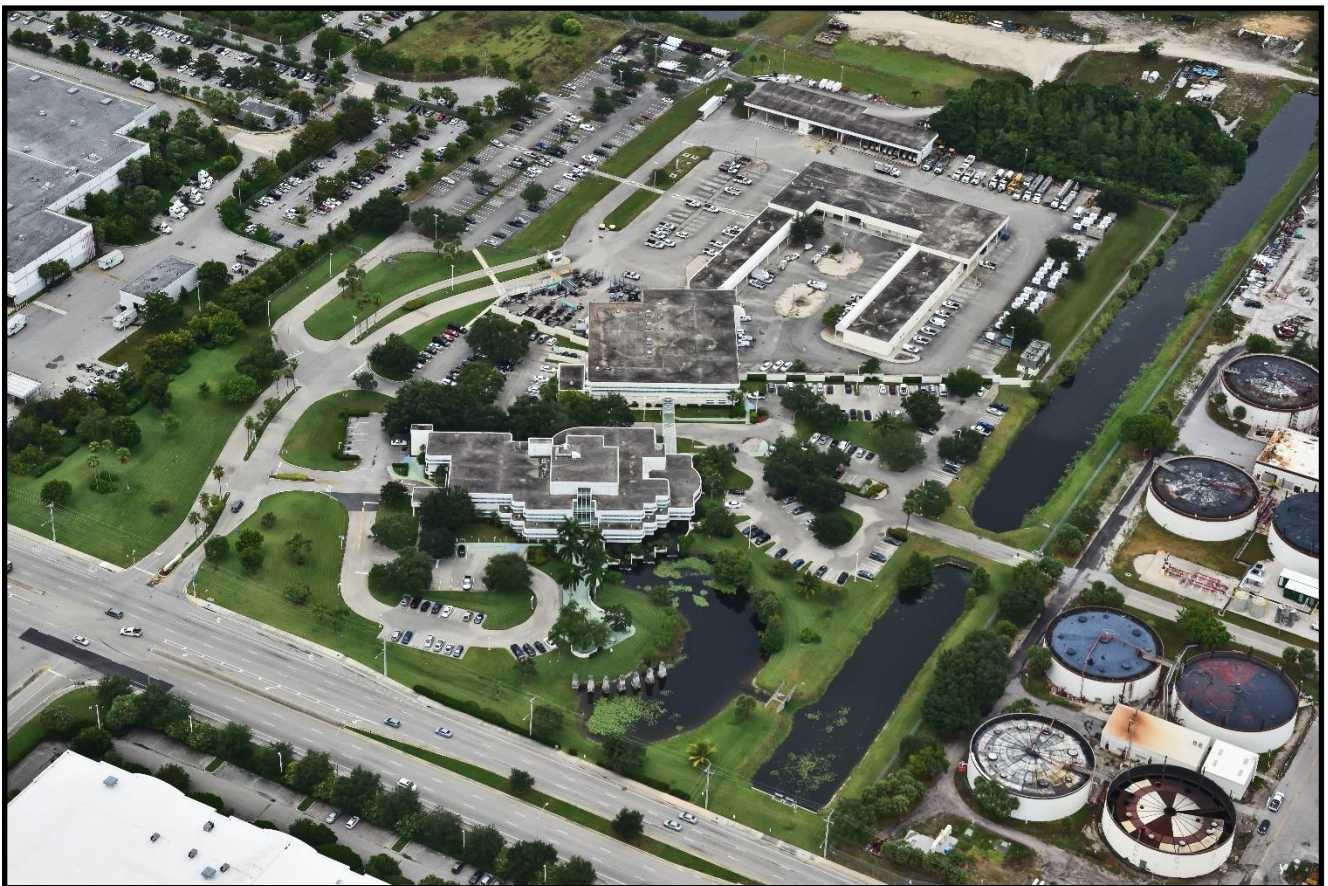


BROWARD COUNTY WATER AND WASTEWATER SERVICES ANNUAL REPORT

FISCAL YEAR 2017

"Our Best in Every Drop"



Final Report Prepared July 2018 by
Brown and Caldwell, Inc.



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Section 1 Introduction

1.1 Purpose of the Report

The purpose of this Annual Report from Consulting Engineers for Water and Wastewater Services (WWS) of Broward County, Florida (County) is to provide the following:

- A review of the management and organization of WWS, which operates the County's water and wastewater systems (collectively, the Utility);
- A description of the Utility;
- A financial review of the Utility regarding historical and prospective debt service coverage, insurance requirements, and future system funding needs; and
- A summary of projections of future impacts on the Utility, projections of revenues and expenses, and a review of the planned capital improvements of the Utility.

This report provides descriptions and observations of the Utility; the primary operating activities including the retail water and wastewater system, which provides water and/or sewer service to approximately 59,570 customers and sewer only to approximately 2,792 customers, the North Regional Wastewater System, which provides transmission, treatment and disposal services to other utilities on a wholesale basis, and the Regional Raw Water System, which provides raw water to other utilities; the water and wastewater capital improvement program (CIP); and the financial operations of the Utility.

Section 2 – Administration and Management

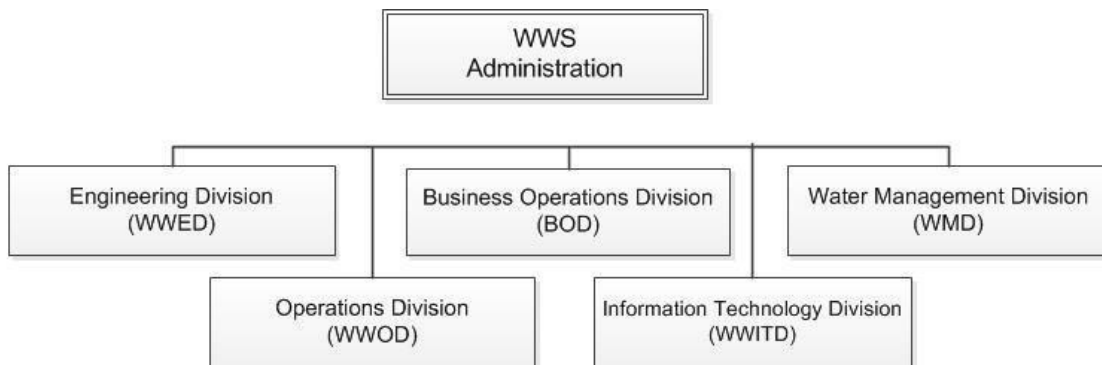
Section 2 Administration and Management

2.1 History and Organization of Water and Wastewater Services

The Broward County Utilities Division was established on January 31, 1962, with the County's purchase of a small, investor-owned water and wastewater utility. Between 1962 and 1975, the County acquired additional private utilities. In 1972, the Utility commenced construction of the North Regional Wastewater Treatment Plant (NRWWTP), and in 1975, the Utility began providing wholesale wastewater treatment service to Large Users (LUs). In 1976, to achieve fiscal consolidation, the County established uniform rates throughout its service areas. The water utility service area is divided into separate geographic districts; District 1 is served by Water Treatment Plant (WTP) 1A, District 2 is served by WTP 2A and District 3 is served by purchased water from the City of Hollywood, Florida.

Subsequent reorganizations created Water and Wastewater Services (WWS) consisting of five divisions. These divisions are Water and Wastewater Operations, Water and Wastewater Engineering, Water Management, Water and Wastewater Information Technology, and Business Operations. WWS operates within the Public Works Department, and is responsible for planning, construction, operation, maintenance, customer service, water management, and financial management of the Utility. Currently, WWS employs 398 people, including 19 certified water operators, 25 certified wastewater operators, 13 registered professional engineers, and 2 certified public accountants. There are seven employees who are dual-certified as both water and wastewater operators. In addition, numerous employees hold recognized industry-specific certifications. An organizational chart, Figure 2-1, is provided below.

Figure 2-1 Water and Wastewater Services Organizational Chart



Under the County Code of Ordinances, the County exercises exclusive jurisdiction, control and supervision over the utility system or any part of a utility system owned, operated or maintained by the County. The Board of County Commissioners of Broward County, Florida (the Board) has the specific legal authority to fix, charge and collect from its customers, rates, fees, and charges, and to acquire, construct, finance and operate the Utility without supervision or regulation by any

Section 2 - Administration and Management

other political subdivision of the State (provided that environmental impacts are regulated as described herein).

2.2 Mission

The mission of Water and Wastewater Services (WWS) is multi-faceted. WWS is committed to performing as a benchmark comprehensive utility providing exceptional retail and regional water and wastewater management services and programs to its customers; and supporting continuous improvement while maintaining the quality of life in Broward County through sound environmental practices.

The overall goals established by WWS are as follows:

- To provide high quality and cost-effective services.
- To treat customers professionally and with the utmost respect.
- To operate the facilities and execute programs in a manner that protects the environment.
- To protect and enhance the natural resources of Broward County.
- To create and maintain a workplace in which employees are provided the opportunity to develop to their maximum potential.
- To maintain honesty and integrity in every aspect of the operation.

Water and Wastewater Services Administration

Water and Wastewater Services Administration manages and directs the activities of the five WWS divisions: Engineering, Business Operations, Information Technology, Operations, and Water Management. Administration approves operating and capital budgets, assures rates, fees, and charges are sufficient to support fund activities and debt service requirements while providing appropriate coverage to maintain or enhance bond ratings; and develops and implements financing plans for the successful implementation of the capital plan and policies to ensure environmentally safe water resources. Administration coordinates activities to identify efficiencies and synergies to reduce overall costs and enhance the delivery of services.

Administration also manages relationships with Large Users of the North Regional Wastewater System and the Regional Raw Water System. Administration coordinates the response to information requests from the County Commission and the general public. Administration promotes water conservation programs to benefit customers, preserve water resources and protect the environment; and monitors legislative and regulatory issues at local, regional, state and federal levels.

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WWS Administration highlights included:

- Water and Wastewater Services' water and sewer utility bonds maintained strong ratings— “Aa1”, “AA+” and “AA+” — from the three major rating services: Moody's, Fitch, and Standard & Poor's.
- The Retail Rates increased approximately 3% as compared to the previous fiscal year.
- The Regional Rates for wastewater and raw water were recalculated in conformance with Large User Agreements and recommended rates were approved by the Board for fiscal year 2017.
- Palm Beach County Water Utilities Department (PBCWUD) and Broward County Water and Wastewater Services (BCWWS) in May of 2016 formed a partnership to construct a cooperative project that will utilize reclaimed water and conserve drinking water supplies in South Florida. The partnership highlights the commitment of both County governments to water conservation. The partnership will be implemented through an interlocal agreement that has been approved by both County Boards, and both Utilities are now actively engaged in the initial design of the project within their respective service areas. The partnership represents the most effective way to achieve the Florida 'Ocean Outfall Rule' that requires increased beneficial reuse water capacity and distribution. The project will provide up to 15 million gallons per day of new reuse water to Palm Beach County to meet increasing demands throughout its reclaimed water service area. Through the utilization of alternative water supply for irrigation needs, drinking water supplies will be conserved for future use.

Water and Wastewater Operations Division

Water and Wastewater Operations Division (WWOD) is committed to supplying high quality raw and potable water; providing reliable water distribution and wastewater collection services; operating dependable transmission, treatment and disposal of wastewater services to Large Users in the north region of the County; and ensuring all services are delivered in a safe, efficient and cost-effective manner.

WWOD operates and maintains water treatment plants; re-pumping and storage facilities; lift stations, underground water distribution and sewage collection systems; and other support facilities. The division is responsible for the preparation and submittal of reports to comply with federal, state and local requirements (such as the Safe Drinking Water Act) and to ensure the reliable production of high-quality, safe, potable drinking water for our citizens. The division provides raw water from two regional wellfields to five Large Users and to Broward County retail operations, as well as operates two retail wellfields that supply water to the County's 1A and 2A water treatment plants.

WWOD is also responsible for providing wastewater transmission, treatment and disposal services to eleven Large Users and to Broward County through the operation and maintenance of a regional wastewater treatment facility and related regional pumping stations. The division

Section 2 - Administration and Management

operates a reclaimed water facility, which provides reclaimed water to both industrial and retail customers. In addition, WWOD operates a state-certified laboratory, a nationally-recognized Industrial Pretreatment Program (IPP) and provides a critical environmental service through operating and maintaining a Septage Receiving Facility.

WWOD's Fiscal Year (FY) 2017 highlights included:

- North Regional Wastewater Treatment Plant (NRWWTP) effluent ocean outfall nutrient reduction goals continued to exceed those established by the State of Florida in response to the ocean outfall legislation.
- Broward County's NRWWTP was the First Place Winner of the Florida Water Environment Association 2017 Earle B. Phelps Award for "Outstanding Wastewater Treatment Plant Performance" for consistently providing the highest removal of pollution prior to discharge of treated effluent and having an exemplary compliance record.
- Resilient Utility of the Year 2017 (Tier 4).
- Broward County's NRWWTP rehabilitated a number of clarifiers in each of the modules, rehabilitated a portion of the influent gates and P3 Digester.
- Broward County Board of County Commission adopted a sewer use ordinance which was accepted by the Florida Department of Environmental Protection.
- Broward County continues to participate in public outreach campaigns such as FROG (fats, rags, oils, and grease reduction).
- Broward County's 1A water treatment plant rehabilitated vacuum filter number 2.
- Broward County received an award from the Florida Section of the American Water Works Association (AWWA) for Outstanding Water Distribution System of the year.

Water and Wastewater Engineering Division

Water and Wastewater Engineering Division (WWED) is committed to managing the WWS Capital Improvement Program (CIP) by ensuring that cost-effective, reliable infrastructure is available in a timely manner to meet the current and projected demands and capacities for raw water, potable water, sanitary sewer and storm drainage within WWS service areas.

WWED is responsible for developing and implementing the CIP for services provided by WWS including water, wastewater and drainage. The division is also responsible for coordination of developer-donated facilities, the maintenance of record information on potable water and wastewater facilities, administration of potable water and sewer easements, and administration

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of permits to connect to the potable water and wastewater plants operated by WWS. WWED also provides general potable water and wastewater engineering support for Broward County. These processes ensure compliance with the County's minimum standards for construction and integrity of WWS systems.

WWED administers the following projects:

- The Local Utility Program (LUP) consists of numerous smaller localized utility replacement projects that cover an overall area of 1,479 acres and include installation of approximately 54 miles of pipeline. Construction started in 2009. Each project is designed based on its Utility Analysis Zone (UAZ).
- North Regional Wastewater Treatment Plant (NRWWTP) effluent disposal and treatment enhancements to comply with outfall legislation and proposed facilities operational modifications are estimated at \$170 million over the next five years.
- Septic Tank Elimination Program which will address the removal of all septic tanks within Water and Wastewater Services service areas by year 2022.
- NRWWTP Facilities Improvements is a comprehensive restoration project for the treatment plant, which will address aging infrastructure and processes and will be accomplished in several phases. The first phase of improvements began in 2017 and are scheduled to be completed by 2021. The estimated construction cost of this project is \$113 million.

Water Management Division

Water Management Division (WMD) is committed to developing, managing, operating, and maintaining the surface and groundwater resources within our service area to provide recharge for water supply and wetlands; saltwater intrusion abatement; drainage and flood control; and environmental enhancements.

WMD programs in engineering, management and development review provide for the planning, design, construction and right-of-way management of waterways, culverts, pump stations and water control structures that provide flood protection, surface and ground water recharge, saltwater intrusion abatement and urban water supply. Water supply planning, well site assessments, and permitting services are provided to apply for, obtain and assure compliance with public water supply and diversion and impoundment water use permits.

WMD highlights included:

- Providing support to water supply and water resource development programs, including the Broward County Water Supply Plan Update, Broward County Comprehensive Plan Goals, Policies and Objectives and supporting document updates, C-51 Reservoir Project, Integrated Water Resources Management Master

Section 2 - Administration and Management

Plan, Broward County Water Resources Task Force/Technical Team and the Broward County Water Advisory Board/Technical Advisory Committee.

- Preparing South Florida Water Management District Annual Alternative Water Supply, Reclaimed Status, and Unaccounted-for Water Reports, submittal of information to the Water Supply Project Database (WaSUP) and Consumptive Use Permit modifications, and submittal of monthly Consumptive Use Permit compliance information.
- Collection, analyses and tracking of wellfield withdrawals and surface water pumpages, water levels and chloride concentration sampling information required under Consumptive Use Permits for District 1A, District 2A/ North Regional Wellfield (NRW), South Regional Wellfield (SRW) and the Northern Recharge System.
- Providing hydrogeological technical support to WWOD and WWED for water supply and wastewater disposal projects.
- Providing assistance in the development of models to evaluate the impacts of predicted sea level rise on the 2A wellfield, the potential benefit of the C-51 Storage Reservoir and the Floridan Aquifer System's potential as an Alternative Water Supply.

Business Operations Division

Business Operations Division (BOD) is committed to supporting all WWS divisions by providing exceptional customer service and timely and accurate billing services; supporting sound financial management; fiscal planning and rate development; and providing efficient and effective support services.

BOD provides accounting services for all divisions of WWS to provide timely financial reporting, ensure compliance with federal and state laws, professional accounting standards and County policies and procedures. The division provides customer services including meter reading and meter repair, monthly billing and collection of revenues. The division operates a warehouse for materials and supplies used in the operation and maintenance of utility infrastructure. BOD coordinates materials management, purchasing and contract administration functions for all operational and administrative activities in WWS. In addition, the division performs grounds and building maintenance services for over 200 locations owned and operated by WWS throughout the County. The division also coordinates the budgeting activities of all divisions of WWS, supports the development of fiscal plans and rates, and fees and charges for the services provided by WWS and publishes an award-winning WWS employee newsletter.

BOD highlights included:

- Promotion of the "Toilet Rebate" Program for water customers to replace inefficient high flow toilets with WaterSense high efficiency low flow toilets.
- Preparation of annual financial statements using CAFROnline software.

Section 2 - Administration and Management

- Coordination with Water and Wastewater Information Technology Division to upgrade the Utility Billing Customer Information System.
- Executed agreement with a qualified vendor for utility bill printing, data processing, and mailing services.
- Implemented regular and preventive maintenance schedules at WWS grounds & facilities, and completed capital improvements at WWS Administrative Complex.

Water and Wastewater Information Technology Division

Water and Wastewater Information Technology Division (WWITD) is committed to providing WWS divisions with current industry standard technologies to efficiently and effectively automate business functions and to provide a high level of service support for those systems.

WWITD provides specialized automation services to the water and wastewater utility by acquiring, developing and maintaining the latest technology solutions on its proprietary utility and SCADA networks. WWITD is responsible for desktop, server and network support for the WWS segment of the County's administrative network.

The WWITD Director also manages the safety and physical security programs for WWS staff and facilities, which have been designated critical infrastructure by Homeland Security.

WWITD highlights included:

- With Single Desktop Proof of Concept approved, which allows secure access to the County Admin Network from workstations on the WWS Utility Network, the plan to build the final product was put in motion in Fiscal Year 2016. The infrastructure was procured and provisioned to facilitate the complete end to end testing. Completion of the end-to-end testing of the Single Desktop solution was in Fiscal Year 2017. This is designed to allow access to the County Admin Network from workstations on the WWS Utility Network.
- The project to upgrade the Energy/Utility Billing Customer Information System from Energy 7 to PeacePlus 9 was initiated. The project planning phase was put in motion and the infrastructure was procured and pre-production environments were configured to allow for the first phase of the project to begin with the installation of the different components, which make up the billing system.
 - An amendment to the contract for the upgrade to the utility billing system was executed June 20, 2017 to extend the support of the 7.2 version until February 17, 2018 or until the upgraded PeacePlus 9 software has been fully implemented and accepted, whichever is earlier.
 - The Utility Billing Work Authorization #1 executed July 11, 2017 for professional services which provided additional functionality included, but not limited to, configuring Debt Classifications, Multi-Receiveables, Septage Billing rates, PDS Statement hyperlink, and Tariff Consolidation using Multiplier feature in the PeacePlus 9 application and sign on with Windows Active

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Directory. In addition, creating custom workflows using the built in Workflow Module.

- Security enhancements were made to the WWS network infrastructure. The WWS firewall infrastructure was upgraded to Checkpoint firewalls to refresh the current hardware and software to take advantage of new feature sets and further improve the security footprint.
- The WWS Oracle database infrastructure was modernized. WWS procured and deployed the Oracle Private Cloud Appliance for the WWS Utility databases. This infrastructure appliance hosts all Oracle databases providing improved performance and redundancy for critical WWS databases.
- Installed new credit card processing devices at the two WWS payment centers. This update improved the experience for the WWS customers and simplified the credit card payment process.
- In the event of a medical emergency, all Automated Defibrillators were updated in each WWS facility.

Section 3 – Retail Water and Wastewater Utilities System

Section 3 Retail Water and Wastewater Utilities System

This section describes the water and wastewater retail system including the service area, results of the physical inspection, and review of the renewal and replacement program.

3.1 General Description

The retail water system supplies potable water to retail customers in several sections of the County and to one significant bulk water user. Over the past ten years, the County's retail water system has grown from 57,003 customers (accounts) to its present retail base of 57,037, as shown in Table 3-1. Broward County's total population is approximately 1.9 million. Of this amount, WWS's customer base represents a population of approximately 212,280. The City of Coconut Creek, a sale for resale customer, has approximately 61,010 residents. Including the City of Coconut Creek, the retail water system serves approximately 12% of Broward County's total population.

In the past 10 years, the retail wastewater customer base has grown from 42,163 customers (connections) to its present base of 50,457 customers as shown in Table 3-1. This represents an increase of 15%. This number will continue to grow through the County's extension of sanitary sewers into currently un-sewered areas. Treatment, transmission and disposal management is provided by the County-operated North Regional Wastewater System (the "Regional Wastewater System" discussed in Section 4 and collectively with the retail wastewater system the "Wastewater System") and by the Southern Regional Wastewater System operated by the City of Hollywood. A summary of the Retail Water and Wastewater systems is presented in Table 3-1.

Over a 10-year period, the average daily production has been steady. This is attributable to the County's water conservation efforts, including year-round lawn irrigation restrictions. Water conservation became increasingly important following a series of droughts from 2007 through 2009.

Section 3 - Retail Water and Wastewater Utilities System

Table 3-1 Summary of Retail Water System and Retail Wastewater System

| System Component | Units | Fiscal Year 2008 | Fiscal Year 2017 | Change | Percent Change |
|---|------------------|---------------------|---------------------|--------|-------------------|
| Water System | | | | | |
| Customer Base | Customers | 57,003 | 57,037 | 34.00 | 0.06% |
| Water Service Area | Square Miles | 41.18 | 41.00 | (0.18) | -0.44% |
| Water Lines | Miles | 683.17 | 723.80 | 40.63 | 5.95% |
| Water Plant Capacity: | | | | | |
| Plant Capacity | MGD ¹ | 46.00 | 56.00 | 10.00 | 21.74% |
| Avg. Daily Production ² | MGD ¹ | 20.98 | 20.30 | (.68) | -3.24% |
| Max. Daily Production ² | MGD ¹ | 22.75 | 23.65 | .90 | 3.96% |
| Purchased Water | MGD ¹ | 6.78 | 6.58 | (.20) | -2.95% |
| Wastewater System | | | | | |
| Customer Base | Customers | 42,163 | 50,457 | 8,294 | 19.67% |
| Wastewater Service Area | Square Miles | 40.9 | 40.2 | -0.7 | -1.71% |
| <p>¹ Water demand management efforts were implemented in 2007. These consist of water conservation initiatives including, when necessary, year-round lawn watering restrictions. Reduced water demand translates to reduced billed wastewater.</p> <p>²MGD = Million Gallons Per Day.</p> <p>Source: Broward County Water and Wastewater Services</p> | | | | | |

Service Area and Customer Base

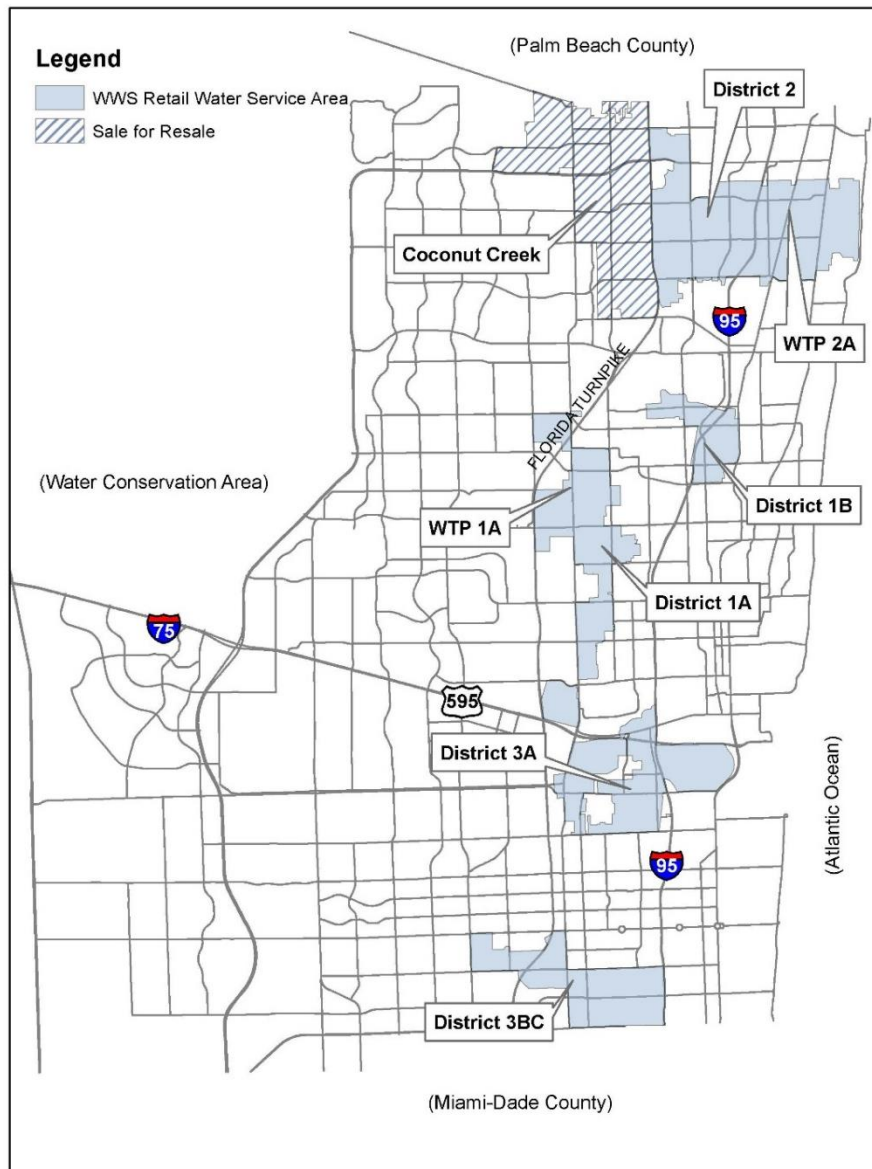
The retail water system is divided into three service areas - Districts 1, 2 and 3, which collectively cover approximately 41 square miles. Additionally, District 2 sells water to the City of Coconut Creek, which re-sells it to its customers. Two Water Treatment Plants (WTPs), one each in District 1 and District 2, have a combined permitted water treatment capacity of 56 MGD (million gallons per day). However, potable water production is constrained by 20-year term consumptive use permit from the South Florida Water Management District (SFWMD). Based on the current 20-year permit, Biscayne Aquifer annual average allocation is 27.54 MGD through March 2028 and includes the North Regional Wellfield. Starting March 2013, a Floridan Aquifer average day allocation of 8.4 MGD was included in the 20-year consumptive use permitted withdrawal for

Section 3 - Retail Water and Wastewater Utilities System

Districts 1 and 2. The Utility's five-year Capital Improvement Program (CIP) is predicated upon these allocations. Water for District 3 is provided by the City of Hollywood through a water for resale agreement.

The distribution systems in the three Districts contain approximately 724 miles of water distribution and transmission mains with 2-inch to 54-inch diameters. Figure 3-1 shows the geographic location of each service district, as well as the finished water Large User (the City of Coconut Creek). Table 3-2 summarizes information on the production wells, treatment plants and water system storage capacity in each district.

Figure 3-1 WWS Retail Water Service Areas



Source: Broward County Water and Wastewater Services

Section 3 - Retail Water and Wastewater Utilities System

Table 3-2 Summary of Water System Facilities and Capabilities as of September 30, 2017

| | District 1 | District 2 | District 3 | Total |
|---|------------|-------------------|------------|-------|
| Production Wells | 9 | 7 | 0 | 16 |
| Wellfield Firm Capacity, (MGD) ^{1,2} | 15.7 | 16.8 | 0 | 32.5 |
| Treatment Plants ³ | 1 | 1 | 0 | 2 |
| Permitted Plant Capacity (MGD) ^{2,4} | 16.00 | 40.00 | 0 | 56.00 |
| Current Permitted Allocation (MGD) ^{2,4} | 10.04 | 17.5 ⁵ | 0 | 27.54 |
| Storage Capacity (Million Gallons) ³ | 6.20 | 8.50 | 6.00 | 20.70 |
| Distribution Mains (Miles) | 248 | 253 | 223 | 724 |
| Service Area (Square Miles) | 11.90 | 14.80 | 14.30 | 41.00 |
| Purchased Water (MGD) ² | 0 | 0 | 6.58 | 6.58 |
| Produced Water (MGD) ² | 7.45 | 12.94 | 0 | 20.40 |

1 Firm Capacity refers to the available flow with the largest well in each district out of service.

2 MGD = Million Gallons Per Day

3 Includes clearwells, on site and distribution storage facilities.

4 Permit allocations are less than permitted treatment plant capacity.

5 Combined permits with North Regional Wellfield and includes finished water sold to Coconut Creek.

Source: Broward County Water and Wastewater Services

The Water System supplies water primarily to retail customers, but also serves the City of Coconut Creek under a resale agreement, which expires as described in Section 3.5. Without prior approval by the County, the City of Coconut Creek is prohibited from buying or otherwise providing water within its service area from any source other than the County during the term of the resale agreement, and cannot provide more than 100,000 gallons per day of water to any customer unless approved by the County. Presently, there appears to be no practical or economic incentive for the City of Coconut Creek to pursue development of its own facility or to develop alternative sources of supply. The County cannot charge rates to Coconut Creek greater than those charged to other customers in the same class. Billing based upon water meter readings is provided monthly.

A historical summary of treated water sold and consumption data, including service to the City of Coconut Creek, is shown in Table 3-3. Values for annual average daily consumption will differ from the sum of production plus purchased water due to system losses.

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Table 3-3 Summary of Treated Water Sold as of September 30, 2017

| Fiscal Year | Average Number of Units¹ | Average Number of Metered Customers | Total Billed Treated Water (1,000 GAL) | Total Billed Water for Resale (1,000 GAL) | Annual Average Daily Consumption (MGD) |
|---------------------|--|--|---|--|---|
| 2008 ^{2,3} | 89,452 | 57,003 | 9,063,644 | 1,868,562 | 24.83 |
| 2009 ^{2,3} | 92,870 | 58,287 | 9,001,466 | 1,872,821 | 24.66 |
| 2010 ^{2,3} | 93,183 | 58,323 | 8,628,876 | 1,754,856 | 23.64 |
| 2011 ^{2,3} | 92,208 | 58,773 | 8,616,736 | 1,731,297 | 23.61 |
| 2012 ^{2,3} | 88,344 | 56,503 | 8,339,560 | 1,643,812 | 22.85 |
| 2013 ^{2,3} | 87,928 | 56,529 | 8,279,722 | 1,699,799 | 22.67 |
| 2014 ^{2,3} | 88,305 | 56,538 | 8,449,062 | 1,754,927 | 23.15 |
| 2015 ^{2,3} | 89,066 | 56,591 | 8,738,889 | 1,789,374 | 23.94 |
| 2016 ^{2,3} | 88,712 | 56,695 | 8,502,167 | 1,736,453 | 23.29 |
| 2017 ^{2,3} | 89,605 | 57,037 | 8,714,099 | 1,844,111 | 23.87 |

¹ The term "unit" means individual living unit for residential (single family), multifamily, hotel/motel and mobile home categories. Several units may be served through one connection. For commercial, the term means the number of connections.

² Water demand management efforts were implemented in 2007. These consist of water conservation initiatives including, when necessary, year-round lawn watering restrictions. Reduced water demand translates to reduced billed wastewater.

³ Included in Average Number of Metered Customers are sewer only customers.

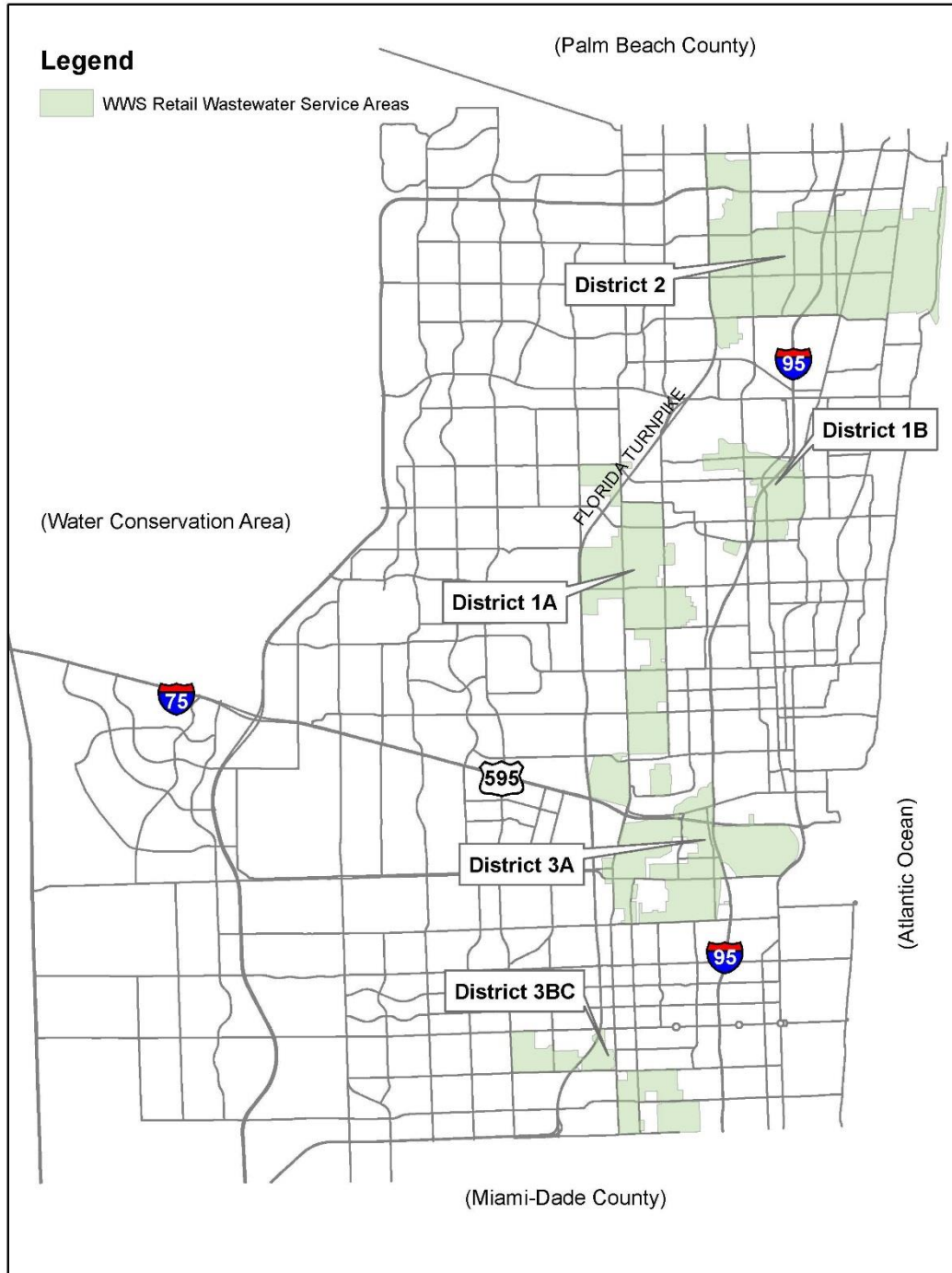
Source: Broward County Water and Wastewater Services

The retail wastewater system service area covers approximately 40 square miles with approximately 450 miles of gravity sewers, 242 lift stations, 8 retail master pump stations and 113 miles of force mains. Figure 3-2 shows the service districts for the retail wastewater system. Table 3-4 presents retail wastewater system characteristics. A 10-year summary of the Retail Wastewater System customers and billed wastewater flows is presented in Table 3-5. Table 3-6 presents a five-year history of water usage by customer type.

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Figure 3-2 WWS Retail Wastewater Service Areas

Source: Broward County Water and Wastewater Services



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**Table 3-4 Retail Wastewater System Characteristics
as of September 30, 2017**

| | District 1 | District 2 | District 3 | Total |
|-----------------------------|------------|------------|------------|-------|
| Service Area (Square Miles) | 12.9 | 15.7 | 11.8 | 40.4 |
| Gravity Sewer (Miles) | 187.5 | 173.8 | 88.5 | 449.8 |
| Lift Stations | 76 | 101 | 65 | 242 |
| Force Mains (Miles) | 42.8 | 35.3 | 34.9 | 113 |
| Retail Master Pump Stations | 0 | 5 | 3 | 8 |

Source: Broward County Water and Wastewater Services

**Table 3-5 Summary of Billed Wastewater - Retail
as of September 30, 2017**

| Fiscal Year | Average Number of Units ¹ | Average Number of Metered Customers | Total Billed Treated Wastewater (1,000 GAL) | Annual Average Daily Flow (MGD) |
|----------------|--|--|--|--|
| 2008 | 71,718 | 42,163 | 4,830,155 | 13.23 |
| 2009 | 74,146 | 43,591 | 4,828,210 | 13.23 |
| 2010 | 74,547 | 44,953 | 4,744,985 | 13.00 |
| 2011 | 74,691 | 44,856 | 4,891,742 | 13.40 |
| 2012 | 77,247 | 46,911 | 4,872,721 | 13.35 |
| 2013 | 78,020 | 47,799 | 4,996,843 | 13.69 |
| 2014 | 79,466 | 48,873 | 5,165,058 | 14.15 |
| 2015 | 80,995 | 49,643 | 5,372,243 | 14.72 |
| 2016 | 81,144 | 49,999 | 5,339,240 | 14.63 |
| 2017 | 82,149 | 50,457 | 5,979,186 | 16.38 |

¹ The term "unit" means individual living unit for residential (single family), multifamily, Hotel / Motel, and mobile home categories. Several units may be served through one connection. For commercial, the term means the number of connections and does not include large users.

Source: Broward County Water and Wastewater Services

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**Table 3-6 Water Usage - Five Year History (1,000 gallons)
Through September 2017**

| Customer Class | Fiscal Year 2013 | Fiscal Year 2014 | Fiscal Year 2015 | Fiscal Year 2016 | Fiscal Year 2017 |
|--------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| Residential | 4,462,407 | 4,463,289 | 4,587,014 | 4,457,821 | 4,550,624 |
| Commercial | 1,740,148 | 1,868,525 | 1,961,350 | 1,924,866 | 1,920,260 |
| Irrigation | 377,368 | 362,321 | 401,151 | 383,027 | 399,104 |
| Sale for Resale | 1,699,799 | 1,754,927 | 1,789,374 | 1,736,453 | 1,844,111 |
| Total¹ | 8,279,722 | 8,449,062 | 8,738,889 | 8,502,167 | 8,714,099 |

¹ Water demand management efforts were implemented in 2007. These consist of water conservation initiatives including, when necessary, year-round lawn watering restrictions. Reduced water demand translates to reduced billed wastewater.

Source: Broward County Water and Wastewater Services

3.2 Water System Regulatory Requirements

Current Water Quality Regulations

The Safe Drinking Water Act (SDWA, 1974) and the Safe Drinking Water Act Amendments (SDWAA, 1986) authorized the United States Environmental Protection Agency (EPA) to establish national primary and secondary drinking water regulations to regulate maximum permissible levels of contaminants in finished drinking water. These standards were incorporated into the State of Florida's Water Quality Regulations beginning in 1993 and modified to address state-specific concerns. By doing this and meeting other specific requirements, the State was given the primary authority (primacy) to enforce SDWA requirements within its borders. The Florida Department of Environmental Protection (FDEP) is the state agency with primary enforcement responsibility. In Broward County, the authority to enforce drinking water regulations is delegated by FDEP to the Florida Department of Health in Broward County, which is an Approved County Health Department (ACHD) as defined under the Memorandum of Understanding between FDEP and the Florida Department of Health.

The Water and Wastewater Operations Division (WWOD) performs the analyses for primary and secondary drinking water standards on raw and finished water as required under applicable sections of the SDWA and the State of Florida's Water Quality Regulations (Chapter 62-550, Florida Administrative Code (FAC)). No maximum contaminant levels (MCLs) were exceeded, no Treatment Technique (TT) violations were noted, and no Action Levels were exceeded during FY 2017. WWS tests raw water quality only for the development of baseline data and as required under the Ground Water Rule as described on the following page. MCL limitations do not apply for any raw water monitoring outside of fecal indicator triggered monitoring required under the ground water rule.

The annual Consumer Confidence Report, which summarizes the results of drinking water quality testing results, is available at <http://www.broward.org/WaterServices/WaterQualityReport>

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The Disinfectants and Disinfection Byproducts Rule (D/DBPR) requires all water treatment plants to comply with MCLs for byproducts of several common disinfectants. For WWS water treatment plants, byproducts of chlorine and chloramines, specifically total trihalomethanes (TTHMs) and five haloacetic acids (HAA5), are of primary concern. Stage II of this rule requires that the rolling annual average of TTHM and HAA5 levels be below their respective MCLs at each sampling site in the distribution system, whereas previously they were averaged over the entire system. Since Stage II compliance began in February 2012, WWS' water treatment plants have remained in compliance with D/DBPRs requirements.

The Ground Water Rule was promulgated in 2009. This rule, which was adopted by reference in FAC 62-550.828 in December 2011, provides two Compliance options: triggered monitoring and 4-log virus treatment. Triggered monitoring uses sampling under the existing Total Coliform Rule (TCR) to trigger additional sampling requirements for raw water wells if needed. If any of the wells test positive for one of three fecal indicators, action must be taken, which typically includes issuing a precautionary boil water order for the affected system. Groundwater plants that provide 4-log (99.99%) virus treatment are not required to conduct triggered monitoring, but instead must maintain treatment conditions specified in its 4-log treatment authorization. The current FAC 62-550.828 became effective on August 8, 2016; it was revised to adopt the revisions to EPA's Public Notification Rule relating to the Revised Total Coliform Rule (RTCR) published in the July 1, 2015 version of 40 C.F.R. 141, Subpart Q.

Currently, the County is in the process of implementing 4-log virus treatment in its 3A system. Improvements at the 1A WTP are complete, and 4-log treatment is currently in operation in the 1A system. Improvements at the 2A water treatment facility are complete and improvements at the 3A facility are in the construction phase. In FY 2017, WWOD maintained continuous compliance with the Ground Water Rule.

The EPA published the revised Total Coliform Rule (RTCR) in 78 FR 10269 on February 13, 2013 and minor corrections in 79 FR 10665 on February 26, 2014. Florida adopted the RTCR by reference under F.A.C. 62-550.830 on July 7, 2015; the current revised version of F.A.C. 62-550.830 became effective on August 8, 2016. The current version of F.A.C. 62-550.830 includes revisions from EPA's Public Notification Rule, as previously mentioned.

Florida currently has primacy for the revised rule, except for certain sections that cover systems serving less than or equal to 1,000 people. The RTCR is different from the old TCR in the following major ways:

- Systems were required to submit a formal sample siting plan (sample collection schedule and all sample sites, including sites for routine and repeat monitoring) by March 31, 2016 and start sampling per the plan starting on April 1, 2016, unless otherwise specified in 40 C.F.R. Part 141, Subpart Y.
- Total coliforms no longer trigger a violation, only *E. coli*. Acute violation of the MCL for *E. coli* includes:
 - If the system has an *E. coli*-positive repeat sample following a total coliform-positive routine sample.

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- If the system has a total coliform-positive repeat sample following an *E. coli*-positive routine sample.
- If the system fails to take all required repeat samples following an *E. coli*-positive routine sample.
- If the system fails to test for *E. coli* when any repeat sample tests positive for total coliform.
- Assessment and corrective action required based on monitoring results.
- Exceedance of the 5.0% total coliform threshold results in one of the following:
 - Utility must conduct Level 1 assessment if this is the first exceedance of the 5% total coliform threshold in the last 12 months. It is a basic examination of the source water, treatment, distribution system and relevant operational practices.
 - The State or another outside agency must conduct a Level 2 assessment if there is more than one Level 1 assessment triggered in a 12-month period, *E. coli* is detected, or certain monitoring violations occur. Level 2 assessments are more in-depth versions of Level 1 assessments.
 - Failure to assess and correct identified deficiencies is a Treatment Technique (TT) violation.
- Public Notification (PN) is required for failure to assess/correct and for acute *E. coli* violations.

The EPA requires utilities to periodically collect occurrence and concentration data of substances that are being considered for future regulation under the Unregulated Contaminant Monitoring Rule (UCMR). Monitoring requirements for unregulated contaminants, 40 CFR Part 141, Section 40, for owners and operators of a public water system (PWS) has been revised to include new contaminants to be reported if the minimum reporting levels are met or exceeded; this is for PWSs subject to the UCMR. 40 CFR Part 141, Section 40 was revised on December 20, 2016 per 81 FR 92688.

On May 5, 2014, updated cross-connection control rules under FAC 62-555.330, 62-555.360, and FAC 62-555.900 came into effect. These rules allow a dual check valve to be used in lieu of a reduced pressure principle-type backflow preventer (RPZ) at residences where an auxiliary (reclaimed or other) water source is present, reduce the required testing frequency for RPZs installed at residences from once a year to once every two years, and requires utilities to report cross-connection control compliance on a new two-page form. WWS is required to prepare and submit this form each year.

3.3 Water Supply

The primary source of water supply for WWS is the Biscayne Aquifer. Presently, WWS operates wellfields to supply water to the 1A and 2A Water Treatment Plants, with firm capacities of 19.6 and 21.3 MGD, respectively. Additional water is provided to District 2 by the North Regional Wellfield with a firm capacity of 18.1 MGD. A physical description of the regional system and its wellfields is provided in Section 5. Water for District 3 is provided primarily by the City of Hollywood.

In 1979, the Biscayne Aquifer was designated as a “sole source” drinking water supply by the EPA. The water in the aquifer is primarily replenished by rainfall, but is also recharged by water flowing from Lake Okeechobee and conservation areas through an extensive regional water conveyance system. Presently, in addition to the Utility, the Biscayne Aquifer is also the primary source for raw water supplies for the municipalities in Broward County, Miami-Dade County, Monroe County, and the southern portion of Palm Beach County.

Section 3.2 of the Source Specific Criteria of the South Florida Water Management District (SFWMD) Applicant’s Handbook for Water Use Permit Applications, which current version went into effect on September 7, 2015, limits raw water usage from the Biscayne Aquifer for public water supply to the maximum quantity of water withdrawn over a consecutive 12-month period during the five years preceding April 1, 2006. Water supplies necessary to satisfy any demand which exceeds the maximum allowable withdrawal must come from an alternative water supply source, such as captured/stored water, the Upper Floridan Aquifer, harvested stormwater or reclaimed wastewater to offset withdrawal impacts to the Everglades Water Bodies.

Due to the “withdrawal and treatment” cost-effectiveness of the relatively shallow Biscayne Aquifer, this aquifer is expected to remain the County’s primary source of raw water supply. Future water supply beyond what can be provided from the Biscayne Aquifer may come from the brackish Upper Floridan Aquifer or other water sources such as the C-51 Reservoir. The County, Palm Beach County, several municipalities, and the SFWMD are moving forward with an option for a regional water storage reservoir project located in Palm Beach County known as the C-51 Reservoir Project. This project will expand the availability of Biscayne Aquifer raw water by offsetting impacts to the Regional Water System. The County will make use of the water made available by the C-51 Reservoir Project first before development of the brackish Upper Floridan Aquifer water source.

The Broward County Board of County Commissioners approved Resolution No. 2015-195 on April 7, 2015 supporting the C-51 Reservoir Project and encouraging water utilities to consider participating in the project to secure alternative water supply and receive long-term raw water permit allocations from the South Florida Water Management District. On May 2, 2017, the Board of County Commissioners approved the "Agreement for Capacity Allocation in Phase 1 of the C-51 Reservoir" between the County and Palm Beach Aggregates, LLC for a total of 6 million gallons per day at a capital cost of \$4.60 per gallon.

The proposed C-51 Reservoir located in western Palm Beach County has the potential to deliver a significant amount of water for future public water supply in Broward, Miami-Dade and Palm Beach Counties. Phase 1 of this project is projected to supply up to 35 MGD of water to the regional water supply system, and Phase 2 is projected to supply up to 96 MGD to the

environment. The Cities of Dania Beach, Hallandale Beach, Lauderhill and Sunrise are considering allocation in C-51 Reservoir Phase I.

3.4 Water Supply Regulatory Requirements

The volume of raw water withdrawal from the Utility's wellfields is regulated by the SFWMD. Each wellfield is governed by a Consumptive Use permit that stipulates the annual and monthly withdrawals that are allocated to each wellfield. As stated above, the 2007 Regional Water Availability Rule requirements limit withdrawals from the Biscayne aquifer to the highest consecutive 12-month period in the five years prior to April 2006. Water demand above the Biscayne limitation will need to be supplied by an Alternative Water Source. The County has accounted for the uncertainty that this rule represents in the water supply planning process by pursuing various Alternative Water Supply options, such as the treatment of brackish upper Floridan Aquifer water, regional system water availability offsets using C-51 reservoir water storage, use of reclaimed water to offset potable water irrigation uses, and encouragement of system-wide water conservation.

The potential need to develop an alternative water source will have implications for future treatment technologies, capital investments, and operation and maintenance costs. The Utility will evaluate the fiscal and environmental factors associated with each potential alternative supply source and will make timely decisions concerning water source and treatment development.

The County's Utility is permitted by the SFWMD to withdraw approximately 15.2 billion gallons of groundwater from their combined Biscayne aquifer wellfields, including the Regional Raw Water Wellfields. The Utility holds three permits from the SFWMD for the wellfields 1A, 2A/North Regional Wellfield (NRW), and the South Regional Wellfield (SRW). The permit for the combined 2A/NRW wellfields was issued for a 20-year duration in March 2008 and the permit for the District 1A wellfield was issued for a 20-year permit duration in April 2008.

An application to renew the SRW permit was submitted in October 2007 prior to permit expiration. The County and the SFWMD are actively reviewing available information and the permit has been administratively extended while the review process continues. The SRW permit governs the withdrawal of raw water from the Biscayne aquifer for sale to coastal raw water Large Users (Dania Beach, Hallandale Beach, Hollywood and FPL) and the permit allocation is based on the projection of raw water demands for each Large User. The County is actively working with the SFWMD and Large Users to complete the renewal effort, which will include an allocation from the C-51 reservoir.

Monitoring of wellfield and individual well withdrawals, groundwater levels, and chloride concentrations are required as part of the consumptive use permits issued for each wellfield. Monitoring information is reported to the SFWMD in their ePermitting system monthly to ensure each permit remains compliant.

Table 3-7 on the following page summarizes the Consumptive Use Permit allocations for each of the County Utility wellfields.

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| Table 3-7 Summary of SFWMD Wellfield Permits as of September 30, 2017 | | | |
|--|----------------|-----------|-------------------------|
| Description | Wellfield | | |
| | 1A | 2A/NRW | SRW |
| Permit Period: | | | |
| Issuance | 4/10/2008 | 3/13/2008 | 10/10/2002 |
| Expiration | 4/10/2028 | 3/13/2028 | 10/10/2007 ¹ |
| Total Allocations: | | | |
| Annual Average Daily (MGD) | 13.9 | 22.1 | 14.2 |
| Maximum Monthly (MGD) | 15.2 | 24.3 | - |
| Maximum Day (MGD) | - | - | 22.4 |
| Biscayne Aquifer Withdrawals | | | |
| Annual Average Daily (MGD) | 10.0 | 17.5 | 1 |
| Maximum Monthly (MGD) | 10.9 | 19.2 | 1 |
| Floridan aquifer wells | | | |
| Annual Average Daily (MGD) | 3.9 | 4.6 | 1 |
| Maximum Monthly (MGD) | 4.2 | 5 | 1 |
| Number of Wells – proposed | 4 ² | 4 | - |
| Diameter (Inches) | 16 | 16 | - |
| Depth (Feet) | 1,200 | 1,200 | - |
| <i>Proposed Implementation Date Modification³</i> | 2022 | 2022 | - |
| <p><i>1. Permit for SRW expired October 2007 and an application is under review with the SFWMD. It is expected that the SRW permit will be renewed in the ordinary course of events.</i></p> <p><i>2 Construction of two test wells was completed in 2014.</i></p> <p><i>3. Implementation dates for Floridan aquifer alternative water supply development continue to be extended due to demand management efforts and lower than expected growth.</i></p> <p><i>Source: Broward County Water and Wastewater Services</i></p> | | | |

Long-term water supply in South Florida may also be affected by the Comprehensive Everglades Restoration Plan (CERP) undertaken by the U.S. Army Corps of Engineers (ACOE) in coordination with the SFWMD and by regional water supply planning undertaken by the SFWMD and the FDEP. The intent of CERP is to provide multiple benefits to the South Florida ecosystem. While restoration of the Everglades is a primary objective of the plan, it also includes a provision for ensuring a reliable, adequate supply of fresh water for use by the environment, public water supply and agriculture while maintaining flood protection. The effect of CERP will be to reserve water resources for restoration of the Everglades without impacting existing legal users. Implementation through the Lower East Coast Water Supply Plan (LECWSP), and CERP account for future needs of water utilities by utilization of new surface water reservoirs and by implementation of Aquifer Storage and Recovery (ASR) wells. A decision by the State to endeavor to acquire the property owned and farmed by US Sugar as part of the CERP may limit the option of utilities to store and use excess stormwater as an alternative to water supply.

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New water supply technologies could be delayed, or could be less effective than SFWMD and ACOE expect. Recognizing this, the Utility has taken multiple steps to assure that a continuous adequate raw water supply is available:

- The County is actively participating in the LECWSP, the CERP and the SFWMD regulatory revision process.
- A new surface water pump station has been designed to improve the effectiveness of the existing raw water recharged by three existing pump stations through the canal system.
- The County has constructed and operates a 10 MGD wastewater reuse facility to support potable water demand reduction.
- The County continues to implement the Integrated Water Resources Plan (IWRP) to maximize the utilization of available water. Current projects include the design of interconnects between the C-1 and C-2 Canals.
- The County continues to review potential use of the upper Floridan Aquifer as an alternative raw water supply source and/or storage source.
- The County is engaged with the SFWMD and Palm Beach Aggregates to fully develop the C-51 Storage Reservoir Project as a water source to offset Regional Water impacts.
- The County continues to promote water conservation within the utility service areas and County-wide.

3.5 Overview of the Water System Facilities

District 1

District 1 has a combined service area of 11.9 square miles, FDEP permitted treatment plant capacity of 16 MGD, and 248 miles of water distribution and transmission mains. WWS maintains District 1 water system interconnections with the City of Fort Lauderdale, the City of Tamarac, the City of Plantation, and the City of Lauderhill to provide for emergency water supply.

District 2

District 2 includes the Utility's largest wholesale water customer, the City of Coconut Creek. The District, not including the City of Coconut Creek, has a service area of 14.8 square miles, a FDEP permitted treatment plant capacity of 40 MGD and contains 253 miles of water distribution and transmission mains. The facilities of District 2 are interconnected with the City of Deerfield Beach, the Town of Hillsboro Beach, the City of Pompano Beach and Palm Beach County to provide for emergency water supply.

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The County has an agreement with the City of Coconut Creek under which the County has agreed to provide the City of Coconut Creek with potable water for a term that exceeds by one year the last payment of any potable water system debt obligation of the County. The City of Coconut Creek constitutes approximately 20% of the total potable water consumption by customers of the Utility, and pays compensation amounting to 4.7% of the Utility's gross revenues. The agreement provides that, except by written consent of the County or for emergency purposes, the City of Coconut Creek will not purchase water other than from the County or pump water into its water distribution system from its own facilities. The County has agreed not to sell water to anyone else within the defined service area and the City of Coconut Creek is not permitted to increase its water service area without the written consent of the County.

District 3

District 3 is the southernmost service area of the County and is geographically separated into subdistricts referred to as 3A and 3BC. 3A and 3BC receive potable water through connections principally with the City of Hollywood. District 3 has a combined service area of approximately 14.3 square miles and contains 223 miles of transmission and distribution mains. Subdistrict 3A has interconnects with the City of Fort Lauderdale, the City of Hollywood and the City of Dania Beach to provide for emergency water supply. Subdistrict 3BC has interconnects with the City of Hollywood for its primary water supply, and the Cities of Pembroke Pines and Miramar to provide for emergency water supply.

3.6 Overview of the Retail Wastewater System Facilities

District 1

District 1 has a service area of 12.9 square miles and includes 187.6 miles of gravity collection sewers and 76 lift stations. There are 43.6 miles of force mains. Transmission, treatment and disposal of wastewater are provided through the Utility's Regional Wastewater System.

District 2

The size of the District 2 service area is 15.5 square miles. The collection system consists of 173.9 miles of gravity sewer, 101 lift stations, 5 retail master pump stations, and 35.3 miles of force mains. Transmission, treatment and disposal of wastewater are provided through the Utility's Regional Wastewater System.

District 3

District 3 serves an area of 11.8 square miles. The gravity collection system has 88.5 miles of gravity sewer, 65 lift stations and 3 retail master pump station. The force main network contains 34.9 miles of pipe that delivers the wastewater from this area to the Southern Regional Wastewater Treatment Facility operated by the City of Hollywood. District 3A and District 3BC

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wastewater is treated by the City of Hollywood under a Large User wastewater agreement with the County. The County has 5.883 MGD of reserved capacity in the Southern Regional Wastewater Treatment Plant. The City of Hollywood has 55.5 MGD of plant capacity.

The agreement between the County and the City of Hollywood contains several major provisions including: identification of the service area; requirements for the use of metering devices; reserve capacity requirements; restrictions on excessive flows; and charges for damages to the system. Debt service and operation and maintenance costs are paid on an actual flow basis. The agreement can be terminated by either party with a 365-day notice, if all financial requirements have been met. The City of Hollywood may not terminate the agreement, unless there shall be a readily available alternative means of treating and disposing of County wastewater.

3.7 Visual Inspection and Review

The visual inspection includes the water treatment plants for District 1 and 2 and the former District 3 water treatment plant (currently operated as a pumping station and booster chlorination facility), as well as distribution system storage and pumping stations 3B and 3C (part of the 3BC system). These inspections were performed by Brown and Caldwell accompanied by WWS staff. Appendix B contains a compilation of maps showing the locations of the inspected facilities.

Water Treatment Plant 1A

WTP 1A was originally constructed in 1960 with a treatment capacity of 3.0 MGD, which was expanded to 10.5 MGD in 1979, and finally to 16.0 MGD in 1994. Overall, the plant is in good condition. Water quality standards were maintained at WTP 1A throughout the year. During the visual inspection of the plant, it was operating in a satisfactory manner. The plant is clean and well maintained. The following summarizes the observations resulting from the visual inspection performed on April 18, 2018:

- District 1 Raw Water Wells – Biscayne Aquifer
 - Well 1 was in good condition. The wellhead and associated piping and valves appeared to be in good condition. Light corrosion was noted around the pump shaft. Electrical equipment was in good condition. The concrete slab was in good condition. New motor pump has been installed.
 - Well 2 was in good condition. The wellhead and associated piping and valves appeared to be in good condition. Light corrosion was noted around the pump shaft and piping. Electrical equipment was in good condition. The concrete slab was in good condition.
 - Well 3 was in good condition. The wellhead and associated piping and valves appeared to be in good condition. Light corrosion was noted around the pump shaft and piping. Electrical equipment was in good condition. The concrete slab was in good condition.

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- Well 4 was being prepared for upcoming work; vertical pump, wellhead and shaft had been removed. Electrical equipment was in good condition. The concrete slab was in good condition.
- Well 5 was in good condition. The wellhead and associated piping and valves appeared to be in good condition. Wellhead drain pipe was loose and in the process of being repaired. Corrosion was noted around the pump shaft and piping. Electrical equipment was in excellent condition. The concrete slab was in good condition.
- Well 6 was in good condition. The wellhead and associated piping and valves appeared to be in good condition. Corrosion was noted around the pump shaft and piping. Electrical equipment was in good condition. The concrete slab was in good condition.
- Well 7 was in good condition. The wellhead and associated piping and valves appeared to be in good condition. Electrical equipment was in good condition. The concrete slab was in good condition.
- Well 8 was in good condition. The wellhead and associated piping and valves appeared to be in good condition. Light corrosion was noted around the pump shaft and piping. Electrical equipment was in good condition. The concrete slab was in good condition.
- Well 9 was in good condition. The wellhead and associated piping and valves appeared to be in good condition. Corrosion was noted around the pump shaft and piping. Electrical equipment was in good condition. The concrete slab was in good condition.
- District 1 Floridan Aquifer Wells
 - Floridan Well 1 is an on-site well; development and testing phase have been completed. Permanent wellhead equipment was not in place at the time of the inspection, only a sample tap.
 - Floridan Well 2 is an off-site well; development and testing phase have been completed. Permanent wellhead equipment was not in place at the time of the inspection, only a sample tap.
- Treatment Unit 1 (softener unit) was in good condition. Unit was on stand-by at the time of inspection. The interior, including the cone, mixer and launders are in good condition. The drive, electrical equipment and instruments appeared to be in good condition. Auxiliary pumps and associated piping, valves, and equipment were in good condition. Sludge cycling pumps will soon need replacement.

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- Treatment Unit 2 was in good condition. The interior, including the visible parts of the cone and mixer were in good condition. Effluent launders showed moderate corrosion in several locations; rehabilitation will address corrosion in a project identified in the future project list on page 3-21. The drive appeared to be in fair condition. Electrical equipment and instruments appeared to be in good condition. Auxiliary pumps and associated piping, valves, and equipment were in good condition. Sludge cycling pumps will soon need replacement.

- Filters
 - Filter 1 was in good condition, piping and valves were in very good condition. Effluent launders were in very good condition. The control panel on the filter deck appeared to be in good condition. The overall structure appeared to be in very good condition.

 - Filter 2 was in good condition, piping and valves were in very good condition. Effluent launders were in very good condition. The control panel on the filter deck appeared to be in good condition. The overall structure appeared to be in very good condition.

 - Filter 3 was in good condition, piping and valves were in very good condition. Effluent launders were in very good condition. The control panel on the filter deck appeared to be in good condition. The overall structure appeared to be in very good condition.

 - Filter 4 was in good condition, piping and valves were in very good condition. Effluent launders were in very good condition. The control panel on the filter deck appeared to be in good condition. The overall structure appeared to be in very good condition.

 - Filter 5 was in very good condition, piping and valves were in very good condition. Effluent launders were in very good condition. The control panel on the filter deck appeared to be in good condition. The overall structure appeared to be in very good condition.

 - Filter 6 was in very good condition, piping and valves were in very good condition. Effluent launders were in very good condition. The control panel on the filter deck appeared to be in good condition. The overall structure appeared to be in very good condition.

 - Filter 7 was in very good condition, piping and valves were in very good condition. Effluent launders were in very good condition. The control panel on the filter deck appeared to be in good condition. The overall structure appeared to be in very good condition.

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- Filter 8 was in very good condition, piping and were in good condition. Effluent launders were in very good condition. The control panel on the filter deck appeared to be in good condition. The overall structure appeared to be in very good condition.
- The filter backwash pumps, piping, valves, gauges, and appurtenances appeared to be in good condition. Corrosion was observed on the baseplate of both backwash pumps that should be addressed during routine maintenance. Valve actuators and turbidity meters are becoming outdated and will be replaced soon. Some of the filter effluent valve actuators and most of the turbidity meters have already been replaced, the remaining filter effluent valve actuators and turbidity meters will soon be replaced.
- Four clearwell transfer and backwash pumps and all piping, valves, gauges, appurtenances, and associated structures appear to be in excellent condition. Soft start on transfer pumps 3 and 4 to be replaced.
- High Service Pumping
 - High service pump 1 was down for replacement at the time of the inspection.
 - High service pumps 3 and 5 appeared to be in good condition. Pumps, piping, valves, gauges, appurtenances, and associated structures appeared to be in good condition. Pumps will soon need to be replaced due to normal wear and tear.
 - High service pumps 2, 4, and 6 appeared to be in good condition. Pumps, piping, valves, gauges, appurtenances, and associated structures appeared to be in good condition. High service pump electrical gear appeared to be in good condition.
- Solids handling
 - The gravity thickener structure and auxiliary pumps appeared to be in good condition.
 - The spare solids holding tank appeared to be in good condition. This structure is currently only put into service on an as-needed basis.
 - Vacuum filters 1 and 2 were in good condition, belt and electrical equipment appeared to be in good condition.
- Chemical feed and storage systems
 - The carbon dioxide feed system, including refrigerated storage tanks and solution feeder panels, appeared to be in excellent condition.

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- The ferric chloride system and pumps are currently operational, two chemical pumps and one transfer pump have already been replaced, other pumps are slated to be replaced soon. Bulk and day storage tanks are functional.
- The dry polymer makedown and feed systems were in good condition. Makedown and dilution units appeared to be intact and functional. Metering pumps are functional.
- The lime slaking and feed systems appeared to be in good condition. The lime silo, vibrator, rotary valve, and dosing unit appeared to be in good condition. Slakers and pumps, and slurry pumps are operational. Corrosion was present on equipment.
- The fluoride (HFS) pump and tank are currently operational, one pump has been replaced and other pumps are slated to be replaced soon. Bulk and day storage tanks appeared to be intact and functional. Metering pumps are functional. Electrical and mechanical equipment was extensively corroded inside the day tank/metering room.
- The sodium hypochlorite feed and storage system was in good condition. Storage tanks are generally in good condition. Containment area flooring is in good condition. New transfer pumps were installed. Metering pumps are in very good condition. Metering pump piping is in good condition.
- The Chlorine system overall is in good condition, but pumps and gaskets need rehabilitation.
- The gaseous ammonia system is generally in good condition. Bulk storage tanks are in very good condition. The three ammoniators are functional and in good condition.
- Backup generators, diesel tanks and associated equipment appeared to be in good condition.
- Operations building air conditioning system will soon need to be replaced due to aging.

The plant modifications for FY 2017 & FY 2018:

- SCADA computers replacement (complete)
- Security system improvements (complete)
- Rehabilitation of Lime Slakers (complete)
- Construction of new electrical switchgear (ongoing)

Section 3 - Retail Water and Wastewater Utilities System

- Demolition of 1B-2 elevated tank (ongoing)
- Demolition of on-site 0.3 MG ground storage tank (ongoing)
- Treatment Unit 2 Rehabilitation project (ongoing)
- Chemical Feed System Modifications (ongoing)
- Vacuum filter 2 Rehabilitation (complete)
- Wellheads improvement project (ongoing)

The plant modifications to be initiated for FY 2019:

- Chlorine pumps replacement

Water Treatment Plant 2A

The WTP 2A was originally constructed in 1975 with a treatment capacity of 20 MGD. In FY 1994, the treatment capacity was expanded to 40 MGD with permitted capacity of 30 MGD. Water quality standards were maintained at WTP 2A throughout the year. Overall, the plant is in good condition and appeared to be operating satisfactorily at the time of the site visit. The following summarizes the observations performed for major subsystems resulting from the visual inspection performed on April 16, 2018.

- District 2 Raw Water Wells – Biscayne Aquifer
 - Well 4 was in good condition. The security fencing was intact. The wellhead and associated pump shaft, piping and valves appeared to be in good condition. Corrosion was noted at the drive shaft. Electrical equipment was in good condition. The concrete slab was in good condition.
 - Well 6 was in good condition. The building was intact and in good condition. The wellhead and associated pump shaft, piping and valves appeared to be in good condition. Minor corrosion was noted at the drive shaft. Electrical equipment was in good condition.
 - Well 7 was in good condition. The security fencing was in good condition. The wellhead and associated pump shaft, piping and valves appeared to be in good condition. Minor corrosion was noted at the drive shaft. Electrical equipment was in good condition. The concrete slab was in good condition.
 - Well 8 was in excellent condition. The security fencing was in excellent condition. The wellhead and associated motor, pump shaft, piping and valves appeared to be in excellent condition. Electrical equipment was in excellent condition. The concrete slab was in good condition.

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- Well 9 was in excellent condition. The security fencing was excellent condition. The wellhead and associated pump shaft, piping and valves appeared to be in excellent condition. Electrical equipment was in excellent condition. The concrete slab was in excellent condition.
- Well 10 was in good condition. The security fencing was in good condition. The wellhead and associated motor, pump shaft, piping and valves appeared to be in good condition. Electrical equipment was in good condition. The concrete slab was in good condition.
- Well 11 was in good condition. The security fencing was in good condition. The wellhead and associated motor, pump shaft, piping and valves appeared to be in good condition with very minor light corrosion noted on pipe flange. Electrical equipment was in good condition. The concrete slab was in good condition.
- Treatment Unit 1 was out of service at the time of the visual inspection; it is on stand-by. Effluent launders showed light corrosion in several locations. Electrical equipment and instruments also appeared to be in good condition. The gearbox is in the process of being replaced. Auxiliary pumps and associated piping, valves, and equipment were in good condition.
- Treatment Unit 2 was in good condition. The interior, including the visible parts of the cone and mixer were in good condition. Effluent launders showed light corrosion in several locations. The drive appeared to be in good condition. Electrical equipment and instruments also appeared to be in good condition. Auxiliary pumps and associated piping, valves, and equipment were generally in good condition.
- Filters: All six filters appeared to be in good condition. Filter media appeared level and uniform, piping and valves in the filter gallery were in good condition. Effluent launders were in good condition. The overall structure appeared to be in good condition. No issues were identified with instrumentation.
 - Filter backwash fill pumps 1, 3 and 4 along with associated motor, piping, valves, gauges, and appurtenances appeared to be in fair to good condition.
 - Filter backwash pump 2 has been replaced in-house and it appeared to be in excellent condition.
- All four clearwell transfer pumps and associated motor, piping, valves, gauges, and appurtenances appeared to be in good condition. Electrical equipment appeared to be in fair condition. Transfer pump 3 was recently repaired.
- High service pumps (HSPs) 1 and 3-8 (HSP 2 does not exist) appeared to be in good condition. Pumps, motors, piping, valves, gauges, appurtenances, and associated structures appear to be in good condition. Electrical gear appeared to be in fair to good condition.

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- Solids handling
 - Gravity thickener 1: the structure, rake and drive, and auxiliary pumps have been replaced and appeared to be in excellent condition.
 - Gravity thickener 2: the structure, rake and drive, and auxiliary pumps appeared to be in good condition.
 - Vacuum filters and associated vacuum pumps and electrical equipment appeared to be in good condition.

- Chemical feed and storage systems
 - The carbon dioxide feed system, including refrigerated storage tanks and solution feeder panels, appeared to be in good condition.
 - The ferric chloride feed and storage system was in good condition. The bulk storage tank appeared to be intact and functional. Metering pumps were functional.
 - The dry polymer makedown and feed systems were in good condition. Makedown and dilution units appeared to be intact and functional. Metering pumps were functional.
 - The lime slaking and feed systems appeared to be in good condition. The lime silo, vibrator, rotary valve, and dosing unit were in excellent condition, inside parts have been replaced. Slakers were functional.
 - The fluoride (HFS) feed and storage system was in fair condition. Bulk and day storage tanks appeared intact and functional. Metering pumps were functional. Electrical and mechanical equipment appeared to be functional.
 - The sodium hypochlorite feed and storage system appeared to be in good condition. Storage tanks are in good condition, except for Day Tank No. 1's bottom flange and valve that showed evidence of a previous leak (dry liquid was present). Containment area flooring was in good condition. Metering pumps were in good condition. Light to moderate corrosion was observed on transfer pump equipment in the bulk storage area. Transfer pump equipment in the day tank room was in the process of being rehabilitated. Two of the four transfer pumps located in the bulk storage area were out of service at the time of the inspection.
 - The sodium hydroxide system has never been placed into service and is not anticipated to be put into service within the foreseeable future.
 - The gaseous ammonia system is in good condition. Bulk storage tanks are in very good condition. Ammoniators are in very good condition.

Section 3 - Retail Water and Wastewater Utilities System

- The diesel fuel storage system is in excellent condition. Bulk storage tanks are in very good condition.
- Backup generators and associated equipment appeared to be in good condition.
- The 0.5, 1 and 5 MG ground storage tanks, including their exterior coating, appeared to be in good condition. This FY they are performing the 5-year visual inspection of the County's ground storage tanks, this also includes the two clearwells for WTP 2A.
- The backwash tank was generally in good condition.

Plant modifications performed in FY 2017 were:

- Installation of lighting improvements for the plant (ongoing)
- Repair of the roof on the lime silo tower and replace bag house (complete)
- Rehabilitation of chemical feed systems (in design)
- Rehabilitation of switchgear at high service pump room at building No.1 (ongoing)

Plant modifications to be performed in FY 2018 & FY 2019:

- Treatment Unit 2 Rehabilitation project (in design)
- Chemical Feed System Modifications (in design)
- Repair of clearwell spalling, repaint clearwell and treatment units (ongoing)
- Design of a new 5 MG ground storage tank
- Repair of the roof on the lime silo tower and replace bag house (complete)
- Rehabilitation of switchgear at high service pump room at building No.1 (ongoing)

Water Distribution System 3A

In December 2001, the City of Hollywood began providing water for resale to the County in System 3A. Then re-pumping facilities consisting of high service pumps supplying the 3A distribution system, which includes the Fort Lauderdale/Hollywood International Airport were constructed at the site of the former WTP 3A.

The 3A facility was inspected on April 13, 2018. In general, the 3A facility appeared to be in fair condition. Observations from the site visit are provided on the following page.

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- High service pump 1 appeared to be in good condition. The pump appeared to be in good condition, with light corrosion noted around the pump base. The diesel engine backup drive associated with this pump appeared to be in good condition.
- High service pump 2 appeared to be in good condition. The discharge isolation valves and check valves appeared to be in excellent condition. The VFD for this pump appeared to be in good condition.
- High service pump 3 appeared to be in good condition. The discharge isolation valves, check valves, and piping are in good condition. Electrical gear serving this pump appeared to be functional.
- High service pump 4 appeared to be in good condition. The discharge isolation valves and check valves appear to have been recently replaced. Electrical gear serving this pump appeared to be functional.
- The 2 MG ground storage tank appeared to be in good condition.
- The inflow meter and associated piping, valving, and instrumentation continue to function in good condition.
- The temporary sodium hypochlorite feed and storage system appeared to be in good condition. The chlorinator unit was in good condition. Construction has begun to incorporate 4-log virus treatment at this facility, this includes a permanent sodium hypochlorite feed and storage system.
- The ammonia storage and feed system appear to be in good condition. Piping inside the ammonia storage building has been repainted. The control panel inside the ammonia storage building has moderate corrosion.
- The diesel fuel storage system has been removed and replaced with a new one which appeared to be in excellent conditions and containment appeared to be in good condition.
- Underground diesel tank has been emptied, out of service, and removed.
- New portable diesel generator appeared to be in excellent conditions.

Planned modifications to be performed in FY 2017 & FY 2018 are:

- Demolition of the existing treatment plant and adjacent plant building has been completed, which included:
 - Upflow treatment units

Section 3 - Retail Water and Wastewater Utilities System

- Greenleaf filter
- Backwash recovery pond
- Permuted treatment unit
- Lime slaker/sili
- Ferric chloride and secondary containment
- Construction of 4-log disinfection improvements, including an upgraded permanent hypochlorite system and a new HSP room (new building) (ongoing)
- Construction of a new building to house a new generator
- Construction of a new by-pass system
- Implementation of new site lighting system

Water Distribution System 3BC

The 3B area of the 3BC distribution system water supply is fed primarily by the City of Hollywood through two 12-inch potable water interconnect treatment stations located at the City's south system perimeter (on Pembroke Road at Park Road and at S.W. 57th Avenue). A separate connection from the City of Pembroke Pines supplies water to the North Perry Airport perimeter. These facilities are remotely monitored and controlled via SCADA equipment/instrumentation. The 3B and 3C storage and pumping facilities were inspected by Brown and Caldwell on April 13, 2018.

3B Storage and Pumping Facility

Overall, the four distribution high service pumps (HSPs) and their associated piping and valving appeared to be in good condition. It was reported that pumps 2 and 4 appear to have insufficient head capacity to pump into the system. HSPs 2 and 3 name plates are illegible and HSP 4's name plate is missing. The 2.5 MG ground storage tank appeared to be in good condition, with minor hairlines. Actuated valve for ground storage tank influent line is not closing completely, valve is slated to be replaced. The backup generator and associated equipment appeared to be in good condition. The temporary sodium hypochlorite system appeared to be in good condition and is only connected to HSP 3. The temporary sodium hypochlorite system is slated to be replaced with a permanent system in the future, this project will include the upgrade of the HSPs and the ability to control both the sodium hypochlorite system and HSPs separately on SCADA. The pump building exterior was in good condition.

3C Storage and Pumping Facility

The 3C storage and pumping facility currently consists of a 2.0 MG ground storage tank and three high service pumps, VFD controls, sodium hypochlorite disinfection system and emergency standby diesel engine with generator housed in a concrete building structure. The facility is equipped with a SCADA system to allow staff to monitor and control the facility operation remotely. The entire site is fenced with a decorative fence in the front of the facility and a standard chain link fence approximately 6-foot high on the sides and back of the property; north and west portions of the chain link fence have 15-in high barbwire.

The concrete storage tank exterior walls appeared to be in good condition. The tank plate was not located. Overall, the three distribution high service pumps at the 3C facility appear to be in good condition. Pump 1 and 3 had some light corrosion on the top half of the casing. The ground storage tank appeared to be in good condition. The sodium hypochlorite storage tank 1 was in good conditions, and a new tank 2 will be installed soon to provide redundant sodium hypochlorite storage capacity at this facility. The sodium hypochlorite transfer/tank mixing pumps appeared to be in good condition, staff reported that the turnover of chemical in the tank was sufficient to maintain hypochlorite quality and strength. The sodium hypochlorite visual calibration tube was colored due to use and age, thus making it is difficult to be read. The ammonia system was in good condition; ammoniator 1 was down for maintenance (pipe joints had been leaking) and ammoniator 2 appeared to be in good condition and functional. The chlorine analyzers were in good condition. The backup generator appeared to be in good condition. The pump building exterior was in good condition.

Retail Lift Stations

There is a total of 242 lift stations operated by the County. A representative set of 20 lift stations were inspected by Brown and Caldwell. On April 17, 2018 LSs 23G, 23J, 24D1, 28A, 28B, 29C, 51H, 63 and 64 were inspected and on May 14, 2018 LSs 10J, 30E2-11, 31-F-21, 32A, 32F, 32H, 34, 50E1, 50G1, 50L and 50R were inspected. Overall, the mechanical and electrical components (control panels, variable frequency drives, motor control centers, generators, telemetry units, pumps, pipes, and accessories) appeared to be in fair to good condition, as described on the following pages. The following serves as a summary of the observations made during the visual inspection of the lift stations:

- LS 10J This submersible pump-type lift station was in very good condition. No pump issues were reported. The wetwell and valve vault hatches were in good condition. Piping and valving were in good condition, with very light corrosion noted on a couple bolts. The valve vault was dry at the time of site visit. The wetwell was in good condition, with the liner mainly intact. The electrical panel was in good condition.
- LS 23G This submersible pump-type lift station was in good condition. No pump issues were reported. Piping and valving are located above ground, exposed to weather

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conditions, were in good condition with very light corrosion noted. The wetwell, electrical panel, fence and gate were in good condition.

- LS 23J This submersible pump-type lift station was in good condition. No pump issues were reported. The wetwell and valve vault hatches were in good condition. Piping and valving were in good condition. The wetwell was in good condition overall but minor liner peeling was noted. The electrical panel, fence and gate were in good condition.
- LS 24D1 This submersible pump-type lift station was in fair condition. No pump issues were reported. The wetwell and valve vault hatches were in good condition. Piping and valving were in fair condition, with corrosion noted. The wetwell was in fair condition; wetwell is leaking and the liner is gone. Voids were observed under the wetwell concrete slab. The electrical panel was in good condition.
- LS 28A This submersible pump-type lift station was in good condition. No pump issues were reported. The wetwell and valve vault hatches were in poor condition. The wetwell was in fair condition, the lining was gone. The piping and valving appeared to be in good condition with minor corrosion noted. The electrical panel was in good condition.
- LS 28B This submersible pump-type lift station was in fair condition. No pump issues were reported. The valve vault hatch was in good condition but the wetwell hatch was not able to be fully opened. Piping and valving were in fair condition, with corrosion noted. The valve vault bottom was filled with sand and gravel covering the bottom portion of the piping and valves inside the vault. The wetwell was in fair condition, most of the lining was gone. The electrical panel, chain link fence and gate were in good condition.
- LS 29C This submersible pump-type lift station was in fair condition. No pump issues were reported. The wetwell and valve vault hatches were in good condition. Piping and valving were in fair condition, with corrosion noted. The valve vault bottom was filled with sand and gravel hiding the bottom portion of the piping and valves inside the vault. The wetwell was in fair condition, some of the lining was gone. The electrical panel, chain link fence and gate were in good condition.
- LS 30E-2-11 This submersible pump-type lift station was in good condition. No pump issues were reported. The wetwell and valve vault hatches were in good condition. Piping and valving were in good condition, with minor corrosion noted. The wetwell and electrical panel were in good condition.

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- LS 31-F-21 This submersible pump-type lift station was in good condition. No pump issues were reported. The wetwell and valve vault hatches were in good condition. Piping and valving in the valve vault were in good condition. The wetwell, electrical panel, fence and gate were in good condition.
- LS 32A This submersible pump-type lift station was in fair condition. Pumps lifting system is a single rail system; heavy blow-by has been reported that can be due to pumps not seating properly. The wetwell hatch was in good condition, but the valve vault hatch was in fair condition, west door of the hatch could not be opened. Piping and valving were in fair condition, with corrosion noticed mainly at the pipe end where it penetrates the vault's wall. The wetwell was in fair condition, most of the lining was gone. The electrical panel was in fair condition, panel seals need to be replaced to avoid further water intrusion into the electrical panel.
- LS 32F This submersible pump-type lift station was in good condition. No pump issues were reported but issues with pumps single rail lifting system have been noticed. The wetwell and valve vault hatches were in good condition. Piping and valving were in good condition, with minor corrosion noted. The valve vault bottom was wet at the time of the inspection. The wetwell and electrical panel were in good condition.
- LS 32H This submersible pump-type lift station was in good condition. No pump issues were reported. The wetwell and valve vault hatches were in good condition. Piping and valving were in good condition, with minor corrosion noted. A check valves inside the valve vault has been replaced. The wetwell was in good condition. The electrical panel is in fair condition, some of the panel is rusted inside.
- LS 34 This submersible pump-type lift station was in excellent condition. No pump issues were reported. The wetwell and valve vault hatches were in good condition. Piping and valving were in good condition. The wetwell was in good condition. The electrical panel, fence and gate were in excellent condition.
- LS 50E1 This submersible pump-type lift station was in fair condition. No pump issues were reported. The wetwell and valve vault hatches were in good condition. Piping and valving were in good condition. The valve vault had water, sand and dirt seeping from the sides. It appeared that small animals have been digging into the vault. The wetwell, electrical panel, fence and gate were in good condition.

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- LS 50G1 This submersible pump-type lift station was in good condition. No pump issues were reported. The wetwell and valve vault hatches were in good condition. Piping and valving were in good condition, with corrosion and peeling noted. The wetwell, electrical panel, fence and gate were in good condition.
- LS 50L This submersible pump-type lift station was in good condition. No pump issues were reported. The wetwell and valve vault hatches were in good condition. Piping and valving were in good condition, with pipe coating having hairlines. The wetwell, electrical panel, fence and gate were in good condition.
- LS 50R This submersible pump-type lift station was in good condition. No pump issues were reported. The wetwell and valve vault hatches were in good condition. Piping and valving were in good condition, with very light corrosion noted. The valve vault had water at the time of the inspection. The wetwell, electrical panel, fence and gate were in good condition.
- LS 51H This submersible pump-type lift station was in fair condition. No pump issues were reported. The wetwell and valve vault hatches were in good condition. Piping and valving were in fair condition, with moderate corrosion noted. The wetwell was in good condition. The electrical panel was in fair condition, the bottom inside of the panel exhibits corrosion.
- LS 63 This submersible pump-type lift station was in good condition. No pump issues were reported. The wetwell and valve vault hatches were in good condition. Piping and valving were in good condition, with very light corrosion noted. The two check valves have been replaced and installed with a restrained flanged coupling adapter. The wetwell, electrical panel, fence and gate were in good condition.
- LS 64 This submersible pump-type lift station was in good condition. No pump issues were reported. The wetwell and valve vault hatches were in good condition. Piping and valving were in good condition. The wetwell and electrical panel were in good condition.

Section 4 – Regional Wastewater System

Section 4 Regional Wastewater System

This section describes the North Regional Wastewater System (NRWWS) including the service area, visual inspection and review of the renewal and replacement program.

4.1 General Description

WWS owns and operates the North Regional Wastewater Treatment Plant (NRWWTP), which has provided contract wholesale wastewater services to Large Users plus the County since 1974. The current Large Users include the Cities of Coconut Creek, Coral Springs, Deerfield Beach, Lauderhill, North Lauderdale, Oakland Park, Pompano Beach and Tamarac; and, North Springs Improvement District (NSID), Parkland Utilities, and Royal Utilities. Service is also provided to WWS Districts 1 and 2 retail wastewater systems. The NRWWS includes 11 master pumping stations and approximately 66 miles of force mains. All the wastewater collected from retail Districts 1 and 2 and Large User customers are treated at the NRWWTP located in Pompano Beach, Florida. The plant has a permitted treatment capacity of 95 MGD of which 87.015 MGD has been reserved by the Large Users and the County. During Fiscal Year 2017, the annual average daily flow rate at the NRWWTP was approximately 70.22 MGD, and the plant currently has sufficient capacity to meet the projected demands of all Large Users and the County to at least the year 2035.

The Large User agreements are substantially similar. Each is for a term that exceeds by one year the last payment of any wastewater system debt obligation applicable to the NRWWS. In addition to stipulating points of connection and establishing minimum quality limitations on all wastewater, the agreements designate reserve capacity in the plant for each user and provide for the method to charge each user for the availability and provision of service. The agreements also require the Large Users to deliver all wastewater collected to the County. Monthly, each user is billed a fixed charge depending upon the user's reserve capacity in the plant. This fixed charge is designated to recover each Large User's equitable share of debt service including required coverage (1.2 x principal and interest). The operation and maintenance costs associated with provision of treatment and transmission service, also billed monthly to each Large User, are based upon the Large User's pro rata usage of the NRWWS. Additionally, the contracts provide restrictions on excessive and peak flows, limitations on types of waste allowed to be discharged, and requirements to pay for damages caused by a Large User.

The NRWWTP was designed and constructed in accordance with a master plan approved by regulatory authorities specifically to encourage the use of regional, technologically advanced wastewater treatment processes and to discourage development and use of smaller, less efficient systems. A difficult permitting process, outstanding contractual obligations with the County and high capital costs of constructing and operating a new facility should discourage any Large Users from abandoning the NRWWS. The agreements as executed by the Large Users are binding and can only be terminated upon mutual consent of the County and the Large User.

The NRWWTP utilizes an activated sludge treatment process for liquid treatment and an anaerobic digestion system for handling the biosolids produced from the liquid treatment process. After digestion, the sludge is dewatered and disposed of by landfilling and land spreading. The effluent from the liquid treatment process is either chlorinated and pumped through the outfall pipe into the Atlantic Ocean, disposed of in on-site deep injection wells, or chlorinated and filtered

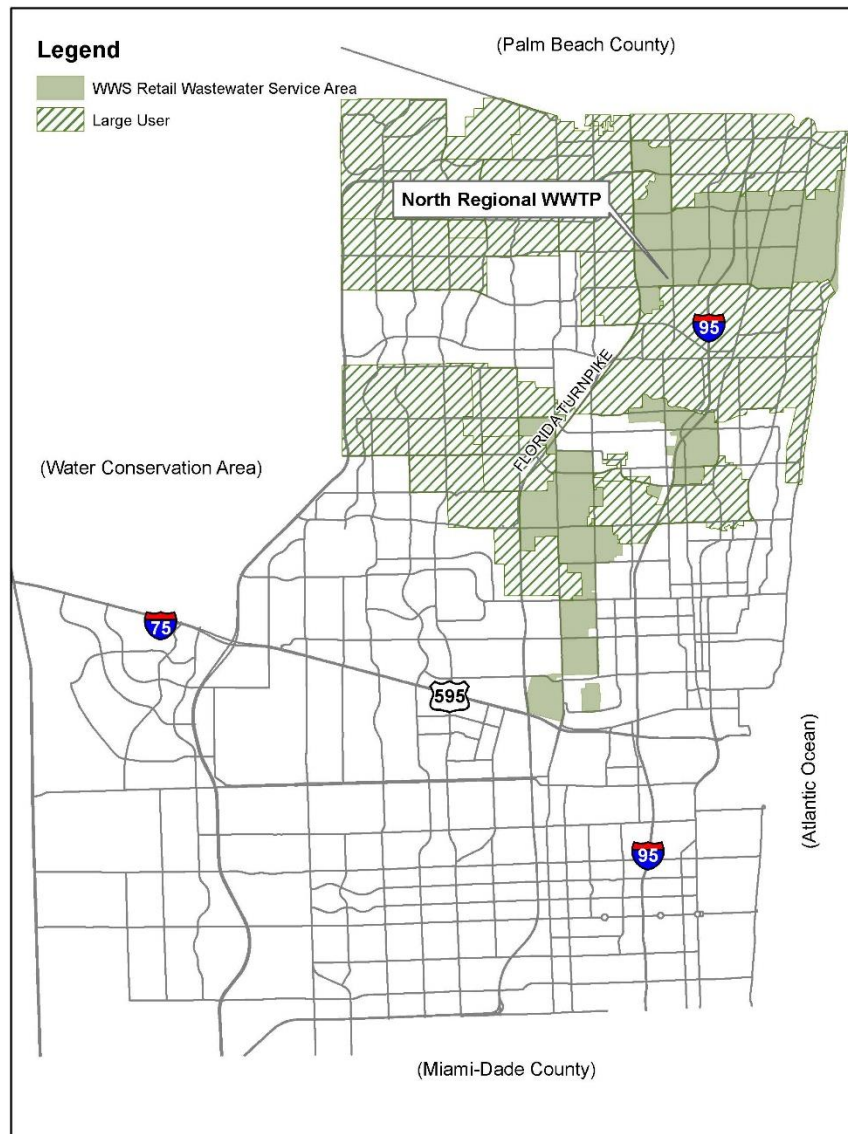
Section 4 - Regional Wastewater System

via the County's 10 MGD reclaimed water system. The reclaimed water is used for irrigation and industrial process water at the Waste-to-Energy Plant (Wheelabrator North Broward Plant), the Septage Receiving Facility and the NRWWTP as well as for landscape irrigation at a nearby commerce center.

Service Area and Customer Base

Figure 4-1 shows the NRWWS service area. All wastewater collected from retail Districts 1 and 2, and all Large User customers, is treated at the NRWWTP located in Pompano Beach, Florida.

Figure 4-1 WWS Wastewater Large User Service Areas



Source: Broward County Water and Wastewater Services

Section 4 - Regional Wastewater System

The NRWWS service area provides service to 35% of the population in the County through providing wholesale treatment services to Large Users and services to the County's retail customers in Districts 1 and 2 (District 3 treatment is provided by contract with the City of Hollywood at the South Regional Wastewater System). Service is provided pursuant to individual, contractual agreements between the County and each Large User. Generally, such agreements specify each Large User's reserve capacity in the plant and provisions for billing and payment for service. As noted, the Large Users and WWS have currently subscribed to 87.015 MGD of the 95 MGD of treatment and disposal capacity.

Table 4-1 provides a summary of historical Large User wastewater flow rates for treatment and disposal. The reserve capacity for each Large User of the NRWWS is shown in Table 4-2. Table 4-3 provides information on the wastewater annual flows for the past five years. Collectively the system user will not exceed permitted plant capacity through at least 2035. As such, obligations to individual Large Users for wastewater flows do not currently constitute an issue from the standpoint of available plant capacity.

| Table 4-1 Summary of Historical Large User Wastewater Average Monthly Flow for Treatment and Disposal (1,000 Gallons) | | | | | |
|--|------------------|----------------------|------------------|------------------------|---------------|
| Large User | FY 2015 | FY 2016 ¹ | FY 2017 | Change From Prior Year | % of Change |
| Coconut Creek | 123,283 | 126,018 | 124,321 | (1,697) | -1.35% |
| Coral Springs | 216,483 | 271,306 | 231,840 | (39,466) | -14.55% |
| Deerfield Beach | 168,645 | 198,350 | 188,192 | (10,158) | -5.12% |
| Lauderhill | 180,403 | 189,169 | 187,662 | (1,507) | -0.80% |
| North Lauderdale | 113,280 | 107,148 | 115,941 | 8,793 | 8.21% |
| NSID | 85,888 | 91,755 | 90,825 | (930) | -1.01% |
| Oakland Park | 42,816 | 42,934 | 39,889 | (3,045) | -7.09% |
| Parkland Utilities | 6,457 | 5,906 | 5,893 | (13) | -0.22% |
| Pompano Beach | 383,692 | 408,733 | 399,613 | (9,120) | -2.23% |
| Royal Utilities | 7,920 | 9,451 | 8,361 | (1,090) | -11.53% |
| Tamarac | 222,589 | 228,988 | 222,406 | (6,582) | -2.87% |
| Subtotal | 1,551,456 | 1,679,758 | 1,614,942 | (64,816) | -3.86% |
| Broward County | 403,257 | 427,628 | 394,660 | (32,968) | -7.71% |
| Total | 1,954,713 | 2,107,386 | 2,009,602 | (97,784) | -4.64% |
| ¹ Higher flows in FY 2016 compared to FY 2015 are believed to be related to infiltration and inflow associated with high rainfall in 2016 | | | | | |
| Source: Broward County Water and Wastewater Services | | | | | |

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| Table 4-2 North Regional Wastewater System Reserve Capacity as of September 30, 2017 (MGD) | | |
|--|---------------|--------------|
| Large User | Capacity | |
| | Treatment | Transmission |
| Broward County | 19.420 | 19.42 |
| Coconut Creek ¹ | 6.540 | 4.41 |
| Coral Springs | 9.790 | 9.79 |
| Deerfield Beach | 8.500 | 8.50 |
| Lauderhill | 7.100 | 7.10 |
| North Lauderdale | 4.400 | 4.40 |
| N S I D | 3.530 | 3.53 |
| Oakland Park | 1.520 | 1.52 |
| Parkland Utilities | 0.265 | 0.27 |
| Pompano Beach ¹ | 17.000 | N/A |
| Royal Utilities | 0.450 | 0.45 |
| Tamarac | 8.500 | 8.50 |
| Total | 87.015 | 67.89 |
| ¹ All of Pompano Beach and portions of Coconut Creek do not use the North Regional Wastewater System transmission facilities. | | |
| Source: Broward County Water and Wastewater Services | | |

| Table 4-3 Summary of Large User Wastewater Treatment Annual Flows Five-Year History as of September 2017 (1,000 Gallons) | | | | | |
|--|---------------------|---------------------|---------------------|---------------------|---------------------|
| Large User (LU) | Fiscal Year 2013 | Fiscal Year 2014 | Fiscal Year 2015 | Fiscal Year 2016 | Fiscal Year 2017 |
| Coconut Creek | 1,491,870 | 1,469,596 | 1,479,397 | 1,512,213 | 1,491,846 |
| Coral Springs | 2,932,561 | 2,645,025 | 2,597,792 | 3,255,671 | 2,782,075 |
| Deerfield Beach | 2,128,498 | 2,050,891 | 2,023,739 | 2,380,200 | 2,258,300 |
| Lauderhill | 2,263,122 | 2,269,385 | 2,164,841 | 2,270,030 | 2,251,942 |
| North Lauderdale | 1,292,221 | 1,515,225 | 1,359,362 | 1,285,778 | 1,391,289 |
| NSID | 992,712 | 1,010,832 | 1,030,656 | 1,101,064 | 1,089,904 |
| Oakland Park | 550,088 | 536,527 | 513,792 | 515,203 | 478,666 |
| Parkland | 74,607 | 76,065 | 77,485 | 70,875 | 70,721 |
| Pompano Beach | 4,913,176 | 5,230,870 | 4,604,300 | 4,904,800 | 4,795,360 |
| Royal Utilities | 105,492 | 104,544 | 95,037 | 113,410 | 100,330 |
| Tamarac | 3,055,706 | 3,006,553 | 2,671,066 | 2,747,855 | 2,668,874 |
| Total LU | 19,800,053 | 19,915,513 | 18,617,467 | 20,157,099 | 19,379,307 |
| Broward County | 4,976,657 | 5,360,913 | 4,839,080 | 5,131,540 | 4,735,923 |
| Total LU and County | 24,776,710 | 25,276,426 | 23,456,547 | 25,288,639 | 24,115,230 |
| Source: Broward County Water and Wastewater Services | | | | | |

4.2 Wastewater System Regulatory Requirements

Operations of the NRWWT are regulated by the EPA, the Florida Department of Environmental Protection (FDEP) and the Broward County Environmental Protection and Growth Management Department (EPGMD). Regulatory requirements are focused on effluent management, sludge disposal, reclaimed water and industrial pretreatment.

In Fiscal Year 2017, the North Regional Wastewater Treatment Plant (NRWWTP) had no permit violations. The NRWWT is in compliance with effluent quality standards. On November 27, 2017 sampling frequency for domestic wastewater treatment plants with permitted capacity of 15 MGD and above for fecal coliform changed from daily to five times per week (once per day).

4.3 Wastewater Effluent Management

The NRWWT currently disposes of treated effluent via an open ocean outfall and deep injection wells. Additionally, a portion of the effluent is treated to public-access quality and distributed for reuse via a reclaimed water system. The open ocean outfall is regulated through the Federal National Pollutant Discharge Elimination System (NPDES) permit program, administered by the FDEP. Deep injection wells are permitted by the FDEP Underground Injection Control Section.

The County's facility permit from the FDEP rates the NRWWT at 95 MGD and acknowledges 66 MGD of effluent disposal capacity through the ocean outfall. The current NRWWT permit was issued on January 25, 2013 and became fully enforceable in March 2013.

The FDEP continues to promote a reduction of nutrients in the face of opposition to ocean discharges from interested groups. They have worked with the wastewater utilities with ocean outfalls (including Broward County) to reduce the economic impact of the Leah Schad Memorial Ocean Outfall Program, which became the law effective July 1, 2008. Initially, this law required that the disposal of effluent through ocean outfalls be eliminated by 2025. In 2013, the Florida Legislation passed the following amendments to the act:

- Allows peak flow backup discharges not exceeding 5% of the facility's cumulative baseline flow, measured on a 5-year rolling average and requires that such discharges meet the FDEP's applicable secondary waste treatment and water-quality-based effluent limitations.
- A detailed plan was submitted to FDEP in July 2013 which identified technically, environmentally and economically feasible reuse options. The plan included an analysis of the costs associated with meeting state and mandated nutrient reduction requirements, and the detailed schedule for implementation of all necessary actions. Requires FDEP, SFWMD and the outfall utilities to consider the above information for adjusting, as needed, the reuse requirements, and requires FDEP to report to the Legislature any changes that may be necessary in the reuse requirements by February 15, 2015.

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In order to meet the advanced wastewater treatment requirements of the rule, the County has implemented cumulative nutrient reduction strategies including modifying the existing treatment process to augment biological nutrient removal and reduce outfall discharges via diversion to the existing deep injection well system.

In addition to the ocean outfall, the effluent management system also includes six Class I deep injection wells. The Operation Permit 0334636-001-006-UO/1M for Injection Wells 1 through 6 was issued on October 5, 2015 and is valid for five (5) years. There are also two additional Class I deep injection wells that are under operational testing under permit 0334636-007-008-UC/1M that was issued April 10, 2017 and is valid for two years.

Minimum Treatment Standards - Technology Based Effluent Limitations (TBELs) (62-600.420, F.A.C) requires all domestic wastewater facilities to provide, at a minimum, secondary treatment of wastewater prior to reuse or disposal; except as specifically required by other Department rules or Florida Statutes. Subsection 62-600.420(2), F.A.C. amended on February 8, 2016 requires the following for surface water disposal via open ocean outfalls:

- CBOD₅
 - The annual average shall not exceed 25.0 mg/L
 - The monthly average shall not exceed 25.0 mg/L
 - The weekly average shall not exceed 40.0 mg/L
 - The maximum-permissible concentration in any single sample shall not exceed 60.0 mg/L
 - And the monthly average percent removal shall not be less than 85%.
- Total Suspended Solids (TSS)
 - The annual average shall not exceed 30.0 mg/L
 - The monthly average shall not exceed 30.0 mg/L
 - The weekly average shall not exceed 45.0 mg/L
 - The maximum-permissible concentration in any single sample shall not exceed 60.0 mg/L
 - And the monthly average percent removal shall not be less than 85%.

The County's effluent management program currently includes a 10 MGD system providing highly treated reclaimed water for industrial and landscape uses. As a requirement of the Leah Schad Memorial Ocean outfall Program described above, the County will be required to increase production of reclaimed water by 2025 and is currently in discussions with Palm Beach County for the creation of a regional reclaimed water system to beneficially reuse up to 15 MGD of reclaimed water. Long-term effluent management improvements include combinations of injection wells, Biscayne Aquifer recharge, Floridan Aquifer recharge, offsite Large User reuse, and residential reuse. An increase in the consumptive use permit raw water allocation for the water treatment facilities may be authorized by the SFWMD when effluent management results in the potential beneficial reuse of the reclaimed water.

4.4 Biosolids Management

Pollutant concentrations in wastewater residuals are regulated by both federal and state sludge regulations. The federal regulation that currently regulates disposal is 40 CFR Part 503, last revised on December 23, 2015. The Part 503 rule regulates five categories of wastewater residuals disposal: agricultural land application, non-agricultural land application, distribution and marketing, monofills and surface disposal. WWS currently employs landfilling and land-spreading for wastewater residuals disposal. The County has a current contract to dispose of biosolids by land application.

The County is currently managing most biosolids by land application of the treated residuals. Land application is a beneficial reuse of this wastewater treatment byproduct and is subject to both federal and state regulations. The County produces Class B residuals allowable for application to non-food agricultural sites.

In August 2010, revisions to the state regulations governing the treatment and disposal of biosolids, Chapter 62-640 F.A.C., went into effect. The NRWWTP became subject to the new regulations upon renewal of the facility's operating permit in January 2013. New land application sites were permitted under these new regulations. While land application continues to be an option, permitting of sites will likely be at greater distances, potentially making hauling to new disposal sites costlier. The County has secured alternate disposal capacity at a nearby Class I landfill and continues to investigate cost-effective long-term biosolids management alternatives. Disposal at the landfill meets all current federal, state and local regulations and since the landfill cogenerates electricity from its methane gas production, this disposal option is currently the most carbon neutral.

4.5 Wastewater Large User Agreements

The County is under obligation to provide Large Users with capacity under the terms of Large User Agreements (Agreements) it has executed with the cities of Coconut Creek, Coral Springs, Deerfield Beach, Lauderhill, North Lauderdale, Oakland Park, Pompano Beach and Tamarac, the North Springs Improvement District (NSID), and the private utility companies of Parkland Utilities, Inc. and Royal Utilities. The Agreements provide for wastewater transmission, treatment and disposal services. The Agreements terminate at the end of the County's fiscal year following the date all obligations, notes or bonds at any time issued for the NRWWTP and associated transmission and disposal facilities, or any part thereof, are retired or satisfied. The current Large User reserved capacity in the NRWWTP is set forth in Table 4-2.

The Agreements are substantially alike in form and a brief summary of significant provisions follows:

- A. Provisions Pertaining to Connection to the County System. The Agreements require that during the term of the Agreement, each user, except the City of Oakland Park, will deliver all existing water flows collected by it to the County. Oakland Park sends a portion of their flow to the City of Ft. Lauderdale's wastewater treatment plant. The outstanding contractual obligations with the County and high capital costs of constructing and operating a new facility capable of meeting current effluent quality requirements may discourage any withdrawal of users from the NRWWS.

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The Agreements also identify the points of connection of the users' systems to the County's system, and state that the user will convey to the County land needed by the County for the point of connection and access thereto. The users agree to maintain their own systems, the elevation and pressure of which are required to be sufficient to deliver wastewater to the County's facility without backing up or reversing flow. The users' systems must include provisions to prevent excessive peak flow rates and extended periods of no flow. Each of the users must list estimates of its future flows in the Agreement and the user must submit annual updates of these estimates to the County. The County is required to use these estimates to plan future treatment capacity and to determine whether facilities should be extended or modified. The County's obligation to provide service is limited to the capacities reserved by users, which may be increased or decreased by amendment or modification to the Agreements. The Agreements allow users to lease or sell excess capacity to other users, subject to the County's approval. The County is required to install and maintain a meter at each point of connection to determine the volume and rates of flow and to inspect the meters at least annually to determine the accuracy thereof. The Agreements provide for credits or additional charges in the event of the inaccuracy of the meters. If the meters are inoperative, the users are required to pay an amount based on the average flow of the prior month.

- B. Provisions Relating to Discharge Sampling. The Agreements specify quality limitations for wastewater discharges. A user's failure to comply with these limitations places the user in default under this Agreement and allows the County either to initiate programs to bring the user's discharge into compliance at the user's expense or to seek damages from the user. A user's system must include a sampling station and the user must, upon receipt of written request from the County, submit a complete laboratory analysis of a composite sample of combined wastes leaving the user's facilities. The County and the user may enter into an agreement whereby the County would accept wastewater with a strength or other characteristic that exceeds parameters listed in an existing agreement. In this case, the County may impose surcharges on the system supplying such a wastewater.
- C. Provisions Pertaining to Charges. The County is required to conduct an annual review of the costs of providing service to users, which will provide the preliminary basis for establishing fees, rates and other charges for the next succeeding fiscal year. The fees and rates charged to the users constitute the full cost of the transmission, treatment and disposal services provided to the users, including operation and maintenance charges and debt service charges for both the NRWWTP and the NRWWS transmission facilities, and include an Improvement Repair and Replacement Surcharge. Such fees, rates and charges are required to be set at a public hearing by the Board, which must be held after 30 days' written notice to the users. The Board is required to consider recommendations of the individual users or the advisory board, which is composed of representatives from each of the users. The operation and maintenance charges applicable to the NRWWTP or the transmission system are included in the monthly rate charged to the users based upon the users' actual monthly flow in thousands of gallons. The rate is to be set by dividing the total annual budgeted operation and maintenance expense for each fiscal

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year by the number of gallons estimated to be treated or transmitted in that fiscal year, and is to be adjusted at year end to reflect the actual number of gallons treated and actual operation and maintenance expense. This adjustment is either collected from, or remitted to, the Large Users in the subsequent year.

The debt service charge included in monthly rates charged to the Large Users include principal, interest and coverage requirements on debt obligations issued at any time for the NRWWS and is computed by determining the ratio of the amount of capacity reserved by the user to the amount reserved by all users. The debt service charge for the NRWWS transmission facilities is computed by reference to transmission reserved capacity in the same manner. A user's contribution to the Improvement, Repair and Replacement Surcharge, which is part of the monthly rate charged to users, may not exceed 10% of that user's monthly bill. In addition, the Agreements provide for additional charges if a customer requests additional transmission or treatment capacity or if the monthly flow of a user exceeds the capacity reserved by such user for three consecutive months. A user that fails to pay the monthly bill within 45 days of its due date is required to pay an interest penalty on the unpaid balance; and if the payment is not made within 60 days, the user is in default of the Agreement and the County may enforce the Agreement by suit. The users agree to establish service charges or other means of obtaining funds sufficient to enable them to pay the monthly charge.

- D. Provisions Pertaining to Additional Obligations of Both Parties. The Agreements provide that the County will extend and expand its NRWWS to provide for the user's scheduled flow. The users must deliver their wastewater to the County facilities for treatment and the County must accept all wastewater flows collected by the users, provided the amount of such flow does not exceed the capacity reserved by such users.
- E. Provisions Pertaining to Violations and Exceptions to the Terms of Agreements. If a user violates the Agreement, the County must give written notice of the violation and allow a reasonable time to correct the violation. The user must correct the violation within the stated time. If either party violates the Agreement, that party becomes liable to the other for any expense, loss or damage occasioned by such violation; provided that any payment by the County to a user for violation of any provision of the Agreement shall be from any legally available source other than the revenues pledged to any bondholders. If there is a dispute concerning a violation that cannot be settled, the user will pay the full amount billed, and the amount in dispute will be escrowed or held in a joint trust, interest-bearing bank account and held pending settlement of such dispute. Each user agrees to hold the County harmless from costs and expenses incurred by such user or the County in any litigation resulting from the improper introduction of materials by such user into the County facility. Any temporary cessation of wastewater transmission and treatment services caused by an act of God, a fire, strikes, casualty, necessary maintenance work, breakdown of or injury to machinery, pumps or pipeline shall not constitute a breach of the Agreement. The County is required to accept and dispose of wastewater transmitted by the users, if physically possible, regardless of the degree of treatment available, until written notice to the contrary is received from a government agency.

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- F. Provisions Relating to the Term of the Agreements and Cancellation. The users and the County were bound by the Agreements at the date of their execution. The County and each user may terminate their Agreements by mutual written consent. Otherwise, the Agreements terminate at the end of the County's next full fiscal year after all obligations issued at any time during the term of the Agreements for the NRWWS have been retired or satisfied.

4.6 Visual Inspection and Review

Master Lift Stations

Five Master Lift Stations (MLS 440, 451, 452, 454, and 462) were inspected on May 2, 2018 by Brown and Caldwell. Master lift stations were selected based on their previous inspection history, and on a rotation; with priority given to stations with the longest time since the last inspection. Master lift stations appeared to be in good to excellent condition and operating satisfactorily. A summary of the findings at each station is presented below.

- MLS 440 The inline booster-type station in general was in excellent condition. Pumps, motors, and interior station piping were in excellent condition. Pump control valves and actuators appeared to be in excellent condition, other valves were in good condition. Work was done last year on pump 1 and most of the lift station, piping and valving has been repainted. The backup power diesel generator appeared to be in good condition. Electrical control panels appeared to be in good working condition. The building interior and exterior were in good condition.
- MLS 451 The inline booster-type station in general was in good condition. Pumps, motors, and interior station piping and valving were operational. The check valve for pump 3 has been replaced and its concrete support was chipped. Rust was observed on the metal base plate for pump 1. The backup power diesel generator appeared to be in good condition. Electrical control panels appeared to be in good working condition. The building interior and exterior were in good condition.
- MLS 452 The inline booster-type station in general was in good condition. Pumps, motors, and interior station piping and valving were operational. Pump 3 motor has been replaced. The piping on all three pumps exhibit paint peeling off. Pump 1 actuated plug valve exhibit water leaking on the top. Spare parts are no longer available for existing 20-inch plug valves. Station electrical gear appeared to be in good condition. The backup power diesel generator appeared to be in good condition. Electrical control panels appeared to be in in good condition. The building interior and exterior were in good condition. This station exhibits ragging issues requiring frequent maintenance.

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MLS 454 The inline booster-type station in general was in good condition. Pumps, motors, and interior station piping and valving appeared to be in good condition. Air release valves for all three pumps have been replaced. The backup power diesel generator appeared to be in good condition. Electrical control panels appeared to be in good condition. The building interior and exterior were in good condition.

MLS 462 The inline booster-type station in general was in good condition. Pumps, motors, and interior station piping and valving appeared to be in good condition. The backup power diesel generator appeared to be in good condition. Electrical control panels appeared to be in good condition. The building interior and exterior were in good condition.

North Regional Wastewater Treatment Plant

The visual inspection of the NRWTP was performed on April 12, 2018 for the headworks, Treatment Modules, ocean outfall pump station, Deep Injection Well pump station and backup generators, the rest of the inspection was performed on June 4, 2018. The inspection consisted of visual observation of selected major process units and supporting equipment to generally establish the condition and functionality of major unit processes. In general, equipment appeared to be able to perform its intended function. Based on the facility's ability to continuously meet permit requirements, the facility appears to be operated in a sound manner. A summary of key observations for each process area are as follows:

- Headworks
 - In general, headworks equipment appeared to be in fair to good condition and functioning normally with the exception of the odor control, and wet scrubber that is not utilized and will be removed/demolished. One bar screen has been replaced and the other two bar screens will soon be replaced. Concrete work for gates has been done (concrete below gate handwheel was cracked or chipped). Overall, the headworks building appears structurally sound, but an inspection by a qualified professional to evaluate its condition should be performed.

- Treatment Module A
 - Basins A-3 and A-4 were empty at the time of the inspection. Aeration basin structures and piping appeared to be in good condition. Cracks and spalls in concrete walkway supports were observed. Aeration unit motors were in fair to good condition, with several motors showing signs of wear, tear and aging. Removal of the existing aerator motors and gear reduction drives during the planned future conversion to fine-bubble aeration will resolve these issues.

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- Clarifiers were in good condition, with all showing moderate corrosion in the area of the drive mechanisms, and very light corrosion on the skimmer arm with the exception of A-3. Corrosion was also noted on the handwheels located at the top of the RAS pumps building.
- Return Activated Sludge (RAS) pumping station appeared to be in good condition. Pumps, piping and valving showed light corrosion.
- Treatment Module B
 - Aeration basins were empty at the time of inspection. Aeration basins appeared to be structurally sound. Basins were down for work at the time of the inspection, piping at the bottom of the basins had been cut as part of a CIP project. Aeration unit motors were in fair to good condition, with several motors showing signs of wear, tear and aging. Removal of the existing aerator motors and gear reduction drives during the planned future conversion to fine-bubble aeration will resolve these issues.
 - Clarifiers were mostly empty at the time of inspection, not in operation. Clarifiers were in good condition, with all showing moderate corrosion in the area of the drive mechanisms and light corrosion was noted on the skimmer arm. Corrosion was also noted at the handwheels located on the top of the RAS pumps building.
 - RAS pumping station appeared to be in fair to good condition. Pumps, piping and valving showed light corrosion.
- Treatment Module C
 - Aeration basin structures, piping, and equipment appeared to be in good condition. Cracks and spalls in concrete walkway were observed. Corrosion was noted on conduit pipe.
 - Clarifiers were in good condition, with all showing moderate corrosion in the area of the drive mechanisms, and very light corrosion on the skimmer arm with the exception of C-1. Corrosion was also noted at the handwheels located on the top of the RAS pumps building.
 - RAS pumping station appeared to be in good condition. Pumps, piping and valving showed light corrosion.
- Treatment Module D
 - Aeration basin structures and piping appeared to be in good condition. Cracks and spalls in concrete walkway supports were observed. Aeration unit motors

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were in fair to good condition, with several motors showing signs of wear, tear and aging. Removal of the existing aerator motors and gear reduction drives during the planned future conversion to fine-bubble aeration will resolve these issues.

- Clarifiers were in good condition, with all showing moderate corrosion in the area of the drive mechanisms and very light corrosion on the skimmer arm with the exception of D-1. D-1 gear drive seemed to have been repainted recently. Corrosion was also noted at the base of a gate stem located on the top of the RAS pumps building.
- RAS pumping station appeared to be in good condition. Pumps, piping and valving showed light corrosion.
- Treatment Module E
 - Aeration basin structures, piping, and equipment appeared to be in good condition.
 - Clarifiers were in good condition, with all showing light to moderate corrosion in the area of the drive mechanisms.
 - RAS pumping station in general appeared to be in fair to good condition. Pumps, piping and valving showed light to moderate corrosion. RAS pump E-1 had excessive water leakage at the time of the inspection.
- Ocean outfall pump station
 - Outfall pumps: In general, all six pumps appeared to be in good condition. Pump 4 had corrosion on the pump base and pump 6 had bolts that exhibited corrosion.
 - Electrical equipment: The motors, liquistat system and associated cooling units appeared to be functioning in a satisfactory manner.
 - Chlorine contact basins associated with the outfall were in good condition. The sodium hypochlorite feed system appeared to be in good condition.
- Deep Injection Well pump station
 - One out of the five pumps had been removed at the time of the inspection. The remaining deep injection well pumps present along with their motors and supporting electrical equipment appeared to be in good condition.

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- Water reuse system
 - The reuse system pumping station appeared to be in good condition.
 - The self-backwashing sand filters were in excellent condition, the sand replacement has been completed.
 - The reuse chlorine contact chambers appeared to be in good condition.
 - The high head and low head reuse pumps appeared to be in good condition.
- Digester complex
 - All eight digesters appeared to be functional and in good condition. Digester P-3 has a new compressor, heater sludge pump and grinder.
 - Progressive cavity (Moyno) sludge pumps appeared to be in good condition.
 - 7 out of the 8 boilers appeared to be in good condition and functional. Boiler 7 was out of service at the time of the inspection. The digester cluster electrical gear appeared to be in good condition.
- Biosolids processing
 - The Dissolved Air Flootation (DAF) thickeners appeared to be in good condition and functional, with the exception of the new DAF thickener 5 which was not in operation at the time of the inspection. DAF thickeners 1, 3 and 4 had their skimmer chains replaced. All six DAF units have new reuse water piping. The associated pressure tanks appeared to be in good condition. Polymer feed system serving the DAF thickeners is not being used.
 - All belt filter presses and their drive motors and associated equipment were in good condition and functional; belt filter press 9 was not in operation at the time of the inspection. The supporting polymer feed system components, including pumps, tanks, piping, and electrical gear, appeared to be in good condition.
- Backup generators:
 - Backup generators 5 and 6 were being worked on as part of a CIP project at the time of inspection. The backup generators and associated equipment appeared to be in good condition and operational.
 - The diesel fuel storage system was in good condition. Bulk storage tanks are in good condition.

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- Work was being performed on the MCCs at the time of the inspection.
- Cogeneration System
 - The Cogeneration System appeared to be in excellent condition and functional.
- Fats, Oils, and Grease (FOG) Facility
 - The FOG tank, equipment and associated appurtenances appeared to be in excellent condition and operational.

Plant modifications for FY 2017:

- Replacement of 20 underground reuse valves throughout the plant (complete)
- New Injection well booster pump stations (complete)
- Replacement of generator No.4 (complete)
- New Boilers 4 and 8 (complete)
- New heat exchangers for FOG pumps (complete)
- Replacement of cover at Digester P-3 (complete)
- Replacement of six 10,000 gallon underground diesel tanks with two 30,000 gallon above-ground tanks (ongoing)
- Improvements to the Ocean Outfall Pump Station system (ongoing)
- Replacement of the SCADA system (ongoing)

Plant modifications for FY 2018:

- Aboveground Aeration Basin Influent lines (ongoing)
- Modules A, B & D diffused air system
- Replacement of grit capture system (five units) and Modules A, B, and C influent piping (ongoing)
- Automatic bar screen rehabilitation (five units) (ongoing)
- Demolition of old dewatering building

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- Demolition of existing grit removal System (ongoing)
- Reuse Expansion

Septage Receiving Facility

The Septage Receiving Facility receives domestic waste from septic tanks, portable toilets, vacuum trucks, grease traps, sporadically some leachate from landfills, etc. The waste is separated into two categories: liquids and solids. The equipment, which must be maintained, includes transfer pumps and electrical control panels, a diesel generator set, biofilters and miscellaneous valves.

The Septage Receiving Facility was inspected on April 11, 2018. The facility, inclusive of liquid pumps, solids discharges area, liquids discharge area, and office building appears to be in good working condition.

Facility modifications for FY 2017:

- Demolition of existing equipment, fencing and access ways required (complete)
- Wetwell rehabilitation and replacement of cover (complete)
- Installation of new biofilter odor control system (complete but not in operation)
- Implementation of landscaping and irrigation system improvements (complete)
- Installation of Raptor Septage Complete Treatment Plant (complete but not in operation)

Facility modifications to be initiated in FY 2018

- Design of new administrative building

WWS Administrative Complex

A visual inspection of the WWS Administrative Complex needs to be performed outside of the Annual Report. The inspection should consist of a visual observation and assessment of the administrative building (Building 1), and operations building (Building 2) and equipment to establish the condition, functionality, and needed improvements.

Section 5 - Regional Raw Water Supply

Section 5 Regional Raw Water Supply

There are currently two wellfields operated by Broward County as part of the regional system, the North Regional Wellfield (NRW) and South Regional Wellfield (SRW). This section describes the regional raw water supply system, including the Large Users, physical descriptions and permit limitations.

5.1 General Description

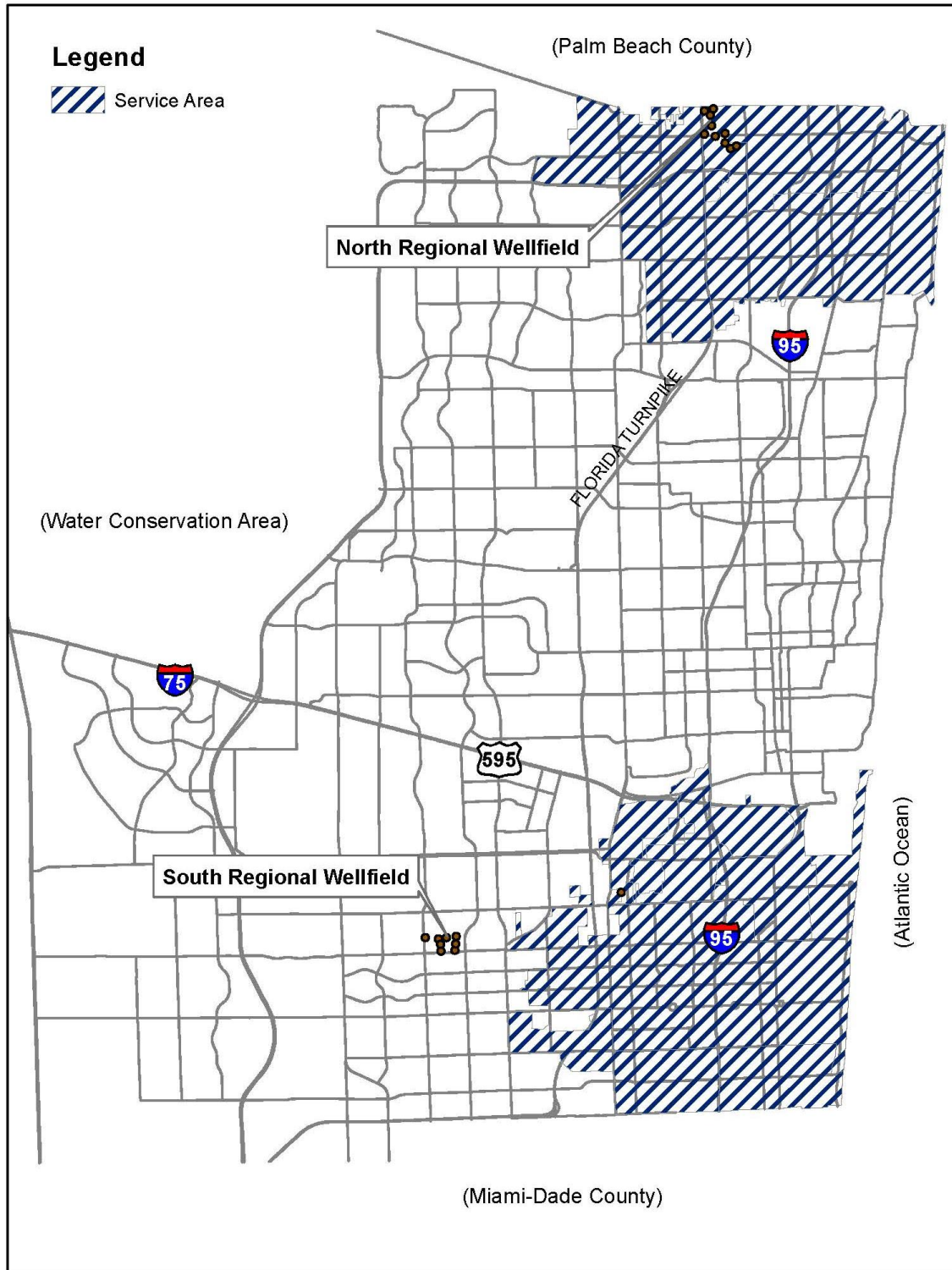
The Biscayne Aquifer, currently the County's primary source of drinking water, is subject to saltwater intrusion. In 1986, the County adopted the Regional Raw Water Supply (RRWS) Program, which called for centralized wellfields located further inland to ensure a long-term water supply for Broward County coastal communities. Under the program, wellfields and raw water delivery systems were financed, constructed and operated as regional water supply system supporting large raw water users. The Large Users currently purchasing raw water from the regional supply system are Dania Beach, Deerfield Beach, Hallandale Beach, Florida Power and Light Corporation (FPL), Hollywood and WWS District 2. The two regional supply wellfields (NRW and SRW) were constructed using general County revenues and the assets were contributed to the Utility. Figure 5-1 depicts the regional wellfield locations and service areas. Physical descriptions of the NRW and the SRW are presented in Tables 5-1 and 5-2.

| Table 5-1 NRW Physical Descriptions | | | | | | | |
|--|------------------|--------------------|---------------------------|-----------------------|---------------------------|-----------------------|-----------------------|
| Well No. | Size (in) | Depth (ft.) | Casing Depth (ft.) | Type of Casing | Normal Yield (GPM) | Capacity (GPM) | Service Status |
| 1 | 20 | 170 | 112 | PVC | 1400 | 1400 | ON LINE |
| 2 | 20 | 130 | 116 | PVC | 1400 | 1400 | ON LINE |
| 27 | 20 | 130 | 95 | PVC | 1400 | 1400 | OFF LINE |
| 29 | 20 | 130 | 94 | PVC | 1400 | 1400 | ON LINE |
| 30 | 20 | 121 | 92 | PVC | 1400 | 1400 | ON LINE |
| 31 | 20 | 121 | 92 | PVC | 1400 | 1400 | ON LINE |
| 32 | 20 | 120 | 88 | PVC | 1400 | 1400 | ON LINE |
| 33 | 20 | 121 | 92 | PVC | 1400 | 1400 | ON LINE |
| 45 | 20 | 112 | 94 | PVC | 1400 | 1400 | ON LINE |
| 46 | 20 | 170 | 131 | PVC | 1400 | 1400 | ON LINE |

Source: Broward County Water and Wastewater Services

Section 5 - Regional Raw Water Supply

Figure 5-1 Regional Raw Water Service Areas



Source: Broward County Water and Wastewater Services

Section 5 - Regional Raw Water Supply

Table 5-2 SRW Physical Descriptions

| Well No. | Size (in) | Depth (ft.) | Casing Depth (ft.) | Type of Casing | Normal Yield (GPM) | Capacity (GPM) | Service Status |
|--|-----------|-------------|--------------------|----------------|--------------------|----------------|----------------|
| 5 | 20 | 110 | 75 | PVC | 2083 | 1400 | ABANDONED* |
| 6 | 20 | 110 | 75 | PVC | 2083 | 1400 | ABANDONED* |
| 17 | 12 | 115 | 81 | PVC | 2800 | 2800 | ONLINE |
| 18 | 12 | 140 | 80 | PVC | 2800 | 2800 | ONLINE |
| 19 | 12 | 140 | 80 | PVC | 2800 | 2800 | ONLINE |
| 20 | 12 | 140 | 80 | PVC | 2800 | 2800 | ONLINE |
| 21 | 12 | 140 | 80 | PVC | 2800 | 2800 | ONLINE |
| 22 | 12 | 140 | 80 | PVC | 2800 | 2800 | ONLINE |
| 23 | 12 | 140 | 80 | PVC | 2800 | 2800 | ONLINE |
| 24 | 12 | 140 | 80 | PVC | 2800 | 2800 | AIR GAPPED** |
| *Abandoned due to saltwater intrusion. | | | | | | | |
| **Air gapped from the SRWF system due to past issue | | | | | | | |
| Source: Broward County Water and Wastewater Services | | | | | | | |

5.2 North Regional Wellfield

The NRW includes ten 2-MGD Biscayne aquifer wells and approximately 30,000 linear feet of pipeline, ranging from 12-inches to 48-inches in diameter. A permit application combining the District 2A retail wellfield and NRW permits was approved by the SFWMD and issued in March 2008. The permitted Biscayne aquifer withdrawal capacity of the 2A/NRW is 19.2 MGD on a maximum month basis and 17.5 MGD on an annual average basis. The permit expires in the year 2028. The well casings at the NRW are set in the Biscayne Aquifer at a depth of approximately 100 feet below land surface. The NRW has two emergency generators capable of powering pumps for six wells. Usage data for the NRW are presented in Table 5-3. All wells in the NRW have PVC casings.

| Table 5-3 Large User Actual Flow North Regional Raw Water Flow Distribution (1,000 Gallons) | | | |
|--|------------------|-----------------------|-------------|
| Fiscal Year | Deerfield | Broward County | NRWF |
| FY 2013 | 204,231 | 2,295,427 | 2,499,658 |
| FY 2014 | 207,310 | 2,364,710 | 2,572,020 |
| FY 2015 | 205,344 | 2,141,714 | 2,347,058 |
| FY 2016 | 208,115 | 2,159,405 | 2,367,520 |
| FY 2017 | 193,199 | 2,146,048 | 2,339,921 |

Source: Broward County Water and Wastewater Services

5.3 South Regional Wellfield

The SRW includes eight 4-MGD wells, approximately 79,000 linear feet of transmission pipeline, ranging in size from 20-inches to 42-inches in diameter. The SRW has two emergency generators capable of powering pumps for six of the wells (three wells per generator). The remaining wells have connections for a portable generator. The permitted capacity of the SRW is 22.4 MGD on a maximum month basis and 14.2 MGD on an annual average basis. The consumptive use permit expired in October 2007 (and is administratively extended until permit renewal is completed). Permit reissuance is expected in the normal course of events. Wells 5 and 6 were formerly associated with WTP 3A and were abandoned in 2015. The well casings at the SRW are set in the Biscayne Aquifer at a depth of approximately 100 feet below land surface. Usage data for the SRW are presented in Table 5-4. All wells in the SRW have PVC casings.

Section 5 - Regional Raw Water Supply

Table 5-4 Large User Actual Flow South Regional Raw Water Flow Distribution (1,000 Gallons)

| FISCAL YEAR | Hallandale | Hollywood | Dania | FPL | SRWF |
|--------------------|-------------------|------------------|--------------|------------|-------------|
| FY 2013 | 1,270,864 | 1,449,876 | 651,827 | 582,357 | 3,954,924 |
| FY 2014 | 1,177,573 | 1,405,356 | 632,706 | 674,546 | 3,890,181 |
| FY 2015 | 1,206,252 | 1,380,709 | 644,968 | 526,307 | 3,758,236 |
| FY 2016 | 1,148,577 | 1,344,525 | 660,040 | 526,610 | 3,679,752 |
| FY 2017 | 1,363,827 | 1,401,756 | 647,368 | 437,357 | 3,850,308 |

Source: Broward County Water and Wastewater Services

5.4 Contractual Agreements

The contractual agreements with each of the Large Users are substantially similar. The agreements do not have expiration dates, except for the City of Hollywood agreement, which has a four-year term with an automatic renewal for four years unless otherwise terminated. The Large User Agreements provide for a method to charge each user a pro rata share of system operations and maintenance costs. Historical and projected revenues for the raw water system are shown in Table 7-6 and generally represent less than one percent of Utility revenues. As noted, the capital costs of system construction were funded using general County revenues.

5.5 Large Users

The North and South Regional Wellfields serve different areas in Broward County. The NRW serves the City of Deerfield Beach and the County's District 2 WTP. The SRW serves the Cities of Dania Beach, Hollywood, and Hallandale Beach, as well as Florida Power and Light.

5.6 Regional Raw Water Supply Regulations

The volume of raw water withdrawal from the Utility's regional raw water supply wellfields is regulated by the SFWMD. Each wellfield is governed by a water use permit that stipulates the raw water annual and maximum month withdrawals. These permits are reissued for periods of five to 20 years. The permit for the combined 2A/NRW was issued in March 2008 for a 20-year period. The application for the renewal of the SRW permit has been filed. The Utility has responded to permit application review comments from the SFWMD and is coordinating with the SFWMD to establish raw water demands based on the Cities of Hollywood, Hallandale Beach and Dania Beach consumptive use permits and the Regional Water Availability Rule base condition water use for the SRW. The SRW permit renewal is anticipated to be completed in Fiscal Year 2018.

Monitoring of well pumpage, groundwater levels in proximity to wetlands and saltwater intrusion is conducted to comply with specific limiting conditions of the regional wellfield water use permits. For wells that are in service, the County operation personnel regularly monitor pH, alkalinity, hardness, iron, chloride, color, heterotrophic plate count (HPC), coliforms, quarterly wellfield protection monitoring and annual analysis to comply with the SDWA as well as the FDEP. All water quality regulations are enforced by the FDEP. Groundwater levels around the wellfield footprints and chloride concentrations in the Biscayne aquifer production zone and at depths below production zone also are monitored and reported to the SFWMD on a monthly basis as part of consumptive use permit compliance.

5.7 Visual Inspection and Review

North Regional Wellfield

Overall, the NRW appeared to be in good operating condition and in good to excellent physical condition. Most wells pipe coating appeared to be intact, and the vaults and surrounding concrete areas pressure washed as part of annual maintenance. The following summarizes the observations resulting from the visual inspection performed on April 16, 2018. Well 27 was offline at the time of the site visit.

Well 1 Well 1 was in good condition. Security fencing and locked vaults were intact. The wellhead and associated piping and valves appeared to be in good condition. Electrical equipment, including the backup generator serving Wells 1, 2, and 46, was in very good condition. The sump pumps appeared to be in operational condition – the well vault showed no obvious evidence of flooding. The emergency generator building’s AC unit is slated to be replaced. The emergency generator building interior and exterior were in very good condition.

Well 2 Well 2 was in good condition. Security fencing and locked vaults were intact. The wellhead and associated piping and valves appeared to be in excellent condition, it appeared that piping and valving has been repainted recently. Electrical equipment was in very good condition. The sump pumps appeared to be in operational condition – the well vault showed no obvious evidence of flooding. The vault had some minor concrete spalling on the exterior southwest corner.

Well 27 Well 27 was in good condition. The well is currently offline. Security fencing and locked vaults were intact but the railing for the gate needs to be repaired. The wellhead and associated piping and valves appeared to be in very good condition. Electrical equipment was in very good condition. The sump pumps appeared to be in operational condition – the well vault showed no obvious evidence of flooding.

Well 29 Well 29 was in very good condition. Security fencing and locked vaults were intact. The wellhead and associated piping and valves appeared to be in very good condition. Electrical equipment was in very good condition. The sump pumps appeared to be in operational condition – the well vault showed no obvious evidence of flooding.

Well 30 Well 30 was in excellent condition. Security fencing and locked vaults were intact. The wellhead and associated piping and valves were in excellent condition. Electrical equipment was in very good condition. The sump pumps appeared to be in operational condition – the well vault showed no obvious evidence of flooding.

Section 5 - Regional Raw Water Supply

- Well 31 Well 31 was in excellent condition. Security fencing and locked vaults were intact. The wellhead and associated piping and valves appeared to be in very good condition. Electrical equipment was in very good condition. The sump pumps appeared to be in operational condition – the well vault showed no obvious evidence of flooding.
- Well 32 Well 32 was in very good condition. Security fencing and locked vaults were intact. The wellhead and associated piping and valves appeared to be in good condition. Electrical equipment was in very good condition. The sump pumps appeared to be in operational condition – the well vault showed no obvious evidence of flooding. The emergency generator building exterior was in very good condition.
- Well 33 Well 33 was in very good condition. Security fencing and locked vaults were intact. The wellhead and associated piping and valves appeared to be in good condition. Electrical equipment was in very good condition. The sump pumps appeared to be in operational condition – the well vault floor was slightly wet at the time of the inspection; water possibly coming from the ARV outlet, which is a normal occurrence.
- Well 45 Well 45 was in excellent condition. Security fencing and locked vaults were intact. The wellhead and associated piping and valves appeared to be in excellent condition. Electrical equipment was in very good condition. The sump pumps appeared to be in operational condition – the well vault floor was slightly wet at the time of the inspection; water possibly coming from the ARV outlet, which is a normal occurrence.
- Well 46 Well 46 was in good condition. Security fencing and locked vaults were intact. The wellhead and associated piping and valves appeared to be in very good condition. Electrical equipment was in very good condition. The sump pumps appeared to be in operational condition – the well vault floor was slightly wet at the time of the inspection; water possibly coming from the ARV outlet, which is a normal occurrence.

South Regional Wellfield

Overall, the SRW appeared to be in fair to good condition. Most wells pipe coating appeared to be intact, and the vaults and surrounding concrete areas appeared to be in good condition. The following summarizes the observations resulting from the visual inspection performed on April 13, 2018. Well 17 was out of service and scheduled for rehabilitation and well 24 was disconnected from the raw water well system at the time of the site visit.

- Well 17 Well 17 was in fair condition. Security fencing and locked vaults were intact. The piping and valves appeared to be in good condition, with some minor corrosion present and leaking occurring around the wellhead and concrete slab. The scheduled rehabilitation is intended to resolve this issue. Electrical equipment was in good condition. The sump pumps appeared to be in operational condition – the well vault showed no obvious evidence of flooding. One of the ladder extension arms was missing and needs to be replaced.
- Well 18 Well 18 was in good condition. Security fencing and locked vaults were intact. The wellhead and associated piping and valves appeared to be in good condition. Electrical equipment was in good condition, including the backup generator serving this well and wells 17 and 19. The sump pumps appeared to be in operational condition – the well vault showed no obvious evidence of flooding. Minor grout repair may be needed in the vicinity of the vault hatch. The interior and exterior of the generator building were in good condition.
- Well 19 Well 19 was in good condition. Security fencing and locked vaults were intact. The wellhead and associated piping and valves appeared to be in good condition. Electrical equipment appeared to be in good condition. The sump pumps appeared to be in operational condition – the well vault showed no obvious evidence of flooding.
- Well 20 Well 20 was in good condition. Security fencing and locked vaults were intact. The wellhead and associated piping and valves appeared to be in good condition. Electrical equipment was in good condition. The sump pumps appeared to be in operational condition – the well vault showed no obvious evidence of flooding.
- Well 21 Well 21 was in good condition. Security fencing and locked vaults were intact. The wellhead and associated piping and valves appeared to be in good condition, with very minor light corrosion noted on flanges. Electrical equipment was in very good condition. The sump pumps appeared to be in operational condition – the well vault showed no obvious evidence of flooding.

Section 5 - Regional Raw Water Supply

- Well 22 Well 22 was in good condition. Security fencing and locked vaults were intact. The wellhead and associated piping and valves appeared to be in good condition, with corrosion noted on wellhead flange. Electrical equipment was in very good condition. The sump pumps appeared to be in operational condition – the well vault showed no obvious evidence of flooding.
- Well 23 Well 23 was in good condition. Security fencing and locked vaults were intact. The wellhead and associated piping and valves appeared to be in good condition, with light corrosion noted on wellhead flange. Electrical equipment was in very good condition. The sump pumps appear to be in operational condition – the well vault showed no obvious evidence of flooding. The vault had some grout missing at the southeast corner.
- Well 24 Well 24 was in good condition. Security fencing and locked vaults were intact. The wellhead and associated piping and valves appeared to be in good condition. The well had a spool piece removed and was configured to allow sampling. Electrical equipment was in very good condition. The sump pumps appear to be in operational condition – the well vault showed no obvious evidence of flooding. The grading around the vault does not appear to slope away from the vault and areas of severe erosion from well flushing were observed.

Section 6 - Capital Improvement Program

Section 6 Capital Improvement Program

This section includes descriptions of the five-year Capital Improvement Program (CIP) for the Retail Water and Wastewater Systems and the Regional Wastewater and Water Supply Systems.

6.1 Description of the Capital Improvement Program

As part of the growth management efforts mandated by State law, the County initiated planning efforts to accommodate future growth and compliance with regulatory requirements. The latest revision was completed in 2014. The revision completed in 2014 addresses the need for services and facilities based upon anticipated build-out conditions of the service area in the year 2025. It is noted that the Utility conducts an annual CIP review process wherein all projects are thoroughly vetted, estimated and scheduled. Each review builds upon prior analyses and utilizes new planning data when available. A new Retail Water and Wastewater Master Plan was completed in August 2016. This Master Plan is currently being utilized to develop water and wastewater improvements for the Water and Wastewater Services retail service areas.

As noted, the Utility develops a five-year CIP recognizing costs associated with the condition of the system, future growth and regulatory requirements. Table 6-1 presents the current CIP categorized by expenditure category. The Board approved the CIP for fiscal years 2018 through 2022 in September 2017. The five-year CIP reflects the total estimated project costs for each project, which is expected to be initiated within the five-year plan regardless of the estimated time required to design and complete construction of the project. Projects remain open until all related construction activities are complete. The budgets by capital project type through Fiscal Year 2022 are presented in Table 6-2.

Section 6 - Capital Improvement Program

Table 6-1 Capital Improvement Program as of September 30, 2017

| Capital Budgets | Water Treatment | Water and Sewer Mains | Wastewater Treatment | Regional Transmission | Engineering Services & Misc. | Total |
|---|---------------------|-----------------------|----------------------|-----------------------|------------------------------|----------------------|
| Unspent Prior Budget | \$17,034,390 | \$122,578,169 | \$228,375,461 | \$16,531,480 | \$10,992,787 | \$395,512,287 |
| 2018 | 6,056,800 | 45,782,120 | 43,952,390 | 8,863,060 | 5,121,480 | 109,775,850 |
| 2019 | 300,000 | 61,476,950 | 60,900,000 | 1,800,000 | 3,589,580 | 128,066,530 |
| 2020 | 300,000 | 36,843,220 | 800,000 | 500,000 | 3,563,580 | 42,006,800 |
| 2021 | 16,600,000 | 23,930,000 | 800,000 | 7,500,000 | 3,563,580 | 52,393,580 |
| 2022 | 300,000 | 40,780,000 | 37,900,000 | 500,000 | 3,213,580 | 82,693,580 |
| Totals | \$40,591,190 | \$331,390,459 | \$372,727,851 | \$35,694,540 | \$30,044,587 | \$810,448,627 |
| Five Year CIP Funding: | | | | | | |
| Bonds FY 2018-2022 | 15,000,000 | 75,000,000 | 175,000,000 | 17,000,000 | - | 282,000,000 |
| Cash FY 2018-2022 ¹ | 5,000,000 | 45,000,000 | 71,411,000 | 9,470,000 | 14,500,000 | 145,381,000 |
| Beyond 2022 ² | 20,591,190 | 211,390,459 | 126,316,851 | 9,224,540 | 15,544,587 | 383,067,627 |
| Totals | 40,591,190 | \$331,390,459 | \$372,727,851 | \$35,694,540 | \$30,044,587 | \$810,448,627 |
| ¹ Cash reflects net revenues, capital recovery charges, large user contributions, and grants ² Reflects effects of construction period. It is currently expected that \$383M of the \$810M program will be spent by 2022. Since the construction period extends beyond 2022, the remaining \$427M will be spent in subsequent years. | | | | | | |
| Source: Broward County Water and Wastewater Services | | | | | | |

Section 6 - Capital Improvement Program

Table 6-2 Capital Projects Budgets by Type Through Fiscal Year 2022

| | Budget |
|---|----------------------|
| Water Treatment | |
| Water Treatment Plant Expansion | \$6,900,477 |
| Water Treatment Plant IRR ¹ & Misc. Projects | \$33,690,713 |
| Water Treatment Subtotal | \$40,591,190 |
| Water Distribution and Sewer Collection | |
| Neighborhood & Local Utility Projects (NP & LUP) | \$169,120,936 |
| Misc. Main Improvements | \$95,659,402 |
| Potable Water Storage Improvements | \$41,860,000 |
| Lift Station Improvements | \$24,750,121 |
| Water Distribution and Sewer Collection Subtotal | \$331,390,459 |
| Wastewater Treatment | |
| NRWWTP Effluent Disposal /Treatment Enhancements | \$227,092,910 |
| Wastewater Plant IRR ¹ & Misc. Projects | \$145,634,941 |
| Wastewater Treatment Subtotal | \$372,727,851 |
| Regional Transmission | |
| Master Pump Station Improvements | \$27,577,797 |
| Force Main Extensions/Improvements | \$8,116,743 |
| Regional Transmission Subtotal | \$35,694,540 |
| Engineering/Misc. Services | \$30,044,587 |
| GRAND TOTAL | \$810,448,627 |

1 IRR = Improvement, Repair and Replacement

Source: Broward County Water and Wastewater Services

The estimated funding requirements for this five-year period ending Fiscal Year 2022 are expected to be met by net revenues, debt proceeds, capital recovery charges, contributions from Large Users, grants and future borrowings. The Utility currently forecasts cash financing at least 40% of the actual funding requirements. Many of the projects and improvements in the CIP are in the planning stages with cost estimates that are preliminary and contracts have not been awarded. The County plans to prioritize projects as needed to maintain an affordable rate structure. Proposed rates are annually presented to the Board for discussion at an August workshop with action taken at the September budget hearings. Current projections anticipate level

Section 6 - Capital Improvement Program

rate increases of approximately three percent annually through Fiscal Year 2019. The County estimates it will issue approximately \$194 million in bonds in 2019.

The County reviews and updates the CIP annually and includes separate estimates for the Water and Wastewater Systems. The total cost of the CIP could vary from these annual estimates depending upon future demands, regulatory requirements, actual contract awards and other economic factors.

6.2 Retail Water and Wastewater System Improvements

The five-year CIP for the retail water and wastewater systems has the principal objectives of upgrading/rehabilitating or replacing water treatment and distribution systems, sewage collections systems, and extending sanitary sewers to currently non-sewer customers.

6.3 Water Treatment

The five-year CIP includes \$40 million to improve Water Treatment Plants 1A and 2A, which includes repair and replacement of process equipment, chemical and electrical systems, security improvements, and energy efficiency upgrades.

6.4 Neighborhood Program

The Neighborhood Program (NP) has been completed. Initiated by the County in 1993, the program upgraded the infrastructure in what were unincorporated neighborhoods. The improvements include upgrades to the existing water and sewer system, installation of drainage, new pavement, swales and landscaping. The final bid pack, Hillsboro Pines was completed in Fiscal Year 2017.

6.5 Local Utility Program (LUP)

WWS began implementing local utility improvement projects by Utility Analysis Zones (UAZ) in mid-2009. Where the NP included drainage, landscaping and sidewalk improvements, which were paid for from County general funds, the LUP projects focus solely on water and sanitary sewer improvements. The total cost estimate for these improvements is nearly \$275 million dollars over the next 20 plus years. The five-year CIP includes \$169 million dollar for UAZ projects.

6.6 Other Including Mains, Lift Station Improvements and Potable Storage

The CIP includes \$17 million for water and wastewater main improvement projects to address aging water and wastewater lines; increase transmission and distribution capacities, and to extend service to new customers. \$42 million of potable water storage improvements are included for the purpose of replacing existing aging systems and enhancing water storage capacities to meet current and future demands. The CIP also includes \$25 million of retail wastewater lift station rehabilitation projects to increase the reliability of the wastewater collection system and prevent the occurrence of sanitary sewer overflows. The Multi-District Inflow and Infiltration Program is continuing with \$6 million budgeted for repairs to be the wastewater collection system.

6.7 Regional Wastewater Treatment

Under current regulations, the Utility is required to reduce the nutrient loadings discharged to the ocean outfall between 2009 and 2025, and to eliminate use of the outfall, except as a back-up discharge that is part of a functioning reuse system after December 31, 2025. These were estimated to result in plant process improvement requirements with estimated costs ranging from \$766 million to \$889 million in accordance with the Effluent Disposal Master Plan. With amendment to the Ocean Outfall legislation in 2013, and the potential of sending reclaimed water to PBC, estimated costs are expected to be substantially reduced to approximately \$170 million. The Utility has negotiated a long-term agreement with Palm Beach County (PBC) to supply bulk reclaimed water to customers in PBC. The agreement was fully executed in April 2016. The County has included funding in the 5-year CIP to address these improvements. Various other system utility Improvement, Repair and Replacement (IRR) projects are budgeted at approximately \$146 million and include digester improvements, grit removal improvements, control center upgrades, general improvements and replacements.

6.8 Regional Wastewater Transmission

The CIP includes a series of master pump station improvements to ensure adequate system capacity and reliability in the regional transmission system. The CIP anticipates investing approximately \$28 million for improvements to the master pumping stations.

Section 7 - Financial Conditions

Section 7 Financial Conditions

This section describes financial operations of the utility; rates, fees and charges; revenue projections; a comparison of utility service costs with other utilities; and adequacy of insurance coverage.

7.1 Overview of Financial Operations

Operating and general maintenance costs of the retail portion of the Utility are recovered through service charges, connection charges and miscellaneous fees and charges. Capital costs for system development, large maintenance projects and renewal and replacement projects are funded through net revenues, bond proceeds, developer contributions, contributions from other municipalities and capital recovery charges.

User charges and fees are developed by WWS and approved by the Broward County Board of County Commissioners. The Board has specific legal authority to fix charges and collect rates, fees and charges from its customers and to acquire, construct, finance and operate the Utility. The existing rate structure for retail customers is based on meter size and consumption. The County, as a matter of policy, on an annual basis reviews revenue requirements and institutes required rate increases.

The current retail water and wastewater rates were approved by the Board in September 2017 and became effective October 1, 2017. These rates are presented in Tables 7-1, 7-2 and 7-3. The Rate Resolutions also address rates for irrigation, reclaimed water, septage and high strength industrial wastewater surcharge, an emergency rate adjustment for water conservation during drought conditions, capital recovery charges per equivalent residential unit (ERU), customer deposits and specific service charges. Capital recovery charges underwrite the investment in additional capacity needed to serve new (additional) customers.

| Table 7.1 Broward County Water and Sewer Monthly Service Costs for a Residential Customer Using 5,000 Gallons per Month | | | | | | | | | | |
|--|---------------------------------------|----------------------------|--------------------|---------------------------------|---------------------------|----------------------------|--------------------|---------------------------------|------------------------------|---------------------------------------|
| Fiscal Year | Water Fixed Charge¹ | Water Volume Charge | Total Water | % Change From Prev. Year | Sewer Fixed Charge | Sewer Volume Charge | Total Sewer | % Change From Prev. Year | Total Water and Sewer | Total % Change From Prev. Year |
| 2014 | 14.89 | 9.01 | 23.90 | 0.0% | 17.44 | 17.15 | 34.59 | 0.0% | 58.49 | 0.0% |
| 2015 | 15.14 | 9.34 | 24.48 | 2.4% | 17.46 | 18.30 | 35.76 | 3.4% | 60.24 | 3.0% |
| 2016 | 15.54 | 9.53 | 25.07 | 2.4% | 18.12 | 18.70 | 36.82 | 3.0% | 61.89 | 2.7% |
| 2017 | 16.01 | 9.81 | 25.82 | 3.0% | 18.69 | 19.30 | 37.99 | 3.2% | 63.81 | 3.1% |
| 2018 ² | 16.36 | 10.06 | 26.42 | 2.3% | 19.26 | 19.90 | 39.16 | 3.1% | 65.58 | 2.8% |

¹ Includes customer charge.

² Based on rates adopted by the Board effective October 1, 2017.

Source: Broward County Water and Wastewater Services

Section 7 - Financial Conditions

| 7-2 Broward County Schedule of Retail Rates Minimum Monthly Charges by Customer Class and Meter Size Effective October 1, 2017 | | | | |
|---|--|-------------------|------------------------|-----------|
| Customer Class | Meter Size (inches) | Water (\$) | Wastewater (\$) | |
| Residential | 5/8" Residential | 11.94 | 19.26 | |
| | 1" Residential | 34.19 | 44.85 | |
| | Commercial, Municipal and Institutional | 5/8 | 17.69 | 25.70 |
| | | 1 | 41.11 | 68.87 |
| | | 1 1/2 | 92.93 | 142.43 |
| | | 2 | 234.80 | 401.29 |
| | | 3 | 511.13 | 1,156.45 |
| | | 4 | 4,509.90 | 2,238.20 |
| | | 6 | 8,806.10 | 13,754.48 |
| 8 | 10,572.13 | 14,908.40 | | |
| Sale for Resale | 4 or less | 4,509.90 | - | |
| | 6 | 8,806.10 | - | |
| | 8 | 10,572.13 | - | |
| | 10+ | 60,468.90 | - | |
| Multi-Family and Mobile Home (per unit) | All sizes | 9.79 | 15.23 | |
| Hotels and Motels (per unit) | All sizes | 6.50 | 11.09 | |
| Recreational Vehicles (per unit) | All sizes | 7.28 | 11.38 | |
| Private Fire Protection | All Sizes | 121.01 | - | |
| Irrigation | 5/8 | 15.21 | - | |
| | 1 | 30.4 | - | |
| | 1 1/2 | 82.68 | - | |
| | 2 | 190.05 | - | |
| | 3 | 444.37 | - | |
| | 4 | 1,966.15 | - | |
| Reclaimed Water (based on 1,000 GPD demand and 20% discount on capital) | 5/8 | 11.95 | - | |
| | 1 | 11.95 | - | |
| | 1 1/2 | 72.78 | - | |
| | 2 | 237.30 | - | |
| | 3 | 511.13 | - | |
| | 4 | 4,509.90 | - | |
| | 6 | 8,806.10 | - | |
| 8 | 10,572.13 | - | | |
| Source: Broward County Water and Wastewater Services | | | | |

Section 7 – Financial Conditions

Table 7.3 Broward County Schedule of Retail Rates Volume Charge (1,000 Gallons) by Customer Class and Meter Size Effective October 1, 2017

| Customer Class (all Meter sizes unless noted) | Water | | Wastewater | | |
|---|------------------------------|-------------|-------------------------|-------------|---|
| | Volume (per 1,000 Gals) | Charge (\$) | Volume (per 1,000 Gals) | Charge (\$) | |
| Residential | 0-3 | 1.54 | 0 - 15 | 3.98 | |
| | 4-6 | 2.72 | Over 15 | No Charge | |
| | 7-12 | 6.43 | | | |
| | Over 12 | 7.78 | | | |
| Commercial, Municipal and Institutional | 0 - 75% of Avg Consumption | 3.89 | All Volumes | 3.98 | |
| | Over 75% of Avg. Consumption | 7.92 | | | |
| Sale for Resale | Water Treatment Charge | 2.49 | N/A | - | |
| | Water Transmission Charge | 0.10 | N/A | - | |
| Multi-Family and Mobile Homes (per unit) | 0-2 | 1.54 | 0-8 | 3.98 | |
| | 3-4 | 2.72 | | | |
| | 5-6 | 6.43 | Over 8 | No Charge | |
| | Over 6 | 7.78 | | | |
| Hotels and Motels (per unit) | 0 - 75% of Avg Consumption | 3.89 | All Volumes | 3.98 | |
| | Over 75% of Avg. Consumption | 7.92 | | | |
| Recreational Vehicles (per unit) | 0 - 75% of Avg Consumption | 3.89 | All Volumes | 3.98 | |
| | Over 75% of Avg. Consumption | 7.92 | | | |
| Private Fire Protection | All Volumes | 6.24 | N/A | - | |
| Irrigation | 5/8" meter | 0-8 | N/A | - | |
| | | Over 8 | N/A | - | |
| | 1" meter | 0-22 | 6.42 | N/A | - |
| | | Over 22 | 7.79 | N/A | - |
| | 1 1/2" meter | 0-55 | 6.42 | N/A | - |
| | | Over 55 | 7.79 | N/A | - |
| | 2 to 3" meter | 0-142 | 6.42 | N/A | - |
| | | Over 142 | 7.79 | N/A | - |
| Reclaimed Water | All Volumes | 0.70 | N/A | - | |

Source: Broward County Water and Wastewater Services

Section 7 – Financial Conditions

Since 1994, the average residential use of water decreased from 220 gpd (gallons per day) to 177 gpd. The decrease appears to be related to ongoing water restrictions and water conservation initiatives of Broward County and the South Florida Water Management District (SFWMD). In Fiscal Year 2010, WWS completed a Rate Study which determined that the treatment plant must produce 206 gpd of water to deliver 185 gpd to the average residential customer. Converting the daily demand to the maximum average daily flow (a factor of 1.33x), yields the requirement of 274 gpd of plant capacity necessary to serve an ERU (equivalent residential unit). In addition, the ratio of billed water to treated wastewater was 1.13x, yielding a requirement of 209 gpd of wastewater treatment capacity per ERU.

For Fiscal Year 2017, the capital recovery charges are \$1,590 and \$2,010 for water and sewer respectively. At the beginning of the Neighborhood Projects, the County adopted the policy of not charging for the first ERU for sewer per customer.

Charges for Large Users of the NRWWS are defined by the Large User agreements, and consist of charges for operation and maintenance costs assessed based on flows, debt service costs assessed based on reserve capacity, and improvement, repair, and replacement fund costs that are assessed as a percentage of other charges. The charges for operation and maintenance costs are adjusted annually to reflect each user's proportionate share of actual costs during the fiscal year.

7.2 Water and Wastewater Rates and Charges

The County continues to encourage retail customers to conserve water. The County established a rate schedule that sets higher water rates for levels of consumption beyond basic use. As a result of the 2010 Rate Study, an additional rate tier was implemented. The current rate schedule is composed of four tiers:

- Rates for basic use
- Rates for normal use
- Rates for discretionary use
- Rates for excessive use

As noted in Table 7-1, there was an approximately 3.1% increase in the average monthly residential bill of 5,000 gallons from Fiscal Year 2017 to Fiscal Year 2018. Tables 7-2 and 7-3 show the minimum monthly fixed charges and volume charges for all customer classes based upon rates approved by the County which went into effect October 1, 2017. A five-year summary of billing volumes is shown in Table 7-4.

Section 7 – Financial Conditions

| Table 7-4 Retail Water and Wastewater Billing Volumes as of September 30, 2017 (1,000 Gallons) | | | | |
|--|---------------------------|--------------------------|--|---|
| Fiscal Year Ended 9/30 | Treated Retail | Coconut Creek | Treated Water Total¹ | Wastewater Water¹ |
| 2013 | 6,579,923 | 1,699,799 | 8,279,722 | 4,496,843 |
| 2014 | 6,694,051 | 1,754,927 | 8,448,978 | 5,165,058 |
| 2015 | 6,949,511 | 1,789,374 | 8,738,885 | 5,372,243 |
| 2016 | 6,764,038 | 1,736,453 | 8,500,491 | 5,339,017 |
| 2017 | 6,861,976 | 1,844,111 | 8,706,087 | 5,442,216 |
| ¹ Water demand management efforts were implemented in 2007. These consist of water conservation initiatives including, when necessary, year-round lawn watering restrictions. Reduced water demand translates to reduced billed wastewater. | | | | |
| Source: Broward County Water and Wastewater Services | | | | |

In the event additional water restrictions are imposed, the County has instituted an automatic adjustment as noted in Table 7-5 to the water quantities at which increased rates are applied to encourage customers to reduce consumption. The automatic rate adjustment was adopted by the Board as a method to maintain the revenues required for operations while water consumption is curtailed. The SFWMD imposes phased restrictions as drought conditions warrant to achieve targeted reductions of water used.

With the automatic adjustment, the higher water rates established for larger consumption levels are applied at lower levels of consumption. The result is that customers who do conserve as required may experience a reduction in their water bills. Conversely, customers who fail to achieve reductions will pay even greater amounts for water consumed than they would otherwise pay without the adjustment. As targeted reductions increase, the associated levels at which increased rates become effective decrease.

Section 7 – Financial Conditions

Table 7-5 Automatic Rate Adjustments for Periods of Mandated Water Restrictions

| Customer Class and Block | Restrictions Per Unit Per Month (1,000 gallons) | | |
|---|--|----------|-----------------|
| | Standard | Drought | Extreme Drought |
| Single Family (all meter sizes) | | | |
| First Tier | 0-3 | 0-2 | 1 |
| Second Tier | 4-6 | 3-5 | 2-4 |
| Third Tier | 7-12 | 6-9 | 5-6 |
| Final Tier | Over 12 | Over 9 | Over 6 |
| Multi-Family (per unit, all meters) | | | |
| First Tier | 0-2 | 1 | 1 |
| Second Tier | 3-4 | 2-3 | 2 |
| Third Tier | 5-6 | 4-5 | 3 |
| Final Tier | Over 6 | Over 5 | Over 3 |
| Irrigation | | | |
| 5/8" Meter, First Tier | 0-8 | 0-4 | 0-2 |
| 5/8" Meter, Second Tier | Over 8 | Over 4 | Over 2 |
| 1" Meter, First Tier | 0-22 | 0-11 | 0-5 |
| 1" Meter, Second Tier | Over 22 | Over 11 | Over 5 |
| 1 1/2" Meter, First Tier | 0-55 | 0-27 | 0-14 |
| 1 1/2" Meter, Second Tier | Over 55 | Over-27 | Over 14 |
| 2" and Over Meter, First Tier | 0-142 | 0-71 | 0-35 |
| 2" and Over Meter, Second Tier | Over 142 | Over 71 | Over 35 |
| Commercial, Municipal, Institutional, Hotels, Motels and Recreational Vehicles | | | |
| First Tier | 0-75% | 0-60% | 0-45% |
| Second Tier | Over 75% | Over 60% | Over 45% |
| <i>Source: Broward County Water and Wastewater Services</i> | | | |

The NRWWS Large Users' rates are reviewed and adjusted annually by the County as part of the budget process. The rates are based on the County's estimation of total costs and total flows. Debt service requirements (including required coverage) for the NRWWS are allocated to each Large User in proportion to their reserved capacity. A surcharge of up to 10% is added to fund improvements, repairs and replacements to the NRWWS. Currently the surcharge is 5%. These funds are maintained separately from the Renewal, Replacement and Improvement Fund established by resolutions of the Board authorizing the issuance of bonds for the Utility (collectively, the "Bond Resolutions") to provide a reserve for the Utility.

Section 7 – Financial Conditions

Presently, the Renewal, Replacement and Improvement Fund is required by the Bond Resolution to maintain a minimum balance of five percent of the previous year's revenues, as defined by the Bond Resolution, or a greater amount if recommended by the Consulting Engineer. Five percent of Fiscal Year 2017 revenues are approximately \$6.9 million. Based on the financial statement for the Fiscal Year ended September 30, 2017, the 2017 total revenues were \$138,546,000. The current balance in the Renewal, Replacement and Improvement Fund is \$6.6 million. The Consultant recommends that the balance in this fund be increased to at least \$6,927,300 for Fiscal Year 2018, consistent with the requirement of the Bond Resolution.

7.3 Revenue Projections

Annual water and wastewater revenues and expenditures for Fiscal Year 2017 are based on actual values from financial statements prepared as of September 30, 2017. Fiscal year 2018 revenues and expenditures have been projected based upon the rates approved by the County, which were implemented October 1, 2017 in conjunction with estimated expenses through Fiscal Year 2018. Revenues for Fiscal Years 2018 through 2022 have been based on average annual number of customers, historical average consumption and the retail service rates shown in Table 7-3.

The Utility operates a mature system with limited future growth expected. Growth rates in the retail water and retail wastewater system customer base beginning in Fiscal Year 2017 have been estimated at 1% annually for water and 2% annually for wastewater. Operation and Maintenance costs are forecast at budgeted levels for Fiscal Year 2017 and assumed to increase by an average of 2% annually for both water and wastewater beginning in Fiscal Year 2018. Retail rate increases from Fiscal Years 2018 through 2022 of approximately 3% or less per year for both retail water and wastewater are necessary to meet the projected revenues as presented in Table 7-6 and Table 7-7. The Board has not yet considered these rate increases. If any retail rate increase is not approved, coverage would be reduced. The revenue forecast for the Large Users of the NRWWS has been projected to recover costs as defined under the Large User agreement.

Table 7-6 shows historical and projected ratios of Large User's (regional and resale) revenues to total revenues. Proposed 2019 debt service assumes a 5% interest rate per annum and maturities over a 25-year period, back-loaded to support levelized total debt service payments. In Fiscal Year 2017, the total revenues generated by the Utility were sufficient to meet the bond covenant requirement of 120% coverage of all debt service obligations. The audited financial statements at September 30, 2017 present the computation of debt service coverage on all outstanding revenue bonds as 1.82 for Fiscal Year 2017. In addition, a Balance Available for Renewal, Replacement and Capital Expenditures of approximately \$29.6 million was generated during Fiscal Year 2017. Table 7-7 presents the Historical and Projected Net Revenue Debt Service and Debt Service Coverage.

An estimate of interest income is projected annually from Fiscal Year 2018 through Fiscal Year 2022. Interest income is generated from three main sources: debt service reserve fund, general reserve fund, and investments of fund balances as permitted under the Bond Resolution.

Table 7-6 Historical and Projected Ratios of Large Users' Revenues and Wastewater Revenues (in 1,000s)

| | Historical | | | | | Projected | | | | |
|--|------------|---------|---------|---------|---------|-----------|---------|---------|---------|---------|
| | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
| Total Revenues ¹ | 122,344 | 123,983 | 132,139 | 132,838 | 138,546 | 141,081 | 144,608 | 147,704 | 151,397 | 155,192 |
| Large User Revenues (Excluding Broward County) | 32,957 | 32,413 | 34,417 | 33,868 | 34,834 | 35,400 | 40,356 | 42,374 | 43,645 | 44,954 |
| Percentage Large User to Total Revenues | 26.9% | 26.1% | 26.0% | 25.5% | 25.1% | 25.1% | 27.9% | 28.7% | 28.8% | 29.0% |
| Regional Raw Water Revenues | 876 | 945 | 849 | 857 | 803 | 847 | 893 | 901 | 910 | 919 |
| Percentage Regional Raw Water Total Revenues | 0.7% | 0.8% | 0.6% | 0.6% | 0.6% | 0.6% | 0.6% | 0.6% | 0.6% | 0.6% |
| Sale for Resale/Water ² | 5,740 | 5,938 | 6,053 | 6,247 | 6,688 | 6,855 | 7,007 | 7,077 | 7,148 | 7,219 |
| Percentage Sale for Resale Revenues to Total Revenues | 4.7% | 4.8% | 4.6% | 4.7% | 4.8% | 4.9% | 4.8% | 4.8% | 4.7% | 4.7% |

¹ Total Revenues do not include interest earned on the construction account.

² Principally Sales to City of Coconut Creek

Source: Broward County Water and Wastewater Services

Section 7 - Financial Condition

Table 7-7 Schedule of Historical and Projected Net Revenues, Debt Service and Debt Service Coverage (\$1,000)

| | Historical | | | | | Projected | | | | |
|---|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
| Revenues: | | | | | | | | | | |
| Water | \$ 43,990 | \$ 45,453 | \$ 47,796 | \$ 48,106 | \$ 50,620 | \$ 50,976 | \$ 52,505 | \$ 54,080 | \$ 55,703 | \$ 57,374 |
| Wastewater | 69,419 | 70,385 | 76,159 | 76,890 | 79,411 | 80,506 | \$ 82,921 | \$ 85,409 | \$ 87,971 | \$ 90,610 |
| Other ¹ | 8,735 | 7,869 | 7,893 | 7,417 | 7,507 | 7,183 | \$ 7,398 | \$ 7,620 | \$ 7,849 | \$ 8,085 |
| Interest Income | 200 | 276 | 291 | 425 | 1,008 | 1,338 | 1,340 | 1,340 | 1,340 | 1,300 |
| Total Revenues | \$ 122,344 | \$ 123,983 | \$ 132,139 | \$ 132,838 | \$ 138,546 | \$ 140,003 | \$ 144,165 | \$ 148,450 | \$ 152,863 | \$ 157,369 |
| Current Expenses: | | | | | | | | | | |
| Water Transmission & Distribution | \$ 9,043 | \$ 10,024 | \$ 11,258 | \$ 11,441 | \$ 12,404 | \$ 12,776 | \$ 13,159 | \$ 13,423 | \$ 13,691 | \$ 13,965 |
| Water Source of Supply, Treatment & Pumping | 8,713 | 9,060 | 7,317 | 9,817 | 9,497 | 9,782 | 10,075 | 10,277 | 10,482 | 10,692 |
| Wastewater Collection & Transmission | 11,141 | 9,200 | 11,004 | 11,262 | 11,824 | 12,179 | 12,544 | 12,795 | 13,051 | 13,312 |
| Wastewater Treatment | 14,936 | 15,373 | 17,321 | 17,724 | 18,324 | 18,874 | 19,440 | 19,829 | 20,225 | 20,630 |
| Customer Service | 4,729 | 4,765 | 4,782 | 4,953 | 5,291 | 5,450 | 5,613 | 5,725 | 5,840 | 5,957 |
| Administrative/General | 14,813 | 14,041 | 15,203 | 14,920 | 15,534 | 16,000 | 16,480 | 16,810 | 17,146 | 17,489 |
| Total Current Expenses | \$ 63,375 | \$ 62,463 | \$ 66,885 | \$ 70,117 | \$ 72,874 | \$ 75,060 | \$ 77,312 | \$ 78,858 | \$ 80,435 | \$ 82,044 |
| Net Revenues | \$ 58,969 | \$ 61,520 | \$ 65,254 | \$ 62,721 | \$ 65,672 | \$ 64,943 | \$ 66,853 | \$ 69,591 | \$ 72,428 | \$ 75,325 |
| Debt Service: | | | | | | | | | | |
| Senior Lien Debt: | | | | | | | | | | |
| Series 2003 Bonds | \$ 1,048 | | | | | | | | | |
| Series 2003-B Bonds | 8,188 | | | | | | | | | |
| Series 2005-A Bonds | 2,456 | \$ 2,457 | \$ 1,979 | | | | | | | |
| Series 2009-A Bonds | 10,325 | 10,326 | 8,773 | \$ 2,367 | \$ 2,363 | \$ 2,363 | \$ 1,985 | \$ 1,984 | \$ 1,700 | \$ - |
| Series 2012-A Bonds | 8,251 | 8,252 | 8,252 | 8,251 | 8,253 | 9,037 | 8,723 | 8,725 | 8,810 | 8,812 |
| Series 2012-B Bonds | 5,522 | 5,523 | 5,523 | 5,523 | 5,523 | 11,058 | 16,371 | 16,370 | 14,271 | 14,271 |
| Series 2012-C Bonds | 1,706 | 10,941 | 10,945 | 10,940 | 10,942 | 4,622 | - | - | - | - |
| Series 2015-A Bonds | - | | 411 | 2,113 | 2,113 | 2,113 | 2,113 | 2,113 | 2,113 | 2,113 |
| Series 2015-B Bonds | - | | 1,339 | 6,885 | 6,885 | 6,885 | 6,885 | 6,885 | 9,515 | 11,209 |
| Series 2019-A Bonds | - | | | | | | 7,965 | 8,095 | 9,500 | 9,500 |
| Total Debt Service | \$ 37,496 | \$ 37,499 | \$ 37,222 | \$ 36,079 | \$ 36,079 | \$ 36,078 | \$ 44,042 | \$ 44,172 | \$ 45,909 | \$ 45,905 |
| Debt Coverage Senior Lien | 1.57 | 1.64 | 1.75 | 1.74 | 1.82 | 1.80 | 1.52 | 1.58 | 1.58 | 1.64 |
| ¹ Commencing in fiscal year 2012, other revenues include the customer service charge previously reflected as water revenues. Source: Broward County Water and Wastewater Services | | | | | | | | | | |

Section 7 – Financial Condition

7.4 Comparison of Utilities Service Costs for Municipalities and the Unincorporated Area in Broward County

Table 7-8 shows the current water and wastewater monthly service charges for residential customers of municipalities and the County, as well as Miami-Dade and Palm Beach Counties.

| Table 7.8 Comparative Rate Survey as of 12/31/2017 (Based On Usage of 5,000 Gallons Per Month for a 5/8" meter) | | | |
|---|--------------|--------------|--------------|
| Utility | Water | Sewer | Total |
| Sunrise (outside City) | 50.00 | 61.10 | 111.10 |
| Davie | 37.35 | 69.62 | 106.97 |
| Wilton Manors | 54.50 | 46.81 | 101.31 |
| Dania Beach ¹ | 35.00 | 58.82 | 93.82 |
| Oakland Park | 48.52 | 44.64 | 93.16 |
| Sunrise (inside City) | 40.00 | 48.87 | 88.87 |
| Hollywood ¹ | 26.93 | 54.27 | 81.20 |
| North Lauderdale | 32.30 | 47.25 | 79.55 |
| Parkland | 24.98 | 53.83 | 78.81 |
| Margate (outside City) | 36.81 | 37.49 | 74.30 |
| Coconut Creek | 41.90 | 32.24 | 74.14 |
| Miramar | 30.82 | 39.26 | 70.08 |
| Cooper City | 27.36 | 41.51 | 68.87 |
| Pembroke Pines | 31.24 | 36.16 | 67.40 |
| NSID ¹ | 36.09 | 30.28 | 66.37 |
| Hallandale Beach | 25.32 | 40.48 | 65.80 |
| Broward County (WWS) | 26.42 | 39.16 | 65.58 |
| Plantation | 23.01 | 42.28 | 65.29 |
| Pompano Beach (outside City) | 31.44 | 33.14 | 64.58 |
| Tamarac ¹ | 21.80 | 42.75 | 64.55 |
| Coral Springs | 22.06 | 41.96 | 64.02 |
| Fort Lauderdale | 23.59 | 39.52 | 63.11 |
| Margate (inside City) | 29.46 | 29.99 | 59.45 |
| Royal Utility | 27.19 | 31.59 | 58.78 |
| Lauderhill | 20.71 | 36.28 | 56.99 |
| Deerfield Beach ¹ | 28.25 | 24.53 | 52.78 |
| Pompano Beach (inside City) | 25.13 | 26.52 | 51.65 |
| CSID ¹ | 25.01 | 25.01 | 50.02 |
| Average Water & Sewer for Broward | 31.54 | 41.26 | 72.81 |
| Water Only | | | |
| Hillsboro | 34.41 | | 34.41 |
| Sewer Only | | | |
| Pembroke Park | | 58.09 | 58.09 |
| Lauderdale by the sea | | 40.34 | 40.34 |
| Tri-County Utilities | | | |
| Palm Beach County | 22.91 | 27.99 | 50.90 |
| Miami Dade County | 13.67 | 25.79 | 39.46 |
| ¹ The rates did not change from 2016 to 2017 | | | |

7.5 Insurance Coverage

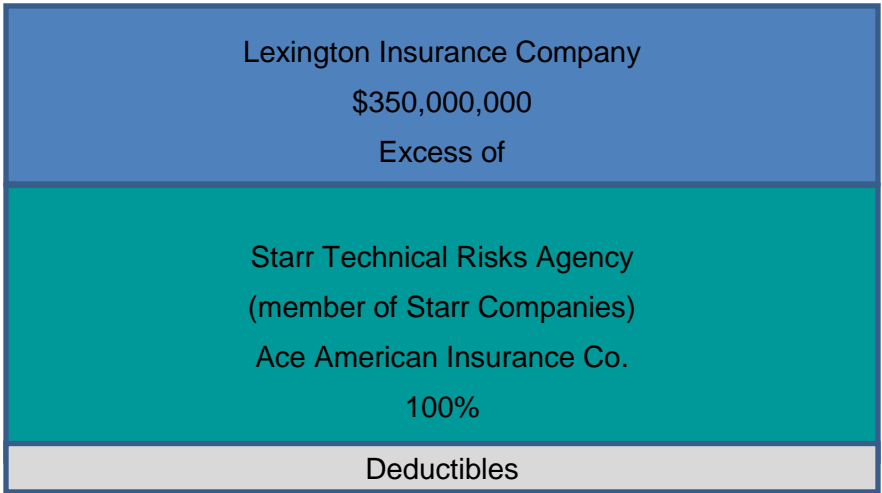
Broward County Water and Wastewater Services (WWS) bond covenants require that customary insurance be carried on the physical assets of the system and coordinates coverage through the County’s Master Property program. The term of the present policy is from February 1, 2018 to February 1, 2019.

Broward County has a large portion of property values located in Special Flood Hazard Areas. The County and Water and Wastewater Services have taken steps to mitigate and protect the physical assets, so they are more resistant to catastrophic events and flooding.

This year, Broward County continued to provide coverage with a dedicated tower specific to Water and Wastewater Services locations that provide comprehensive protection for its physical assets valued over \$528 Million. Coverage is provided through ACE American Insurance Company, an admitted A++ XV carrier rated by AM Best, as their lead carrier providing \$50 Million of Windstorm coverage on a per occurrence basis. The coverage provided through ACE is designed for water utility operations and provides \$25 Million of Equipment Breakdown coverage and \$10 Million of flood coverage including storm surge for physical assets located in Zone X. Physical assets located outside of Zone X – have been identified and individual policies have been written through National Flood Insurance Program (NFIP).

As depicted in Figure 7-1, Water and Wastewater Services has an independent tower, separate from Aviation (BCAD) and the County (including Port Everglades).

Figure 7-1 WWS Insurance Tower



The Risk Management Division renewed Broward County’s property insurance program on February 1st, 2018. The premium for the County’s Insurance Program renewal is \$16,340,909 for a combined/overall rate increase of only 5.31%. This is the first time since 2012 that Broward County will see a rate increase. Significant Insured damages from Hurricane Harvey, Hurricane Irma and Hurricane Maria have placed increased pressure on the reinsurance market to recoup losses. By ways of comparison the noted increase compares favorable based on premilitary data. Similar sized markets with sustained damages are seeing an upward rate increase of 25% and up to 10% increases from similar markets with no reported losses.

Section 7 – Financial Conditions

Water and Wastewater Services' insured physical assets comprise 9.6% of Broward County's assets. Water and Wastewater Services recognized a premium increase of 8.4% on their dedicated property renewal.

The four major above-ground water and wastewater facilities and their estimated values, as provided by Broward County Water and Wastewater Services, as of June 2018 are as follows:

| Table 7-9 Estimated Value of Aboveground Water and Wastewater Facilities | |
|---|---|
| Facility | FY 2017 Estimated Bldg. Value (\$1,000s)¹ |
| NRWWTP Complex | \$928,818 |
| Water Treatment Plant 2A | \$109,273 |
| Water Treatment Plant 1A | \$71,028 |
| 3A Repump Station | \$16,391 |
| <i>1: Note: Values may not reflect all improvements done at each facility.</i> | |
| <i>Source: Broward County Water and Wastewater Services</i> | |

The building values for each facility were based on values provided in previous years' annual reports, increased by three percent. In order to aid in determining insurance coverage needs, in July 2016, Broward County completed an external survey to estimate fair market value, replacement value, and appropriate insured value for physical assets of the system.

7.6 Financial Regulations

On June 12, 2018 changes became effective to F.A.C. 62-342.700(7), (8), (9) and (10), which correspond to Insurance Policy, Escrow, Standby Escrow and Standby Trust Fund respectively, which pertains to Mitigation Banks used to satisfy the requirement of F.A.C. 62-342.700(1) for construction and implementation activities. Changes were also made to F.A.C. 62-342.700(13)d to state that the banker shall submit written cost estimates with verifiable basis for the estimates to the Department along with the financial responsibility mechanism.

Appendix A

Table A-1
Water and Wastewater Services
Water Production, Wastewater Treatment, and Regional Raw Water (Millions Gallons)

| | FY-2008 | FY-2009 | FY-2010 | FY-2011 | FY-2012 | FY-2013 | FY-2014 | FY-2015 | FY-2016 | FY-2017 |
|---|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Water Production | | | | | | | | | | |
| Plant 1A | 3,059 | 2,835 | 2,865 | 2,635 | 2,672 | 2,613 | 2,608 | 2,739 | 2,670 | 2,708 |
| Plant 1B | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Plant 2A | 4,599 | 4,571 | 4,555 | 4,572 | 4,259 | 4,444 | 4,364 | 4,588 | 4,498 | 4,699 |
| Plant 3A | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Plant 3B | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Plant 3C | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Broadview | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Purchased Water From Municipality | 2,486 | 2,597 | 2,203 | 2,204 | 2,187 | 2,390 | 2,515 | 2,293 | 2,402 | 2,170 |
| Total Water Production | 10,143 | 10,003 | 9,623 | 9,411 | 9,118 | 9,447 | 9,487 | 9,620 | 9,570 | 9,577 |
| Wastewater Treatment | | | | | | | | | | |
| North Regional WWTP | 25,156 | 23,793 | 23,852 | 21,762 | 25,989 | 24,777 | 25,276 | 23,457 | 25,289 | 24,115 |
| WW Flows to Hlwd. Regional Treatment | 1,053 | 1,162 | 1,069 | 958 | 1,158 | 1,142 | 1,308 | 1,248 | 1,284 | 1,294 |
| Total Wastewater Treatment | 26,209 | 24,955 | 24,921 | 22,720 | 27,147 | 25,919 | 26,584 | 24,705 | 26,573 | 25,409 |
| Regional Raw Water | | | | | | | | | | |
| | 7,023 | 6,438 | 6,374 | 7,196 | 6,669 | 6,455 | 6,462 | 6,105 | 6,047 | 6,204 |
| Notes: | | | | | | | | | | |
| 1. Water for 1B and Broadview produced by 1A. | | | | | | | | | | |
| 2. Water for 3B/3C purchased from Hollywood (after October 15, 1996). | | | | | | | | | | |
| Source: Broward County Water and Wastewater Services | | | | | | | | | | |

**Table A - 2
Water and Wastewater Services
Average Number of Accounts as of September 30,2017**

| Consumer & Meter Size (inches) | WATER | | | SEWER | | |
|--|-----------------|--------------------|---|-----------------|--------------------|---|
| | Number of Units | Number of Accounts | Average Consumption per Month (1,000 Gallons) | Number of Units | Number of Accounts | Average Consumption per Month (1,000 Gallons) |
| Residential Single Family | | | | | | |
| 5/8" | 46,594 | 46,555 | 234,813 | 41,775 | 41,740 | 215,992 |
| 1" | 1,886 | 1,855 | 27,980 | 2,814 | 2,783 | 35,862 |
| 1 1/2" | 146 | 69 | 1,877 | 209 | 178 | 13,753 |
| 2" | 77 | 5 | 646 | 104 | 32 | 1,738 |
| TPK Residential Single Family | | | | | | |
| 5/8" | 35 | 18 | 70 | 31 | 14 | 62 |
| 1 1/2" | 69 | 2 | 221 | 36 | 1 | 23 |
| 2" | 146 | 2 | 226 | 275 | 1 | 1,255 |
| Residential Multi-Family, Hotel & RVs | 33,412 | 2,025 | 126,961 | 32,805 | 1,869 | 123,307 |
| Commercial | | | | | | |
| 5/8" | 2,707 | 2,706 | 13,982 | 1,920 | 1,920 | 10,894 |
| 1" | 1,652 | 1,489 | 18,356 | 838 | 827 | 15,031 |
| 1 1/2" | 704 | 702 | 24,834 | 567 | 565 | 19,768 |
| 2" | 842 | 621 | 55,654 | 463 | 463 | 48,148 |
| 3" | 423 | 76 | 6,217 | 297 | 49 | 4,053 |
| 4" | 10 | 10 | 20,104 | 9 | 9 | 7,789 |
| 6" | 7 | 7 | 7,299 | 1 | 1 | 483 |
| Irrigation | | | | | | |
| 5/8" | 287 | 287 | 2,730 | 3 | 3 | 4 |
| 1" | 275 | 275 | 5,936 | 1 | 1 | 3 |
| 1 1/2" | 204 | 204 | 10,084 | - | - | - |
| 2" | 123 | 123 | 14,509 | 1 | 1 | 101 |
| Sale for Resale | | | | | | |
| 10" | 6 | 6 | 153,676 | - | - | - |
| TOTAL | 89,605 | 57,037 | 726,175 | 82,149 | 50,457 | 498,265 |

Source: Broward County Water and Wastewater Services

**Table A-3
Water and Wastewater Services
Retail Water & Wastewater
Customer Average Monthly Demand & Revenues
As of September 30, 2017**

| Revenue Class | Water | | | Wastewater | | |
|---------------------------|--------------------|------------------|---------------------|--------------------|------------------|---------------------|
| | Demand | Revenue | | Demand | Revenue | |
| | Total 1,000 Gal | \$ Total | \$ Per 1,000 Gal | Total 1,000 Gal | \$ Total | \$ Per 1,000 Gal |
| Residential Single Family | 265,316 | 1,463,714 | 5.52 | 267,345 | 1,743,498 | 6.52 |
| Residential Multi Family | 113,386 | 630,122 | 5.56 | 110,236 | 815,338 | 7.40 |
| Commercial | 160,022 | 1,265,956 | 7.91 | 119,237 | 902,896 | 7.57 |
| Sale for Resale | 153,676 | 568,209 | 3.70 | N/A | N/A | N/A |
| Irrigation | 33,259 | 275,774 | 8.29 | N/A | N/A | N/A |
| Total | 725,658 | 4,203,776 | 5.79 | 496,818 | 3,461,732 | 6.97 |

Source: Broward County Water and Wastewater Services

Table A - 4.0
Water & Wastewater Services
Activity Based Costing Report for the Twelve Months Ended September 30, 2017
Retail Water

| Retail Water | Activities | | | | Total Water |
|---------------------------------|-------------------|---------------------|---------------------|---------------------|----------------------|
| | Wellfields | Treatment | Purchased Water | Distribution | |
| PERSONAL SERVICES | \$ 33,195 | \$ 3,138,058 | \$ - | \$ 1,635,314 | \$ 4,806,566 |
| OPERATING MATERIAL | 31,603 | 383,704 | - | 426,612 | 841,918 |
| OTHER MATERIAL | - | 9,919 | - | 264 | 10,184 |
| UTILITIES-OTHER | - | 9,478 | - | 152,601 | 162,079 |
| ELECTRIC | 50,910 | 831,323 | - | 331,806 | 1,214,039 |
| TREAT/TRANS | - | - | - | - | - |
| PURCHASED WATER | - | - | 6,017,570 | - | 6,017,570 |
| RENTAL/LEASES | - | 5,806 | - | - | 5,806 |
| MOTOR POOL | - | 174,745 | - | 114,678 | 289,423 |
| CONTRACT SERVICE | 24,450 | 135,068 | - | 254,881 | 414,399 |
| OTHER | 208,715 | 314,478 | - | 649,960 | 1,173,153 |
| EDUCATIONAL COURSES | - | 548 | - | 1,034 | 1,582 |
| COMPUTER MAINTENANCE | - | - | - | - | - |
| TRAVEL | - | - | - | - | - |
| OTHER CHEMICALS | - | 992,804 | - | 1,669 | 994,472 |
| CHEMICALS CHLORINE | - | 492 | - | - | 492 |
| CHEMICALS LIME | - | 1,378,314 | - | - | 1,378,314 |
| SUBTOTAL | 348,873 | 7,374,735 | 6,017,570 | 3,568,818 | 17,309,996 |
| OPERATING COST RECLASS: | | | | | |
| ONE CALL | - | - | - | - | - |
| PAINT SHOP | - | (8,458) | - | - | (8,458) |
| HEAVY EQUIPMENT | - | - | - | - | - |
| SUBTOTAL | - | (8,458) | - | - | (8,458) |
| ALLOCATE: | | | | | |
| SECTION ADMIN. | - | - | - | - | - |
| DIVISION ADMINISTRATION | 30,990 | 655,085 | 534,530 | 317,012 | 1,537,617 |
| SUBTOTAL DIRECT OVERHEAD | 30,990 | 655,085 | 534,530 | 317,012 | 1,537,617 |
| TOTAL | \$ 379,863 | \$ 8,021,363 | \$ 6,552,100 | \$ 3,885,830 | \$ 18,839,156 |

Table A - 4.1
Water & Wastewater Services
Activity Based Costing Report for the Twelve Months Ended September 30, 2017
Retail Water - Wellfields Detail

| ACTIVITY - Retail Wellfields | District One | | | District Two | | | Total | | |
|---------------------------------------|-------------------|------------------|-------------------|-------------------|------------------|-------------------|-------------------|-------------------|-------------------|
| | Operations | Maintenance | Total O & M | Operations | Maintenance | Total O & M | Operations | Maintenance | Total O & M |
| PERSONAL SERVICES | \$ - | \$ 21,425 | \$ 21,425 | \$ - | \$ 11,770 | \$ 11,770 | \$ - | \$ 33,195 | \$ 33,195 |
| OPERATING MATERIAL | - | 14,606 | 14,606 | - | 16,997 | 16,997 | - | 31,603 | 31,603 |
| OTHER MATERIAL | - | - | - | - | - | - | - | - | - |
| UTILITIES-OTHER | - | - | - | - | - | - | - | - | - |
| ELECTRIC | - | - | - | 50,910 | - | 50,910 | 50,910 | - | 50,910 |
| TREAT/TRANS | - | - | - | - | - | - | - | - | - |
| PURCHASED WATER | - | - | - | - | - | - | - | - | - |
| RENTAL/LEASES | - | - | - | - | - | - | - | - | - |
| MOTOR POOL | - | - | - | - | - | - | - | - | - |
| CONTRACT SERVICE | 12,000 | 12,450 | 24,450 | - | - | - | 12,000 | 12,450 | 24,450 |
| OTHER | 105,882 | 18,653 | 124,535 | 82,353 | 1,827 | 84,180 | 188,235 | 20,480 | 208,715 |
| EDUCATIONAL COURSES | - | - | - | - | - | - | - | - | - |
| COMPUTER MAINTENANCE | - | - | - | - | - | - | - | - | - |
| TRAVEL | - | - | - | - | - | - | - | - | - |
| OTHER CHEMICALS | - | - | - | - | - | - | - | - | - |
| CHEMICALS CHLORINE | - | - | - | - | - | - | - | - | - |
| CHEMICALS LIME | - | - | - | - | - | - | - | - | - |
| SUBTOTAL | 117,882 | 67,133 | 185,016 | 133,263 | 30,594 | 163,857 | 251,145 | 97,728 | 348,873 |
| <u>OPERATING COST RECLASS:</u> | | | | | | | | | |
| ONE CALL | - | - | - | - | - | - | - | - | - |
| PAINT SHOP | - | - | - | - | - | - | - | - | - |
| HEAVY EQUIPMENT | - | - | - | - | - | - | - | - | - |
| SUBTOTAL | - | - | - | - | - | - | - | - | - |
| <u>ALLOCATE:</u> | | | | | | | | | |
| SECTION ADMIN. | - | - | - | - | - | - | - | - | - |
| DIVISION ADMINISTRATION | 10,471 | 5,963 | 16,435 | 11,838 | 2,718 | 14,555 | 22,309 | 8,681 | 30,990 |
| SUBTOTAL DIRECT OVERHEAD | 10,471 | 5,963 | 16,435 | 11,838 | 2,718 | 14,555 | 22,309 | 8,681 | 30,990 |
| TOTAL | \$ 128,354 | \$ 73,097 | \$ 201,450 | \$ 145,100 | \$ 33,312 | \$ 178,412 | \$ 273,454 | \$ 106,409 | \$ 379,863 |

Source: Broward County Water and Wastewater Services

Table A - 4.2
Water & Wastewater Services
Activity Based Costing Report for the Twelve Months Ended September 30, 2017
Retail Water - Water Treatment Detail

| | ACTIVITY - Retail Water Treatment | | | | | | | | | ACTIVITY - Purchased Water |
|---------------------------------------|-----------------------------------|-------------------|---------------------|---------------------|-------------------|---------------------|---------------------|---------------------|---------------------|----------------------------------|
| | WTP 1-A | | | WTP 2-A | | | Total Treatment | | | |
| | Operations | Maintenance | Total O & M | Operations | Maintenance | Total O & M | Operations | Maintenance | Total O & M | |
| PERSONAL SERVICES | \$ 1,529,665 | \$ 344,437 | \$ 1,874,102 | \$ 1,042,042 | \$ 221,913 | \$ 1,263,956 | \$ 2,571,707 | \$ 566,351 | \$ 3,138,058 | \$ - |
| OPERATING MATERIAL | 35,371 | 88,854 | 124,225 | 87,156 | 172,323 | 259,479 | 122,527 | 261,177 | 383,704 | - |
| OTHER MATERIAL | 7,354 | 119 | 7,473 | 1,879 | 567 | 2,446 | 9,233 | 686 | 9,919 | - |
| UTILITIES-OTHER | 9,478 | - | 9,478 | - | - | - | 9,478 | - | 9,478 | - |
| ELECTRIC | 361,977 | - | 361,977 | 469,345 | - | 469,345 | 831,323 | - | 831,323 | - |
| TREAT/TRANS | - | - | - | - | - | - | - | - | - | - |
| PURCHASED WATER | - | - | - | - | - | - | - | - | - | 6,017,570 |
| RENTAL/LEASES | 831 | - | 831 | 4,975 | - | 4,975 | 5,806 | - | 5,806 | - |
| MOTOR POOL | 78,678 | 16,529 | 95,206 | 73,215 | 6,324 | 79,539 | 151,893 | 22,852 | 174,745 | - |
| CONTRACT SERVICE | 57,792 | 41,586 | 99,378 | 13,027 | 22,663 | 35,690 | 70,819 | 64,249 | 135,068 | - |
| OTHER | 55,112 | 91,507 | 146,619 | 187,540 | (19,682) | 167,859 | 242,653 | 71,825 | 314,478 | - |
| EDUCATIONAL COURSES | 238 | - | 238 | 310 | - | 310 | 548 | - | 548 | - |
| COMPUTER MAINTENANCE | - | - | - | - | - | - | - | - | - | - |
| TRAVEL | - | - | - | - | - | - | - | - | - | - |
| OTHER CHEMICALS | 447,125 | - | 447,125 | 545,679 | - | 545,679 | 992,804 | - | 992,804 | - |
| CHEMICALS CHLORINE | - | - | - | - | 492 | 492 | - | 492 | 492 | - |
| CHEMICALS LIME | 464,845 | - | 464,845 | 913,468 | - | 913,468 | 1,378,314 | - | 1,378,314 | - |
| SUBTOTAL | 3,048,465 | 583,032 | 3,631,497 | 3,338,638 | 404,600 | 3,743,238 | 6,387,104 | 987,632 | 7,374,735 | 6,017,570 |
| <u>OPERATING COST RECLASS:</u> | | | | | | | | | | |
| ONE CALL | - | - | - | - | - | - | - | - | - | - |
| PAINT SHOP | - | (2,950) | (2,950) | - | (5,507) | (5,507) | - | (8,458) | (8,458) | - |
| HEAVY EQUIPMENT | - | - | - | - | - | - | - | - | - | - |
| SUBTOTAL | - | (2,950) | (2,950) | - | (5,507) | (5,507) | - | (8,458) | (8,458) | - |
| <u>ALLOCATE:</u> | | | | | | | | | | |
| SECTION ADMIN. | - | - | - | - | - | - | - | - | - | - |
| DIVISION ADMINISTRATION | 270,790 | 51,790 | 322,580 | 296,565 | 35,940 | 332,505 | 567,355 | 87,730 | 655,085 | 534,530 |
| SUBTOTAL DIRECT OVERHEAD | 270,790 | 51,790 | 322,580 | 296,565 | 35,940 | 332,505 | 567,355 | 87,730 | 655,085 | 534,530 |
| TOTAL | \$ 3,319,255 | \$ 631,871 | \$ 3,951,126 | \$ 3,635,204 | \$ 435,033 | \$ 4,070,237 | \$ 6,954,459 | \$ 1,066,904 | \$ 8,021,363 | \$ 6,552,100 |

Source: Broward County Water and Wastewater Services

Table A - 4.3
Water & Wastewater Services
Activity Based Costing Report for the Twelve Months Ended September 30, 2017
Retail Water - Distribution Detail

| ACTIVITY - Distribution | District One | | | District Two | | | District Three | | | Total Distribution | | |
|---------------------------------|-------------------|-------------------|-------------------|--------------|-------------------|-------------------|---------------------|-------------------|---------------------|---------------------|---------------------|---------------------|
| | Operations | Maintenance | Total O & M | Operations | Maintenance | Total O & M | Operations* | Maintenance | Total O & M | Operations | Maintenance | Total O & M |
| PERSONAL SERVICES | \$ - | \$ 311,077 | \$ 311,077 | \$ - | \$ 189,757 | \$ 189,757 | \$ 788,402 | \$ 346,078 | \$ 1,134,480 | \$ 788,402 | \$ 846,911 | \$ 1,635,314 |
| OPERATING MATERIAL | - | 146,068 | 146,068 | - | 67,995 | 67,995 | 137,542 | 75,007 | 212,549 | 137,542 | 289,069 | 426,612 |
| OTHER MATERIAL | - | - | - | - | - | - | 264 | - | 264 | 264 | - | 264 |
| UTILITIES-OTHER | - | - | - | - | - | - | 152,601 | - | 152,601 | 152,601 | - | 152,601 |
| ELECTRIC | 148,139 | - | 148,139 | - | - | - | 183,668 | - | 183,668 | 331,806 | - | 331,806 |
| TREAT/TRANS | - | - | - | - | - | - | - | - | - | - | - | - |
| PURCHASED WATER | - | - | - | - | - | - | - | - | - | - | - | - |
| RENTAL/LEASES | - | - | - | - | - | - | - | - | - | - | - | - |
| MOTOR POOL | - | - | - | - | - | - | 102,675 | 12,003 | 114,678 | 102,675 | 12,003 | 114,678 |
| CONTRACT SERVICE | - | - | - | - | 1,025 | 1,025 | 233,755 | 20,101 | 253,856 | 233,755 | 21,126 | 254,881 |
| OTHER | - | 188,045 | 188,045 | - | 143,071 | 143,071 | 103,233 | 215,611 | 318,844 | 103,233 | 546,727 | 649,960 |
| EDUCATIONAL COURSES | - | - | - | - | - | - | 1,034 | - | 1,034 | 1,034 | - | 1,034 |
| COMPUTER MAINTENANCE | - | - | - | - | - | - | - | - | - | - | - | - |
| TRAVEL | - | - | - | - | - | - | - | - | - | - | - | - |
| OTHER CHEMICALS | - | - | - | - | - | - | 1,669 | - | 1,669 | 1,669 | - | 1,669 |
| CHEMICALS CHLORINE | - | - | - | - | - | - | - | - | - | - | - | - |
| CHEMICALS LIME | - | - | - | - | - | - | - | - | - | - | - | - |
| SUBTOTAL | 148,139 | 645,190 | 793,329 | - | 401,847 | 401,847 | 1,704,843 | 668,800 | 2,373,643 | 1,852,981 | 1,715,837 | 3,568,818 |
| OPERATING COST RECLASS: | | | | | | | | | | | | |
| ONE CALL | - | - | - | - | - | - | - | - | - | - | - | - |
| PAINT SHOP | - | - | - | - | - | - | - | - | - | - | - | - |
| HEAVY EQUIPMENT | - | - | - | - | - | - | - | - | - | - | - | - |
| SUBTOTAL | - | - | - | - | - | - | - | - | - | - | - | - |
| ALLOCATE: | | | | | | | | | | | | |
| SECTION ADMIN. | - | - | - | - | - | - | - | - | - | - | - | - |
| DIVISION ADMINISTRATION | 13,159 | 57,311 | 70,470 | - | 35,695 | 35,695 | 151,438 | 59,408 | 210,847 | 164,597 | 152,415 | 317,012 |
| SUBTOTAL DIRECT OVERHEAD | 13,159 | 57,311 | 70,470 | - | 35,695 | 35,695 | 151,438 | 59,408 | 210,847 | 164,597 | 152,415 | 317,012 |
| TOTAL | \$ 161,297 | \$ 702,501 | \$ 863,799 | \$ - | \$ 437,542 | \$ 437,542 | \$ 1,856,281 | \$ 728,208 | \$ 2,584,489 | \$ 2,017,578 | \$ 1,868,252 | \$ 3,885,830 |

Note: *includes Underground

Source: Broward County Water and Wastewater Services

Table A - 4.4
Water & Wastewater Services
Activity Based Costing Report for the Twelve Months Ended September 30, 2017
Retail Wastewater

| Retail Wastewater | Activities | | |
|---------------------------------------|--------------------|---------------------|---------------------|
| | Collection | Lift Stations | Total Wastewater |
| PERSONAL SERVICES | \$ 1,021,743 | \$ 1,499,710 | \$ 2,521,453 |
| OPERATING MATERIAL | 264,806 | 841,057 | 1,105,863 |
| OTHER MATERIAL | 2,638 | - | 2,638 |
| UTILITIES-OTHER | 3,664,261 | 32,959 | 3,697,220 |
| ELECTRIC | 1,610 | 497,573 | 499,183 |
| TREAT/TRANS | - | - | - |
| PURCHASED WATER | - | - | - |
| RENTAL/LEASES | 2,560 | - | 2,560 |
| MOTOR POOL | 66,043 | 155,115 | 221,158 |
| CONTRACT SERVICE | 120,956 | - | 120,956 |
| OTHER | 278,941 | 138,770 | 417,711 |
| EDUCATIONAL COURSES | 9,735 | - | 9,735 |
| COMPUTER MAINTENANCE | - | - | - |
| TRAVEL | - | - | - |
| OTHER CHEMICALS | - | - | - |
| CHEMICALS CHLORINE | - | - | - |
| CHEMICALS LIME | - | - | - |
| SUBTOTAL | 5,433,294 | 3,165,184 | 8,598,478 |
| <u>OPERATING COST RECLASS:</u> | | | |
| ONE CALL | - | - | - |
| PAINT SHOP | - | (8,261) | (8,261) |
| HEAVY EQUIPMENT | - | - | - |
| GENERATORS | - | 617,649 | 617,649 |
| SUBTOTAL | - | 609,388 | 609,388 |
| <u>ALLOCATE:</u> | | | |
| SECTION ADMIN. | - | - | - |
| DIVISION ADMINISTRATION | 482,630 | 281,158 | 763,788 |
| SUBTOTAL DIRECT OVERHEAD | 482,630 | 281,158 | 763,788 |
| TOTAL | \$5,915,924 | \$ 4,055,731 | \$ 9,971,654 |

Source: Broward County Water and Wastewater Services

Table A - 4.5
Water & Wastewater Services
Activity Based Costing Report for the Twelve Months Ended September 30, 2017
Retail Wastewater - Collection Detail

| ACTIVITY - Collection | District One | | | District Two | | | District Three | | | Total Collection | | |
|---------------------------------|--------------|-------------|-------------|--------------|-------------|-------------|----------------|-------------|--------------|------------------|-------------|--------------|
| | Operations | Maintenance | Total O & M | Operations | Maintenance | Total O & M | Operations* | Maintenance | Total O & M | Operations | Maintenance | Total O & M |
| PERSONAL SERVICES | \$ - | \$ 106,483 | \$ 106,483 | \$ - | \$ 127,188 | \$ 127,188 | \$ 753,049 | \$ 35,023 | \$ 788,072 | \$ 753,049 | \$ 268,694 | \$ 1,021,743 |
| OPERATING MATERIAL | - | 11,728 | 11,728 | - | 16,034 | 16,034 | 234,083 | 2,961 | 237,044 | 234,083 | 30,723 | 264,806 |
| OTHER MATERIAL | - | - | - | - | - | - | 2,638 | - | 2,638 | 2,638 | - | 2,638 |
| UTILITIES-OTHER | - | - | - | - | - | - | 3,664,261 | - | 3,664,261 | 3,664,261 | - | 3,664,261 |
| ELECTRIC | - | - | - | 1,610 | - | 1,610 | - | - | - | 1,610 | - | 1,610 |
| TREAT/TRANS | - | - | - | - | - | - | - | - | - | - | - | - |
| PURCHASED WATER | - | - | - | - | - | - | - | - | - | - | - | - |
| RENTAL/LEASES | - | - | - | - | - | - | 2,560 | - | 2,560 | 2,560 | - | 2,560 |
| MOTOR POOL | - | - | - | - | - | - | 66,043 | - | 66,043 | 66,043 | - | 66,043 |
| CONTRACT SERVICE | - | - | - | - | - | - | 120,956 | - | 120,956 | 120,956 | - | 120,956 |
| OTHER | - | 98,214 | 98,214 | - | 230,207 | 230,207 | (84,508) | 35,028 | (49,480) | (84,508) | 363,449 | 278,941 |
| EDUCATIONAL COURSES | - | - | - | - | - | - | 9,735 | - | 9,735 | 9,735 | - | 9,735 |
| COMPUTER MAINTENANCE | - | - | - | - | - | - | - | - | - | - | - | - |
| TRAVEL | - | - | - | - | - | - | - | - | - | - | - | - |
| OTHER CHEMICALS | - | - | - | - | - | - | - | - | - | - | - | - |
| CHEMICALS CHLORINE | - | - | - | - | - | - | - | - | - | - | - | - |
| CHEMICALS LIME | - | - | - | - | - | - | - | - | - | - | - | - |
| SUBTOTAL | - | 216,424 | 216,424 | 1,610 | 373,429 | 375,039 | 4,768,817 | 73,012 | 4,841,830 | 4,770,428 | 662,866 | 5,433,294 |
| ALLOCATE: | | | | | | | | | | | | |
| SECTION ADMIN. | - | - | - | - | - | - | - | - | - | - | - | - |
| DIVISION ADMINISTRATION | - | 19,225 | 19,225 | 143 | 33,171 | 33,314 | 423,606 | 6,486 | 430,091 | 423,749 | 58,881 | 482,630 |
| ONE CALL | - | - | - | - | - | - | - | - | - | - | - | - |
| PAINT SHOP | - | - | - | - | - | - | - | - | - | - | - | - |
| HEAVY EQUIPMENT | - | - | - | - | - | - | - | - | - | - | - | - |
| SUBTOTAL DIRECT OVERHEAD | - | 19,225 | 19,225 | 143 | 33,171 | 33,314 | 423,606 | 6,486 | 430,091 | 423,749 | 58,881 | 482,630 |
| TOTAL | \$ - | \$ 235,649 | \$ 235,649 | \$ 1,754 | \$ 406,600 | \$ 408,353 | \$ 5,192,423 | \$ 79,498 | \$ 5,271,921 | \$ 5,194,177 | \$ 721,747 | \$ 5,915,924 |

Note: * includes Underground

Source: Broward County Water and Wastewater Services

Table A - 4.6
Water & Wastewater Services
Activity Based Costing Report for the Twelve Months Ended September 30, 2017
Retail Wastewater - Lift Stations Detail

| Retail Wastewater ACTIVITY - Lift Stations | District One | | | District Two | | | District Three | | | Field Support | Total Lift Stations | | |
|---|-------------------|-------------------|-------------------|-------------------|---------------------|---------------------|-------------------|-------------------|-------------------|-------------------|---------------------|---------------------|---------------------|
| | Operations | Maintenance | Total O & M | Operations | Maintenance | Total O & M | Operations | Maintenance | Total O & M | | Operations | Maintenance | Total O & M |
| PERSONAL SERVICES | \$ - | \$ 224,150 | \$ 224,150 | \$ - | \$ 342,070 | \$ 342,070 | \$ - | \$ 199,751 | \$ 199,751 | \$ 733,739 | \$ 733,739 | \$ 765,971 | \$ 1,499,710 |
| OPERATING MATERIAL | - | 188,386 | 188,386 | - | 380,149 | 380,149 | - | 196,040 | 196,040 | 76,482 | 76,482 | 764,575 | 841,057 |
| OTHER MATERIAL | - | - | - | - | - | - | - | - | - | - | - | - | - |
| UTILITIES-OTHER | 2,721 | - | 2,721 | 30,238 | - | 30,238 | - | - | - | - | 32,959 | - | 32,959 |
| ELECTRIC | 221,884 | - | 221,884 | 164,002 | - | 164,002 | 111,209 | - | 111,209 | 478 | 497,573 | - | 497,573 |
| TREAT/TRANS | - | - | - | - | - | - | - | - | - | - | - | - | - |
| PURCHASED WATER | - | - | - | - | - | - | - | - | - | - | - | - | - |
| RENTAL/LEASES | - | - | - | - | - | - | - | - | - | - | - | - | - |
| MOTOR POOL | - | - | - | - | - | - | - | - | - | 155,115 | 155,115 | - | 155,115 |
| CONTRACT SERVICE | - | - | - | - | - | - | - | - | - | - | - | - | - |
| OTHER | 500 | 110,363 | 110,863 | 1,000 | 323,206 | 324,206 | 820 | 124,455 | 125,275 | (421,573) | (419,253) | 558,023 | 138,770 |
| EDUCATIONAL COURSES | - | - | - | - | - | - | - | - | - | - | - | - | - |
| COMPUTER MAINTENANCE | - | - | - | - | - | - | - | - | - | - | - | - | - |
| TRAVEL | - | - | - | - | - | - | - | - | - | - | - | - | - |
| OTHER CHEMICALS | - | - | - | - | - | - | - | - | - | - | - | - | - |
| CHEMICALS CHLORINE | - | - | - | - | - | - | - | - | - | - | - | - | - |
| CHEMICALS LIME | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SUBTOTAL | 225,105 | 522,898 | 748,003 | 195,239 | 1,045,425 | 1,240,664 | 112,029 | 520,246 | 632,275 | 544,242 | 1,076,615 | 2,088,569 | 3,165,184 |
| ALLOCATE: | | | | | | | | | | | | | |
| SECTION ADMIN. | - | - | - | - | - | - | - | - | - | - | - | - | - |
| DIVISION ADMINISTRATION | 19,996 | 46,448 | 66,444 | 17,343 | 92,863 | 110,206 | 9,951 | 46,213 | 56,164 | 48,344 | 95,634 | 185,524 | 281,158 |
| ONE CALL | - | - | - | - | - | - | - | - | - | - | - | - | - |
| PAINT SHOP | - | (2,754) | (2,754) | - | (2,754) | (2,754) | - | (2,754) | (2,754) | - | - | (8,261) | (8,261) |
| HEAVY EQUIPMENT | - | - | - | - | - | - | - | - | - | - | - | - | - |
| GENERATORS | 189,412 | - | 189,412 | 266,275 | - | 266,275 | 161,961 | - | 161,961 | - | 617,649 | - | 617,649 |
| SUBTOTAL DIRECT OVERHEAD | 19,996 | 43,695 | 63,690 | 17,343 | 90,110 | 107,452 | 9,951 | 43,459 | 53,410 | 48,344 | 95,634 | 177,263 | 272,897 |
| TOTAL | \$ 245,101 | \$ 566,593 | \$ 811,693 | \$ 212,582 | \$ 1,135,535 | \$ 1,348,116 | \$ 121,981 | \$ 563,705 | \$ 685,686 | \$ 592,586 | \$ 1,172,249 | \$ 2,265,832 | \$ 3,438,081 |

Source: Broward County Water and Wastewater Services

Table A - 4.7
Water & Wastewater Services
Activity Based Costing Report for the Twelve Months Ended September 30, 2017
Wholesale Raw Water

| Wholesale Raw Water | North System | | | South System | | | Total | | |
|---------------------------------------|-------------------|------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| | Operations | Maintenance | Total O & M | Operations | Maintenance | Total O & M | Operations | Maintenance | Total O & M |
| PERSONAL SERVICES | \$ - | \$ 34,199 | \$ 34,199 | \$ - | \$ 52,802 | \$ 52,802 | \$ - | \$ 87,001 | \$ 87,001 |
| OPERATING MATERIAL | - | 8,119 | 8,119 | 24,896 | 48,180 | 73,077 | 24,896 | 56,299 | 81,195 |
| OTHER MATERIAL | - | - | - | - | - | - | - | - | - |
| UTILITIES-OTHER | - | - | - | - | - | - | - | - | - |
| ELECTRIC | 83,744 | - | 83,744 | 303,806 | - | 303,806 | 387,550 | - | 387,550 |
| TREAT/TRANS | - | - | - | - | - | - | - | - | - |
| PURCHASED WATER | - | - | - | - | - | - | - | - | - |
| RENTAL/LEASES | - | - | - | - | - | - | - | - | - |
| MOTOR POOL | - | - | - | - | - | - | - | - | - |
| CONTRACT SERVICE | - | - | - | 9,497 | - | 9,497 | 9,497 | - | 9,497 |
| OTHER | 118,287 | 608 | 118,895 | 94,618 | 23,297 | 117,914 | 212,905 | 23,905 | 236,810 |
| EDUCATIONAL COURSES | - | - | - | - | - | - | - | - | - |
| COMPUTER MAINTENANCE | - | - | - | - | - | - | - | - | - |
| TRAVEL | - | - | - | - | - | - | - | - | - |
| OTHER CHEMICALS | - | - | - | - | - | - | - | - | - |
| CHEMICALS CHLORINE | - | - | - | - | - | - | - | - | - |
| CHEMICALS LIME | - | - | - | - | - | - | - | - | - |
| SUBTOTAL | 202,031 | 42,926 | 244,957 | 432,818 | 124,279 | 557,096 | 634,849 | 167,205 | 802,054 |
| <u>OPERATING COST RECLASS:</u> | | | | | | | | | |
| ONE CALL | - | - | - | - | - | - | - | - | - |
| PAINT SHOP | - | - | - | - | - | - | - | - | - |
| HEAVY EQUIPMENT | - | - | - | - | - | - | - | - | - |
| SUBTOTAL | - | - | - | - | - | - | - | - | - |
| <u>ALLOCATE:</u> | | | | | | | | | |
| SECTION ADMIN. | - | - | - | - | - | - | - | - | - |
| DIVISION ADMINISTRATION | 17,946 | 3,813 | 21,759 | 38,446 | 11,039 | 49,486 | 56,393 | 14,853 | 71,245 |
| SUBTOTAL DIRECT OVERHEAD | 17,946 | 3,813 | 21,759 | 38,446 | 11,039 | 49,486 | 56,393 | 14,853 | 71,245 |
| TOTAL | \$ 219,977 | \$ 46,739 | \$ 266,716 | \$ 471,264 | \$ 135,318 | \$ 606,582 | \$ 691,241 | \$ 182,057 | \$ 873,299 |

Source: Broward County Water and Wastewater Services

Table A - 4.8
Water & Wastewater Services
Activity Based Costing Report for the Twelve Months Ended September 30, 2017
Wholesale Wastewater Treatment

| Wholesale Wastewater Treatment | Solids | | | Liquids | | | Reuse | | | Total Plant | | | Other | Total Treatment |
|---------------------------------|---------------------|-------------------|----------------------|-----------------|-------------------|-------------------|------------------|-------------------|-------------------|---------------------|---------------------|----------------------|---------------------|----------------------|
| | Operations | Maintenance | Total O & M | Operations | Maintenance | Total O & M | Operations | Maintenance | Total O & M | Operations | Maintenance | Total O & M | | |
| PERSONAL SERVICES | \$ 4,140,312 | \$ 254,239 | \$ 4,394,551 | \$ - | \$ 116,276 | \$ 116,276 | \$ - | \$ 40,957 | \$ 40,957 | \$ 4,140,312 | \$ 411,472 | \$ 4,551,784 | \$ 1,045,498 | \$ 5,597,282 |
| OPERATING MATERIAL | 894,953 | 370,906 | 1,265,858 | - | 37,717 | 37,717 | - | 65,051 | 65,051 | 894,953 | 473,674 | 1,368,627 | 36,164 | 1,404,790 |
| OTHER MATERIAL | 30,092 | - | 30,092 | - | - | - | - | - | - | 30,092 | - | 30,092 | 448 | 30,540 |
| UTILITIES-OTHER | 216,648 | - | 216,648 | 333 | - | 333 | - | - | - | 216,981 | - | 216,981 | 14,925 | 231,906 |
| ELECTRIC | 2,993,929 | - | 2,993,929 | - | - | - | - | - | - | 2,993,929 | - | 2,993,929 | - | 2,993,929 |
| TREAT/TRANS | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| PURCHASED WATER | - | - | - | - | - | - | 11,590 | - | 11,590 | 11,590 | - | 11,590 | - | 11,590 |
| RENTAL/LEASES | 5,814 | - | 5,814 | - | - | - | - | - | - | 5,814 | - | 5,814 | 1,242 | 7,056 |
| MOTOR POOL | 222,324 | - | 222,324 | - | - | - | - | - | - | 222,324 | - | 222,324 | 19,884 | 242,209 |
| CONTRACT SERVICE | 3,965,837 | 42,371 | 4,008,208 | 1,520 | 74,375 | 75,895 | - | - | - | 3,967,357 | 116,746 | 4,084,103 | 30,565 | 4,114,668 |
| OTHER | 415,306 | 16,047 | 431,353 | - | 8,712 | 8,712 | - | 5,891 | 5,891 | 415,306 | 30,651 | 445,957 | 65,858 | 511,815 |
| EDUCATIONAL COURSES | 23,219 | - | 23,219 | - | - | - | - | - | - | 23,219 | - | 23,219 | - | 23,219 |
| COMPUTER MAINTENANCE | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| TRAVEL | - | - | - | - | - | - | - | - | - | - | - | - | 557 | 557 |
| OTHER CHEMICALS | 826,646 | - | 826,646 | - | - | - | - | - | - | 826,646 | - | 826,646 | - | 826,646 |
| CHEMICALS CHLORINE | 24,126 | - | 24,126 | - | - | - | - | - | - | 24,126 | - | 24,126 | - | 24,126 |
| CHEMICALS LIME | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SUBTOTAL | 13,759,205 | 683,562 | 14,442,768 | 1,853 | 237,080 | 238,933 | 11,590 | 111,900 | 123,490 | 13,772,648 | 1,032,543 | 14,805,191 | 1,215,142 | 16,020,333 |
| OPERATING COST RECLASS: | | | | | | | | | | | | | | |
| ONE CALL | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| PAINT SHOP | - | (2,950) | (2,950) | - | - | - | - | - | - | - | (2,950) | (2,950) | - | (2,950) |
| HEAVY EQUIPMENT | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| SUBTOTAL | - | (2,950) | (2,950) | - | - | - | - | - | - | - | (2,950) | (2,950) | - | (2,950) |
| ALLOCATE: | | | | | | | | | | | | | | |
| SECTION ADMIN. | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| DIVISION ADMINISTRATION | 1,222,207 | 60,720 | 1,282,926 | 165 | 21,059 | 21,224 | 1,030 | 9,940 | 10,969 | 1,223,401 | 91,719 | 1,315,120 | 107,939 | 1,423,059 |
| SUBTOTAL DIRECT OVERHEAD | 1,222,207 | 60,720 | 1,282,926 | 165 | 21,059 | 21,224 | 1,030 | 9,940 | 10,969 | 1,223,401 | 91,719 | 1,315,120 | 107,939 | 1,423,059 |
| TOTAL | \$14,981,412 | \$ 741,332 | \$ 15,722,743 | \$ 2,017 | \$ 258,140 | \$ 260,157 | \$ 12,620 | \$ 121,840 | \$ 134,460 | \$14,996,049 | \$ 1,121,311 | \$ 16,117,360 | \$ 1,323,081 | \$ 17,440,441 |

Source: Broward County Water and Wastewater Services

Table A - 4.9
Water & Wastewater Services
Activity Based Costing Report for the Twelve Months Ended September 30, 2017
Wholesale Wastewater Treatment - Other Detail

| Wholesale Wastewater Treatment - Other | Reuse Distribution | | | C&M & Septage | Total Other |
|--|--------------------|------------------|------------------|---------------------|---------------------|
| | Operations | Maintenance | Total O & M | | |
| PERSONAL SERVICES | \$ - | \$ 7,899 | \$ 7,899 | \$ 1,037,599 | \$ 1,045,498 |
| OPERATING MATERIAL | 323 | 4,104 | 4,427 | 31,737 | 36,164 |
| OTHER MATERIAL | - | - | - | 448 | 448 |
| UTILITIES-OTHER | - | - | - | 14,925 | 14,925 |
| ELECTRIC | - | - | - | - | - |
| TREAT/TRANS | - | - | - | - | - |
| PURCHASED WATER | - | - | - | - | - |
| RENTAL/LEASES | - | - | - | 1,242 | 1,242 |
| MOTOR POOL | - | - | - | 19,884 | 19,884 |
| CONTRACT SERVICE | - | - | - | 30,565 | 30,565 |
| OTHER | - | 5,325 | 5,325 | 60,534 | 65,858 |
| EDUCATIONAL COURSES | - | - | - | - | - |
| COMPUTER MAINTENANCE | - | - | - | - | - |
| TRAVEL | - | - | - | 557 | 557 |
| OTHER CHEMICALS | - | - | - | - | - |
| CHEMICALS CHLORINE | - | - | - | - | - |
| CHEMICALS LIME | - | - | - | - | - |
| SUBTOTAL | 323 | 17,328 | 17,650 | 1,197,492 | 1,215,142 |
| <u>OPERATING COST RECLASS:</u> | | | | | |
| ONE CALL | - | - | - | - | - |
| PAINT SHOP | - | - | - | - | - |
| HEAVY EQUIPMENT | - | - | - | - | - |
| SUBTOTAL | - | - | - | - | - |
| <u>ALLOCATE:</u> | | | | | |
| SECTION ADMIN. | - | - | - | - | - |
| DIVISION ADMINISTRATION | 29 | 1,539 | 1,568 | 106,371 | 107,939 |
| SUBTOTAL DIRECT OVERHEAD | 29 | 1,539 | 1,568 | 106,371 | 107,939 |
| TOTAL | \$ 351 | \$ 18,867 | \$ 19,218 | \$ 1,303,863 | \$ 1,323,081 |

Source: Broward County Water and Wastewater Services

Table A - 4.10
Water & Wastewater Services
Activity Based Costing Report for the Twelve Months Ended September 30, 2017
Wholesale Regional Transmission (Master Lift Stations)

| Wholesale Regional Transmission (Master Lift Stations) | District Four | | |
|--|---------------------|-------------------|---------------------|
| | Operations | Maintenance | Total O & M |
| PERSONAL SERVICES | \$ 249,992 | \$ 436,372 | \$ 686,364 |
| OPERATING MATERIAL | 85,312 | 95,692 | 181,004 |
| OTHER MATERIAL | - | - | - |
| UTILITIES-OTHER | 107,949 | - | 107,949 |
| ELECTRIC | 560,333 | - | 560,333 |
| TREAT/TRANS | - | - | - |
| PURCHASED WATER | - | - | - |
| RENTAL/LEASES | - | - | - |
| MOTOR POOL | 31,339 | 15,083 | 46,422 |
| CONTRACT SERVICE | 57,816 | 1,259 | 59,074 |
| OTHER | 104,702 | (66,769) | 37,933 |
| EDUCATIONAL COURSES | 2,640 | - | 2,640 |
| COMPUTER MAINTENANCE | - | - | - |
| TRAVEL | - | - | - |
| OTHER CHEMICALS | - | - | - |
| CHEMICALS CHLORINE | - | - | - |
| CHEMICALS LIME | - | - | - |
| SUBTOTAL | 1,200,083 | 481,637 | 1,681,720 |
| <u>OPERATING COST RECLASS:</u> | | | |
| ONE CALL | - | - | - |
| SUBTOTAL | - | - | - |
| <u>ALLOCATE:</u> | | | |
| SECTION ADMIN. | - | - | - |
| DIVISION ADMINISTRATION | 106,601 | 42,783 | 149,384 |
| SUBTOTAL DIRECT OVERHEAD | 106,601 | 42,783 | 149,384 |
| TOTAL | \$ 1,306,685 | \$ 524,420 | \$ 1,831,104 |

Source: Broward County Water and Wastewater Services

Table A-4.11
Water & Wastewater Services
Activity Based Costing Report for the Twelve Months Ended September 30, 2017
General & Administrative

| | WWS Administration | | Engineering Division (WWED) | Information Technology Division (WWITD) | | | | Business Operations Division (BOD) | | | | Total |
|---------------------------------|--------------------|---------------------------------------|--------------------------------|---|----------------------------|--------------------|-------------|------------------------------------|------------------------|--------------------|------------------|-------------------|
| | Administration | Project & Community Coordinator | | Infrastructure Support | Application Development | Desktop Support | SCADA | Customer Service | Grounds & Buildings | Warehouse Costs | Other Costs | |
| PERSONAL SERVICES | \$ 970,316 | \$ - | \$ 1,749,443 | \$ 1,592,233 | \$ 284,760 | \$ - | \$ - | \$ 2,619,904 | \$ 237,613 | \$ 299,109 | \$ 934,698 | \$ 8,688,076 |
| OPERATING MATERIAL | 2,173 | - | 7,463 | - | - | - | - | 366,260 | 77,942 | 10,010 | - | 463,848 |
| OTHER MATERIAL | 28,514 | - | 55,111 | 622,716 | 368 | - | - | 335,715 | 2,986 | 7,815 | 9,276 | 1,062,500 |
| UTILITIES-OTHER | 1,309 | - | 2,233 | 252,481 | - | - | - | 511 | 50,962 | 1,578 | - | 309,074 |
| ELECTRIC | - | - | - | - | - | - | - | 405 | 246,126 | - | - | 246,531 |
| TREAT/TRANS | - | - | - | - | - | - | - | - | - | - | - | - |
| PURCHASED WATER | - | - | - | - | - | - | - | - | - | - | - | - |
| RENTAL/LEASES | 136 | - | 1,700 | - | - | - | - | 27,992 | 3,851 | - | 4,500 | 38,178 |
| MOTOR POOL | - | - | 38,820 | 1,709 | - | - | - | 47,004 | 21,970 | - | - | 109,503 |
| CONTRACT SERVICE | 1,851 | - | 182,664 | 671,056 | - | - | - | 971,284 | 652,968 | 22,830 | 118,751 | 2,621,404 |
| OTHER | (24,941) | - | (46,858) | 280 | 460 | - | - | 598,888 | (3,272) | 10,158 | 13,723 | 548,439 |
| COUNTY SERVICES | 4,164,500 | - | - | - | - | - | - | - | - | - | - | 4,164,500 |
| EDUCATIONAL COURSES | - | - | 27,150 | 57,943 | 500 | - | - | 11,189 | 1,729 | - | 949 | 99,461 |
| COMPUTER MAINTENANCE | - | - | - | 175,680 | - | - | - | - | - | - | - | 175,680 |
| PURCHASED INSURANCE | 1,191,733 | - | - | - | - | - | - | - | - | - | - | 1,191,733 |
| TRAVEL | 2,447 | - | 1,238 | 4,245 | 5,276 | - | - | 1,357 | - | - | 1,724 | 16,286 |
| OPERATING COSTS RECLASS | - | - | - | - | - | - | - | - | - | - | - | - |
| CHEMICALS CHLORINE | - | - | - | - | - | - | - | - | - | - | - | - |
| CHEMICALS LIME | - | - | - | - | - | - | - | - | - | - | - | - |
| SUBTOTAL | 6,338,038 | - | 2,018,963 | 3,378,342 | 291,364 | - | - | 4,980,509 | 1,292,875 | 351,499 | 1,083,621 | 19,735,211 |
| ALLOCATE: | | | | | | | | | | | | |
| DIVISION ADMINISTRATION | | | | 560,910 | 48,376 | - | - | 310,230 | 80,532 | 21,894 | 67,497 | 1,089,439 |
| TOTAL | 6,338,038 | - | 2,018,963 | 3,939,252 | 339,740 | - | - | 5,290,740 | 1,373,407 | 373,393 | 1,151,118 | 20,824,651 |
| TOTAL TO BE ALLOCATED | 6,338,038 | - | 2,018,963 | 3,939,252 | 339,740 | - | - | 5,290,740 | 1,373,407 | 373,393 | 1,151,118 | 20,824,651 |
| | (6,338,038) | - | (2,018,963) | (3,939,252) | (339,740) | - | - | (5,290,740) | (1,373,407) | (373,393) | (1,151,118) | (20,824,651) |
| BALANCE AFTER ALLOCATION | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - |

Source: Broward County Water and Wastewater Services

Table A - 5
Water & Wastewater Services
Activity Based Costing (ABC) Report
Disaggregation of Operating & Maintenance Expenses
FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2017 (Q4 Report)

| OPERATION AND MAINTENANCE EXPENSES: | RETAIL WATER | RETAIL WASTEWATER | WHOLESALE RAW WATER | WHOLESALE TREATMENT | WHOLESALE TRANSMISSION | WWS ADMIN, WWITD & BOD | ENGINEERING | TOTAL |
|--|----------------------|--------------------------|----------------------------|----------------------------|-------------------------------|-----------------------------------|--------------------|----------------------|
| Personal Services | \$ 4,806,566 | \$ 2,521,453 | \$ 87,001 | \$ 5,597,282 | \$ 686,364 | \$ 6,938,634 | \$ 1,749,443 | \$ 22,386,743 |
| Utility Services | 1,376,118 | 4,196,403 | 387,550 | 3,225,835 | 668,282 | 553,372 | 2,233 | 10,409,793 |
| Material & Supplies | 852,102 | 1,108,502 | 81,195 | 1,435,330 | 181,004 | 1,463,773 | 62,574 | 5,184,480 |
| Chemicals | 2,373,278 | - | - | 850,772 | - | - | - | 3,224,050 |
| Motor Pool | 289,423 | 221,158 | - | 242,209 | 46,422 | 70,683 | 38,820 | 908,714 |
| Contractual Services | 414,399 | 120,956 | 9,497 | 4,114,668 | 59,074 | 2,438,740 | 182,664 | 7,339,998 |
| Purchased Insurance | - | - | - | - | - | 1,191,733 | - | 1,191,733 |
| County Administrative Service | - | - | - | - | - | 4,164,500 | - | 4,164,500 |
| Purchased Water | 6,017,570 | - | - | 11,590 | - | - | - | 6,029,160 |
| Rental & Leases | 5,806 | 2,560 | - | 7,056 | - | 36,478 | 1,700 | 53,600 |
| Travel | - | - | - | 557 | - | 15,048 | 1,238 | 16,843 |
| Other | 1,173,153 | 417,711 | 236,810 | 511,815 | 37,933 | 595,296 | (46,858) | 2,925,861 |
| Educational Courses | 1,582 | 9,735 | - | 23,219 | 2,640 | 72,311 | 27,150 | 136,637 |
| Computer Maintenance | - | - | - | - | - | 175,680 | - | 175,680 |
| IRR & Expensed Projects | - | - | - | - | - | - | - | - |
| SUBTOTAL O & M EXPENSES | 17,309,996 | 8,598,478 | 802,054 | 16,020,333 | 1,681,720 | 17,716,248 | 2,018,963 | 64,147,792 |
| OPERATING OVERHEAD: | | | | | | | | |
| SECTION ADMINISTRATION | - | - | - | - | - | - | - | - |
| DIVISION ADMINISTRATION | 1,537,617 | 763,788 | 71,245 | 1,423,059 | 149,384 | 1,089,439 | - | 5,034,532 |
| ONE CALL | - | - | - | - | - | - | - | - |
| PAINT SHOP | (8,458) | (8,261) | - | (2,950) | - | - | - | (19,669) |
| HEAVY EQUIPMENT | - | - | - | - | - | - | - | - |
| GENERATORS | - | 617,649 | - | - | - | - | - | 617,649 |
| LAB | 578,708 | 3,014 | 24,113 | 883,132 | 18,085 | - | - | 1,507,051 |
| SUBTOTAL OPERATING O/H | 2,107,867 | 1,376,191 | 95,358 | 2,303,240 | 167,469 | 1,089,439 | - | 7,139,564 |
| TOTAL EXPENSES BEFORE ALLOCATION | 19,417,863 | 9,974,668 | 897,411 | 18,323,573 | 1,849,189 | 18,805,688 | 2,018,963 | 71,287,356 |
| ALLOCATION: | | | | | | | | |
| CUSTOMER SERVICE | 2,451,994 | 2,150,949 | 52,907 | 529,074 | 105,815 | (5,290,740) | - | - |
| WWS ADMINISTRATION | 5,977,392 | 3,070,498 | 276,250 | 5,640,537 | 569,235 | (13,514,948) | (2,018,963) | - |
| SUBTOTAL ALLOCATION | 8,429,386 | 5,221,447 | 329,157 | 6,169,611 | 675,050 | (18,805,688) | (2,018,963) | - |
| TOTAL OPERATING EXPENSES | 27,847,250 | 15,196,115 | 1,226,569 | 24,493,184 | 2,524,239 | - | - | 71,287,356 |
| RETAIL SHARE OF REGIONAL COST | 425,965 | 5,852,635 | - | - | - | - | - | 6,278,600 |
| TOTAL COST | \$ 28,273,214 | \$ 21,048,750 | \$ 1,226,569 | \$ 24,493,184 | \$ 2,524,239 | \$ - | \$ - | \$ 77,565,956 |

SOURCE: BROWARD COUNTY WATER & WASTEWATER FUND

**Table A-6
Water and Wastewater Services
Operating and Maintenance Expense for Large User Rate
Fiscal Year 2017 and 2018
\$ per 1000 Gallons**

| | Fiscal 2017 | | Fiscal 2018 | |
|--|----------------------|--------------|----------------------|--------------|
| | Treatment & Disposal | Transmission | Treatment & Disposal | Transmission |
| Total Direct Operating Costs | 19,294,570 | 2,556,389 | 18,803,360 | 2,778,400 |
| Allocated A & G Costs | 6,442,190 | 825,530 | 6,280,900 | 880,840 |
| Projected Annual Average Daily Flow (MGD) | 69.3 | 53.4 | 68.5 | 54.5 |
| Operating and Maintenance Rate Per 1,000 Gallons | 0.855 | 0.162 | 0.868 | 0.177 |

NOTE: (1) This charge does not include costs of debt service which are fixed monthly charges to large users or IRR.

Source: Broward County Water & Wastewater Services

| Table A-7 | | | |
|--|--|--|--|
| Water and Wastewater Services | | | |
| Historical and Budgeted Large Users Operating & Maintenance Rates | | | |
| Period Large User Charge in Effect | Treatment & Disposal Rate Per 1,000 Gallons | Transmission Rate Per 1,000 Gallons | Combined Rate Per 1,000 Gallons |
| Fiscal 2009 | \$0.68 | \$0.14 | \$0.81 |
| Fiscal 2010 | \$0.80 | \$0.18 | \$0.97 |
| Fiscal 2011 | \$0.89 | \$0.21 | \$1.10 |
| Fiscal 2012 | \$0.84 | \$0.19 | \$1.03 |
| Fiscal 2013 | \$0.78 | \$0.20 | \$0.98 |
| Fiscal 2014 | \$0.75 | \$0.16 | \$0.91 |
| Fiscal 2015 | \$0.84 | \$0.16 | \$1.00 |
| Fiscal 2016 | \$0.86 | \$0.15 | \$1.01 |
| Fiscal 2017 | \$0.86 | \$0.16 | \$1.02 |
| Fiscal 2018 | \$0.87 | \$0.18 | \$1.05 |

Source: Broward County Water & Wastewater Services

Table A - 8
Water and Wastewater Services
Water & Wastewater Fund
Statement of Net Position
September 30, 2017, 2016, 2015, 2014, and 2013 (In Thousands)

| | FY 2017 | FY 2016 | FY 2015 | FY 2014 | FY 2013 |
|--|-------------------|-------------------|-------------------|-------------------|-------------------|
| ASSETS | | | | | |
| Current Assets: | | | | | |
| Unrestricted Assets: | | | | | |
| Cash & Cash Equivalents | \$ 8,920 | \$ 7,627 | \$ 13,305 | \$ 27,881 | \$ 14,441 |
| Investments | 58,339 | 80,498 | 85,915 | 56,591 | 39,703 |
| Receivable (Net) | 20,169 | 16,698 | 18,235 | 14,873 | 13,460 |
| Due from Other County Funds | 459 | - | - | - | - |
| Due from Other Governments | 17 | - | 18 | - | - |
| Inventory | 9,044 | 8,845 | 8,694 | 8,511 | 8,070 |
| Prepaid Items | 395 | 427 | 1,337 | 1,568 | 2,051 |
| Total Current Unrestricted Assets | 97,343 | 114,095 | 127,504 | 109,424 | 77,725 |
| Restricted Assets: | | | | | |
| Current Restricted Assets | 34,539 | 34,254 | 40,717 | 45,757 | 39,144 |
| Total Current Assets | 131,882 | 148,349 | 168,221 | 155,181 | 116,869 |
| Noncurrent Assets: | | | | | |
| Noncurrent Restricted Assets | 43,394 | 43,359 | 42,952 | 81,043 | 122,932 |
| Capital Assets: | | | | | |
| Utility Plant in Service | 1,217,919 | 1,194,686 | 1,143,447 | 1,124,870 | 1,102,690 |
| Land | 4,936 | 4,936 | 4,936 | 4,936 | 4,904 |
| Construction in Progress | 147,017 | 111,473 | 101,079 | 63,231 | 40,268 |
| Equipment | 32,273 | 31,401 | 28,688 | 27,270 | 26,710 |
| Total Capital Assets | 1,402,145 | 1,342,496 | 1,278,150 | 1,220,307 | 1,174,572 |
| Less Accumulated Depreciation | (588,807) | (553,472) | (520,093) | (485,842) | (452,215) |
| Total Capital Assets, Net | 813,338 | 789,024 | 758,057 | 734,465 | 722,357 |
| Total Noncurrent Assets | 856,732 | 832,383 | 801,009 | 815,508 | 845,289 |
| TOTAL ASSETS | 988,614 | 980,732 | 969,230 | 970,689 | 962,158 |
| DEFERRED OUTFLOWS OF RESOURCES | 32,752 | 34,002 | 31,639 | 13,445 | 13,311 |
| LIABILITIES | | | | | |
| Current Liabilities: | | | | | |
| Payable From Unrestricted Assets: | | | | | |
| Accounts Payable and Accrued Liabilities | 12,028 | 13,991 | 6,827 | 3,547 | 3,216 |
| Due to Other County Funds | 234 | 404 | - | - | - |
| Due to Other Governments | 3,223 | 5,571 | 4,032 | 3,091 | 3,258 |
| Compensated Absences | 1,776 | 1,685 | 1,744 | 1,759 | 1,763 |
| Assets | 17,261 | 21,651 | 12,603 | 8,397 | 8,237 |
| Payable From Restricted Assets | | | | | |
| Accounts Payable and Accrued Liabilities | - | 22 | 9,442 | 11,257 | 5,013 |
| Accrued Interest Payable | 10,870 | 10,999 | 8,352 | 11,897 | 12,068 |
| Revenue Bonds Payable | 14,340 | 14,080 | 13,875 | 13,705 | 13,360 |
| Customer Deposits | 9,329 | 9,153 | 9,048 | 8,898 | 8,703 |
| Total Current Liabilities Payable from Restricted Assets | 34,539 | 34,254 | 40,717 | 45,757 | 39,144 |
| Total Current Liabilities | 51,800 | 55,905 | 53,320 | 54,154 | 47,381 |
| Noncurrent Liabilities: | | | | | |
| Revenue Bonds Payable, Net of Discount & Premiums | 504,052 | 521,843 | 539,373 | 535,928 | 551,826 |
| Compensated Absences | 2,006 | 1,914 | 1,815 | 1,865 | 1,822 |
| Other Post Employment Benefits | 896 | 830 | 762 | 690 | 617 |
| Net Pension Liabilities | 23,309 | 21,315 | 14,067 | 9,798 | - |
| Total Noncurrent Liabilities | 530,263 | 545,902 | 556,017 | 548,281 | 554,265 |
| TOTAL LIABILITIES | 582,063 | 601,807 | 609,337 | 602,435 | 601,646 |
| DEFERRED INFLOWS OF RESOURCES | 1,411 | 528 | 1,988 | 5,898 | - |
| NET POSITION | | | | | |
| Net Investment in Capital Assets | 347,941 | 316,526 | 270,706 | 271,569 | 287,484 |
| Restricted For: | | | | | |
| Debt Service | 14,340 | 14,080 | 13,875 | 13,705 | 13,360 |
| Renewal, Replacement, and Improvement | 6,642 | 6,607 | 6,200 | 6,130 | 5,930 |
| Unrestricted | 68,969 | 75,186 | 98,763 | 84,397 | 67,049 |
| TOTAL NET POSITION | \$ 437,892 | \$ 412,399 | \$ 389,544 | \$ 375,801 | \$ 373,823 |

Table A - 9
Water and Wastewater Services
Water & Wastewater Fund
Statement of Revenue, Expense, and Changes in Net Position
September 30, 2017, 2016, 2015, 2014, and 2013 (In Thousands)

| | FY 2017 | FY 2016 | FY 2015 | FY 2014 | FY 2013 |
|--|-------------------|-------------------|-------------------|-------------------|-------------------|
| Operating Revenues: | | | | | |
| Retail Services: | | | | | |
| Water | \$ 49,817 | \$ 47,249 | \$ 46,947 | \$ 44,508 | \$ 43,114 |
| Wastewater | 41,727 | 39,968 | 38,999 | 35,740 | 34,485 |
| Septic Charges | 2,850 | 3,054 | 2,743 | 2,232 | 1,977 |
| Other Services | 6,888 | 6,953 | 7,473 | 6,932 | 6,807 |
| | 101,282 | 97,224 | 96,162 | 89,412 | 86,383 |
| Wholesale Services: | | | | | |
| Water | 803 | 857 | 849 | 945 | 876 |
| Wastewater | 34,834 | 33,868 | 34,417 | 32,413 | 32,957 |
| Total Operating Revenues | 136,919 | 131,949 | 131,428 | 122,770 | 120,216 |
| Operating Expenses: | | | | | |
| Personal Services | 29,999 | 27,066 | 24,405 | 23,081 | 23,208 |
| Utilities Services | 16,225 | 16,424 | 15,712 | 14,927 | 15,338 |
| Chemicals | 3,224 | 3,184 | 3,225 | 3,281 | 3,086 |
| County Services | 4,015 | 3,827 | 4,052 | 3,339 | 3,236 |
| Material and Supplies | 5,408 | 5,773 | 5,628 | 4,923 | 5,635 |
| Motor Pool | 1,188 | 1,161 | 1,322 | 1,245 | 1,449 |
| Contractual Services | 8,496 | 9,933 | 10,294 | 8,423 | 8,203 |
| Other | 4,319 | 2,749 | 2,247 | 2,583 | 3,220 |
| Total Operating Expenses Before Depreciation | 72,874 | 70,117 | 66,885 | 61,802 | 63,375 |
| Operating Income before Depreciation | 64,045 | 61,832 | 64,543 | 60,968 | 56,841 |
| Depreciation Expense | 36,282 | 34,328 | 34,962 | 34,730 | 33,947 |
| Operating Income | 27,763 | 27,504 | 29,581 | 26,238 | 22,894 |
| Non-Operating Revenues (Expenses): | | | | | |
| Grants | 17 | - | 18 | 11 | 20 |
| Interest Income | 1,099 | 444 | 351 | 394 | 353 |
| Interest Expense, Net of Capitalized Interest | (15,699) | (14,052) | (16,385) | (16,964) | (17,235) |
| Other Income | 643 | 505 | 469 | 941 | 1,938 |
| Bond Issuance Costs | - | - | (1,506) | - | - |
| Discontinued Project Costs | (390) | (185) | (1,344) | (499) | (179) |
| Gain/(Loss) on Disposal of Capital Assets | 143 | 93 | 71 | 25 | 4 |
| Other Expense | (44) | (23) | (36) | (32) | (24) |
| Total Non-Operating Revenues (Expenses) | (14,231) | (13,218) | (18,362) | (16,124) | (15,123) |
| Income before Capital Contributions and Transfers | 13,532 | 14,286 | 11,219 | 10,114 | 7,771 |
| Capital Contributions | 11,961 | 8,569 | 8,046 | 6,600 | 6,037 |
| Transfer Out | - | - | (5,522) | - | - |
| Change in Net Position | 25,493 | 22,855 | 13,743 | 16,714 | 13,808 |
| Total Net Position - Beginning, as Restated (1) | 412,399 | 389,544 | 375,801 | 359,087 | 360,015 |
| Total Net Position - Ending | \$ 437,892 | \$ 412,399 | \$ 389,544 | \$ 375,801 | \$ 373,823 |

(1) The FY 2014 beginning net position in the table above was restated due to the implementation of GASB Statement No. 68, *Accounting and Financial Reporting for Pensions - an amendment of GASB Statement No. 27* and GASB Statement No. 71, *Pension Transition for Contributions Made Subsequent to the Measurement Date - an amendment of GASB Statement No. 68*.

The FY 2013 beginning net position in the table above was restated due to the implementation of GASB Statement No. 65, *Items Previously Reported as Assets and Liabilities*.

Table A - 10
Water and Wastewater Services
Water & Wastewater Fund
Statement of Cash Flows
September 30, 2017, 2016, 2015, 2014, and 2013 (In Thousands)

| | FY 2017 | FY 2016 | FY 2015 | FY 2014 | FY 2013 |
|--|------------------|------------------|------------------|-------------------|-------------------|
| Cash Flows From Operating Activities: | | | | | |
| Cash Received from Customers | \$ 132,464 | \$ 133,830 | \$ 128,787 | \$ 121,370 | \$ 120,655 |
| Cash Payments to Suppliers for Goods and Services | (44,559) | (40,726) | (43,305) | (38,988) | (42,004) |
| Cash Payments to Employees for Services | (28,059) | (26,662) | (24,838) | (23,439) | (23,503) |
| Other Cash Received (Paid) | 621 | 505 | 469 | 941 | 980 |
| Net Cash Provided by Operating Activities | 60,467 | 66,947 | 61,113 | 59,884 | 56,128 |
| Cash Flows From Noncapital Financing Activities: | | | | | |
| Transfers Out | - | - | (5,522) | - | - |
| Noncapital Grants | - | 16 | - | 11 | 20 |
| Net Cash Provided by (Used for) Noncapital Financing Activities | - | 16 | (5,522) | 11 | 20 |
| Cash Flows From Capital and Related Financing Activities: | | | | | |
| Proceeds from Bond Refunding | - | - | 653 | - | - |
| Payment to Refunded Bond Escrow Agent | - | - | (748) | - | - |
| Payment of Bond Issuance Costs | - | (85) | (546) | - | - |
| Acquisition and Construction of Capital Assets | (49,483) | (55,540) | (48,355) | (33,708) | (35,632) |
| Proceeds from Sale of Capital Assets | 169 | 94 | 71 | 69 | 12 |
| Capital Recovery Fees | 1,527 | 2,394 | 3,120 | 4,093 | 3,680 |
| Capital Surcharges Contributed from Other Governments | 1,752 | 1,874 | 1,743 | 1,662 | 1,633 |
| Principal Paid on Revenue Bonds | (14,080) | (13,875) | (13,705) | (13,360) | (10,440) |
| Interest Paid on Revenue Bonds | (21,869) | (19,352) | (26,892) | (23,965) | (23,982) |
| Other Debt Service Costs Paid | (44) | (23) | (36) | (43) | (18) |
| Net Cash Provided by (Used for) Capital and Related Financing Activities | (82,028) | (84,513) | (84,695) | (65,252) | (64,747) |
| Cash Flows From Investing Activities: | | | | | |
| Purchase of Investment Securities | (346,437) | (225,562) | (235,835) | (166,287) | (130,683) |
| Proceeds from Sale and Maturities of Investment Securities | 328,907 | 239,984 | 232,437 | 150,090 | 123,945 |
| Interest and Dividends on Investments | 1,015 | 399 | 721 | 409 | 367 |
| Net Cash Provided by (Used for) Investing Activities | (16,515) | 14,821 | (2,677) | (15,788) | (6,371) |
| Net Increase (Decrease) In Cash & Cash Equivalents | (38,076) | (2,729) | (31,781) | (21,145) | (14,970) |
| Cash & Cash Equivalents, Beginning | 79,022 | 81,751 | 113,532 | 134,677 | 149,647 |
| Cash & Cash Equivalents, Ending | \$ 40,946 | \$ 79,022 | \$ 81,751 | \$ 113,532 | \$ 134,677 |
| Cash and Cash Equivalents - Unrestricted Assets | \$ 8,920 | \$ 7,627 | \$ 13,305 | \$ 27,881 | \$ 14,441 |
| Cash and Cash Equivalents - Restricted Assets | 32,026 | 71,395 | 68,446 | 85,651 | 120,236 |
| Total Cash & Cash Equivalents | \$ 40,946 | \$ 79,022 | \$ 81,751 | \$ 113,532 | \$ 134,677 |
| Reconciliation Of Operating Income To Net Cash Provided By Operating Activities: | | | | | |
| Operating Income | \$ 27,763 | \$ 27,504 | \$ 29,581 | \$ 26,238 | \$ 22,894 |
| Adjustments to Reconcile Operating Income to Net Cash Provided by (Used For) Operating Activities: | | | | | |
| Depreciation | 36,282 | 34,328 | 34,962 | 34,730 | 33,947 |
| Miscellaneous Non-Operating Revenue | 643 | 505 | 469 | 941 | 1,030 |
| Decrease (Increase) in Assets and Deferred Outflows of Resources: | | | | | |
| Accounts Receivable | (3,396) | 1,590 | (3,732) | (1,428) | (607) |
| Due from Other County Funds | (459) | - | - | - | - |
| Inventory | (199) | (151) | (183) | (441) | (513) |
| Prepaid Items | (49) | 14 | (223) | 197 | 131 |
| Deferred Outflows on Pensions | (1,222) | (4,835) | (873) | (1,312) | - |
| Increase (Decrease) in Liabilities and Deferred Inflows of Resources: | | | | | |
| Accounts Payable | 106 | 1,121 | (419) | (23) | (1,455) |
| Accrued Liabilities | 36 | (659) | 74 | 191 | (8) |
| Due to Other Governments | (2,340) | 1,529 | 941 | (167) | 833 |
| Customer Deposits | 176 | 105 | 150 | 195 | 213 |
| Compensated Absences | 183 | 40 | (65) | 39 | (416) |
| Other Post Employment Benefits | 66 | 68 | 72 | 73 | 79 |
| Net Pension Liability | 1,994 | 7,248 | 4,269 | (5,247) | - |
| Deferred Inflows on Pensions | 883 | (1,460) | (3,910) | 5,898 | - |
| Total Adjustments | 32,704 | 39,443 | 31,532 | 33,646 | 33,234 |
| Net Cash Provided by Operating Activities | \$ 60,467 | \$ 66,947 | \$ 61,113 | \$ 59,884 | \$ 56,128 |

**Table A-11
Water and Wastewater Services
Water and Wastewater Retail Statistics (1,000's gallons)
As of September 30, 2017**

| Water | Produced | Purchased | Billed | System Uses & Losses |
|---------------------|------------------|------------------|------------------|---------------------------------|
| District 1 | 2,708,051 | 0 | 2,411,368 | 296,683 |
| District 2 | 4,699,147 | 0 | 2,464,545 | 0 |
| District 2 - Resale | 0 | 0 | 1,844,111 | 390,491 |
| District 3A | 0 | 1,119,899 | 958,412 | 161,487 |
| District 3BC | 0 | 1,049,965 | 1,036,592 | 13,373 |
| Total | 7,407,198 | 2,169,864 | 8,715,028 | 862,034 |

| Wastewater | Billed | Wastewater Transmission to Plant LU adj |
|-------------------|------------------|--|
| District 1 | 2,292,979 | 2,448,044 |
| District 2 | 2,149,829 | 2,287,879 |
| District 3A | 680,153 | 699,099 |
| District 3BC | 322,583 | 335,879 |
| Total | 5,445,544 | 5,770,901 |

* Based upon water billed to wastewater customers. Residential billing capped at 15,000 gallons.

Source: Broward County Water and Wastewater Services

Table A-12
Water and Wastewater Services
WWS Capital Improvement Program Budget History and Projections

| FY | Capital Budget | Debt Financed | Cash Financed |
|-----------|-----------------------|----------------------|----------------------|
| 2005 | 88,852,571 | 22,792,255 | 40,999,372 |
| 2006 | 76,378,590 | 34,207,745 | 24,427,103 |
| 2007 | 78,678,510 | 38,775,056 | 13,951,976 |
| 2008 | 84,191,260 | 34,080,229 | 14,277,285 |
| 2009 | 70,447,060 | 34,136,740 | 9,585,084 |
| 2010 | 39,665,540 | 44,291,612 | 12,341,221 |
| 2011 | 81,438,970 | 51,020,406 | 11,397,849 |
| 2012 | 34,695,650 | 28,718,290 | 18,825,564 |
| 2013 | 85,366,450 | 26,486,078 | 3,291,213 |
| 2014 | 74,726,900 | 31,501,547 | 2,718,458 |
| 2015 | 142,412,090 | 29,226,894 | 19,108,000 |
| 2016 | 86,315,190 | 18,035,392 | 55,540,000 |
| 2017 | 168,680,940 | 139,351,870 | 29,329,070 |
| 2018 | 109,775,850 | 74,050,000 | 35,725,850 |
| 2019 | 128,066,530 | 85,500,000 | 42,566,530 |
| 2020 | 42,006,800 | 14,500,000 | 27,506,800 |
| 2021 | 52,393,580 | 25,000,000 | 27,393,580 |
| 2022 | 82,693,580 | 45,000,000 | 37,693,580 |

Source: Broward County Water and Wastewater Services

| Table A-13 | | | |
|--|--------------|-------------------|--------------|
| Water and Wastewater Services | | | |
| Historical Capital Recovery Fees Collected | | | |
| Fiscal Year Ended 9/30 | Water | Wastewater | Total |
| 2008 | 914,606 | 942,749 | 1,857,355 |
| 2009 | -220,999 | -83,229 | -304,228 |
| 2010 | 75,862 | 198,779 | 274,641 |
| 2011 | 287,404 | 374,258 | 661,661 |
| 2012 | 35,454 | 600,408 | 635,862 |
| 2013 | 2,014,861 | 1,665,189 | 3,680,050 |
| 2014 | 1,838,187 | 2,255,302 | 4,093,489 |
| 2015 | 1,498,657 | 1,621,728 | 3,120,385 |
| 2016 | 1,440,573 | 953,212 | 2,393,785 |
| 2017 | 1,103,163 | 424,215 | 1,527,378 |
| Source: Broward County Water and Wastewater Services | | | |

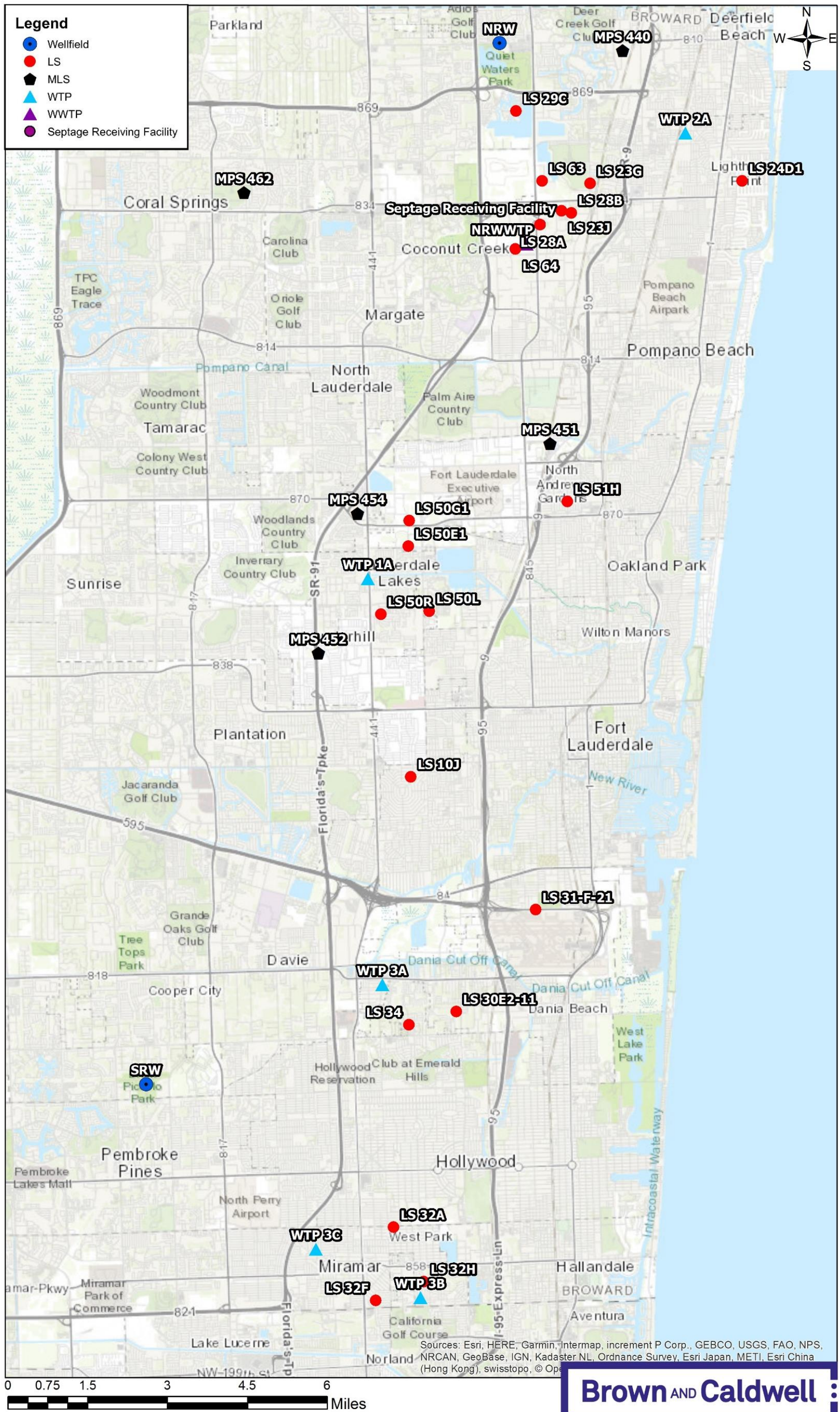
**Table A-14
Water and Wastewater Services
History of Large User Wastewater Rates**

| Fiscal Year Ended 9/30 | O&M (Per 1,000 gallons) | | Debt Service (Per MGD) | | IR&R Surcharge |
|------------------------|-------------------------|--------------|------------------------|--------------|----------------|
| | Treatment | Transmission | Treatment | Transmission | |
| 2018 | 0.868 | 0.177 | 14,554.52 | 6,077.47 | 5.0% |
| 2017 | 0.855 | 0.162 | 15,924.67 | 5,301.99 | 5.0% |
| 2016 | 0.861 | 0.151 | 15,922.79 | 5,302.12 | 5.0% |
| 2015 | 0.839 | 0.162 | 16,155.30 | 5,475.88 | 5.0% |
| 2014 | 0.747 | 0.158 | 16,153.27 | 5,476.00 | 5.0% |
| 2013 | 0.780 | 0.195 | 16,165.78 | 5,439.64 | 5.0% |
| 2012 | 0.839 | 0.186 | 12,562.44 | 5,155.32 | 5.0% |
| 2011 | 0.886 | 0.211 | 12,849.17 | 5,278.69 | 5.0% |
| 2010 | 0.795 | 0.179 | 14,251.52 | 6,139.48 | 5.0% |
| 2009 | 0.676 | 0.136 | 11,253.00 | 3,840.90 | 5.0% |
| 2008 | 0.687 | 0.139 | 10,096.74 | 3,641.36 | 5.0% |
| 2007 | 0.689 | 0.136 | 10,119.20 | 3,641.27 | 2.5% |

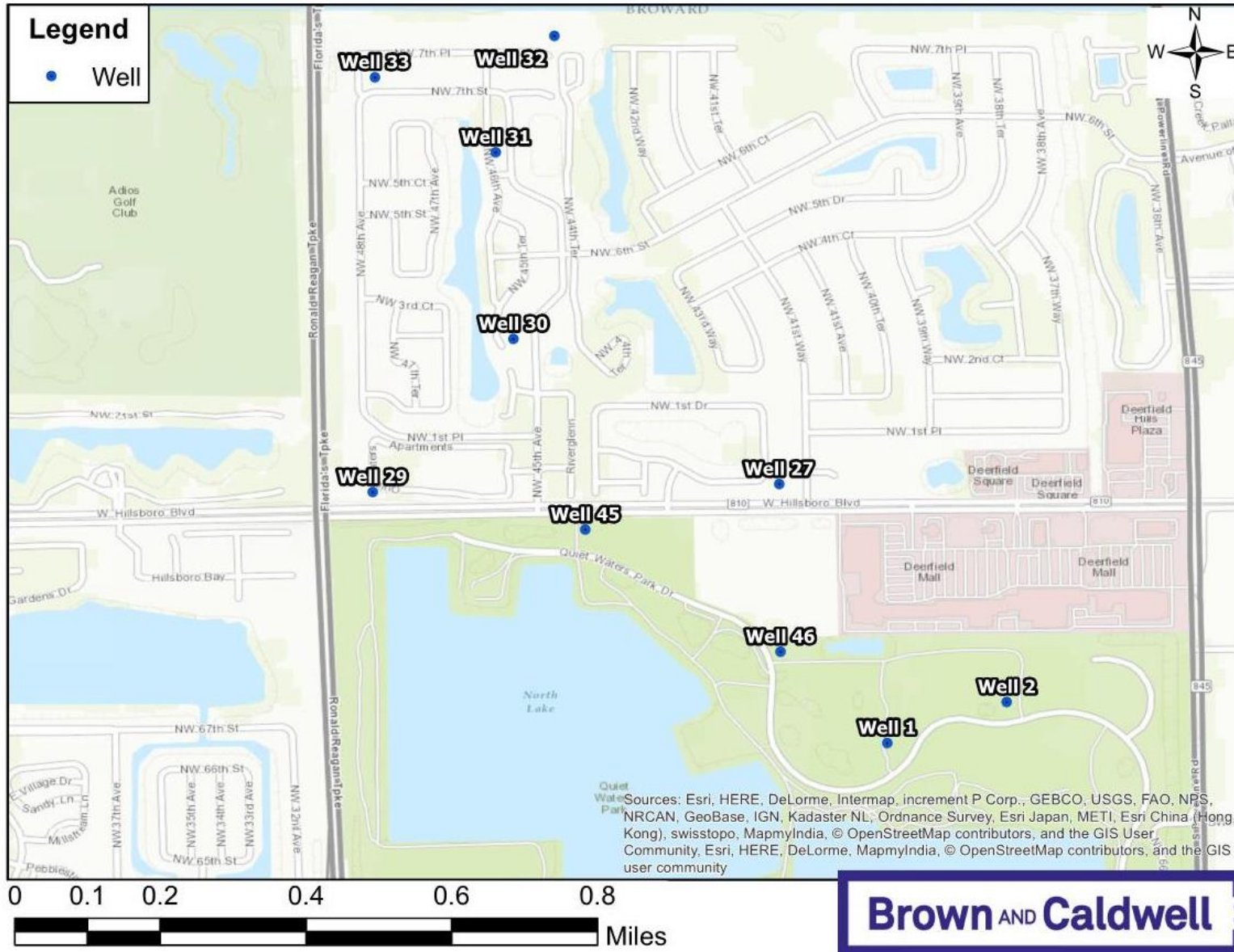
Source: Broward County Water and Wastewater Services

Appendix B

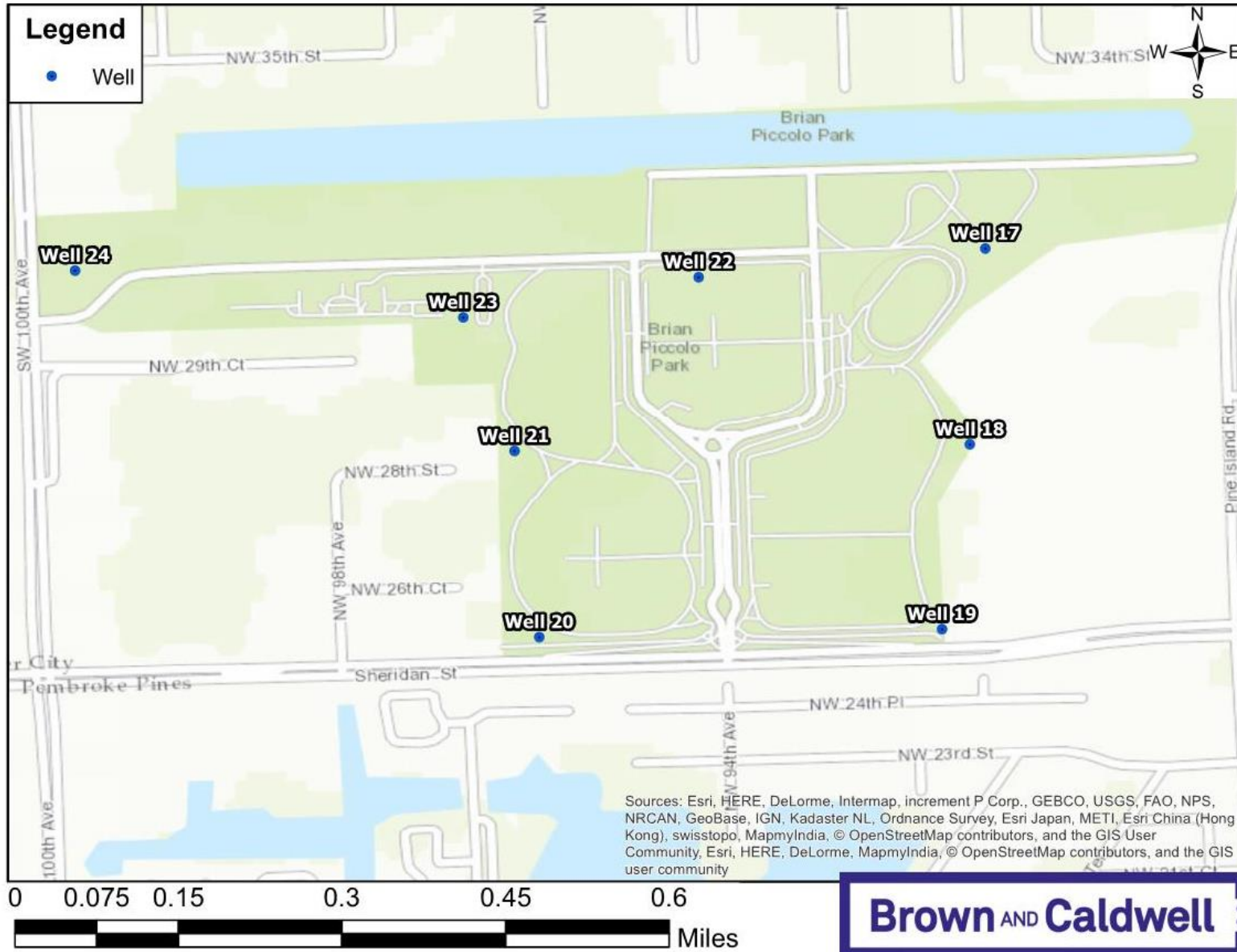
Visual Inspections Overview Map



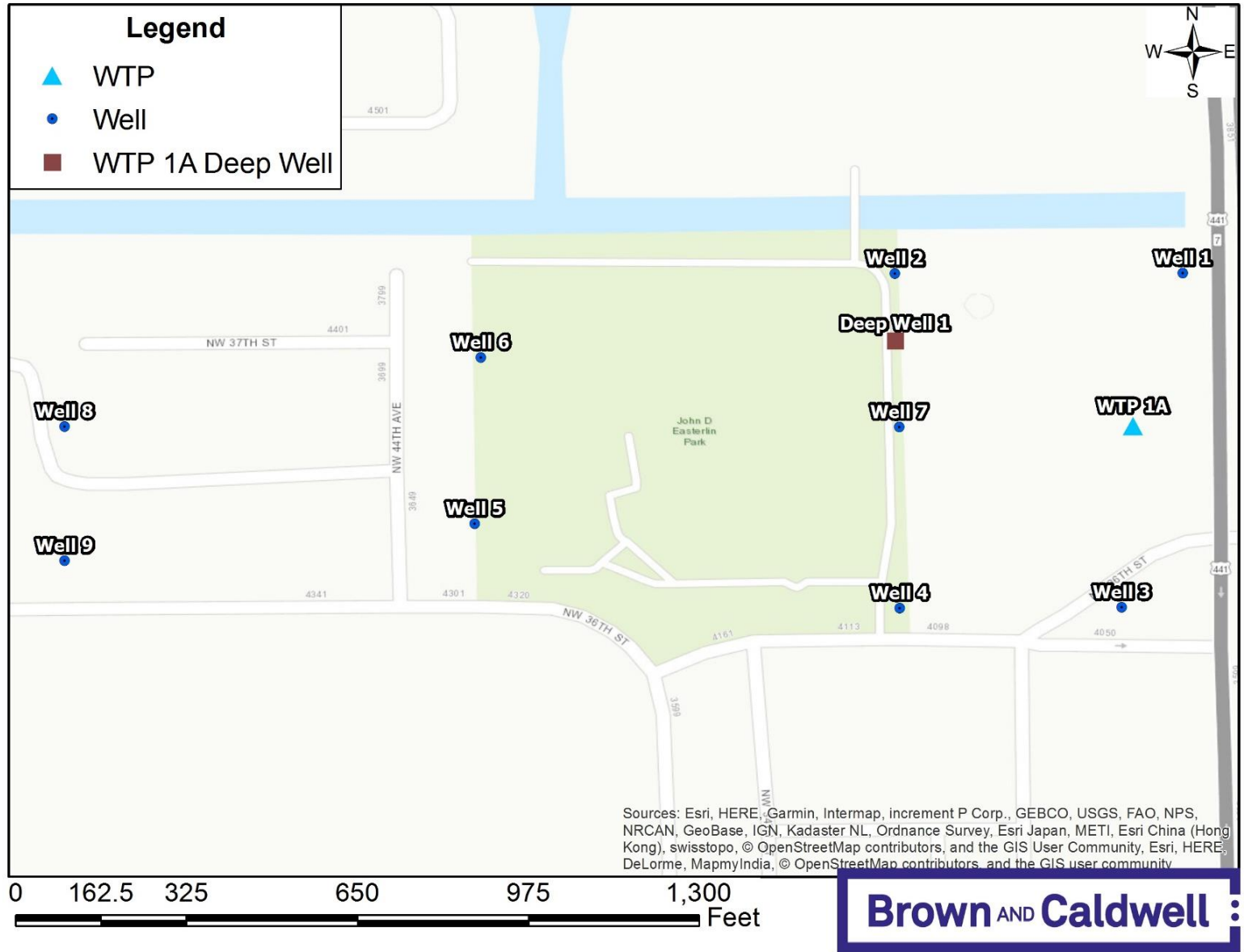
North Regional Wellfield



South Regional Wellfield



District 1



District 2

