy to evaluate the DWTF's major energy end-uses, operational practices, and energy management plans to develop energy saving recommendations. The assessment identified ten energy saving recommendations.
 - H. During the NPDES permit renewal process, DUWA worked with EGLE to develop language regarding the goal of reducing the number of blending events each year.
7. A number of policies were adopted by the Board to provide guidance on the Board's decision-making process.



6C - IPS Electrical Room with Air Quality Concerns (None Found)



6F - DUWA GIS Mapping Database



7 - Adoption of Policies

FOURTH YEAR MAJOR HIGHLIGHTS - CONTINUED

- A. A Board Appointment Policy was adopted that allows DUWA's Board to be comprised of both elected officials and municipal employees, which include persons signed to a personal service contract with the municipality. There is no term limit for those signed to a personal service contract.
 - B. A Cash Reserve Policy was adopted that formally outlines the minimum cash reserve thresholds in DUWA's various cash reserve accounts. This policy formalizes DUWA's prior informal practices related to cash reserves.
 - C. A Major Water Loss Policy was adopted that allows communities to request a base flow adjustment if a major water loss of 100 gpm or more occurring from a single water main break goes undetected for at least two months. Communities must report a major water loss within one year of the repair of the water main in order to request a flow adjustment. This policy encourages communities to quickly identify and correct water loss within their local systems.
8. It is also important that DUWA gets the message out about what is going on in the system and to transfer our "lessons learned" to others. A few actions in 2022 were as follows:
- A. Submitted an abstract to MWEA (the wastewater professionals' organization in Michigan) to present at MWEA's annual conference in June 2023. The abstract discusses how DUWA has improved the management of its regional collection system assets.
 - B. Submitted an application to EGLE to receive funding through their High Water Infrastructure Grant Program. This funding would be used to update DUWA's hydraulic wastewater model and to perform critical repairs throughout the regional collection system. These efforts would help reduce the impact of large wet weather events on the system. Grant awards are expected to be distributed in early 2023.
 - C. Received an award from MWEA for the Premier Utility Management Performance (PUMP) Award that recognizes excellence in Water Resource Recovery Facilities. DUWA was nominated in the following categories: product quality, employee and leadership development, operational optimization, financial viability, infrastructure strategy and performance, and stakeholder understanding and support. The award will be presented to DUWA at MWEA's conference in January 2023.
 - D. Developed this annual summary report, which provides information about some of the system highlights and upcoming challenges.



8A - Submitted Abstract for MWEA Annual Conference Presentation



8C - Received MWEA PUMP Award

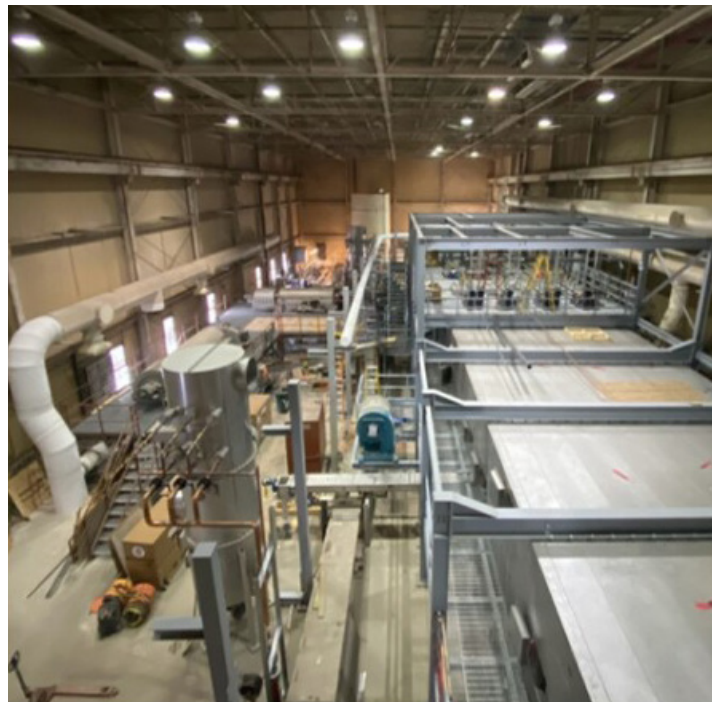
FUTURE CHALLENGES

In looking to the future, here are a few challenges that we expect to address:

- I. The ultraviolet (UV) disinfection system was state-of-the-art when it was installed in the 1990s. Unfortunately, the equipment is now obsolete as the manufacturer no longer provides technical support nor manufactures spare parts. Design and construction of a replacement disinfection system will need to occur before the inventory of spare parts is depleted. It is hopeful that DUWA will receive SRF financing from EGLE to assist with the funding of this project. Design of this project is expected to occur in 2023 with construction anticipated to begin in 2024.
- II. The biosolids dryer facility project is expected to be complete in 2023. This will provide for alternative biosolids disposal options such as beneficial reuse. Identifying and securing backup outlets, including landfills, will continue to be explored in addition to land application. DUWA will continue to investigate long-term strategies at the best economic price.
- III. EGLE, the State regulatory agency, wants to see continued reductions in the number of annual blending events. The next stage of improvements will likely involve reducing the flows in the local community sewer systems through a program labeled CMOM (Capacity, Management, Operations, and Maintenance). This may require regional incentives for the local communities.
- IV. Inflation in the chemical and utility market continues to increase. These are uncontrolled costs to the system. Revenue requirements will need to increase based on expenditures.



Future Challenge 1 - The current UV disinfection system is obsolete and has reached the end of its useful life and requires replacement.



Future Challenge 2 - The biosolids dryer project is nearing completion. Securing disposal outlets, in addition to land application, will continue to be explored.