



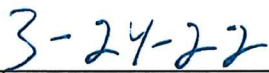
Miami-Dade Water and Sewer Department Business Plan

Fiscal Years: 2022 and 2023
(10/1/2021 through 9/30/2023)

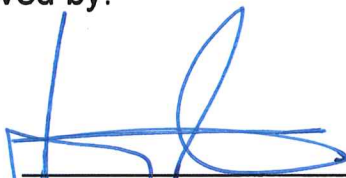
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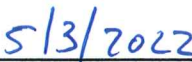
Roy Coley, Director



Date



Jimmy Morales, Chief Operations Officer



Date

Plan Date: February 2022

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DEPARTMENT OVERVIEW

Department Mission

The Miami-Dade Water and Sewer Department (WASD or Department, interchangeably) is committed to providing Miami-Dade County's residents, businesses, and visitors with high-quality drinking water and wastewater services; fostering future economic growth through progressive planning; implementing water conservation measures; and safeguarding public health and the environment; while embracing continuous process improvements and cost efficiencies, as well as the highest level of customer service.

Our Customer

WASD, one of the largest public utilities in the United States, is committed to providing dependable potable water and wastewater services at the lowest possible rate to a service area of approximately 2.4 million. At the retail level, there are approximately four-hundred fifty thousand (450,000) water and three-hundred thirty-six thousand (336,000) wastewater customer accounts. At the wholesale level, there are fifteen (15) (municipal) water accounts. There are thirteen (13) wholesale wastewater customer accounts (including twelve (12) municipal accounts and one (1) for the Homestead Air Reserve Base). Services include water supply, treatment, transmission, distribution, conservation, wastewater collection, disposal, and water reclamation.



Water and Sewer Department

Table of Organization

	<p><u>OFFICE OF THE DIRECTOR, ONE WATER AND RESILIENCE</u> Formulates and establishes departmental policy; directs overall operations</p> <p><u>FY 21-22</u> <u>FY 22-23</u> 7 17</p>
	<p><u>WATER AND WASTEWATER SYSTEMS OPERATIONS</u> Operates and maintains water and wastewater systems; treatment plants, transmission/distribution systems and pump stations. As well as, SCADA and Laboratory functions</p> <p><u>FY 21-22</u> <u>FY 22-23</u> 1,628.6 1,635.4</p>
	<p><u>FINANCE AND ADMINISTRATIVE COMPLIANCE</u> Directs financial, procurement, operating and capital budgets, funding coordination and information technology functions; directs administrative contractual monitoring and compliance</p> <p><u>FY 21-22</u> <u>FY 22-23</u> 311 297</p>
	<p><u>PLANNING, REGULATORY COMPLIANCE, PROGRAM MANAGEMENT</u> Directs water and wastewater design and construction activities for plants and pipelines. Directs capital improvement programs, compliance with state and federal agreements, utilities development</p> <p><u>FY 21-22</u> <u>FY 22-23</u> 349 338</p>
	<p><u>INTERNAL AND ADMINISTRATIVE SERVICES</u> Directs legislative activities, municipal policies, procurement, personnel, customer service and public information dissemination; fleet and general activities, quality assurance of construction/contractual work</p> <p><u>FY 21-22</u> <u>FY 22-23</u> 524 541</p>

The FY 2022-23 total number of full-time equivalent positions is 2,828.4



Strategic Alignment Summary

Strategic Area: Neighborhood and Infrastructure (NI)

Goal NI2: continuity of clean water and community sanitation services; Thrive305 Priority 7: Investment in Blue-Green Jobs that benefit our water and environment; 4E's Objective(s): Environment, Economy, Equity and Engagement.

Objective NI2-1: Provide adequate drinking water supply and wastewater disposal services

- Administer and implement one of the largest Capital Improvement Program (CIP) initiatives in the United States to improve the reliability and sustainability of the Miami-Dade County water and sewer system. Over the next 10 years, the \$7.8 billion CIP will utilize state of the art technology to enhance and upgrade WASD's infrastructure. This economic engine during the first decade alone, will have an economic impact on our community of \$24.9 billion, and create approximately 16,500 (sixteen thousand, five hundred) new jobs and increase service capacity to support more businesses and residences.
- Operate and expand the salt monitoring network in Miami-Dade County in partnership with the U.S. Geological Survey. This network system enables monitoring the movement of the saltwater/freshwater interface and provides a web-based mapping tool to allow ongoing assessment of saltwater intrusion in the aquifer.
- Lead the County's efforts to plan and implement septic to sewer conversions through the Connect 2 Protect Program, which includes work with stakeholders to advance the near-term and long-term actions detailed in the "December 2020 Plan of Action - A Risk-Based Approach to Septic Systems Vulnerable to Sea Level Rise." Key actions include incentivizing parcel connection to available sewer infrastructure through implementing the \$90 Million sewer laterals program, prioritizing and seeking funding sources for expansion of the sewer system to support impactful and cost-effective solutions for the environment and our community.

Strategic Area: General Government (GG)

Goal GG1: Accessible, fair and responsible government; Thrive 305 Priority 1: Accessible County Government, Priority 2: Engaged and Empowered Residents, Priority 12: Government that Cares and Responds; 4E's Objective(s): Environment, Economy and Engagement.

Objective GG1-1: Provide easy access to information and services

- Utilize various outreach methods to inform/educate the public about the Department's programs and initiatives. Message points to include the benefits of the multi-year CIP, water quality, water conservation, customer service, "Stop the Clog" and "WASD Cares." Communication is achieved through both traditional and non-traditional outlets, including social media (Facebook, Twitter, Instagram, Nextdoor and YouTube), radio, television, print, community events, transit bus benches, publications and WASD's website.



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Targeted emails can also be sent as determined by Geographic Information System (GIS) layer.

- WASD's Office of Public Engagement also partners with stakeholder groups to leverage their communication channels with their constituents. Department information is then shared through County Commissioners' offices and municipalities' offices via their websites, social media channels, reverse 311 calls and mass emails.
- Provide timely updates during emergency situations such as extreme weather events, pipeline breaches, water service interruptions, and sewer surface overflow events, Precautionary Boil Water Orders and traffic impacts using social media posts, press releases, news media interviews, and emails to established stakeholders, such as, affected County Commission Districts, municipalities, medical facilities, and schools to name a few.
- Generate support and solicit feedback for WASD initiatives using social media platforms such as, Facebook, Twitter, Instagram, and YouTube. Monitor these platforms and resolve customer service inquiries immediately in real-time.
- Develop government mandated documents for transparency, which includes the annual Consumer Confidence Report, that outlines WASD's water quality and the Annual Comprehensive Financial Report.
- Continue service improvements made through collaborative initiatives with the Utilities Development Division (UDD) and the Regulatory and Economic Resources (RER) Department that enhance the use of electronic documents for construction plans. Through this partnership, a simultaneous review of plans by both WASD and RER will improve customer outcomes and expedite compliance requirements that satisfy County Ordinances.
- Continue to provide online rebate services to residents for high-efficiency fixtures including showerheads, faucets, and toilets, and rebates for landscape irrigation audits and improvements.

Objective GG1-2: Support a customer-focused organization

- Continue updating and expanding WASD's online self-service application, which interfaces with the backend Customer Care and Billing (CCB) system, to initiate requests for new service. The self-service application currently allows customers to submit request for disconnections of existing services, payment extensions, bill payments, apply for pool credits, high bill investigations and for updates to contact information using an online format. This self-service tool gives customers access to account information and transactions 24-hours a day, thereby reducing calls to the Customer Care Center or visits to one of the walk-in customer centers. Other functionalities are being developed to expand this service.
- Promote the use of WASD's online messaging Chatbot launched in 2016, to provide transactional services to WASD customers, such as updating account information, requesting payment extensions, pool credits, underground leaks, disconnection of service and online payments. In 2020, the Self-Service application had 1.1 million visits and nearly 60,000 (*sixty thousand*) submission requests without promotional activities. It is expected to grow rapidly with promotion of the application.



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Goal GG2: Excellent, engaged and resilient workforce; Thrive305 Priority 7: Investment in Blue-Green Jobs that benefit our water and environment; 4E's Objective(s): Environment and Economy.

Objective GG2-1: Attract and hire new talent

- Implement a comprehensive staffing and succession plan to mentor, train, and transfer historical knowledge to new employees before the retirement of existing staff in key areas.

Objective GG2-2: Promote employee development and leadership

- Continue to conduct employee training sessions for employee development and regulatory compliance.
- Implement a requirement that WASD employees to obtain at least 24 hours of formal training per year within their area of expertise.

Objective GG2-3: Ensure an inclusive and diverse workforce

- The Department is committed to creating and maintaining a work environment that is both diverse and inclusive. This extends to having a workforce that is both valued and accepted for their differences in addition to their professional contributions. This will be achieved by:

Establishing the importance of inclusion and diversity in the workplace during new employee orientations.

Encourage tenured employee trainings administered by the Human Resources Department's cultural diversity and inclusion modules. Thereby reinforcing and maintaining employee awareness of WASD safe work environment policies extended to every gender, race, culture, and disabled persons.

WASD workforce policies will reflect the County's overall policies in leadership, leadership roles and management practices.

Goal GG4 – Effective leadership and management practices; Thrive305 Priority 7: Investment in Blue-Green Jobs that Benefit our Water and Environment; 4E's Objective (s): Environment, Economy, and Equity.

Objective GG4-2: Effectively allocate and utilize resources to meet current and future operating and capital needs

- Further develop and advance WASD's resilience framework and planning efforts, including vulnerability assessments, facility hardening, design guidelines, tools, and standard operating procedures to maximize the lifespan of public assets in the face of changing conditions. Continue to integrate future conditions, such as sea-level rise, changes in rainfall frequency and intensity, heat, and other climate conditions, in the planning and design of infrastructure and operations planning. Advance a risk-based approach for the management of assets through the implementation of the ANSI/AWWA J100 Standard for Risk and Resilience of Water and Wastewater Systems.
- Begin the implementation of an Integrated Master Plan, which will assist in developing a framework to comprehensively address WASD's water and sewer infrastructure and



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resource needs through the year 2050. The effort will transform WASD's current business practices to maximize operational efficiency and decision-making regarding future capital improvements.

- Prioritize staffing and budget for the operation and maintenance of water and wastewater hydraulic computer models, that are used to develop facilities needed for system growth, replacement of aged infrastructure, development of design conditions for new pumping stations and associated piping, analyzing capacity of the various systems for new projects, performance of internal regulatory compliance inspection and audits of permitted operating facilities, as well as staffing to meet environmental compliance requirements.
- Develop an efficient data library and analytics management utilizing adequate staffing and data analytics software to maximize operational and planning efficiencies and reduce capital expenditure.

Objective GG4-3: Reduce County government's greenhouse gas emissions and resource consumption

- Maximize the use of digester gas, a byproduct of the wastewater treatment process, as a fuel to power the energy demand at the South and Central District Wastewater Treatment Plants. Further maximize onsite cogeneration of energy at the South District Wastewater Treatment Plant through utilizing the methane gas from the adjacent landfill.
- Implement the Energy Management Plan for Wastewater Treatment, which builds upon existing efforts and establishes a collection of measures to achieve thirty percent (30%) energy intensity savings by 2030.
- Establish similar energy management plans for water treatment and pumping operations through participation in the US Department of Energy Better Plants Program and development of an energy management system by implementing the International Organization for Standardization (ISO) 50001 standard. To improve the Department's bottom line through efficient energy management.
- WASD is committed to promoting water use efficiency in County operations, as well as in the community by utilizing the County's utility billing management system. Utilize this data source to perform consumption trend analysis that assists departments with developing measures to reduce water consumption.
- WASD continues to aggressively detect and remediate leaks throughout its transmission and distribution system countywide. During calendar year 2021, the Department identified and repaired over 590 Non-Breaking Ground Leaks which are difficult to detect because they do not break the ground's surface. Additionally, the backlogs of leak repairs were reduced from 161 (*one-hundred sixty-one*) to 157 (*one hundred fifty-seven*). The repairs of the identified leaks have resulted in the prevention of over 4.6 billion gallons of water loss and savings of more than \$1.727 million.
- WASD uses advanced dynamic hydraulic modeling of pump station operational and energy data to minimize pump size and pump starts.



Strategic Alignment Summary

Scorecard Measures	Strategic Plan Goals and Objectives	Thrive305 and 4E's Strategic Planning Objectives
<p>Primary distribution system maintaining 35 lbs. psi</p> <p>Total MDWASD Population Served (Potable Water Service)</p> <p>Water Treatment Capacity in Millions of Gallons per Day (MGD)</p> <p>Wastewater Treatment Capacity (Permitted)</p> <p>Number of Water Pipeline Breaks (AWWA/FBC)</p> <p>Wastewater Unplanned Disruptions Lasting between 4 to 12 hours (Fiscal Year) (AWWA)</p> <p>Water Unplanned Disruptions Between 4 and 12 hours (AWWA).</p> <p>Percent compliance with wastewater standards (FY Quarterly) (AWWA) (OMB)</p> <p>Compliance with Drinking Water Standards (%) (percentage) (Fiscal Year) (AWWA)</p>	<p>Neighborhood and infrastructure (NI) <u>NI2</u>: Continuity of clean water and community sanitation services.</p> <ul style="list-style-type: none"> o <u>NI2-1</u>: Provide adequate drinking water supply and wastewater disposal services. 	<p>4E's: <u>Environment</u></p> <p>Thrive305 <u>Priority 7</u>: Investment in Blue-Green jobs that benefit our water and environment</p> <ul style="list-style-type: none"> o <u>Action 7.6</u>: Improve our sewer, water, and stormwater systems to protect the health of our bay, our residents and stimulate our economy
<p>Disruptions of Water Service (Fiscal Year) per 1,000 Retail Customers (AWWA)</p> <p>Disruptions of Sewer Service (Fiscal Year) (AWWA) (per 1,000 Wastewater Retail Accounts)</p>	<p>Neighborhood and infrastructure (NI) <u>NI2</u>: Continuity of clean water and community sanitation services.</p> <ul style="list-style-type: none"> o <u>NI2-1</u>: Provide adequate drinking water and wastewater disposal services. 	<p>4E's: <u>Environment</u></p> <p>Thrive305 <u>Priority 7</u>: Investment in Blue-Green jobs that benefit our water and environment</p> <ul style="list-style-type: none"> o <u>Action 7.6</u>: Improve our sewer, water, and stormwater systems to protect the health of our bay, our residents and stimulate our economy.



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<p>Sewer Overflow Rate (Per 100 Miles of Pipe) (AWWA)</p> <p>Response time to sewage overflows</p> <p>Percent compliance wastewater effluent limits</p> <p>What % (percent) of emergency work orders have been completed within 6 hours</p>	<p>Neighborhood and infrastructure (NI)</p> <p><u>N12:</u> Continuity of clean water and community sanitation services.</p> <ul style="list-style-type: none"> o <u>NI2-1:</u> Provide adequate drinking water and wastewater disposal services. 	<p>4E's: <u>Environment</u></p> <p>Thrive305 <u>Priority 7:</u> Investment in Blue-Green jobs that benefit our water and environment</p> <ul style="list-style-type: none"> o <u>Action 7.6:</u> Improve our sewer, water, and stormwater systems to protect the health of our bay, our residents and stimulate our economy.
<p>Percentage (%) of Ocean Outfall Legislation (OOL) Projects on Schedule</p> <p>Percentage (%) of Consent Decree Wastewater Projects on or before Schedule</p>	<p>Neighborhood and infrastructure (NI)</p> <p><u>N12:</u> Continuity of clean water and community sanitation services.</p> <ul style="list-style-type: none"> o <u>NI2-1:</u> Provide adequate drinking water and wastewater disposal services. 	<p>4E's: <u>Environment</u> <u>Equity</u></p> <p>Thrive305 <u>Priority 7:</u> Investment in Blue-Green jobs that benefit our water and environment</p> <ul style="list-style-type: none"> o <u>Action 7.6:</u> Improve our sewer, water, and stormwater systems to protect the health of our bay, our residents and stimulate our economy.
<p>Water Pipe Network System Inspection (%) (percent) (AWWA)</p> <p>Total hours of WASTEWATER planned and corrective maintenance (AWWA/FBC).</p> <p>Emergency Employee Response Readiness Training (Fiscal Year) (hours/employee)</p> <p>Collection System Failure (Integrity) Rate (%) (percent) (Fiscal Year) (Per Miles of Pipe) (AWWA)</p> <p>System-wide Available Water Supply Capacity from the Biscayne Aquifer</p> <p>Available Future Water Supply (Years)</p>	<p>Neighborhood and infrastructure (NI)</p> <p><u>N12:</u> Continuity of clean water and community sanitation services.</p> <ul style="list-style-type: none"> o <u>NI2-1:</u> Provide adequate drinking water and wastewater disposal services. 	<p>4E's: <u>Environment</u></p> <p>Thrive305 <u>Priority 7:</u> Investment in Blue-Green jobs that benefit our water and environment</p> <ul style="list-style-type: none"> o <u>Action 7.6:</u> Improve our sewer, water, and stormwater systems to protect the health of our bay, our residents and stimulate our economy



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<p>Five-year average water demand (MG)(AWWA)</p> <p>Total Planned Maintenance Ratio (planned maintenance as % (percent) of total Maintenance – water and wastewater (AWWA)</p>		
<p>Organization's Policies, Plans, Directions, state commitment to integrating and balancing environmental, social, and economic goals (AWWA)</p>	<p>General Government <u>GG4</u>: Effective leadership and management practices</p> <ul style="list-style-type: none"> o <u>GG4-2</u>: Effectively allocate and utilize resources to meet current and future operating and capital needs. 	<p>4E's: <u>Environment</u> <u>Economy</u> <u>Equity</u> <u>Engagement</u></p> <p>Thrive305 <u>Priority 7</u>: Investment in Blue-Green jobs that benefit our water and environment</p> <ul style="list-style-type: none"> o <u>Action 7.6</u>: Improve our sewer, water, and stormwater systems to protect the health of our bay, our residents and stimulate our economy.
<p>A Minimum of 24 Training Hours Per Employee, per year</p> <p>Review all Sources of Stakeholder Feedback and Develop Actions Regularly</p>	<p>General Government <u>GG1</u>: Accessible, fair, and responsible government.</p> <ul style="list-style-type: none"> o <u>GG1-1</u>: Provide easy access to information and services. o <u>GG1-2</u>: Support a customer focused organization. <p><u>GG2</u>: Excellent, engaged, and resilient workforce.</p> <ul style="list-style-type: none"> o <u>GG2-2</u>: Promote employee development and leadership. 	<p>4E's: <u>Environment</u> <u>Engagement</u> <u>Economy</u></p> <p>Thrive305 <u>Priority 7</u>: Investment in Blue-Green jobs that benefit our water and environment</p> <ul style="list-style-type: none"> o <u>Action 7.5</u>: Coordinate across jurisdictions and agencies to address climate risk and achieve bold resilience and economic recovery goals. o <u>Action 7.6</u>: Improve our sewer, water, and stormwater systems to protect



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		<p>the health of our bay, our residents and stimulate our economy.</p> <p><u>Priority 8: Resilient Communities</u> designed by and for residents.</p> <ul style="list-style-type: none"> o <u>Action 8.1: Expand "Adaptation Action Areas"</u> to build resilience in our communities most vulnerable to climate risk.
<p>Succession Planning (AWWA)</p> <p>Continuous Improvement program participation (AWWA)</p>	<p>General Government</p> <p><u>GG2:</u> Excellent, engaged, and resilient workforce.</p> <ul style="list-style-type: none"> o <u>GG2-1:</u> Attract and hire new talent o <u>GG2-2:</u> Promote employee development and leadership o <u>GG2-3:</u> Ensure an inclusive and diverse workforce <p><u>GG4:</u> Effective leadership and management practices.</p>	<p>4E's:</p> <p><u>Environment</u></p> <p><u>Engagement</u></p> <p><u>Economy</u></p> <p>Thrive305</p> <p><u>Priority 7:</u> Investment in Blue-Green jobs that benefit our water and environment</p> <ul style="list-style-type: none"> o <u>Action 7.6:</u> Improve our sewer, water, and stormwater systems to protect the health of our bay, our residents and stimulate our economy.



KEY ISSUES

Multi –Year Capital Program

Deferred maintenance and regulatory requirements in the form of consent decrees, agreements, permit conditions, and statutory changes continue to create a series of unfunded mandates that can only be met through extensive capital investment. To this end, WASD's \$7.8 billion Multi-Year Capital Improvement Program (MYCIP), will address deficiencies in facilities and pipelines resulting from age and deferred maintenance that have led to expensive equipment failures such as water and wastewater main breaks, plant failures, and decreased efficiency of operation. Fines and penalties have been imposed by regulatory agencies because of these failures. In the past few years, the failure of large diameter water and wastewater mains indicated that dedicated attention to the evaluation, repair and replacement of this critical infrastructure are essential. Key components of this program as follows:

Consent Decree

A Consent Decree (CD) between Miami-Dade County, the United States Environmental Protection Agency, State of Florida, and Florida Department of Environmental Protection (FDEP) was entered into on April 9, 2014. It settled alleged violations of federal and state environmental laws related to the County's sewage system and the replacement of aging and unreliable sewer infrastructure. The Consent Decree Program includes a series of improvements in management, assessments, audits, modeling, ordinances, and planning. It also leverages the strength of a larger capital improvement program, which encompasses all Miami-Dade Water & Sewer wastewater operations. This consists of the Wastewater Collection and Treatment System (WCTS), wastewater treatment facilities, effluent disposal operations, and financial management and reporting systems. The Consent Decree Program covers 176 (*one-hundred seventy-six*) projects with a projected estimate cost at \$1.94 billion dollars. To date, ninety-four percent (94%) of Consent Decree projects are on schedule and sixty-seven percent (67%) of the program is complete.

- The CD outlines certain Capacity, Management, Operations and Maintenance (CMOM) programs to be undertaken to reduce sanitary sewer overflows and ensure proper practices. These include a continuation of CMOM programs from previous Consent Decrees, such as the Transmission and Treatment Capacity Program, Pump Station Remote Monitoring, Wastewater and Collection Transmission System Model, Spare Parts Program, and Volume Sewer Customer Ordinance Program. New CMOM programs related to the current Consent Decree include: Fats, Oils and Grease (FOG) Control Program; Sewer Overflow Response Plan; Information Management System Program; Sewer System Asset Management Program; Gravity Sewer System Operations and Maintenance Program; Pump Station Operations and Preventative Maintenance Program; Force Main Operations; Preventative Maintenance and Assessment/Rehabilitation Program; Wastewater Treatment Plant Operation and Maintenance Program; and the Financial Analysis Program. All CMOM programs have been approved by the United States Environmental Protection Agency (EPA) and the Florida Department of Environmental Protection (FDEP).
- WASD's Pump Station Improvement Program (PSIP) manages the improvements of pump stations, force mains and gravity lines. The PSIP is intended to monitor pump station activity to ensure that WASD is following the Nominal Average Pump Operating



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Time policy as defined by the United States Environmental Protection Agency. The Pump Station Compliance Section constantly monitors over 1,000 pump stations to determine if any are trending out of compliance and alerts the operational divisions to address the problem. If a pump station requires an upgrade, preliminary engineering reports are prepared for engineering design and construction work to begin. This key issue, if not properly managed, not only poses an impediment to economic development but also negatively impacts the reliability of systems that are critical for day-to-day maintenance and operations.

Ocean Outfall

In 2008, the State of Florida enacted the Ocean Outfall Legislation (OOL) requiring all wastewater utilities in Southeast Florida, utilizing ocean outfalls for treated wastewater disposal to:

- Eliminate the normal use of ocean outfalls by the end of 2025.
- To reduce nutrient discharges, WASD Implemented the equivalent reduction approach of advance wastewater treatment. WASD is maximizing the use of existing municipal deep injection wells at North District Wastewater Treatment Plant (NDWWTP) and utilizing new industrial deep injection wells at Central District Wastewater Treatment Plant (CDWWTP) to achieve equivalent reduction in the cumulative outfall loadings of total nitrogen and total phosphorus.
- Currently, it is anticipated that WASD will not meet the 60% (*sixty percent*) reuse target by 2025. However, the Legislation requires implementing reuse that is technically, environmentally, and economically feasible. Therefore, WASD in collaboration with FPL is pursuing 15 mgd (*fifteen million gallons per day*) of reuse for cooling water. In addition, WASD is exploring other opportunities through its Reuse Feasibility Study and has found other limited use.
- In 2013, the OOL was amended to provide greater flexibility to meet wastewater reuse requirements and manage peak flows by standby outfalls. As of September 30, 2021, the Department has expended approximately \$345 million on projects to meet Legislation and to increase treatment capacity of the SDWWTP. Future expenditures will include costs to complete design, permit fees, construction, and construction management for the required infrastructure improvements. The OOL Program includes projects to meet the legislation, as well as projects for overall treatment capacity at the County's three (3) existing Wastewater Treatment Plants (WWTP). The following is the overall status of the OOL Program:
 - Conceptual designs for the WWTPs with ocean outfalls that are affected by the Legislation (Central District and North District WWTPs) have been completed and associated designs are underway.
 - Conceptual design for the South District WWTP, which includes infrastructure improvements to increase treatment capacity is completed. The final designs for the improvements are also completed. Improvements are either under construction or in procurement.
 - The design, permitting and procurement of municipal injection wells has been completed at the South District, Central District and the North District WWTPs



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and construction is now underway. Construction has been completed on the three (3) additional municipal injection wells at the South District.

Connect 2 Protect, Septic to Sewer Conversions

Approximately 9,000 septic systems are vulnerable to compromise or failure under current groundwater conditions. As sea-level rise increases, this number will grow to approximately 13,500 by 2040. Compromised and failing septic systems can cause negative impacts on private properties, pose public health risks, and have negative impacts on our natural resources including Biscayne Bay. Connect 2 Protect is a multi-year, countywide program to plan and implement septic to sewer conversions, which includes work across departments and with external stakeholders to advance the near-term and long-term actions detailed in the "December 2020 Plan of Action — A Risk-Based Approach to Septic Systems Vulnerable to Sea Level Rise." Through this program public laterals will be installed to support the connection of properties abutting sewer infrastructure, prioritizing those that are vulnerable to compromise or failure by 2040.

General Obligation Bond (GOB) Program Projects

WASD has an allocation of \$206.7 million from the General Obligation Bond (GOB) Program to support the Department's water and sewer system enhancements. The largest of WASD's is the implementation of the "Sewer Service to Commercial Properties in Miami-Dade County," created by Resolution R-597-13, adopted on July 2, 2012, with projected costs of \$126 million. This project consists of installation of 116,000 (*one hundred sixteen thousand*) linear feet of pipe and construction of eleven (11) new pump stations. In addition to improving the chances for economic development and job creation, the protection of the County's water supply will also be improved and enhanced by eliminating commercial/industrial septic tanks from these areas. The initial five commercial corridors funded through this program were identified by criteria adopted by the Board of County Commissioners that considered planning and environmental factors, economic, land use, and current and socioeconomic conditions. When coupled with planned water infrastructure upgrades, it reflects a \$200 million project, which would place it among the largest commitments of septic to sewer conversions in the state.

Major commercial corridors where significant clusters of commercial and industrial zoned property lack access to sewer infrastructure includes NW 7th Avenue, NW 22nd Avenue, NW 27th Avenue, NW 79th Street, NE 2nd Avenue, Biscayne Boulevard, SW 40th Street and South Dixie Highway, and Hialeah Transfer area NW 37th Avenue.

Consumer Line Relocation

The Consumer Line Relocation Program (CLR) was established to replace undersized water mains, as well as to transfer water service to the front of properties. The objective is to improve water service, reduce leakage losses from deteriorating aging lines, improve water quality, and enhance fire protection flows. This program will, in part, satisfy a condition by the South Florida Water Management District within the County's Twenty (20) Year Water Use Permit (WUP), requiring a reduction in water losses in the distribution system. WASD has completed Phase 1 of this project. The Department has begun the procurement process to select a contractor that will transfer water services to properties which are currently being served by a rear water main



and have a water main service, as well as a meter in the front.

Utilities Development

The conversion of paper plans and municipal certificate of use (CU's) to electronic submittals have impacted the level of service and completion of our processes. The increase of additional electronic submittals has affected our operation by increasing the number of projects per reviewer, which now must be completed with reduced timelines.

The Department is looking at ways to improve systems integration for a more efficient access to review projects and manage workflows, recurring processes, and standard operating procedures (SOPs).

Timely processing of developer donations of water and wastewater infrastructure is of key importance to the Department. The Department needs to keep pace with development in the community and the water, wastewater and reclaimed water infrastructure projects that become a part of the Department's water and wastewater systems. Larger developer projects require the use and maintenance of the Department's Wastewater Transmission and Collection System (WTCS) hydraulic computer model, which is used to determine the correct size of infrastructure to install. This work, and the equivalent for the Department's water transmission and distribution system, is critical for the determination of capacity for developers, as well as for long-range planning and optimal system operation.

Operations

- Replacement of aging and worn-out equipment and vehicles is an ongoing challenge in meeting WASD's operational needs and regulatory requirements. An aging electrical system requires substantial funding to upgrade the network/data infrastructure and equipment to improve energy efficiency. Updating and improving the mechanical/HVAC and incorporating a more efficient, parallel approach is needed. As the Department continues to add capacity, new pump stations and buildings with modern technology, HVAC staff will require continuing education and adequate staffing levels.
- Technology continues to be at the forefront of WASD operations to improve productivity in our budget and accounting, customer information, geographic information, enterprise asset management, system control data, project tracking, scheduling, security, metering and the monitoring of automation of the operations through SCADA. The core systems that support these functions require maintenance, training, and funding for them to continue to serve their purpose. Additionally, technology changes are introduced by hardware and software suppliers, internal business improvements, regulations, and expanded customer expectations.
- Beyond these core systems, WASD, working with the Information Technology Department (ITD), has introduced innovative solutions and technologies that extend the Department's capabilities by improving productivity, efficiency and enabling better data analysis. Continued improvements have been implemented by enhancing data and systems access through mobile and cloud solutions; proactively managing infrastructure; and diversifying customer channels of communication, thus improving customer service and satisfaction as well. Among these are: new GIS tools to support better analysis of the Department's infrastructure; facilitating the process of migrating our SCADA Data to



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the Modern Data Architecture Cloud services that will allow us to provide even better real-time features, performance, and reporting capabilities than previously available; asset management mobile solutions to support field and warehouse operations; the Microsoft SharePoint platform, to which all SharePoint resources have been migrated, along with Office 365, encourages better business collaboration anytime, anywhere and from any device; Business Intelligence architecture and tools to analyze and visually present disparate data using intuitive dashboards; expanded self-service functionality on-line for customers to access 24/7; and AVA (Watson) Chatbot, which allows customers to ask questions and request payment extensions using natural language. Although these newer technologies provide substantial benefits, it can place a burden on both the workforce adapting to the change and the Information Technology team delivering the support that must be managed. Coordinating these changes requires significant planning to ensure a smooth transition.



PRIORITY INITIATIVES

Multi-Year Capital Improvement Program

WASD will continue to ensure the implementation of the projects in the MYCIP to provide adequate facilities to meet capacity requirements and comply with regulations and infrastructure renewal and replacement.

The MYCIP will also address the support systems associated with implementation, including climate change mitigation and adaptation strategies references below:

Consent Decree

- Continuation of existing Capacity Management Operation and Maintenance (CMOM) programs including implementation of the developed Sewer Overflow Response Plan; Information Management System; Sewer System Asset Management; Gravity Sewer System Operation and Maintenance; Pump Station Operations and Preventive Maintenance; Force Main Operations and Assessment, Preventive Maintenance and Rehabilitation; Wastewater Treatment Plant Operations and Maintenance; and Financial Analysis Programs.
- Further utilization and optimization of existing technology to meet all CD requirements and to support the overall operation and management of the enterprise. Implementation of key automated support systems will provide insight and meaningful monitoring, tracking, and reporting.

Pump Station Improvement Program (PSIP)

- Completion and certification of the remaining PSIP projects. To date, 136 (*one hundred thirty-six*) projects have been completed or certified.
- Four (4) projects have been substantially completed and are pending final certification.
- Nine (9) projects are currently under construction and are scheduled for completion over the next few months.
- An additional two (2) projects are in the procurement process.
- Two (2) projects are in permitting/design or planning.

Ocean Outfall

WASD is fully committed to complying with the requirements of the OOL, specifically regarding the following stipulations: 1) Advanced Wastewater Treatment and Management (AWTM) Requirement; 2) Functional Reuse System; and 3) Elimination of the normal use of the Ocean Outfall by December 31, 2025.

- Advanced Wastewater Treatment and Management Requirement: WASD selected the equivalent nutrient diversion method to meet the AWTM requirement and is on target for compliance. The most current projections for Total Nitrogen (TN) and Total Phosphorus (TP) diversions anticipate the TP goal being met in 2022 and the TN goal being met in



2025. WASD is maximizing the use of its existing municipal deep injection wells at NDWWTP, and its recently operational industrial deep injection wells at CDWWTP to meet the nutrient diversion objectives set forth by the OOL.

- Functional Reuse System: The OOL statute defines a functional reuse system as “an environmentally, economically and technically feasible system that provides a minimum of sixty percent (60%) of a facility’s baseline flow on an annual basis” for various wastewater reuse applications listed in the statute. WASD has undertaken a series of analyses, including the April 2018 Update of the Reuse Feasibility Study, to identify candidate projects that fulfill a water supply need and that can be evaluated in terms of environmental, economic, and technical feasibility. On April 10, 2018, the Miami-Dade Board of County Commissioners (BCC) approved Resolution No. R-292-18, authorizing the County Mayor or County Mayor’s Designee to execute a Joint Participation Agreement with FPL for development of an Advanced Reclaimed Water Project, subsequently on June 16, 2020, under Resolution R-579-20 the BCC approved an Agreement with FPL for up to fifteen (15) million gallons of reclaimed water use at FPL’s Turkey Point Complex.
- Elimination of Ocean Outfall Discharges by December 31, 2025: WASD, through its commitment and actions to advance the OOL Program, is currently working toward meeting the requirements set forth by the legislation to eliminate the ocean outfall discharges (with exception of the permitted five (5) percent peak flow provision in the statute) by December 31, 2025. Through continuous monitoring of increases in flow and population over several years, WASD has been better able to forecast system needs and make corresponding adjustments to future projections. Currently, WASD’s existing wastewater treatment plants significantly exceed anticipated system demands beyond 2025 and, therefore, WASD will use existing assets to address the requirements of the legislation and future wastewater flows. Among the projects to be completed are high-level disinfection facilities and new injection wells that will enable WASD to eliminate the normal use of the outfalls. Additionally, due to the re-evaluation of flow projections through 2025, WASD submitted a 2019 Update Compliance Plan to include only those projects essential for OOL compliance by December 31, 2025.

The C-51 Reservoir Phase 1 Project

This is a regional alternative water supply project and multi-stakeholder public-private partnership that provide utilities with sustainable water supplies in South Florida. It involves the construction of a fourteen thousand (14,000) acre-foot in-ground reservoir in central Palm Beach County immediately adjacent to the existing SFWMD L-8 Flow Equalization Basin that will provide 35 mgd (*thirty-five million gallons per day*) in alternative water supply benefits to utilities through rights to additional Biscayne Aquifer allocation in respective Water Use Permits. The project has environmental benefits including aquifer recharge and reduction of tidal discharges. The in-ground reservoir will store and route water supplies through primary and secondary canal system to individual utility wellfields to provide direct aquifer recharge to offset withdrawals from the Biscayne Aquifer. Broward County Water and Wastewater Services, the City of Sunrise, the City of Lauderhill, and the City of Dania Beach have submitted Letters of Intent to utilize water made available via the C-51 Reservoir and entered into allocation agreements. Participating water utilities will be able to expand use of the Biscayne Aquifer in



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full accordance with the Regional Water Availability Rule, while also taking advantage of existing wellfields and treatment facilities.

For WASD this means obtaining 15 mgd (*fifteen million gallons per day*) of additional Biscayne Aquifer withdrawal rights. Unlike other sources, this water can be withdrawn from WASD's existing well fields and treated at the utility's existing water treatment plants with no additional capital investment. The operating expense associated with the C-51 project is minimal. The South Florida Water Management District will serve as the project operator with reimbursement for operational expenses by the project partners.

Below is a summary of each of the primary components of the project/partnership.

C-51 WASD Allocation:

- 15 mgd (*fifteen million gallons per day*) allocation – this allocation will be through WASD 20 Year Water Use Permit Condition, and the C-51 Reservoir, Inc. a Florida Not-for-Profit (C-51 NFP) Consumptive Use Permit (currently expires 12/27/65).
- Once WASD completes the C-51 allocation agreement and payment, WASD becomes part of the C-51 NFP (note: with a 15 mgd (*fifteen million gallons per day*) agreement we would have 15 (*fifteen*) of 35 (*thirty-five*) voting rights per the C-51 NFP By Laws).

WASD Water Use Permits:

- Once an allocation has been permitted by the SFWMD, the applicant can renew permit at any time, and as long applicant can demonstrate the District's 3-prong approval process, the permitted allocation is extended to the updated expiration date of the permit.
- Example: Our WASD initial 20-year WUP would have expired in 2027, with a base of 347 mgd (*three-hundred forty-seven million gallons per day*). WASD has since submitted several permit modifications, most recently in 2020, which is pending approval by the SFWMD Governing Board in the March 2022 meeting. Once approved our permit will expire in 2040 with an allocation of 392 mgd (*three hundred ninety-two million gallons per day*). WASD was able to demonstrate, in the permit modification application, that inclusion of the C-51 allocation and the optimization of wet and dry season flow will not result in increased impact to regional system.
- For the C-51 NFP CUP, the C-51 NFP can modify that permit to extend it periodically going into the future, as long as the C-51 is operational. Meaning that 15 mgd (*fifteen million gallons per day*) allocation can be extended for as long as the life of the C-51 reservoir (estimated one-hundred years if we're all not under the bottom of the sea by then).
- Once Palm Beach Aggregates (PBA) transfers the C-51 reservoir over to the C-51 NFP, they are no longer involved in the CUP. PBA will transfer ownership of the Phase 1 Reservoir to C-51 NFP on or about the thirtieth (30th) day after the date on which commercial operation of the Phase 1 Reservoir is achieved.
- No further payments to PBA after the initial payment, even if that 15 MGD allocation gets extended to 2100 for example.



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Flow Reduction

WASD aims to reduce average and peak flows in the sewer system via the Flow Reduction Program. Comprised of two main components, Inflow, and Infiltration (I/I) reduction and Pump Station Optimization (PSO), this program implements system betterment as well as real-time controls to reduce flows into the conveyance system. Through this program, additional savings in capital infrastructure are achieved while also helping the Department comply with the Wellfield Protection Ordinance (WPO).

- The Flow Reduction Program aims to address I/I repairs for basins as identified by the Wastewater Collection and Transmission Division, Pump Station Compliance Section (PSCS) and different programs such as the Pump Station Improvement Program (PSIP). Currently, the Program has seven contracts (totaling \$22 million) scheduled to target I/I repairs.
- WASD has completed over seven-thousand, two-hundred, sixty-eight (7,268) in-house repairs and over two-thousand, thirty-four (2,034) contract repairs in compliance with the current local legislation (WPO and VCSO ordinances). This work included MYCIP Liners, Dig & Replace, Large Diameter Cleaning, and Manhole Repairs.

Asset Management

To comply with Consent Decree (CD) requirements, WASD will implement key initiatives that enhance the useful life cycle of the water and wastewater infrastructure and components identified as critical assets, to aid in maintaining an adequate level of service, for Miami-Dade residents and customers.

e-Builder Implementation

- Finalize implementation of the e-Builder project management software application to manage WASD's MYCIP projects and maintain, enhance, and provide support and training for the live e-Builder system for donation projects and processes. This cloud-based solution is being integrated with other WASD systems such as PeopleSoft Enterprise Resource Planning (ERP) and ArcGIS (a geographic information system) to provide a single point of access for project data and related business processes for all users from project and program managers to designers, consultants, permitting agencies, contractors, suppliers and other project stakeholders. e-Builder will result in increased productivity, efficiency and faster project delivery by helping to manage and control projects' scopes, schedules, costs and documents throughout their lifecycles from planning and design, all the way through procurement, construction, closeout and operations. e-Builder supports policies and processes that will ensure governance, while increasing efficiency, transparency, and accountability. One of the many benefits of e-Builder is its ability to automate workflows, create notifications, and incorporate document repository capabilities. This software will undoubtedly help improve work synergies amongst project teams and stakeholders, impacting the way users communicate and collaborate within one platform. Built-in features within e-Builder will streamline processes, improve data security, and provide integrated accountability across one solution while expanding access to information and empowering users to make better-informed decisions. As a result, e-Builder will keep responsible parties



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current and up to date with any changes to their account and provide them with an audit trail of all project transactions. Ultimately, e-Builder will replace the Proliance Project Control Tracking System (PCTS).

- Continue rollout, training, and support of the Bluebeam Revu software application to facilitate and accelerate the design plans review process. Bluebeam Revu is pre-integrated into e-Builder and allows for document markup, comparison, and collaboration by multiple users in real-time. It includes a suite of measurement tools that allow capturing project scope and producing higher-quality bids and simplifies the creation and approval of submittals.
- Expand the WASD Services e-Builder application developed by WASD staff to better track and manage planning, water certification, hydrogeology, and utility coordination projects. The application provides dashboards allowing project managers and other users to track and manage correspondence and work effort.

Resilience Program

- Lead the County's efforts to plan and implement septic to sewer conversions through the Connect 2 Protect Program, which includes work across departments and with external stakeholders to advance the near-term and long-term actions detailed in the *"December 2020 Plan of Action — A Risk-Based Approach to Septic Systems Vulnerable to Sea Level Rise"*. Recognizing that 9,000 septic systems are vulnerable to compromise or failure under current groundwater conditions and increases to approximately 13,500 by 2040, the following are the next steps: Implement a program to install public laterals to support connection of properties abutting sewer infrastructure, prioritizing those that are vulnerable to compromise/failure by 2040.
- Prioritize Areas for Expansion of the Sanitary Sewer System Based on environmental, social, and economic impacts.
- Continue to seek funding opportunities and mechanisms for the public and private costs for expanding the sanitary sewer system and private property connections.
- Further, develop and advance WASD's resilience framework and planning efforts — including vulnerability assessments, facility hardening, design guidelines, tools, and standard operating procedures — to maximize public assets' lifespan as a result of changing conditions. Continue to integrate future conditions, including sea-level rise; and changes in rainfall frequency and intensity; as well as heat and other climate conditions, in the planning and design of infrastructure and operations planning. Develop processes to quantify and document the cost-benefit of efforts, including the added cost of resilient design and the estimated risk reduction to measure performance and offset risk-based insurance or bond ratings that may integrate regional climate risks in future evaluations.
- Communicate and advance the recommendations and implementation plan developed through the Risk Assessment (RA) performed pursuant to the America's Water Infrastructure Act of 2018, which requires that each community water system shall assess the risks to, and resilience of, its system, including the following elements risk to the system from malevolent acts and natural hazards, monitoring practices, financial and chemical systems, and operations and maintenance. The outcomes include an



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implementation plan for capital and operational needs for risk and resilience management of the system, including strategies to improve the system's resilience.

- Operationalize the application of the Envision Rating System across planning, design, and construction by developing policies, guidelines, and other tools.
- Advance the priority areas identified through the two-year City Water Resilience Framework efforts coordinated with the Miami-Dade County Resilience Office, Arup, and the Stockholm International Water Institute (SIWI) to bring together regional stakeholders to diagnose the strengths and weaknesses of the water system using quantitative and qualitative indicators.
- Complete the \$27 million design in FEMA Hazard Mitigation Grant Program projects (Phase 1) to harden critical wastewater pump stations from flooding, wind, and power outages. Prepare design bidding packages to obtain funding for the construction of these projects (Phase 2).
- Continue to work across WASD divisions and County departments to assess impacts from sea-level rise, as well as other climate impacts, using tools such as the U.S. Geological Survey ground and surface water modeling, which provides information on future conditions that may impact the water supply and wastewater services.
- Enhance and expand WASD's water conservation plan to reduce non-revenue water and countywide per-capita water consumption to maximize existing water allocation and facilities.
- Advance the Energy Management Plan for Wastewater Treatment (2019) recommendations, which builds upon existing efforts and establishes a collection of measures to achieve 30 percent (30%) energy intensity savings by 2030. Expand this effort to water production and conveyance, wastewater conveyance, and buildings to reduce its approximately \$26 million in annual electricity expenditures.
- Lead the Biogas Steering Committee in maximizing the use of wastewater biogas and landfill gas to offset the use of electricity at the South and Central District Wastewater Plants.
- Update the Local Mitigation Strategy list of needs, seek additional funding opportunities for these projects, and facilitate implementation.

Water and Wastewater Improvements

- The Department will upgrade its digesters with new mixers resulting in a more efficient and improved performance while also producing additional methane gas; the methane gas produced will be used to fuel cogeneration engines, thereby providing additional alternative energy for use within the plant. The quantified savings are approximately \$1 million in operating costs over the asset's twenty (20) year life cycle.
- Continue to enhance efforts to reduce non-revenue water losses by expanding mobile network loggers across all major corridors. Finalize GIS layer for non-breaking ground (NBG) leaks.
- Continue initiative to replace approximately twenty thousand (20,000) linear feet of aging water mains with in-house forces. Continuation of the Consumer Line Relocation Program (CLR) with the objective to improve water service, reduce leakage losses from deteriorating aging lines, improve water quality, and enhance fire protection flows by



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replacing small insufficient diameter rear alley mains.

- Continue the replacement of undersized and aged water mains throughout the County to include unincorporated Miami-Dade County, the City of Homestead and Florida City. Current, aging water mains contain leaks and may not be providing adequate water pressure for fire flow. The increasing population and current conditions demand adequate infrastructure, increased water capacity, the provision of high-quality water and the protection of public health and safety.
- Improvements to the Wastewater Transmission Mains and Pump Stations throughout the County will allow the Department to increase the flexibility of the wastewater systems and improve their ability to monitor and control wastewater flows. Improvements in metering and monitoring pressures will assist in reducing non-revenue water use or losses.

Other Initiatives

- Embark on the implementation of an Integrated Master Plan. The Integrated Master Plan will help develop a framework that will comprehensively address WASD's water and sewer and reuse infrastructure and water supply needs through the year 2050. The effort will transform WASD's current business practices to maximize operational efficiency and decision-making regarding future capital improvements.
- WASD remains committed to cultivating and encouraging local small businesses to bid for Department projects, especially as a part of the \$7.8 billion CIP.
- Provide continuous monitoring of proposed rules and regulations by State and Federal agencies, identifying their impact on WASD operations, propose modifications and actively participate in the rulemaking process.
- Continue to seek funding through competitive grant programs and state and federal legislative appropriations requests.
- Leverage WASD's data streams, including WASD's SCADA, asset management, laboratory information management, computerized maintenance management, and geographic information systems, among others, to make data-driven planning, capital improvement, and utility operations decisions.
- Development of SCADA Operation Historian system, development of documentation for SCADA Standards and Convention, and continuous integration of plant processes into SCADA system for monitoring, controlling (including Automation) and data collection purposes, as part of Consent Decree, OOL and Internal R&R projects.
- Align WASD's business practices with international standards (ISO or equivalent) in areas of Asset Management (55000), Energy Management (50001), Environmental Management (14001), and Quality Management (9001), among others.
- The Department has instituted a Quality Assurance and Quality Control (QA/QC) team to ensure the efficacy and efficiency of the Water and Sewer Department's business processes and technical procedures, leading to qualitative service delivery, accountability, uniformity, and continuous improvement. The QA/QC Division will ensure that Department business and technical operations adhere to Standard Operating Procedures (SOPs) based on industry standards as well as federal, state, and local



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codes and regulations. The QA/QC team is currently engaged into developing (SOPs) to improve the performance of Water and Wastewater operations as well as administrative processes for Customer Service, Security & Communications, and Public Engagement. The QA/QC Division's strategic plan includes the development and institution of a comprehensive, Department-wide, Quality Management System (QMS) based on ISO 9001:2015 that includes the creation, publishing, central record management, and procedural auditing of the established business, administrative, and technical SOPs.

- Ensure compliance with the 20-year Water Use Permit (WUP) through implementation of alternative water supplies (AWS), water conservation and water loss reduction projects; adequate wastewater transmission capacity; groundwater studies for the North and South District Wastewater Treatment Plants, in compliance with the Florida Department of Environmental Protection (FDEP) Underground Injection Control Program; Infiltration and Inflow Program; Brickell, Doral, and Biscayne Boulevard basin wastewater improvements; the Integrated Water and Wastewater Master Plan to address system needs for future growth, including the OOL, climate change, and sea-level rise; and continuation of comprehensive Lead Service Replacement Program to systematically eliminate lead from water service piping and fittings.
- Provide additional resources to optimize the implementation of infiltration and inflow reduction. The Wastewater Collection System Infiltration and Inflow Reduction (I/I) Program will reduce flow resulting in collection system efficiencies, lower associated operations and maintenance costs and the prevention of additional pump station moratoria.
- The current Infiltration and Inflow Program (I&I) is implemented to achieve the level of service that aligns with the Department's goals.
- Continue implementation of the Water and Wastewater Infrastructure Service Improvement Plan to achieve efficiencies.
- Complete a water system hydraulic model calibration. This modeling effort ensures right-sized infrastructure planning, as well as supports the County's Insurance Services Office (ISO) fire insurance rate credits.
- Address the findings of the 2020 Risk & Resilience Assessment (RRA) performed to identify natural and manmade threats to the water system, pursuant to the America's Water Infrastructure Act of 2018.
 - Develop priorities and leads for the risk mitigation measures outlined in the implementation plan of capital, policy and procedural improvements. Re-establish the FEMA Incident Command Structure (ICS) and defining roles
 - Activate the all-hazards Emergency Response Plan, which includes an incident command structure, training and exercise drills, and incident action checklists for cybersecurity and other emergency incidents.

Operations

- Leverage innovative technologies, along with the development of a utility-wide process for screening and performance validation of technologies for piloting and possible implementation.



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- Prioritize staffing and budget for the operation and maintenance of water and wastewater hydraulic computer models, which are used to develop facilities needed for system growth, replacement of aged infrastructure, development of design conditions for new pumping stations and associated piping, analyzing capacity of the various systems for new projects, and performance of internal regulatory compliance inspection and audits of permitted operating facilities.
- Maintain up-to-date facility master plans and Standard Operating Procedures (SOPs) for water, wastewater, and reclaimed water systems.
- Expand the technology for monitoring flows at all wastewater pumping stations for use in tracking available capacity and improved hydraulic model accuracy.
- Continue hydrogeological modeling to optimize raw water withdrawals from the Biscayne Aquifer. Allocation increases approved by the South Florida Water Management District will allow for the use of existing facilities for pumping and treating groundwater to meet additional water demands with minimum cost.
- Proceed with evaluation techniques, such as water distribution pressure control and water treatment modifications to increase available water for public consumption and decrease energy requirements.
- Implement a comprehensive staffing and succession plan to mentor, train and transfer historical knowledge to new employees before the retirement of existing staff in key areas.
- Enhance efforts to reduce non-revenue water losses which amount to an estimated twenty-nine percent (29%) during FY 2021.
- Strengthen meter replacement program to reduce loss of revenues resulting from aging infrastructure.
- Bolster operation's automation opportunities through smart use of SCADA data to improve alarms and process dosing opportunities.

Customer Service and Community Outreach

- The Department continues to strive towards delivering an excellent customer experience to its retail water and sewer customers. The Retail Customer Service Division (RCSD) responds to approximately 600,000 (*six-hundred thousand*) calls annually and the average customer wait time is less than two (2) minutes. The customer experience through all touchpoints is equally important. For this reason, there is an emphasis on an effective multi-channel communication strategy and comprehensive customer experience whether it is by phone, in person or online.
- RCSD, in collaboration with the Information and Technology Department (ITD) continues to explore options for improving digital communication with customers via text and email.
- The Utilities Development Division (UDD) is continuing to enhance the website, to make it more welcoming, user friendly, more practical, and transparent with supplementary content for a more inclusive customer service experience. Continue to optimize and integrate processes making it easier to understand.
- UDD has continued to enhance customer dialogue. Additional features have been added to the telephone system and to continue to improve the communication



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infrastructure to serve our customers more efficiently. We have created a call center within New Business Section to optimize customer satisfaction and maintain control of the high call volume.

- The Field Services Section is in the process of upgrading its current Meter Reading System (Itron) used by the department to record, track, and bill for water and sewer services provided to retail customers in the county. The Itron System is used to read approximately 480,000 (*four hundred eighty thousand*) meters. It integrates with the WASD's Customer Care and Billing (CCB) System by transferring the reads for bills to be generated, which amounts to approximately \$627 million a year. The latest application will address and improve various inefficiencies such as occasional delays with downloading and uploading read routes, better routing of work which reduces travel time, and other enhancements that will provide the Meter Reading System operators greater ease of reassigning work to available resources. In addition to system upgrades, we are currently testing smaller, more durable, and cost-effective, rugged smart android phones to replace the existing Honeywell FC-00 in the near future.

Finance

Annual review of water and wastewater fees continues to be a priority to improve services and finance the rising cost of capital projects.

As part of the FY 2021-22 Adopted Budget, the BCC approved a revenue increase of three-point sixty eight percent (3.68%), effective October 1, 2021. In previous fiscal years retail rate structure adjustments were approved to address average water decreases due to water usage trends and proactive conservation. The table below includes rate adjustments imposed since the Department entered the Consent Decree:

History of Customer Rate Adjustment			
Fiscal Year	Effective Date	Retail Rate Adjustment	Ordinance/ Resolution
FY2013-14	October 1, 2013	8%	Resolution 444-13
FY 2014-15	October 1, 2014	6%	Ordinance 14-92
FY 2015-16	October 1, 2015	6%	Ordinance 15-99
FY 2016-17	October 1, 2016	8%	Ordinance 16-104
FY 2017-18	October 1, 2017	6% revenue incr.	Ordinance 17-65
FY 2018-19	October 1, 2018	3% revenue incr.	Ordinance 18-102
FY 2019-20	October 1, 2019	4.3% revenue incr.	Ordinance 19-113
FY 2020-21	October 1, 2020	6.3% revenue increase	Ordinance O20-96
FY 2021-22	October 1, 2021	3.68% rate increase	Ordinance 21-98

Modifications to the Department's tiered rate structure has provided the Department with the ability to generate revenues to support fixed costs of operations as well as debt service costs related to funding the Multi-Year Capital Improvement Plan (CIP). Wholesale rates for water and wastewater services are also adjusted annual based on cost of service. Future water and



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wastewater retail and wholesale rate increases are also projected to continue to fund the Multi-Year CIP.

WASD's Bond Ratings	FY2021 Actual	FY2022 Projection	FY2023 Target
Bond rating evaluation by Fitch	A+	A+	A+
Bond rating evaluation by Standard and Poor's	Aa-	Aa-	Aa+
Bond rating evaluation by Moody's	Aa3	Aa3	Aa3

Protecting the financial strength of the Department continues to be a priority for WASD. Rating agency's assessment of the department's financial position determine their credit quality. Typically, higher rated bonds have lower yields and interest rates. At the end of fiscal year 2020, WASD had \$3.2 billion in total revenue bond debt outstanding. Previously, S&P Global Rating upgraded WASD's bond rating for water and sewer revenue bonds to Aa- from A+, noting that: "The upgrade reflects the county's demonstrated ability to generate revenue sufficient to support strong financial performance while it works through its substantial capital investment plan.

These ratings are an independent assessment of WASD's creditworthiness and ability to honor its debt obligations. Ultimately, these positive changes in ratings will help WASD retain access to markets and sell bonds to obtain financing for key projects and initiatives that will improve services rendered to Miami-Dade County residents. The following bond issues have been adopted by the BCC:

- June 4, 2013, fund obligation authorizing the issuance of Miami-Dade County Water and Sewer systems bonds (not to exceed \$4.245 billion in multiple bonds) fund the cost of the capital improvement plan including replacement of aging infrastructure that is more than 50 years old and upgrades to comply with a portion of the CD. In addition, proceeds fund capital interest, reserve funds and cost of issuances.
- Series 2013A bonds issued on August 2, 2013, for \$345.2 million is the first of the multiple bond issues authorized through Ordinance 13-47. This issuance provided \$300 million for capital project funding. Series 2013B Revenue Refunding Bond for \$162.1 million was issued to refund Series 1999A; this bond series is estimated to provide the Department a savings of approximately \$26.5 million over the next 16 years.
- Series 2015 Revenue Refunding Bond for \$481.2 million was issued and adopted by the BCC on April 21, 2015, via Resolution R-298-15. The 2015 Series Bond allows the Department to realize estimated savings of \$47.8 million through FY 2026, through the refunding of Series 2007 and Series 2008C.
- In May 2016, the Department instituted a commercial paper program with a maximum outstanding principal amount of \$400 million. The program was authorized in compliance with the Master Bond Ordinance, Ordinance No. 09-67, and Resolution No. R-347-16, which allows the Department to issue commercial paper. Proceeds from the Commercial Paper program will be used to finance the short-term capital requirements of the Capital Improvement Plan. Revenue Bonds will be issued alongside commercial



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paper notes, in the amount no less than the current outstanding aggregate principal commercial paper debt. In May 2021, the Department has discontinued the Commercial Paper program.

- Ordinance 13-47 also strengthens the Department's rate covenant, previously 110 percent (110%), whereby the County promised to maintain net operating revenues in each fiscal year at least equal to 125 percent (125%) of the debt service requirement. Rating agencies view higher rate covenants to be more robust when compared to other highly rated water and wastewater authorities. In addition, this higher rate covenant is a way to improve the Department's legal credit structure.
- Miami-Dade County Water and Sewer Revenue and Revenue Refunding Bonds, Series 2017, was executed for a total of \$1.03 billion. Series 2017A Revenue Bond for \$414.6 million provides an additional \$400 million to fund the multi-year Capital Improvement Program, and Series 2017B Revenue Refunding Bond for \$624.7 million realizes savings of \$101.4 million by refunding Series 2010.
- Miami-Dade County Water and Sewer Revenue Bonds, Series 2019, was executed for \$223.3 million to continue funding for the MYCIP. Additionally, Series 2019B issued for \$663.9 million as funding for the MYCIP and Taxable Series 2019C Revenue Refunding Bonds issued for \$548.1 million refunding Series 2013A and B.
- Miami-Dade County Water and Sewer Revenue Bonds, Series 2021, was executed for \$605.6 million to continue funding for the MYCIP. This revenue bond offering is anticipated to fund capital project allocations throughout the 2022 fiscal year.
- Miami-Dade County Subordinate Water and Sewer Revenue Bond Series 2021. This is the utility's first subordinate revenue bond for \$236.1 million to fully fund projects partially funded by federal programs such as the WIFIA program below.

WASD makes it a priority to seek alternative funding to support infrastructure-related projects that support environmental improvements. The Water Infrastructure Finance and Innovation Act of 2014 (WIFIA) established the WIFIA program, a federal credit program offering flexible financial terms for eligible water and wastewater infrastructure projects. The WIFIA program provides the Department with long-term, low-costs loans at a subordinate position funding mainly the Ocean Outfall Legislation projects within WASD's wastewater system. Miami-Dade County Water and Sewer department is the only utility nation-wide to close on the first four initial offering savings rate payers an estimated \$297.6 million in interest expense over the life of the four loans, creating over 700 direct jobs. Projects funded with WIFIA loans are combined with State Revolving and various other funding sources as WIFIA loans can fund projects up to a maximum of 49%.

The adoption of Ordinance 18-7 authorizes the County Mayor or County Mayor's designee to: 1) apply for U.S. Environmental Protection, Water Infrastructure and Innovation Act (WIFIA) loans; 2) enter into and execute the related loan agreements and any amendments thereto that are consistent with the authorization provided by the Board in this Ordinance; and 3) expend the loan(s). WIFIA loans are applied for on a project-by-project basis as projects are identified and approved by EPA.



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WIFIA Offering Date	Funded Project Summary	Total Project Cost	WIFIA Loan Amount (49%)	Estimated Interest Expense Savings	Estimated Direct Jobs
WIFIA 2017	Wastewater Injection Wells	\$203.5M	\$99.7M	\$25.6M	95
WIFIA 2018	Wastewater Electrical Distribution Buildings	\$665.8M	\$326.2M	\$103.8M	266
WIFIA 2019	Upgrades: South District Wastewater Treatment Plant	\$480.0M	\$235.2M	\$80.2M	173
WIFIA 2020	Upgrades: Central and North District Wastewater Treatment Plant	\$865.8M	\$424.2M	\$88.0M	226

The Department continuously looks for innovative ways to reduce the fiscal impact to its customers, including reviewing the organizational structure and related business processes to find competitive approaches to addressing the needs of its customers in the most cost-effective manner while maintaining regulatory compliance. As these approaches are identified, the Department, along with the Office of Management and Budget and the Mayor's Office, will present the proposals to the BCC for final determination.



FUTURE OUTLOOK

Utility of the Future

In keeping with its "Utility of the Future" title, as designated by a partnership of national water sector organizations including the National Association of Clean Water Agencies (NACWA), the Water Environment Federation (WEF), the Water Environment Research Foundation (WERF) and the Water Reuse Association, with advisory support from the U.S. Environmental Protection Agency (EPA), WASD will continue to focus on several initiatives to assist in complying with the business model developed by this partnership while also maintaining our status as a leader in the industry. WASD's success with initiatives supporting water quality, sustainability and resilience, efficiency, and economic growth has contributed to this honor.

The water system infrastructure averages 45 (*forty-five*) years with the oldest pipes in the system dating back to the mid-1920s. Similarly, the wastewater infrastructure averages 55 (*fifty-five*) years with the oldest pipes in the system dating back to the 1930s or earlier. As an example, the Central District Wastewater Treatment Plant, a large portion of which was constructed in the 1950s, processes the largest volume of wastewater flows for the Department daily. The plant's age, as well as the physical corrosion due to its proximity to the Atlantic Ocean, continues to require extensive equipment and structural repairs to meet operational demands and regulatory requirements. The Department's MYCIP will continue to address these deficiencies: via testing and replacement, as needed, of all large-diameter concrete water and wastewater pipes; substantial overhauls of all wastewater plants; reconstruction of nine (9) seriously deteriorated sewage pump stations; capacity expansion of more than one-hundred (100) pump stations to accommodate additional flows; and the installation of redundant water supply mains and storage tanks to ensure continuous delivery of water even when pipe failures occur.

The MYCIP also includes planning and design of extensive changes to the wastewater system. This is required to satisfy State mandated eliminating use of ocean outfalls for continuous disposal of treated wastewater and reuse of 60 percent (60%) of that water; and completion of water supply projects as required in the State Water Use Permit to meet service demands in the future. As the MYCIP progresses, WASD will continue to target outreach in the communities that are affected by the improvement projects and Countywide to educate and provide updates on the progress of the CIP, CD, PSIP, and OOL programs. WASD also continues to build positive relationships with municipalities and wholesale customers through industry meetings, face-to-face interactions, training sessions, and business process reviews.

WASD has begun the process of developing an Asset Management (AM) framework to meet the CD requirements to assist the Department in realizing its vision of maturing into a resilient and sustainable utility. The vision is to implement an AM framework across both water and sewer divisions that will go beyond the CD requirement by providing a holistic approach that embraces and blends elements from the industry's best management practices.

With an improving local economy, the number of developer donation construction projects is increasing rapidly. WASD's water and wastewater mains and pump stations systems have increased in size and capacity due to developers designing, building, and donating this



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infrastructure to the Department.

- The Utilities Development Division (UDD) is looking for ways to streamline workflows by combining project management, request intake, and online proofing tools to optimize productivity and utilization of resources across projects, teams, departments, and processes.
- UDD is working on accommodating more online processes to reduce customer walk-in traffic and improve efficiency.
- UDD remains committed to expanding and establishing a call center to have better communication and contact with developers and property owners.

Customer Service

WASD's Retail Customer Service Division (RCSD) incorporates best management practices, including advanced technology and management strategies that focus on improved business processes and multi-channel access to information and services. Call center performance has consistently improved in the last few years through effective management, technology, and expanded self-service tools. Great strides were made to implement underground leak adjustment options and payment extensions via the self-service online application in 2020. RCSD will continue to expand the self-service options to include all key activities such as requesting the start of service, transfers, and reconnects. These tools will further improve access and overall customer experience.

The Retail Customer Service Division is researching best practices and performance standards to improve functionality and management of staff in a work from home environment as an option during emergency operations.

Ocean Outfall

WASD intends to spend approximately \$2 billion as part of its OOL Program in two principal investment categories: OOL Compliance projects, and WWTP capacity expansion projects. Funding has been secured for the deep injection wells through the Water Infrastructure Finance and Innovation Act (WIFIA) and State Revolving Fund (SRF). WIFIA loans have also been closed for funding the proposed new WWTP electrical distribution buildings (switchgear/ back-up generators) and the South District Expansion Projects. WIFIA is being pursued for the remaining portions of the OOL Compliance projects. These investments have a strong resilience component for the existing WWTPs.

Resilience

The Department has become a recognized national utility leader in planning for the challenges of climate change.

Operating in a subtropical climate with a long history of tropical storm activity has required the Department to design facilities to withstand wind, storm surge, and flood conditions that can damage facilities and interrupt critical water and sewer services. Historically the Department has been remarkably successful in maintaining service levels, even though extreme events such as, Hurricane Andrew in 1992, a Category 5 (*five*) hurricane, and Hurricane Irma in 2017. Now, a longer-term challenge has been recognized in the form of climate change that is causing



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the sea level to rise at an increasing rate, rainfall events to be more intense, and increased impacts from storm surge.

Over the past ten years, the Department has made significant investments in sophisticated computer modeling programs that help anticipate and monitor groundwater levels and project water supply levels, including future sea-level rise scenarios. Other modeling efforts to estimate sea-level rise in combination with storm surge, changes in precipitation intensity and frequency, heat, and wave action have been performed as a basis for flood design guidelines for wastewater plants and pump stations. The infrastructure improvements planned through the significant capital program are one driver for this work, in an effort to assure these investments withstand future conditions to limit the damage from storm surge and flooding over the expected life of those renewed assets.

The establishment of the WASD Resilience Program in 2017 underscored the Department's need and commitment to this work, which will be built upon in the future and will be expanded to the water treatment and distribution system infrastructure.

Miami-Dade Water and Sewer Department and the Office of Resilience, as part of the Greater Miami and the Beaches region partnered with Arup, The Rockefeller Foundation, 100 Resilient Cities, and others in a project to assess the resilience of our water systems and to identify actions that will promote resilience-building activities and outcomes across geographic and geopolitical boundaries. The **long-term objectives** of this project are to realize water resilience, which means having the capacity to:

- Provide access to high-quality water-related services for all residents, including water supply and sanitation services, and access to water amenities.
- Protect residents from water-related hazards such as droughts, flooding, and contaminated water.

More than 60 stakeholders in key government, business, academia and community roles diagnosed the strength and weaknesses of our water systems using qualitative and quantitative indicators, based on a shared understanding of resilience, and developed a collective action plan. Some key messages we heard from our stakeholders include the importance of coordination between water stakeholders, the need for catchment-level partnerships and water management projects and practices, and a strong call for sharing data and technical information to ensure evidence-based decision-making. The three prioritized actions from this process focus on data and governance:

- Establish an open-data platform to improve data accessibility and sharing between key stakeholders to support sound decision-making.
- Establish a "One Water" knowledge portal to improve capacity and knowledge sharing around water resilience including online training and seminars and case studies for water stakeholders.
- Build collaboration pathways between governmental, community, academia, and other stakeholder groups to monitor advancement of actions addressing areas of lower scoring indicators, and to advance key joint projects to achieve social, environmental, and economic outcomes that benefit all.



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While there is not a formal or structured implementation effort across stakeholder agencies, the initiatives listed below are examples of how the Department and its partner stakeholders are making improvements in the areas of weakness identified through the assessment. The assessment and the actions below serve as a foundation to build a formal “One Water” approach that aligns resources and current and future initiatives.

Biscayne Bay:

- Task Force reiteration of needs for more comprehensive data, formalizing a position and group to increase coordination among stakeholders.
- Call for evaluating existing data and collecting additional data to better understand the sources of pollution and develop effective mitigation measures.

Septic Tanks vulnerable to sea level rise (SLR):

- Improving septic tank inventory data.
- Refined modeling to support more granular prioritization based on a hierarchy of vulnerabilities.
- Moving forward with additional water quality sampling and monitoring to understand effluent transport characteristics and quantities.
- Coordinating with cities that have concerns over systems in their jurisdiction.
- Developing sewer system expansion plans using a risk-based approach that addresses the connection of systems with the greatest likelihood and consequence of failure.

Water Supply Initiatives:

- Seasonal optimization and storage
- Directing excess flows into storage (Aquifer Storage and Recovery – ASR).
- Future flow reservoirs (C-51).
- Use stored water for environmental flow restoration and recharge and for flood control in agricultural and flood-prone areas.
- Continue robust saltwater intrusion monitoring network to increase operational efficiency of wellfield withdrawals that reduce impact on regional water supply and guard against landward movement of salt front line.
- Adapting vulnerable water and wastewater infrastructure to storm surge and sea level rise.
- Using climate data from international, national and regional climate scientists to establish the unified SLR projections (Compact).
- Developing flood protection design elevations and guidance documents for engineers and planners.
- Incorporating SLR into the design of the infrastructure based on the asset critically and life of the asset.
- Implementing FEMA Hazard Mitigation Grant projects at critical wastewater treatment pump stations to protect them from 500-year (*five-hundred year*) storm scenarios.

