

# BROWARD COUNTY WATER AND WASTEWATER SERVICES ANNUAL REPORT

## FISCAL YEAR 2014

Prepared for



Final Report Prepared July 2015 by  
Brown and Caldwell, Inc.

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## Section 1 Introduction

### 1.1 Purpose of the Report

The purpose of this Annual Report of 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 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;
- 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 organization; the primary operating activities including the retail water and wastewater system which provides water and/or sewer service to approximately 56,530 customers and sewer only to approximately 2,850 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

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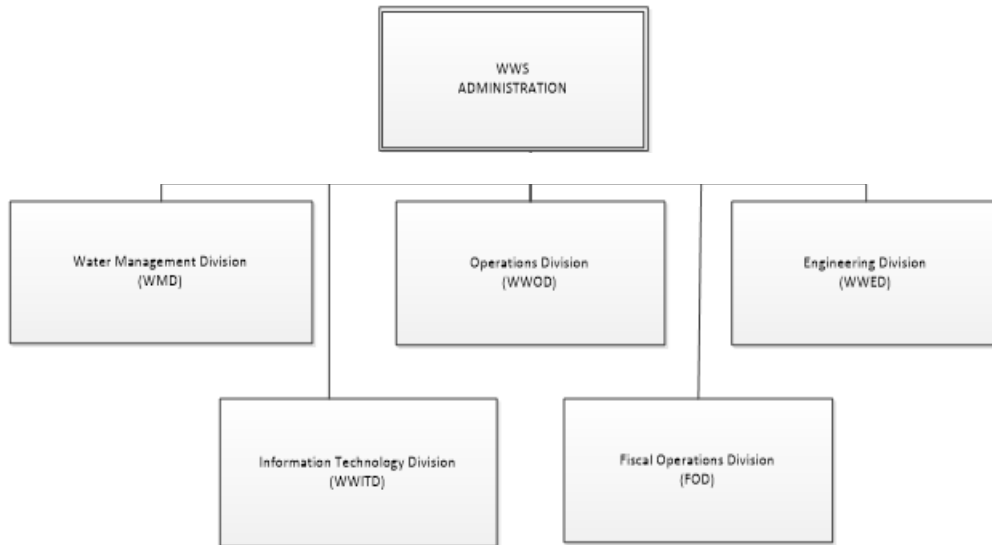
### Section 2 Administration and Management

#### 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, began providing wholesale wastewater treatment service to large users. 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 by WTP 2A and District 3 by purchased water from the City of Hollywood.

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 and Instrumentation Technology, and Fiscal 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 362 people, including 21 certified water operators, 24 certified wastewater operators, 14 registered professional engineers, and 3 certified public accountants. Included are 7 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

## **Section 2 Administration and Management**

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

### **2.2 Mission**

WWS has adopted a mission statement expressing commitment 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 following goals were established by WWS:

- Provide high quality and cost-effective services.
- Treat customers professionally and with the utmost respect.
- Operate the facilities and execute programs in a manner that protects the environment.
- Protect and enhance the natural resources of Broward County.
- Create and maintain a workplace in which employees are provided the opportunity to develop to their maximum potential.
- 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, Fiscal Operations, Information Technology, Operations, and Water Management. Administration approves operating and capital budgets, assures rates, fees, charges are sufficient to support fund activities and debt service requirements while providing appropriate coverage to maintain or enhance bond ratings; 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 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.

## Section 2 Administration and Management

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WWS Administration highlights included:

- Water and Wastewater Services' water and sewer utility bonds maintained strong ratings— "Aa2", "AA+" and "AA" — from the three major rating services: Moody's, Fitch, and Standard & Poor's.
- The Retail Rates remained unchanged as compared to fiscal year 2013.
- 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 2014.
- Palm Beach County (PBC) and Broward County continued to negotiate the creation of a Regional Reclaimed Water System to support the NRWWS reclaimed water requirement under the Ocean Outfall legislation.

### 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 is responsible for pumping, treating and distributing water and/or the provision of wastewater collection services to retail customers and wholesale water for resale customers. The division 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 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 the only Septage Receiving Facility located in Broward County.

WWOD's highlights included:

## Section 2 Administration and Management

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- North Regional Wastewater Treatment Plant (NRWWTP) effluent ocean outfall nutrient reduction goals continue to exceed those established by the State of Florida in response to the ocean outfall legislation.
- Four-Log (99.99%) virus reduction treatment was implemented at 1A Water Treatment Facility to increase levels of disinfection. This will facilitate the applying for and receiving four-log treatment credit for Ground Water Rule compliance.

### 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 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 manages the following projects:

- The Local Utility Program (LUP) covers an area of 1,479 acres and includes 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 \$193 million over the next 5 years.
- WWS has initiated construction of the Guaranteed Energy Savings contract for the construction of the energy conservation measures (ECMs) for the agency's wastewater treatment facilities. The goal of this project is to reduce the carbon footprint through the implementation of the ECMs, thus resulting in reduced operational costs and improved environmental efficiencies. Construction on this project will be complete in August 2015.

### 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

## **Section 2 Administration and Management**

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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. Staff also engineers and manages the inspection, cleaning and repairs of County roadway drainage elements; assures compliance with the Florida Department of Environmental Protection (FDEP) National Pollutant Discharge Elimination System (NPDES); Municipal Separate Storm Sewer Systems (MS4) Permit for Broward County; and prepares and submits applications and data for the renewal of surface water management licenses for the roadway drainage system.

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 Plan, Broward County Water Resources Task Force/Technical Team and the Broward County Water Advisory Board/Technical Advisory Committee.
- Preparing annual Alternative Water Supply and conservation updates, Consumptive Use Permit modifications, and maintaining 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, 2A/ North Regional Water (NRW), and South Regional Water (SRW) wellfields.
- 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.

### **Fiscal Operations Division**

Fiscal Operations Division (FOD) is committed to supporting all WWS divisions by providing exceptional customer service and timely and accurate billing services; supporting sound

## Section 2 Administration and Management

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financial management; fiscal planning and rate development; and providing efficient and effective support services.

FOD 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. FOD coordinates materials management, purchasing and contract administration functions for all operational and administrative activities in WWS. In addition, the division provides grounds and building maintenance services to 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, fees and charges for the services provided by WWS and publishes an award-winning WWS employee newsletter.

FOD highlights included:

- In support of water conservation efforts, the “Toilet Credit” Program continues for WWS water customers who replace old high flow toilets with WaterSense high efficiency low flow toilets. Each approved customer receives a \$100 credit (a maximum of \$200 per customer) to their water bill.
- Customer Service coordinated and completed the relocation and opening of the Lauderdale Lakes Customer Service Office.
- Implemented use of the CAFR online to prepare WWS financial statements.

### 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 providing 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 network. WWITD is responsible for desktop, server and network support for the WWS segment of the County’s administrative network.

The division 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:

- Primary and secondary network communications, security cameras, alarms, and card access were installed to support a new customer payment office in Lauderdale Lakes.

## **Section 2 Administration and Management**

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- Workstations on the admin network were migrated from XP to Windows 7 to coincide with Microsoft's end-of-life support for XP.
- Approximately 70% of workstations on the admin network were virtualized to provide for improved administration and support.
- A new UPS system including redundancy was installed for the Admin Building 1 data center.
- A contract was established through ETS to provide for high level temporary staffing.
- The division began deploying tablets to provide mobile computing for management and field personnel.



# Retail Water and Wastewater Utilities System

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## 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 53,497 customers (connections) to its present retail base of 56,538. This represents a population of approximately 180,500. The City of Coconut Creek, a sale for resale customer, has approximately 55,000 residents. Including the City of Coconut Creek, the retail water system serves approximately 13 percent of Broward County's total population.

The retail wastewater system provides wastewater collection service to approximately 77 percent of the County's retail water customers and sewer only customers. The County's wastewater retail customer base has grown from 38,257 customers (connections) to its present base of 48,873 customers in the past ten years and 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.

Notably, finished water production has decreased in recent years. This may be attributable to a downturn in the economy, slowdown in population growth and 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 2005	Fiscal Year 2014	Change	Percent Change
<b>Water System</b>					
Customer Base	Customers	53,705	56,538	2,833	5.28%
Water Service Area	Square Miles	40.19	41.10	-0.09	-0.22%
Water Lines	Miles	682.23	710.00	31.77	4.66%
Water Plant Capacity:					
Plant Capacity	MGD <sup>1</sup>	46.00	46.00	0.00	0.00%
Avg. Daily Production <sup>2</sup>	MGD <sup>1</sup>	24.79	19.101	-5.46	--22.03%
Max. Daily Production <sup>2</sup>	MGD <sup>1</sup>	30.74	22.667	-7.65	-24.89%
Purchased Water	MGD <sup>1</sup>	7.026	6.55	-0.48	-6.77%
<b>Wastewater System</b>					
Customer Base	Customers	38,257	48,873	10,616	27.75%
Wastewater Service Area	Square Miles	40.79	40.70	0.09	-0.22%
<p><sup>1</sup> MGD = Million Gallons Per Day.</p> <p><sup>2</sup> Droughts which began in April 2007 have resulted in reduced water use due to demand management efforts comprising water conservation initiatives, including year round lawn irrigation restrictions. Reduced water translates to reduced billed wastewater.</p>					
Source: Broward County Water and Wastewater Services					

### Service Area and Customer Base

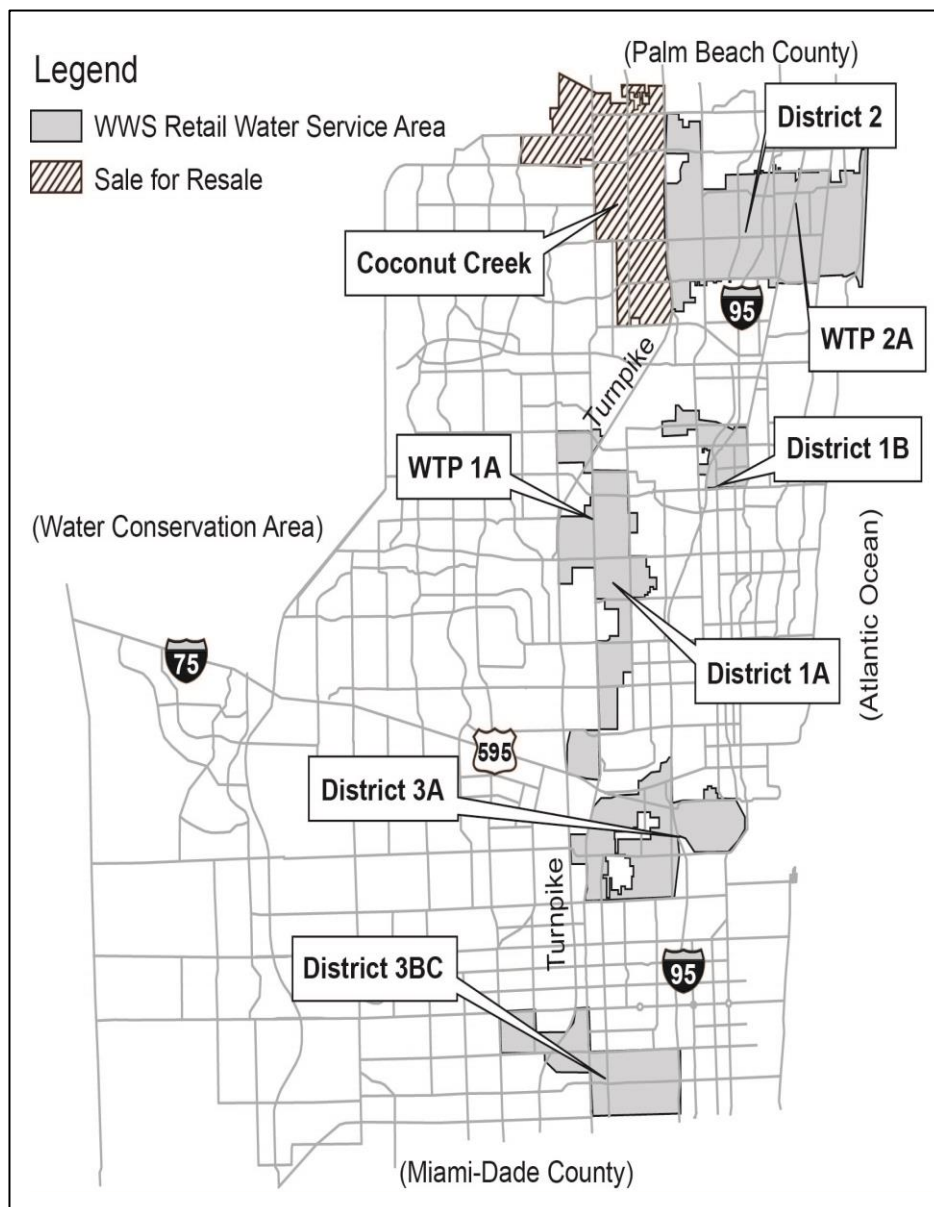
The retail water system is divided into three service areas - Districts 1, 2 and 3, which collectively cover approximately 41 square miles. Additionally, District 2 sells water to the City of Coconut Creek, which re-sells it to its customers. Two (2) water treatment plants (WTPs), one each in District 1 and District 2, have a combined permitted water treatment capacity of 46 MGD (million gallons per day). However, potable water production is constrained by 20-year term consumptive use permits from the South Florida Water Management District (SFWMD). Based on the current 20-year permit, Biscayne Aquifer annual average allocation is 26.7 MGD through March 2028 and includes the North Regional Wellfield. Starting March 2013 a Floridan Aquifer

## Section 3 Retail Water and Wastewater Utilities System

allocation of 9.3 MGD annual average is included in the 20-year consumptive use permitted withdrawal. 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 710 miles of water distribution and transmission mains with 2-inch or greater diameters. Figure 3-1 shows the geographic location of each service district as well as the 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**



## Section 3 Retail Water and Wastewater Utilities System

<b>Table 3-2 Summary of Water System Facilities and Capabilities as of September 30, 2014</b>				
	<b>District 1</b>	<b>District 2</b>	<b>District 3</b>	<b>Total</b>
Production Wells	9	7	0	16
Wellfield Firm Capacity, (MGD) <sup>1,2</sup>	19.6	21.3	0	40.9
Treatment Plants <sup>3</sup>	1	1	0	2
Permitted Plant Capacity (MGD) <sup>2,4</sup>	16	30	0	46
Current Permitted Allocation (MGD) <sup>2,4</sup>	9.2	17.5 <sup>5</sup>	0	26.7
Storage Capacity (Million Gallons) <sup>3</sup>	6.2	8.5	6	20.7
Distribution Mains (Miles)	246.1	247.1	216.3	710
Service Area (Square Miles)	12.0	14.8	14.3	41.1
Purchased Water (MGD) <sup>2</sup>	0	0	6.55	6.55
Produced Water (MGD) <sup>2</sup>	7.145	11.956	0	19.101
<p><sup>1</sup> Firm Capacity refers to the available flow with the largest well in each district out of service.</p> <p><sup>2</sup> MGD = Million Gallons Per Day</p> <p><sup>3</sup> Includes clearwells, on site and distribution storage facilities.</p> <p><sup>4</sup> Permit allocations are less than permitted treatment plant capacity.</p> <p><sup>5</sup> Combined permit with North Regional Wellfield and includes finished water sold to Coconut Creek.</p>				
Source: Broward County Water & 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 summary of historical 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.

## Section 3 Retail Water and Wastewater Utilities System

**Table 3-3 Summary of Treated Water Sold as of September 30, 2014**

<b>Fiscal Year</b>	<b>Average Number of Units<sup>1</sup></b>	<b>Average Number of Metered Customers</b>	<b>Total Billed Treated Water (1,000 GAL)</b>	<b>Total Billed Water for Resale (1,000 GAL)<sup>2</sup></b>	<b>Annual Average Daily Consumption (MGD)</b>
2005 <sup>3</sup>	84,203	53,705	11,383,041	2,178,609	31.19
2006	83,725	52,938	10,362,713	2,005,205	28.39
2007 <sup>4</sup>	87,539	55,596	9,725,151	1,958,720	26.64
2008 <sup>4</sup>	89,452	57,003	9,063,644	1,868,562	24.83
2009 <sup>4</sup>	92,870	58,287	9,001,466	1,872,821	24.66
2010 <sup>4</sup>	93,183	58,323	8,628,876	1,754,856	23.64
2011 <sup>4</sup>	92,208	58,773	8,616,736	1,731,297	23.61
2012 <sup>4</sup>	88,344	56,503	8,339,560	1,643,812	22.85
2013 <sup>4</sup>	87,928	56,529	8,279,722	1,699,799	22.67
2014 <sup>4</sup>	88,305	56,538	8,449,062	1,754,927	23.15

<sup>1</sup> 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.

<sup>2</sup> Included in the total water billed; most represents service to the City of Coconut Creek.

<sup>3</sup> Several hurricanes resulted in significant water losses from line breaks and leaks throughout the system.

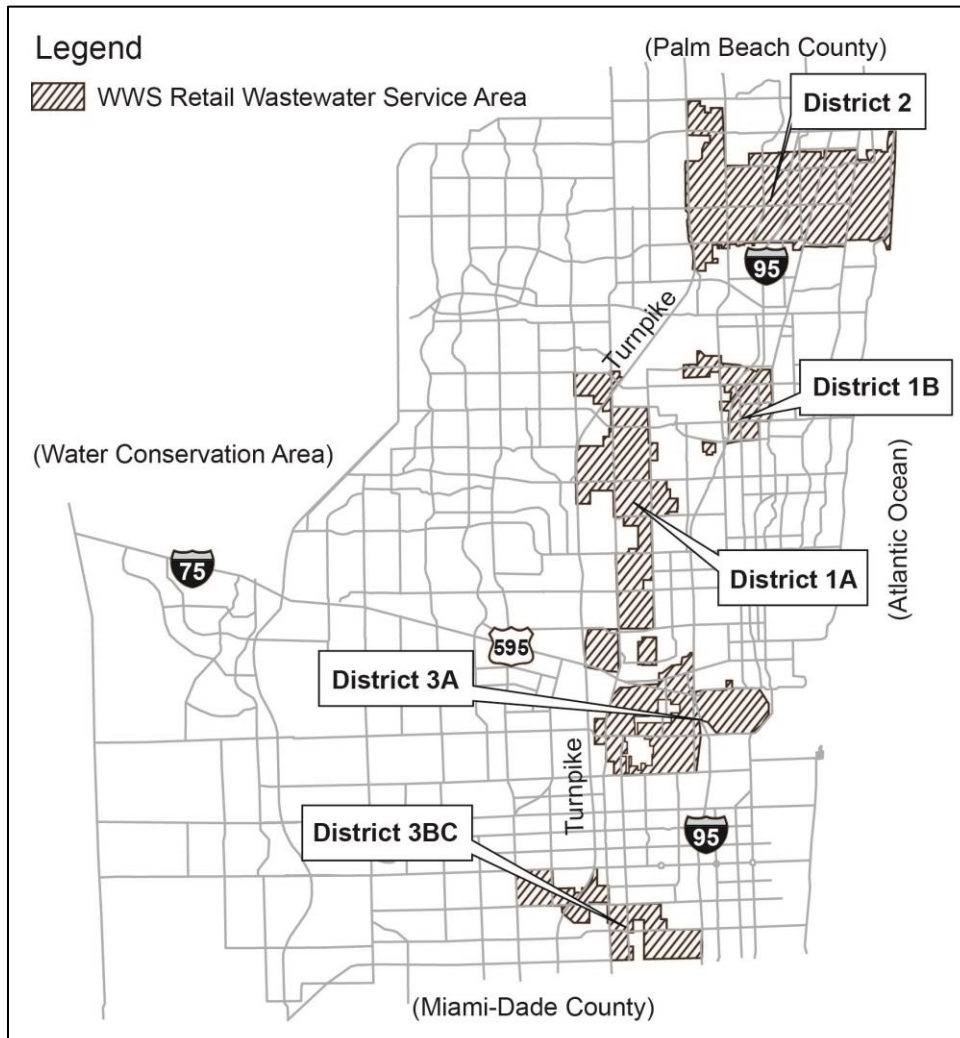
<sup>4</sup> Droughts which began in April 2007 have resulted in reduced water use due to demand management efforts comprising water conservation initiatives, including year round lawn irrigation restrictions. Reduced water use translates to reduced billed wastewater.

Source: Broward County Water and Wastewater Services

The retail wastewater system service area covers approximately 41 square miles with approximately 437 miles of gravity sewers, 232 lift stations, 5 retail master pump stations and 109 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.

# Section 3 Retail Water and Wastewater Utilities System

Figure 3-2 WWS Retail Wastewater Service Areas



## Section 3 Retail Water and Wastewater Utilities System

**Table 3-4 Retail Wastewater System Characteristics  
as of September 30, 2014**

	District 1	District 2	District 3	Total
Service Area (Square Miles)	13.0	15.6	12.1	40.7
Gravity Sewer (Miles)	184.4	167.1	85.6	437.1
Lift Stations	74	96	62	232
Force Mains (Miles)	41.1	34.8	33.1	108.9
Retail Master Pump Stations	4		1	5

**Table 3-5 Summary of Billed Wastewater - Retail as of September 30, 2014**

Fiscal Year	Average Number of Units <sup>1</sup>	Average Number of Metered Customers	Total Billed Treated Wastewater <sup>2</sup> (1,000 GAL)	Annual Average Daily Flow (MGD)
2005	67,116	38,257	5,130,824	14.06
2006	67,736	40,021	5,077,759	13.91
2007	70,361	41,297	4,915,383 <sup>2</sup>	13.47
2008	71,718	42,163	4,830,155 <sup>2</sup>	13.23
2009	74,146	43,591	4,828,210 <sup>2</sup>	13.23
2010	74,547	44,953	4,744,985 <sup>2</sup>	13.00
2011	74,691	44,856	4,891,742 <sup>2</sup>	13.40
2012	77,247	46,911	4,872,721 <sup>2</sup>	13.35
2013	78,020	47,799	4,996,843 <sup>2</sup>	13.69
2014	79,466	48,873	5,165,058 <sup>2</sup>	14.15

<sup>1</sup> 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

<sup>2</sup>Billed wastewater is primarily based upon water sold.

Source: Broward County Water and Wastewater Services

## Section 3 Retail Water and Wastewater Utilities System

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

**Through September 2014**

<b>Customer Class</b>	<b>Fiscal Year 2010</b>	<b>Fiscal Year 2011</b>	<b>Fiscal Year 2012</b>	<b>Fiscal Year 2013</b>	<b>Fiscal Year 2014</b>
Residential	4,608,329	4,659,677	4,534,199	4,462,407	4,463,289
Commercial	1,848,557	1,785,623	1,756,142	1,740,148	1,868,525
Irrigation	417,134	440,139	405,407	377,368	362,321
Sale For Resale	1,754,856	1,731,297	1,643,812	1,699,799	1,754,927
<b>Total<sup>1</sup></b>	<b>8,628,876</b>	<b>8,616,736</b>	<b>8,339,560</b>	<b>8,279,722</b>	<b>8,449,062</b>

<sup>1</sup> Droughts which began in April 2007 have resulted in reduced water use due to demand management efforts comprising water conservation initiatives, including year round lawn irrigation restrictions. Reduced water use 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 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 Broward County Health Department, 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 2014. Additionally, samples required under the Unregulated Contaminant Monitoring Rule (UCMR) were analyzed and reported in FY 2014. WWS tests raw water quality only for the



## Section 3 Retail Water and Wastewater Utilities System

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development of baseline data and as required under the Ground Water Rule as described below; 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/WaterQuality/Pages/WaterQualityReport2014.aspx>

The Disinfectant/Disinfection By-Products Rule (D/DBP) requires all water treatment plants to comply with MCLs for byproducts of a number of 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/DBPR 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.

Currently, the County is in the process of implementing 4-log virus treatment in its 2A, and 3A systems. 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 pending 4-log review and approval by the BCHD, and improvements at the 3A facility are in the design phase. In FY 2014, WWOD maintained continuous compliance with the Ground Water Rule and did not have any fecal indicator detections in its wells.

Monitoring results for seven currently-unregulated contaminants are included in the 2014 water quality report. 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. Outside of time and resources required for analysis, these detections have no immediate compliance impact on WWS; however, it is recommended that WWS closely follow any future potential regulatory action for contaminants detected under the UCMR.

On May 5, 2014, updated cross-connection control rules under FAC 62-555.330, 62-555.360, and FAC 62-555.900 come 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. Going forward, WWOD will be required to prepare and submit this form each year.

## Section 3 Retail Water and Wastewater Utilities System

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### 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 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 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 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 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 and 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 is available from the brackish Upper Floridan Aquifer. The County CIP for the Utility includes provisions to construct reverse osmosis facilities to desalinate water from the Upper Floridan Aquifer to meet projected future potable water demands. The County, Palm Beach County, several municipalities, and the SFWMD are also evaluating the economic and environmental benefit of a regional water storage reservoir project located in Palm Beach County known as the C-51 Reservoir Project. This project could potentially expand the availability of Biscayne Aquifer raw water by offsetting impacts to the Everglades Water Bodies. Should the C-51 Reservoir prove to be a reliable, lower cost alternative water supply option, the County would 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 in order to receive long-term raw water permit allocations from the South Florida Water Management District. The proposed C-51 Reservoir in western Palm Beach County has the potential to deliver a significant amount of water for future public water supply in Broward 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. These projections are subject to change as the C-51 project continues to develop.

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### **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 water availability offsets from C-51 water storage, use of reclaimed water to offset potable water irrigation uses, and encouragement of system-wide water conservation.

The SFWMD included in the County's Consumptive Use Permits, a temporary water supply allocation above the Biscayne aquifer Regional Water Availability Rule "base condition water use" limitation to help the Utility transition from the Biscayne aquifer to an alternative water supply source. The temporary allocation was available during the period between 2008 and 2013 and, due to the reduction in water demands county-wide between 2010 and 2014, the temporary allocation was not needed. With the loss of the temporary allocation, the County's permits are now limited to the base condition water use from the Biscayne identified for each wellfield. This limitation and 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 18.3 billion gallons of groundwater from their combined 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 four coastal raw water large users (Dania Beach, FPL, Hallandale Beach, and Hollywood) and the permit allocation is based on the projection of raw water demands by those large users. By the end of 2013, the SFWMD had issued Consumptive Use Permits to Dania Beach and Hallandale Beach. Hollywood's Consumptive Use permit was issued in 2010. The raw water demand projections contained in the individual large user permits will provide the basis for the SRW permit renewal. The County is actively working with the SFWMD to complete the renewal effort in 2015.

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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 below summarizes the Consumptive Use Permit allocations for each of the County Utility wellfields.

<b>Table 3-7 Summary of SFWMD Wellfield Permits as of September 30, 2014</b>			
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 <sup>1</sup>
Total Allocations:			
Annual Average Daily (MGD)	13.9	22.1	14.2
Maximum Monthly (MGD)	15.2	24.3	-
Maximum Day (MG)	-	-	22.4
<b>BISCAYNE AQUIFER WITHDRAWALS</b>			
Annual Average Daily (MGD)	9.2	17.5	<sup>1</sup>
Maximum Monthly (MGD)	9.9	19.2	<sup>1</sup>
<b>FLORIDAN AQUIFER WELLS</b>			
Annual Average Daily (MGD)	4.7	4.6	<sup>1</sup>
Maximum Monthly (MGD)	5.3	5	<sup>1</sup>
Number of Wells – proposed	4 <sup>2</sup>	4	-
Diameter (Inches)	16	16	-
Depth (Feet)	1,200	1,200	-
Proposed Implementation Date	2017	2022	-
Modification <sup>3</sup>			
<sup>1</sup> 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. <sup>2</sup> Construction of two test wells was completed in 2014. <sup>3</sup> Due to demand management efforts and lower growth, the implementation dates for alternative water supply will be extended.			
Source: Broward County Water and Wastewater Services			

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 was to provide multiple benefits to the South Florida ecosystem. While restoration of the Everglades is a primary objective of the plan, it also

## **Section 3 Retail Water and Wastewater Utilities System**

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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.

It is possible that the 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) in order to maximize the utilization of available water. Current projects include the design of interconnects between the C-1 and C-2 Canals and between the C-12 and C-13 Canals.
- The County continues to review potential use of the upper Floridan Aquifer as an alternative raw water supply source.
- The County continues to be engaged with the SFWMD and Palm Beach Aggregates to develop the C-51 Storage Reservoir Project as a potential water source to offset Regional Water impacts.
- The County continues to promote water conservation within the utility service areas and county-wide.

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### **3.5 Overview of the Water System Facilities**

#### **District 1**

District 1 has a combined service area of 12.0 square miles, FDEP permitted treatment plant capacity of 16.0 MGD and 247 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 30 MGD and contains 247 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.

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, 3B and 3C. Subdistricts 3B and 3C are interconnected. Together they are referred to as 3BC with one PWS number. 3A, 3B and 3C 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 216 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 3B has interconnects with the City of Hollywood. Subdistrict 3C has interconnects with the City of Hollywood, the City of Pembroke Pines and the City of 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 13.0 square miles and includes 184.4 miles of gravity collection sewers and 74 lift stations. There are 41.1 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 15.6 square miles. The collection system consists of 167.1 miles of gravity sewer, 96 lift stations, and 34.8 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 12.1 square miles. The gravity collection system has 85.6 miles of gravity sewer, 62 lift stations and 1 pump station. The force main network contains 33.1 miles of pipe that delivers the wastewater from this area to the Southern Regional Wastewater Treatment Facilities operated by the City of Hollywood. District 3A and District 3BC 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. One (1) of the master pump stations is located within District 3.

The agreement between the County and the City of Hollywood contains a number of 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 of the District 1 water treatment plant was performed on May 27, 2015. The District 2 water treatment plant was inspected on May 20, 2015. The 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, were inspected on May 28, 2015. These inspections were performed by Brown and Caldwell accompanied by WWS staff.

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### 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 generally operating in a satisfactory manner. The plant is clean and well maintained. The following summarizes the observations resulting from the inspection:

- Raw Water Wells
  - Well 1 was generally 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.
  - Well 2 was generally 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.
  - Well 3 was generally 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.
  - Well 4 was generally 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.
  - Well 5 was generally 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. Preventative maintenance may be needed on the seal of the pump.
  - Well 6 was generally 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.



## Section 3 Retail Water and Wastewater Utilities System

- Well 7 was generally 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.
- Well 8 was generally 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. Preventative maintenance may be needed on the seal of the pump.
- Well 9 was generally 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.
- Deep Well 1 is a new Floridan well that is still in the development and testing phase. Permanent wellhead equipment was not in place at the time of the inspection.
- Deep Well 2 is a new Floridan well that is still in the development and testing phase. Permanent wellhead equipment was not in place at the time of the inspection.
- Treatment Unit 1 (softener unit) was recently refurbished. The interior, including the cone, mixer, and launders, were in good condition. 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.
- Treatment Unit 2 is generally 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 – this should be addressed via sanding and repainting. 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
  - Filter 1 was generally in very good condition. Filter media appeared level and uniform. 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 2 was generally in very good condition. Filter media appeared level and uniform. 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 generally in very good condition. Filter media appeared level and uniform. 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 generally in very good condition. Filter media appeared level and uniform. 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 generally in very good condition. Filter media appeared level and uniform. Piping and were in excellent 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 generally in very good condition. Filter media appeared level and uniform. Piping and valves were in excellent 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 generally in very good condition. Filter media appeared level and uniform. Piping and valves were in excellent condition. Effluent launders were in very good condition. The control panel on the filter deck appeared to be in good condition. The filter effluent turbidimeter should be checked to ascertain whether it is functional and correctly calibrated. The overall structure appeared to be in very good condition.
- Filter 8 was generally in very good condition. Piping and were in excellent 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 backwash pump 2 that should be addressed during routine maintenance.

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- Filter roof drain piping paint is peeling extensively, and the underlying piping is beginning to corrode. This piping should be stripped and repainted as a part of routine maintenance efforts.
- Clearwell transfer pumps (4) were recently installed as part of the 4-log project at this facility, and all pumps, piping, valves, gauges, appurtenances, and associated structures appear to be in excellent condition.
- High Service Pumping
  - High service pumps 1, 3, and 5 appeared to be in very good condition. Pumps, piping, valves, gauges, appurtenances, and associated structures appear to be in very good condition.
  - High service pumps 2, 4, and 6 appeared to be in good condition. Pumps, piping, valves, gauges, appurtenances, and associated structures appear to be in good condition. Moderate corrosion on pump 2 casing, bolts, and baseplate should be addressed during routine maintenance.
  - High service pump electrical gear generally appeared to be in good condition.
- Solids handling
  - The gravity thickener structure and auxiliary pumps appeared to be in good condition.
  - The emergency gravity thickener structure, rake and drive, and auxiliary pumps appeared to be in good condition. This structure is currently only put in service on an as-needed basis.
  - Vacuum belt thickeners and associated vacuum pumps and electrical equipment generally appeared to be in good condition. The vacuum disk on vacuum drum 1 needs to be replaced.
- Chemical feed and storage systems
  - The carbon dioxide feed system, including refrigerated storage tanks and solution feeder panels, appeared to be in excellent condition. These systems were recently installed as part of the 4-log project.
  - The ferric chloride feed and storage system was in fair to good condition. Bulk and day storage tanks appeared generally intact and functional. Metering pumps appeared to be functional. Calibration columns were open at the top, below the

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level of the day tanks. This represents a potential spill hazard. Consistent with current practices, each calibration column should be capped with a vent pipe routed to above the liquid level of the day tanks.

- The dry polymer makedown and feed systems were in good condition. Makedown and dilution units appeared generally intact and functional. Metering pumps appeared to be functional. Calibration columns were open at the top, but appeared to be at or above the level of the tanks from which they are filled. It is recommended that these be screened or covered to prevent foreign objects from entering the system.
- The lime slaking and feed systems appeared to be in generally good condition. The lime silo, vibrator, rotary valve, and dosing unit appeared to be in good condition. Slakers appeared to be functional. Overall, the level of corrosion on equipment was less than expected, and equipment appears to be well-maintained.
- The fluoride (HFS) feed and storage system was in fair condition. Bulk and day storage tanks appeared generally intact and functional. Metering pumps appeared to be functional. Calibration columns were open at the top, below the level of the day tanks. This represents a potential spill hazard. Consistent with current practices, each calibration column should be capped with a vent pipe routed to above the liquid level of the day tanks. Electrical and mechanical equipment was extensively corroded inside the day tank/metering room. This system should be considered for refurbishment.
- The sodium hypochlorite feed and storage system, which was recently installed, was in very good condition. Storage tanks are generally in very good condition. Containment area flooring is generally in good condition. Metering pumps are in very good condition. Metering pump piping is in good condition, with a couple minor drips that need to be repaired.
- The sodium hydroxide system is not in service, and is not anticipated to be put in service within the foreseeable future. The bulk tank shares a containment area with ferric chloride and fluoride. Since sodium hydroxide can react violently with both of these chemicals, consideration should be given to permanently removing this tank.
- The gaseous ammonia system is generally in good condition. Bulk storage tanks are in very good condition. Ammoniators are in excellent condition.

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- The diesel fuel storage system is generally in good condition. Bulk storage tanks are in very good condition. The local display for the leak detection is not functional and should be replaced.
- Backup generators and associated equipment appeared to be in good condition. The sight glass on Generator Number 1 leaks and should be repaired.

Plant modifications performed through FY 2014:

- Structural repairs to Treatment Unit No. 1 (complete).
- 4-Log Virus Treatment approval received (complete).
- Construction of a new 1.0 MG concrete storage tank (ongoing).
- New site lighting improvement project (complete)
- Completion of new communication tower (complete)
- Rebuild filters No. 5 thru No. 8 and replace piping and media (complete)
- Drilled second Floridan well (complete)

The plant modifications to be initiated for FY 2015:

- New 1.0 MG water storage tank (ongoing)
- New Electrical Switchgear (ongoing)

### 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.

A summary of the inspection observation for major subsystems is presented below:

- Raw Water Wells

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- 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. Electrical equipment was in good condition. The concrete slab was in good condition.
- Well 6 was in good condition. The well building was intact and generally in good condition. The wellhead and associated 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 7 is currently being rehabilitated. The security fencing was intact and generally in good condition. The wellhead and associated 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 8 was recently rehabilitated and was generally in excellent condition. The security fencing was intact. 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. Ponding of water in the bottom of the well vault was observed; this can be addressed by relocating the float switch for the sump pump.
- Well 9 was recently rehabilitated and was generally in excellent condition. The security fencing was intact. 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.
- Well 10 was generally in good condition. The security fencing was intact. 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 generally in good condition. The security fencing was intact. 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. A small sunken area of asphalt was present adjacent to the well and should be repaired.
- Treatment Unit 1 was down for maintenance at the time of the site visit. The interior, including the visible parts of the cone and mixer were in good condition. Effluent launders showed moderate corrosion in several locations – this should be addressed via sanding and repainting. Electrical equipment and instruments also appeared to be in good condition.

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Auxiliary pumps and associated piping, valves, and equipment were generally in good condition. This unit was out of service at the time of observation.

- Treatment Unit 2 is generally 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 – this should be addressed via sanding and repainting. The drive appeared to be in good condition and was recently rebuilt. 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
  - Filter 1 was generally in good condition. Filter media appeared level and uniform. Piping and valves in the filter gallery were in very good condition. Effluent launders were in very good condition. The overall structure appeared to be in very good condition. No issues were identified with instrumentation.
  
  - Filter 2 was generally in good condition. Filter media appeared level and uniform. Piping and valves in the filter gallery were in very good condition. Effluent launders were in very good condition. The overall structure appeared to be in very good condition. No issues were identified with instrumentation.
  
  - Filter 3 was generally in good condition. Filter media appeared level and uniform. Piping and valves in the filter gallery were in very good condition. Effluent launders were in very good condition. The overall structure appeared to be in very good condition. No issues were identified with instrumentation.
  
  - Filter 4 was generally in good condition. Filter media appeared level and uniform. Piping and valves in the filter gallery were in very good condition, but corrosion was noted around the effluent piping wall penetration. Effluent launders were in very good condition. The overall structure appeared to be in very good condition. Local instrument readouts on the filter control panels were difficult to read.
  
  - Filter 5 was generally in good condition. The underdrain appeared to be in excellent condition. Piping and valves in the filter gallery were in very good condition. Effluent launders were in very good condition. The overall structure appeared to be in very good condition. Local instrument readouts on the filter control panels were difficult to read.
  
  - Filter 6 was out of service for media replacement and other maintenance. Piping and valves in the filter gallery were in very good condition, but corrosion was noted around the effluent piping wall penetration. Effluent launders were in very

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good condition. The overall structure appeared to be in very good condition. Local instrument readouts on the filter control panels were difficult to read.

- Filter backwash pump 1 was out of service for maintenance, and the motor has been removed, piping, valves, gauges, and appurtenances appeared to be in good condition. A crack exists along the corner of the grout pad that should be repaired.
- Filter backwash pump 2, piping, valves, gauges, and appurtenances appeared to be in good condition.
- Clearwell transfer, and all, piping, valves, gauges, appurtenances, and associated structures appear to be in good condition. Electrical equipment for transfer pumps 1 and 2 (and other filter equipment) appeared to be functional. Electrical gear associated with transfer pumps 3 and 4 appears to be in excellent condition and was recently upgraded.
- High Service Pumping
  - High service pumps 1, 3, 4, 5, 7, and 8 appeared to be in very good condition. Pumps, motors, piping, valves, gauges, appurtenances, and associated structures appear to be in very good condition.
  - High service pump 6 was out of service at the time of the site visit.
  - High service pump 7 appeared to be in functional condition. Pumps, piping, valves, gauges, appurtenances, and associated structures have extensive amounts of moderate corrosion and/or cracked paint. It is recommended that this pump be re-coated in the course of normal maintenance activities.
  - High service pump electrical gear generally appeared to be in good condition. Potential performance issues with the VFD for pump 6 were noted; this should be investigated further and corrected.
- Solids handling
  - Gravity thickener 1: the structure, rake and drive, and auxiliary pumps appeared to be in good condition.
  - Gravity thickener 2: the structure, rake and drive, and auxiliary pumps appeared to be in good condition. The check valve on pump 3 has a small leak and should be repaired or replaced. This thickener was out of service for routine maintenance at the time of the site visit.



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- Vacuum filters and associated vacuum pumps and electrical equipment generally appeared to be in fair to poor condition. Unit 1 has an issue with the gearbox and Units 2 and 3 have severe corrosion resulting in leaks. These units should be repaired/rehabilitated as needed.
- Chemical feed and storage systems
  - The carbon dioxide feed system, including refrigerated storage tanks and solution feeder panels, appeared to be in excellent condition.
  - The ferric chloride feed and storage system was in good condition. Bulk and day storage tanks appeared generally intact and functional. Metering pumps appeared to be functional. Calibration columns were open at the top, below the level of the day tanks. This represents a potential spill hazard. Consistent with current practices, each calibration column should be capped with a vent pipe routed to above the liquid level of the day tanks.
  - The dry polymer makedown and feed systems were in good condition. Makedown and dilution units appeared generally intact and functional. Metering pumps appeared to be functional.
  - The lime slaking and feed systems appeared to be in generally good condition. The lime silo, vibrator, rotary valve, and dosing unit appeared to be in good condition. Slakers appeared to be functional.
  - The fluoride (HFS) feed and storage system was in fair condition. Bulk and day storage tanks appeared generally intact and functional. Metering pumps appeared to be functional. Calibration columns were open at the top. This represents a potential hazard. Consistent with current practices, each calibration column should be capped with a vent pipe routed to above the liquid level of the day tanks. Electrical and mechanical equipment was extensively corroded inside the day tank/metering room. This system should be considered for refurbishment.
  - The sodium hypochlorite feed and storage system, which was recently installed, was in good condition. Storage tanks are generally in very good condition, except for Day Tank No. 1, which has a leak near the discharge flange. This leak should be repaired. Containment area flooring is generally in good condition. Metering pumps are in very good condition. Minor leaks have been noted in the metering pump piping at several locations. Staff noted issues with the bulk storage transfer pumps concerning a control wire from the local control panel keeping the pumps from shutting down. It is recommended that WWS further evaluate this to determine what action is required.

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- The sodium hydroxide system is not in service, and is not anticipated to be put into service within the foreseeable future. The bulk tank shares a containment area with ferric chloride and fluoride. Since sodium hydroxide can react violently with both of these chemicals, consideration should be given to permanently removing this tank.
- The gaseous ammonia system is generally in good condition. Bulk storage tanks are in very good condition. Ammoniators are in very good condition.
- The diesel fuel storage system is generally in excellent condition. Bulk storage tanks are in very excellent condition.
- Backup generators and associated equipment appeared to be in good condition.
- The 5 MG storage tank is in fair condition, with minor cracks or spalls visible. Paint appears to be in fair condition. Staff noted that the tank requires a new internal lining.
- The 1 MG storage tank is in good condition, with no observed cracks or spalls. Paint appears to be in fair condition.
- The 0.5 MG storage tank is in good condition, with no observed cracks or spalls. Paint appears to be in fair condition.

Plant modifications performed through FY 2014:

- Installation of lighting improvements for the plant (ongoing)
- Rehabilitation of wells No. 7, No. 8 and No. 9 (complete)
- Replacement of backwash tanks
- Installation of new chlorine analyzers
- North High Services Pump buildings connected to new public sewer system

Plant modifications for FY 2015:

- Repaint clearwell and treatment units
- Rehabilitate laboratory cabinets and counter tops
- Replace roof on the lime silo tower and bag house (ongoing)
- Rehabilitation of chemical feed systems

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- Rehabilitation of switch gear at high service pump room at building No.1 (ongoing)
- Plans to construct a new 5 MG storage tank (ongoing)
- Filter #6 of 6 to be resealed, re-painted and media replaced (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 May 28, 2015. In general, the 3A facility appeared to be in fair condition, with potential operational issues that WWS is in the process of addressing, and potential issues with the integrity of an abandoned building that still houses a functional piece of equipment that is maintained by County staff. Observations from the site visit are provided below. Staff report that issues with loss of pump prime reported in the 2013 Annual Report have been addressed.

- High service pump 1 appeared to be in good condition. The pump appeared to be in good condition, with moderate corrosion noted around the pump base that should be addressed as part of routine maintenance. 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 appear to have been recently replaced. The VFD for this pump appeared to be in good condition. The VFD was wired to an emergency generator located outside the building, and portions of the wires serving this generator were not in conduit. If the County desires to maintain the ability to serve this VFD with a backup generator, it is recommended that a permanent, hard-wired generator connection receptacle be installed.
- 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 was aging, but 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 was aging, but functional.
- The water storage tank appeared to be in good condition. Light spalling was noted on isolated locations on the outer surface of the tank. The paint on the exterior was in fair to poor condition.

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- The inflow meter and associated piping, valving, and instrumentation appears to be in good condition.
- The temporary sodium hypochlorite feed and storage system appeared to be in very good condition. The chlorinator unit itself was in excellent condition. County staff anticipate replacing this system with a permanent system in the near term to support 4-log virus treatment.
- The ammonia storage and feed system appear to be in good to fair condition. Moderate corrosion was observed on the piping within the ammonia storage building.
- The diesel fuel storage system appeared to be in fair condition. Containment was intact. Corrosion was noted at the base of the diesel tank, which warrants further assessment and determination of repair is needed.
- The main diesel generator appears to be in fair condition. The structure in which the generator is housed had severe deterioration and large patches of mold visible. It is recommended that this building be assessed by a structural engineer and a firm experienced in mold identification and remediation to determine if it is safe for WWS staff to enter for generator maintenance work. The planned demolition of unused facilities at this site will remedy this issue permanently.

Planned modifications to the plant for FY 2014:

- Demolition of the existing treatment plant and adjacent plant building (ongoing)
- Construction of a new 3.5 mg storage tank (ongoing)
- Construct new chemical feed system (ongoing)
- Construct new building to house new generator (ongoing)
- Construct a new by-pass system (ongoing)
- Implementation of new site lighting system (ongoing)
- Construction of temporary sodium hypochlorite feed system to support implementation of 4-log virus treatment (ongoing)

### Water Distribution System 3B and 3C

The 3B 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). Another connection from the City of Pembroke Pines supplies water to the North Perry Airport perimeter. The County maintains a 2.5 MG storage tank and high service pumps and an emergency generator,

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all in very good condition. These facilities are remotely monitored and controlled via SCADA equipment/instrumentation. The 3B and 3C facilities were inspected by Brown and Caldwell on May 28, 2015.

Overall, the four distribution high service pumps at the 3B facility and their associated piping and valving appear to be in good condition. Staff report that pumps 2 and 4 appear to have insufficient head capacity to pump into the system. It is recommended that WWS further evaluate this claim to determine what action is required. The storage tank appears to be in good condition, with minor spalling noted in certain locations. The exterior paint was chalking, and it is recommended that the tank be re-painted. The backup generator and associated equipment appeared to be in good condition. The temporary hypochlorite system installed in the previous year appeared to be in good condition, and is slated to be replaced with a permanent system in the future. The pump building exterior was generally in good condition.

The 3C repump facility currently consists of a 2.0 MG concrete tank and three high service pumps, VFD controls, sodium hypochlorite disinfection system and emergency standby diesel engine with generator housed in a new 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 6-foot high chain link fence on the sides and back of the property.

Overall, the three distribution high service pumps at the 3C facility appear to be in good condition. Pump 3 has some corrosion on the top half of the casing and on the coupling that should be addressed. Check valves for pumps 2 and 3 were recently replaced. The storage tank appears to be in excellent condition. One of the two sodium hypochlorite storage tanks leaks and is out of service, while the other is in good condition. The leaky tank should be fixed or replaced to provide redundant hypochlorite storage capacity at this facility. The sodium hypochlorite transfer/tank mixing pumps are not functional, but staff report that the turnover of chemical in the tank is sufficient to maintain hypochlorite quality and strength. The ammonia system was generally in excellent condition. The chlorine analyzers installed at this facility have recently been replaced and are in excellent condition. The backup generator appeared to be in excellent condition. The pump building exterior was in excellent condition.

### Master Lift Stations

Five Master Lift Stations (MLS 224, 450, 456, 458 and 460) were inspected on June 11, 2015. Lift stations were chosen based on their previous inspection history, with stations representing the longest time since inspection being selected. All five lift stations appeared to be in good condition and operating satisfactorily. A summary of the findings at each station is presented below.

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- MLS 450      This master lift station, an inline booster-type station, is generally in good condition. Pumps, motors, and interior station piping were in good condition, with some corrosion present at pump bases. Pump control valves appeared to be in good condition. The check valve on pump 3 had a small drip and some moderate corrosion and should be serviced as required. An electrical control panel was observed to be open – the underlying reason for leaving this open should be identified and corrected. The building interior and exterior were generally in good condition.
- MLS 456      This master lift station, an inline booster-type station, is generally in good condition. Pumps, motors, and interior station piping were in good condition, with some corrosion present at pump bases. Pump control valves appeared to be in good condition. The check valve on pump 2 appears to have been recently replaced. The backup power generator appeared to be in good condition; however, a small amount of diesel fuel was observed underneath the generator and maintenance should be performed to address any leaks that may be occurring. The building interior and exterior were generally in good condition.
- MLS 458      This master lift station, an inline booster-type station, is generally in good condition. Pumps, motors, and interior station piping were in good condition, with some corrosion present at pump bases. Pump bases should be sanded and recoated. Pump control valves appeared to be in good condition. Other valves were generally in good condition. The backup power generator appeared to be in good condition. The building interior and exterior were generally in good condition.
- MLS 460      This master lift station, an inline booster-type station, is generally in good condition. Pumps, motors, and interior station piping were generally in good physical condition. Valves were generally in good condition. Station electrical gear also appeared to be in good condition. The building interior and exterior were generally in good condition.
- This MLS appears to have operational issues that need to be addressed. During the course of the inspection, pump 1 appeared to “hunt” constantly through a wide range of VFD speeds. Also, pumps started and stopped frequently, with cycle times as low as about two minutes. The operation of this station should be reviewed and relevant settings and equipment changed/adjusted as needed to achieve acceptable operation.

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### Lift Stations

There are a total of 232 lift stations operated by the County. A representative set of 20 lift stations were inspected by Brown and Caldwell on June 10, 2015. Overall, the lift stations inspected appeared to be well maintained, and the mechanical and electrical components (control panels, variable frequency drives, motor control centers, generators, telemetry units, pumps, pipes, and accessories) appeared to be in good condition unless noted. The following serves to summarize the observations made during the visual inspection of the lift stations:

- LS 10D1      This submersible pump-type lift station is in generally good condition. No pump issues were observed or reported, but pumps were below the wetwell water surface and could not be directly observed. The wetwell and valve vault hatches were in good condition. Piping and valving were generally in good condition, with light corrosion noted. The wetwell itself was in good condition, with the liner fully intact. The electrical panel was in good condition.
- LS 10H      This submersible pump-type lift station is in generally fair condition. The condition of the pumps should be investigated further based on noises that were heard during the inspection. The pumps were below the wetwell water surface and could not be directly observed. Staff reported issues with Pump Number 2 being unable to maintain head. Since this station is located a long distance from the wastewater plant, consideration should be given to inspecting and repairing pumps, reviewing system hydraulics to select larger pumps, and/or identifying other strategies to resolve this issue. The wetwell and valve vault hatches were in good condition. Piping and valving were generally in good condition, with light corrosion noted. The wetwell itself was in good condition, with the liner fully intact. The electrical panel was in good condition.
- LS 20C1      This belt drive pump-type lift station is in good condition. The motor bases showed light to moderate corrosion which should be addressed by sanding and repainting the surfaces. The wetwell and valve vault hatches were in good condition. Piping and valving were generally in good condition, with minor to moderate corrosion noted. The wetwell itself was in good condition. The wetwell itself was in fair condition, with the liner showing moderate amount of peeling. The electrical panel was in good condition.
- LS 21A2      This submersible pump-type lift station is in generally fair condition. No pump issues were observed or reported, but pumps were below the wetwell water surface and could not be directly observed. The wetwell and valve vault hatches were in good condition. Piping and valving were in good condition, with

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moderate corrosion noted. The wetwell itself was in fair condition. The wetwell liner appeared to be almost entirely gone, and the underlying concrete is beginning to erode. The electrical panel was in fair condition, with some light corrosion noted on interior components. This wetwell contained a significant amount of grease. Since this wetwell serves an industrial area, the utility should consider reviewing industrial discharge permits and perform a review of grease trap performance for sites discharging to this lift station.

LS 21D4 This submersible pump-type lift station is in generally fair condition. No pump issues were observed or reported, but pumps were below the wetwell water surface and could not be directly observed. The wetwell and valve vault hatches were in good condition. The wetwell liner appeared to be almost entirely gone. Piping and valving were generally in fair to poor condition, with moderate to severe corrosion noted. The electrical panel was in fair condition, with some light corrosion noted on interior components.

LS 21K This submersible pump-type lift station is in generally good condition. No pump issues were observed or reported, but pumps were below the wetwell water surface and could not be directly observed. The wetwell and valve vault hatches were in good condition. Piping was in good condition, with light corrosion noted. The wetwell itself was in good condition. The wetwell liner appeared to be intact with minimal peeling and bubbling. The electrical panel was in excellent condition. A significant amount of grease was noted in the wetwell at the time of inspection.

LS 23B This submersible pump-type lift station is in generally fair condition. No pump issues were observed or reported, but pumps were below the wetwell water surface and could not be directly observed. The wetwell and valve vault hatches were in good condition. Piping and valving were generally in good to fair condition, with moderate corrosion noted. The wetwell itself was in fair condition and does not appear to be lined and the underlying concrete is showing signs of erosion. The electrical panel was in good to fair condition, with light corrosion noted on interior components.

LS 24C This submersible pump-type lift station is in generally fair condition. No pump issues were observed or reported, but pumps were below the wetwell water surface and could not be directly observed. The wetwell and valve vault hatches were in good condition. The wetwell liner appeared to be almost entirely gone, and the underlying concrete is beginning to erode. The valve vault was overgrown with landscaping and would not open entirely. Piping and valving were



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generally in fair condition, with moderate corrosion noted. The electrical panel was in good condition.

- LS 24D1-1 This submersible pump-type lift station is in generally fair to poor condition. No pump issues were observed or reported, but pumps were below the wetwell water surface and could not be directly observed. The wetwell and valve vault hatches were in good condition. The wetwell and valve vault liner appeared to be almost entirely gone, and the underlying concrete is beginning to erode. The valve vault had holes in the structure that allows soil to erode into the vault. Piping and valving were generally in fair condition, with moderate corrosion noted. The electrical panel was in fair condition, with some light to moderate corrosion noted on interior components.
- LS 24E3-2 This submersible pump-type lift station is in generally fair to good condition. No pump issues were observed or reported, but pumps were below the wetwell water surface and could not be directly observed. The wetwell and valve vault hatches were in good condition. Piping and valving were generally in fair condition, with moderate corrosion noted. The wetwell itself was in good condition. the wetwell and valve vault liners were peeling significantly and the underlying concrete is beginning to erode. Plant roots were observed growing into the valve vault which should be removed to avoid structural damage. The electrical panel was in good condition.
- LS 28 This submersible pump-type lift station is in generally good condition. No pump issues were observed or reported, but pumps were below the wetwell water surface and could not be directly observed. The wetwell and valve vault hatches were in good condition. Piping and valving were generally in fair good condition, with light to moderate corrosion noted. The wetwell itself was in good condition and the wetwell does not appear to be lined. The electrical panel was in very good condition.
- LS 30A1 This submersible pump-type lift station is in generally good condition. No pump issues were observed or reported, but pumps were below the wetwell water surface and could not be directly observed. The wetwell and valve vault hatches were in good condition. Piping and valving were generally in good condition, with light corrosion noted. The wetwell itself was in good condition and the wetwell lining was intact. The electrical panel was in fair to good condition.

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- LS 30D      This submersible pump-type lift station is in generally good condition. No pump issues were observed or reported, but pumps were below the wetwell water surface and could not be directly observed. The wetwell and valve vault hatches were in good condition. Piping and valving were generally in fair condition, with light to moderate corrosion noted. The wetwell itself was in good condition and the wetwell lining was intact. The electrical panel was in good condition.
- LS 30R      This submersible pump-type lift station is in generally good condition. No pump issues were observed or reported, but pumps were below the wetwell water surface and could not be directly observed. Piping and valving were generally in good condition, with light to moderate corrosion noted. The wetwell and valve vault hatches were in good condition. The wetwell itself was in good condition. Its coating was intact. The valve vault was flooded and consideration should be made to have a sump pump or drain installed. The electrical panel was in good condition, with light corrosion of some interior components noted.
- LS 31F1     This submersible pump-type lift station is in generally good condition. No pump issues were observed or reported, but pumps were below the wetwell water surface and could not be directly observed. The wetwell and valve vault hatches were in good condition. Piping and valving were generally in good condition, with moderate corrosion noted. The wetwell itself was in good condition, with the coating intact. The electrical panel was in good condition, with light corrosion of some interior components noted.
- LS 32J      This submersible pump-type lift station is in generally good condition. No pump issues were observed or reported, but pumps were below the wetwell water surface and could not be directly observed. The wetwell and valve vault hatches were in good condition. Piping and valving were generally in good condition, with light corrosion noted. The wetwell itself was in good condition and the coating was intact. The electrical panel was in good condition and is currently under contract for replacement.
- LS 50C      This submersible pump-type lift station is in generally good condition. No pump issues were observed or reported, but pumps were below the wetwell water surface and could not be directly observed. The wetwell and valve vault hatches were in good condition. Piping and valving were generally in good condition, with light corrosion noted. The wetwell itself was in good condition, with the liner fully intact. The valve vault was flooded and maintenance should be performed to have the vault drain unclogged. The electrical panel was in very good condition.

## Section 3 Retail Water and Wastewater Utilities System

- LS 50K2      This submersible pump-type lift station is in generally good condition. No pump issues were observed or reported, but pumps were below the wetwell water surface and could not be directly observed. The wetwell and valve vault hatches were in good condition. Piping and valving were generally in good condition, with light corrosion noted. The wetwell itself was in fair condition and the wetwell liner was peeling in isolated places. The electrical panel was in fair to good condition.
- LS 51B      This submersible pump-type lift station is in generally fair condition. The condition of the pumps should be investigated further based on noises that were heard during the inspection. The pumps were below the wetwell water surface and could not be directly observed. Staff reported issues with Pump Number 2 not turning on due to an electrical issue which should be promptly repaired. The wetwell and valve vault hatches were in good condition. The valve vault piping and valves were generally in fair condition, with moderate corrosion noted. A small leak was noted from the check valve on pump number 2. The wetwell itself was in fair condition. The wetwell liner appeared to be almost entirely gone, and the underlying concrete is beginning to erode. The electrical panel was in fair to good condition.
- LS 51K      This submersible pump-type lift station is in generally good condition. No pump issues were observed or reported, but pumps were below the wetwell water surface and could not be directly observed. The wetwell and valve vault hatches were in good condition. Piping and valving were generally in good condition, with light corrosion noted. The wetwell itself was in good condition with the wetwell liner intact. The valve vault was flooded and consideration should be made to have a sump pump or drain installed. The electrical panel was in very good condition.
- MLS 224      This master retail lift station, a submersible-type station, is generally in good condition. Pumps and motors were mostly submerged during the inspection, but the exposed portions appeared to be in good condition, and no unusual noises or vibrations were noted. The pump discharge piping and rails inside the wetwell appeared to be generally in fair condition, with light to moderate corrosion noted. The wetwell liner appeared to be “peeling” in places, but was generally intact. Valves appeared to be in good condition. The backup power generator appeared to be in good condition. Electrical components generally appeared to be in good condition. The concrete slab top and electrical cabinets were generally in good condition. The valve vaults contained up to a foot of standing water and did not contain operating sump pumps.

# Section 4

## Regional Wastewater System

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### 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, Lauderdale, 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 of 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 2014, the annual average daily flow rate at the NRWWTP was approximately 69.75 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. On a monthly basis, 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

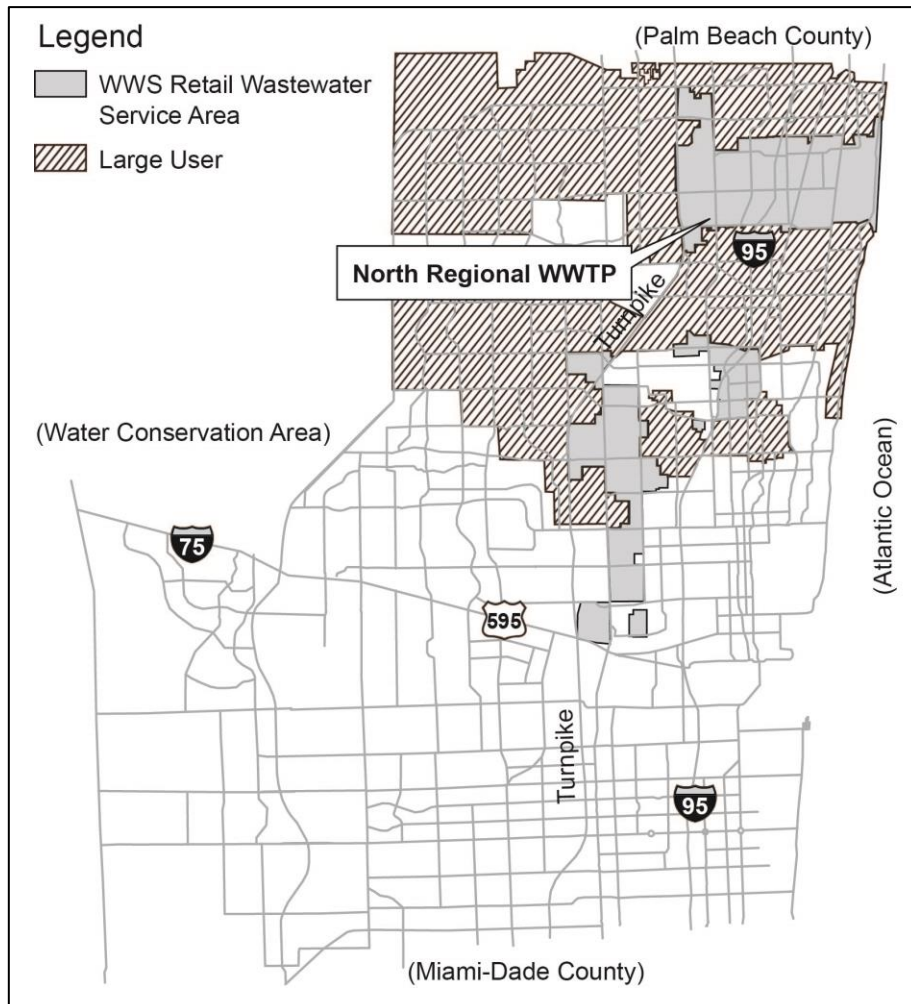
## Section 4 Regional Wastewater System

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 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 NRWTP 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 of the wastewater collected from retail Districts 1 and 2, and all large user customers, are treated at the NRWTP located in Pompano Beach, Florida.

**Figure 4-1 WWS Wastewater Large User Service Areas**



## Section 4 Regional Wastewater System

The NRWWS service area provides service to 35 percent 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 a liability issue from the standpoint of available plant capacity.

<b>Table 4-1 Summary of Historical Large User Wastewater Average Monthly Flow for Treatment and Disposal (1,000 Gallons)</b>					
<b>Large User</b>	<b>FY 2012<sup>1</sup></b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>Change From Prior Year</b>	<b>% of Change</b>
Coconut Creek	120,600	124,323	122,466	(1,856)	-1.49%
Coral Springs	260,668	244,380	220,419	(23,961)	-9.80%
Deerfield Beach	182,561	177,375	170,908	(6,467)	-3.65%
Lauderhill	200,317	188,594	189,115	522	0.28%
North Lauderdale	118,946	107,685	126,269	18,584	17.26%
NSID	92,960	82,726	84,236	1,510	1.83%
Oakland Park	53,233	45,841	44,711	(1,130)	-2.47%
Parkland Utilities	6,415	6,217	6,339	122	1.95%
Pompano Beach	417,423	409,431	435,906	26,475	6.47%
Royal Utilities	7,532	8,791	8,712	(79)	-0.90%
Tamarac	294,120	254,642	250,546	(4,096)	-1.61%
<b>Subtotal</b>	<b>1,754,775</b>	<b>1,650,004</b>	<b>1,659,626</b>	<b>9,622</b>	<b>0.58%</b>
Broward County	410,946	414,721	446,743	32,021	7.72%
<b>Total</b>	<b>2,165,720</b>	<b>2,064,726</b>	<b>2,106,369</b>	<b>41,643</b>	<b>2.02%</b>
<sup>1</sup> Higher flows in FY 2012 compared to FY 2013 are believed to be related to infiltration and inflow associated with high rainfall in 2012					
Source: Broward County Water and Wastewater Services					

## Section 4 Regional Wastewater System

<b>Table 4-2 North Regional Wastewater System Reserve Capacity as of September 30, 2014 (MGD)</b>		
<b>Large User</b>	<b>Capacity</b>	
	<b>Treatment</b>	<b>Transmission</b>
Broward County	19.420	19.42
Coconut Creek <sup>1</sup>	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 <sup>1</sup>	17.000	N/A
Royal Utilities	0.450	0.45
Tamarac	8.500	8.50
<b>Total</b>	<b>87.015</b>	<b>67.89</b>
<sup>1</sup> 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		

## Section 4 Regional Wastewater System

**Table 4-3 Summary of Large User Wastewater Treatment Annual Flows Five-Year History as of September 2014 (1,000 Gallons)**

Large User (LU)	Fiscal Year 2010 <sup>1</sup>	Fiscal Year 2011 <sup>1</sup>	Fiscal Year 2012 <sup>2</sup>	Fiscal Year 2013	Fiscal Year 2014
Coconut Creek	1,316,095	1,276,592	1,447,199	1,491,870	1,469,596
Coral Springs	3,132,096	2,516,794	3,128,012	2,932,561	2,645,025
Deerfield Beach	2,561,252	2,018,628	2,190,729	2,128,498	2,050,891
Lauderhill	2,176,961	2,000,517	2,403,809	2,263,122	2,269,385
North Lauderdale	988,496	1,078,407	1,427,346	1,292,221	1,515,225
NSID	964,037	991,983	1,115,514	992,712	1,010,832
Oakland Park	740,767	529,162	638,795	550,088	536,527
Parkland	79,808	74,642	76,984	74,607	76,065
Pompano Beach	4,627,160	4,496,220	5,009,080	4,913,176	5,230,870
Royal Utilities	107,764	90,004	90,382	105,492	104,544
Tamarac	2,420,243	2,642,672	3,529,445	3,055,706	3,006,553
<b>Total LU</b>	<b>19,114,679</b>	<b>17,715,621</b>	<b>21,057,295</b>	<b>19,800,053</b>	<b>19,915,513</b>
Broward County	4,737,647	4,046,268	4,931,347	4,976,657	5,360,913
<b>Total LU and County</b>	<b>23,852,326</b>	<b>21,761,889</b>	<b>25,988,642</b>	<b>24,776,710</b>	<b>25,276,426</b>
<p><sup>1</sup> The infiltration and inflow programs, water conservation efforts and water restrictions appear to have reduced water sales and the amount of water returned to the wastewater system between FY 2010 and FY 2011.</p> <p><sup>2</sup> Higher flows in FY 2012 compared to FY 2011 and FY 2013 are believed to be related to infiltration and inflow associated with high rainfall in 2012.</p>					
Source: Broward County Water and Wastewater Services					

### 4.2 Wastewater System Regulatory Requirements

Operations of the NRWWTP 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 2014, the North Regional Wastewater Treatment Plant (NRWWTP) had no permit violations. The NRWWTP is in compliance with effluent quality standards.

### 4.3 Wastewater Effluent Management

The NRWWTP 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,



## Section 4 Regional Wastewater System

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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 NRWWTP at 95 MGD and acknowledges 66 MGD of effluent disposal capacity through the ocean outfall. The current NRWWTP 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 the purpose of 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.

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 0051336-502-UO for Injection Wells 1 through 6 was issued on July 2, 2010 and is valid for five (5) years. A Conditional Permit was recently issued.

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. 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 (20,000 tons per year) and land-spreading (70,000 tons per year) 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 more costly. 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

## Section 4 Regional Wastewater System

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portion of their flow to the City of Ft. Lauderdale's wastewater treatment plant. The Consulting Engineers are of the opinion that 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.

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 in the Agreement, estimates of its future flows 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 NRWWTTP and the NRWWS transmission

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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 NRWTP 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 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 percent of that user's monthly bill. In addition, the Agreements provide for additional charges in the event that a customer requests additional transmission or treatment capacity or in the event that 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.

- 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

#### North Regional Wastewater Treatment Plant

The visual inspection of the NRWTP was performed on June 9, 2015. 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 good condition and functioning normally.
- Treatment Module A
  - In general, aeration basin structures and piping appeared sound. Aeration unit motors were in fair condition, with some motors having cracked fan shrouds and/or making noises that indicate that preventative maintenance may be needed in the near term. Removal of the existing aerator motors and gear reduction drives during the planned future conversion to fine-bubble aeration will resolve these issues. One aeration motor was out of service at the time of the site visit.

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- All except one clarifier appeared to be in good condition, with all showing moderate corrosion in the area of the drive mechanisms. One clarifier was out of service, reportedly due to issues with the drive mechanism.
- In general, the Module A Return Activated Sludge (RAS) pumping station appeared to be in good condition.
- Treatment Module B
  - In general, aeration basin structures and piping appeared sound. Aeration unit motors were in fair condition, with several motors having cracked fan shrouds and/or making noises that indicate that preventative maintenance may be needed in the near term. 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 generally in good condition, with all showing moderate corrosion in the area of the drive mechanisms.
  - In general, the Module B Return Activated Sludge (RAS) pumping station appeared to be in good condition. Preventative maintenance may be needed on the seal of Pump No. 2 and Pump No. 3 was making noises that indicate that preventative maintenance may be needed in the near term.
- Treatment Module C
  - In general, aeration basin structures, piping, and equipment appeared to be in good condition.
  - In general, clarifiers were in fair to good condition. In general, the Module C Return Activated Sludge (RAS) pumping station appeared to be in good condition. Moderate corrosion was noted on the pumps with sanding and re-coating needed in select areas.
- Treatment Module D
  - In general, aeration basin structures, piping, and equipment appeared to be in good condition.
  - In general, clarifiers were in fair to good condition. The drive mechanisms for two of the clarifiers are scheduled for replacement.
  - In general, the Module D Return Activated Sludge (RAS) pumping station appeared to be in good condition.

## Section 4 Regional Wastewater System

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- Treatment Module E
  - In general, aeration basin structures, piping, and equipment appeared to be in good condition. Local readouts for instruments were generally sun-faded and should be considered for replacement.
  - In general, clarifiers were in good condition. Clarifier E1 was out of service maintenance and E2 was out of service for scum box repairs at the time of the site visit.
  - In general, the Module E Return Activated Sludge (RAS) pumping station appeared to be in fair condition.
- Ocean outfall pump station
  - Outfall pumps: the five vertical turbine ocean outfall pumps generally appeared to be in good condition. Pump No. 3 was out of service at the time of the site visit.
  - Electrical equipment: The motors, liquistat system and associated cooling units appear to be generally functioning in a satisfactory manner.
  - Chlorine contact basins associated with the outfall were generally in good condition. The sodium hypochlorite feed system appeared to be generally in good condition.
- Deep Injection Well pump station
  - The deep injection well pumps, motors, and supporting electrical equipment all appeared to be in good condition. Pump No. 1 was out of service for routine maintenance at the time of the site visit.
- Water reuse system
  - The reuse system feed pumping station generally appeared to be in good condition.
  - The self-backwashing sand filters were generally in good condition. Two units were out of service for media replacement and general maintenance.
  - The reuse chlorine contact chambers generally appeared to be in good condition.
  - The high head and low head reuse pumps generally appeared to be in good condition.

## Section 4 Regional Wastewater System

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- Digester complex
  - Seven out of eight digesters generally appeared to be in good condition, with sanding and re-coating needed in select areas. Digester P-3 has been out of service for an extended period of time, but is scheduled to be repaired in FY 2015. The methane gas collection piping was reported to have severe corrosion and temporary piping was in place at the time of site visit.
  - Sludge Pumping – the County has been replacing old piston-style pumps with new progressive cavity (Moyno) pumps. The new pumps are generally in good condition.
  - Boilers
    - The boilers serving digesters 1, 2, 3, and SEC appear to be in good to fair condition. Boiler 1 was out of service due to leaks. The five boilers serving digesters 4-7 appear to be in good condition, with Boilers 4 and 8 being recently replaced. The digester cluster electrical gear appears to be generally in fair condition, with a light to moderate amount of surface rust present on cabinet and panel surfaces.
- Biosolids processing:
  - Dissolved Air Floatation (DAF) thickeners generally appeared to be functioning adequately. According to staff, the polymer feed system serving the DAF building was not being used.
  - Belt filter presses and associated equipment were generally in good condition, with the exception of significant amounts of corrosion observed on some drive motors, especially on the fan shrouds. Presses 1 and 2 had mild to moderate corrosion on motors and shrouds, and presses 3, 4, and 8 had shrouds that were corroded through or missing pieces. It is recommended that all corroded fan shrouds be replaced. A few of the corroded fan shrouds were in the process of being repainted at the time of the site visit. The supporting polymer feed system components, including pumps, tanks, piping, and electrical gear, appeared to be in very good condition.
- Load Center 5-6: This load center appears to be in fair condition. The structure appears to have limited working room and clearance internally. WWS staff is in the process finalizing a consultant agreement to replace this load center which will be housed in a building similar to Load Center 11-12.
- Load Center 11-12: This load center appears to be in very good condition.



## Section 4 Regional Wastewater System

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Plant modifications performed through FY 2014:

- Repair aeration weirs at A-1 and A-2 MOD
- Replacement of boiler Nos. 4 & 8 at north complex
- Replace pump and shredder at No.7 slot
- Replacement of aerator shroud at B-2 Basin
- Replacement of clarifier drive at D-2 and D-3
- Add skids for chlorine injection system for clarifier rings at Modules A, B and C
- Repaint aerator weirs at A-1 thru A-6 steel structure
- Replacement of 20 underground reuse valves throughout the plant
- Replacement of damaged concrete slab for effluent pump No. 3
- Headworks gates and screen upgrades
- Re-installation of ocean outfall pump No. 3

Plant modifications to be initiated for FY 2015:

- Replacement of grit capture system (five units) and Modules A, B, and C influent piping (future)
- New Injection well booster pump stations (ongoing)
- Boiler 1 – 8 replacement (future)
- Automatic bar screen replacement (five units) (future)
- Replacement of six 10,000 gallon underground diesel tanks with two 30,000 gallon above-ground tanks (future)
- Improvements to the Ocean Outfall Pump Station system (ongoing)
- Replacement of E1 Clarifier mechanism (future)
- Modules A, B & D diffused air (future)

## Section 4 Regional Wastewater System

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- Replacement of generator No.4 (ongoing)
- Eliminate evaporators at the chlorine facility; change piping and add two (2) scales (ongoing).
- Replacement of cover at Digester P3 (ongoing)
- Replacement of the SCADA system (future)
- Replacement of emergency generator at MPS 462 (ongoing)
- Completion of repair of Digester P3 (ongoing)
- Installation of FOG unit in partnership with Chevron (ongoing)

### Septage Receiving Facility

The Septage Receiving Facility receives waste from septic tank pump outs, portable toilets, vacuum trucks, grease traps, 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 June 10, 2015. The facility inclusive of liquid pumps, solids discharge area, liquids discharge area, and office building appear to be in good working condition. Facility staff report that they experience intermittent losses in SCADA communication and must issue paper load tickets when this happens. Major upgrades to this facility are planned as part of the NRWTP Cogeneration project with Chevron Energy Solutions.

Facility modifications performed in FY 2014:

- None

The proposed modifications to be initiated for FY 2015:

- Demolition of existing equipment, fencing and access ways required (ongoing).
- Installation of aerator grid chamber (ongoing).
- Repair existing septage receiving station, including rehabilitating the wet well, replacement of cover and removal of non-working equipment (ongoing).
- Installation of new biofilter odor control system (ongoing).

## **Section 4 Regional Wastewater System**

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- Landscaping and irrigation system improvements (ongoing).

# Section 5

## Regional Raw Water Supply

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### 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.

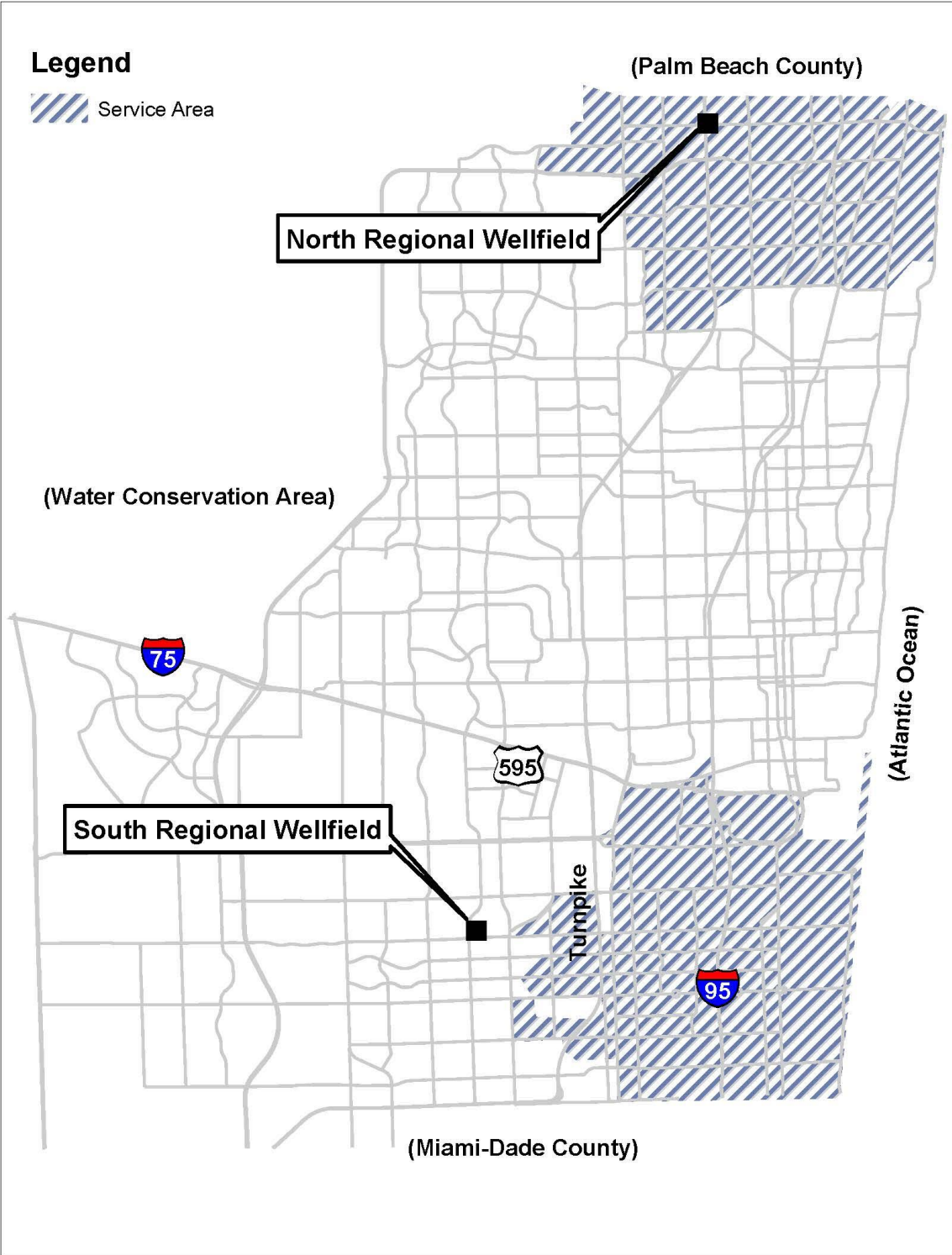
## Section 5 Regional Raw Water Supply

**Table 5-1 NRW Physical Descriptions**

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

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**

Wellfield	Well No.	Size (in)	Depth (ft.)	Casing Depth (ft.)	Type of Casing	Normal Yield (GPM)	Capacity (GPM)	Service Status
SRW	5	20	110	75	PVC	2083	1400	ABANDONED*
SRW	6	20	110	75	PVC	2083	1400	**OFF LINE
SRW	17	12	115	81	PVC	2800	2800	ON LINE
SRW	18	12	140	80	PVC	2800	2800	ON LINE
SRW	19	12	140	80	PVC	2800	2800	ON LINE
SRW	20	12	140	80	PVC	2800	2800	ON LINE
SRW	21	12	140	80	PVC	2800	2800	ON LINE
SRW	22	12	140	80	PVC	2800	2800	ON LINE
SRW	23	12	140	80	PVC	2800	2800	ON LINE
SRW	24	12	140	80	PVC	2800	2800	**OFF LINE

\*Abandoned due to saltwater intrusion.

\*\*Out of Service for maintenance.

**Source: Broward County Water and Wastewater Services**

### 5.2 North Regional Wellfield

The NRW includes 10, 2-MGD 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 withdrawal capacity of the 2A/NRW is 24.3 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.

Table 5-3 Large User Actual Flow North Regional Raw Water  
Flow Distribution (1,000 Gallons)

Fiscal Year	Deerfield	Broward County	NRWF
FY 2010	220,694	2,299,487	2,520,181
FY 2011	201,111	2,926,030	3,127,141
FY 2012	200,980	2,567,130	2,768,110
FY 2013	204,231	2,295,427	2,499,658
FY 2014	207,310	2,364,710	2,572,020

Source: Broward County Water and Wastewater Services

### 5.3 South Regional Wellfield

The SRW includes eight 4-MGD wells, one 2-MGD well and 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 currently being administratively extended until permit renewal is completed in 2015. Permit reissuance is expected in the normal course of events. Wells 5 and 6 were formerly associated with WTP 3A, are now out of service and are scheduled to be 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 2010	1,401,787	1,539,507	433,268	479,590	3,854,152
FY 2011	1,316,530	1,634,700	590,960	526,280	4,068,470
FY 2012	1,338,773	1,379,070	677,090	506,214	3,901,147
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

Source: Broward County Water and Wastewater Services

### 5.4 Contractual Agreements

The contractual agreements with each of the large users are substantially similar. All, except for Hollywood's, do not have an expiration date. The City of Hollywood agreement 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 base condition water use for the SRW. The

## Section 5 Regional Raw Water Supply

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SFWMD has requested additional groundwater modeling information before resolving the outstanding issues. The SRW permit renewal is anticipated to be complete in 2015.

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 and South Regional Wellfields

Visual inspections of the County's regional wellfields were performed on by Brown and Caldwell on May 28 and June 4, 2015. The findings of these inspections are summarized below.

#### North Regional Wellfield

Overall, the NRW appeared to be in good operating condition and in very good to excellent physical condition. Most wells appeared to have been recently painted, and the vaults and surrounding concrete areas pressure washed as part of annual maintenance. A summary of the observed condition of each well is presented below. One well was offline at the time of the site visit.

Well 1 Well 1 was generally 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, including the backup generator serving Wells 1, 2, and 46, was in very good condition. The sump pumps appear to be in operational condition – the well vault showed no obvious evidence of flooding. The emergency generator building interior and exterior were in very good condition.

Well 2 Well 2 was generally in good 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 appear to be in operational condition – the well vault showed no obvious evidence of flooding. The vault had some minor concrete spalling on the exterior.

## Section 5 Regional Raw Water Supply

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- Well 27 Well 27 was generally 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 appear to be in operational condition – the well vault showed no obvious evidence of flooding. This well was temporarily out of service until the 4-log treatment project at the 2A water plant is complete.
- Well 29 Well 29 was generally 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 appear to be in operational condition – the well vault showed no obvious evidence of flooding.
- Well 30 Security fencing and locked vaults were intact. The wellhead was generally in excellent condition, and associated piping and valves appeared to be in very good condition with minimal corrosion. 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.
- Well 31 Well 31 was generally 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 appear to be in operational condition – the well vault showed no obvious evidence of flooding.
- Well 32 Well 32 was generally 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 appear to be in operational condition – the well vault showed no obvious evidence of flooding. The emergency generator building exterior was in very good condition; however, the interior of the building could not be inspected due to access issues.
- Well 33 Well 33 was generally 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 appear to be in operational condition – the well vault showed no obvious evidence of flooding.

## Section 5 Regional Raw Water Supply

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- Well 45 Well 45 was generally 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 appear to be in operational condition – the well vault showed no obvious evidence of flooding although minor ponding of water occurs since the vault floor is not sloped towards the sump pit.
- Well 46 Well 46 was generally 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 appear to be in operational condition – the well vault showed no obvious evidence of flooding.

### South Regional Wellfield

The SRW was generally in good condition; however, issues were identified that warrant attention. Well 21 had cracks and fractures in the concrete around the vault door, which should be addressed within a reasonable amount of time. In addition, Well 22 had some grout missing around the door that needs replacement, an approximately 1/16-inch crack along the bottom, and evidence of ants tunneling through the vault walls. A summary of the observed condition of each well is presented below. One well was offline at the time of the site visits.

- Well 17 Well 17 was generally in good condition. Security fencing and locked vaults were intact. The piping and valves appeared to be in good condition, with some minor corrosion present. Electrical equipment was in good condition. The sump pumps appear 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 generally 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 two adjacent wells. The sump pumps appear 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 generally in good condition. Security fencing and locked vaults were intact. The wellhead and associated piping and valves appeared to be in good

## Section 5 Regional Raw Water Supply

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condition. Electrical equipment appeared to be in good condition. The sump pumps appear 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 20 Well 20 was generally 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 appear 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.

Well 21 Well 21 was generally in good condition, with an issue at the top of the concrete vault that needs to be addressed. 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 appear to be in operational condition – the well vault showed no obvious evidence of flooding. The vault had cracks and fractures in the concrete around the lid – these should be repaired to limit the potential for water intrusion into the vault.

Well 22 Well 22 was generally in good to fair condition. Security fencing and locked vaults were intact. The wellhead and associated piping and valves appeared to be in good condition, with light corrosion in places. 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 around the door that needs replacement, an approximately 1/16-inch crack along the bottom, and evidence of ants tunneling through the vault walls.

Well 23 Well 23 was generally in good condition. Security fencing and locked vaults were intact. Associated piping and valves appeared to be in good condition, with light corrosion in places. 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 corners near the hatch that needs replacement.

Well 24 Well 24 was generally 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

## **Section 5 Regional Raw Water Supply**

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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. This should be further investigated, and the area around the well re-graded as required.

# Section 6

## Capital Improvement Program

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### 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 overall plan is periodically updated with the latest revision expected to be completed by the end of 2014. The revision completed in 2004 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. Recent additional planning efforts include completion of the Alternative Water Supply Master Plan and the Effluent Disposal and Reclaimed Water Master Plan. Efforts have begun on a new Retail Water and Wastewater Master Plan.

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 2015 through 2019 in September, 2014. 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 2019 are presented in Table 6-2.

## Section 6 Capital Improvement Program

**Table 6-1 Capital Improvement Program as of September 30, 2014**

Capital Budgets	Water Treatment	Water and Sewer Mains	Wastewater Treatment	Regional Transmission	Engineering Services & Misc.	Total
Unspent Prior Budget	\$13,309,503	\$51,082,711	\$116,167,324	\$11,217,858	\$5,204,573	\$196,981,969
2015	405,000	30,334,530	103,553,310	2,583,750	5,535,500	142,412,090
2016	1,283,340	22,380,820	14,145,100	10,745,210	1,845,000	50,399,470
2017	37,220,990	47,023,000	22,717,000	9,877,300	1,675,000	118,513,290
2018	300,000	39,509,480	87,367,000	500,000	0	127,676,480
2019	300,000	24,205,000	13,867,000	500,000	0	38,872,000
<b>Totals</b>	<b>\$52,818,833</b>	<b>\$214,535,541</b>	<b>\$357,816,734</b>	<b>\$35,424,118</b>	<b>\$14,260,073</b>	<b>\$674,855,299</b>
<b>Five-Year CIP Funding:</b>						
Bonds FY 2015-2019	35,000,000	30,000,000	110,000,000	10,000,000		- \$185,000,000
Cash FY 2015-2019 <sup>1</sup>	10,000,000	48,000,000	37,000,000	10,000,000	12,000,000	125,000,000
Beyond 2019 <sup>2</sup>	7,818,833	136,535,541	210,816,734	15,424,118	2,260,073	364,855,299
<b>Totals</b>	<b>\$52,818,833</b>	<b>\$214,535,541</b>	<b>\$357,816,734</b>	<b>\$35,424,118</b>	<b>\$14,260,073</b>	<b>\$674,855,299</b>
<sup>1</sup> Cash reflects net revenues, capital recovery charges, large user contributions, and grants						
<sup>2</sup> Reflects effects of construction period. It is currently expected that \$310M of the \$675M program will be spent by 2019. Since the construction period extends beyond 2019, the remaining \$365M 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 2019**

<b>Water Treatment</b>	<b>Budget</b>
Water Treatment Plant Expansion	\$44,505,116
Water Treatment Plant IRR <sup>1</sup> & Misc. Projects	\$7,201,888
Energy Efficiency for Retail Facilities	\$1,111,829
<b>Water Treatment Subtotal</b>	<b>\$52,818,833</b>
<b>Water Distribution and Sewer Collection</b>	
Neighborhood Projects (NIP & LUP)	\$129,797,533
Misc. Main Improvements	\$33,487,852
Potable Water Storage Improvements	\$25,381,393
Lift Station Improvements	\$25,869,095
<b>Water Distribution and Sewer Collection Subtotal</b>	<b>\$214,535,541</b>
<b>Wastewater Treatment</b>	
NRWWTP Effluent Disposal /Treatment Enhancements	\$193,304,990
Wastewater Plant IRR <sup>1</sup> & Misc. Projects	\$163,792,230
NRWWTP Ocean Outfall Improvements	\$719,514
<b>Wastewater Treatment Subtotal</b>	<b>\$357,816,734</b>
<b>Regional Transmission</b>	
Master Pump Station Improvements	\$22,383,440
Force Main Extensions/Improvements	\$13,040,678
<b>Regional Transmission Subtotal</b>	<b>\$35,424,118</b>
<b>Engineering/Misc. Services</b>	<b>\$14,260,073</b>
<b>GRAND TOTAL</b>	<b>\$674,855,299</b>

<sup>1</sup> IRR = Improvement, Repair and Replacement

Source: Broward County Water and Wastewater Services

The estimated funding requirements for this five-year period ending fiscal year 2019 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 percent 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

## **Section 6 Capital Improvement Program**

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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 levelized rate increases of approximately three percent or less annually through fiscal year 2019. The County estimates it will issue approximately \$250 million in bonds in 2019 (the "Series 2019A Bonds").

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: rehabilitating or replacing water distribution systems and extending sanitary sewers to currently unsewered customers. The estimated cost of these improvements totals approximately \$215 million. The Multi-District Inflow and Infiltration Program is continuing with \$4.5 million budgeted for repairs to the wastewater collection system.

### **6.3 Water Treatment**

The five-year CIP includes projects of approximately \$53 million to improve the retail water treatment plants, which includes \$45 million for the expansion of Water Treatment Plant 1A, and \$7 million for improvement, repair and replacement (IRR) of process equipment and security improvements.

### **6.4 Neighborhood Improvement Program**

The Neighborhood Improvement Program (NIP) was initiated by the County in 1993 to upgrade 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 is expected to begin construction in late 2015.

### **6.5 Local Utility Program (LUP)**

WWS began implementing local utility improvement projects by Utility Analysis Zones (UAZ) in mid-2009. Where the NIP 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.

### **6.6 Other Including Mains, Lift Station Improvements and Potable Storage**

The CIP includes \$33 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. \$25 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 \$26 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.

### **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 is currently working on a long-term agreement with Palm Beach County (PBC) to supply bulk reclaimed water to customers in PBC. The County has included approximately \$193 million in the current 5-year CIP to start addressing these improvements to meet the future requirements. Various other system Utility Improvement Repair and Replacement (IRR) projects are budgeted at approximately \$164 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 \$22 million in improvements to the master pumping stations.

## **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 Board. 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 2014 and became effective October 1, 2014. 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.

## Section 7 Financial Conditions

**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 Charge <sup>1</sup>	Water Volume Charge	Water		% Change From Prev. Year	Sewer Fixed Charge	Sewer Volume Charge	Sewer		% Change From Prev. Year	Total Water and Sewer	
			Total	Water				Total	Sewer		Total	% Change From Prev. Year
2011	14.20	8.58	22.78		-4.6%	17.44	15.65	33.09		9.1%	55.87	3.0%
2012	14.68	8.89	23.57		3.5%	17.44	16.60	34.04		2.9%	57.61	3.1%
2013	14.89	9.01	23.90		1.4%	17.44	17.15	34.59		1.6%	58.49	1.5%
2014	14.89	9.01	23.90		0.0%	17.44	17.15	34.59		0.0%	58.49	0.0%
2015 <sup>2</sup>	15.14	9.34	24.48		2.4%	17.46	18.30	35.76		3.4%	60.24	3.0%

<sup>1</sup> Includes customer charge.

<sup>2</sup> Based on rates adopted by the Board effective October 1, 2014.

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, 2014			
Customer Class	Meter Size (inches)	Water (\$)	Wastewater (\$)
<b>Residential</b>  <b>Commercial, Municipal and Institutional</b>	5/8" Residential	10.95	17.46
	1" Residential	31.94	35.05
	5/8	16.66	22.50
	1	37.71	64.99
	1 1/2	79.92	132.40
	2	213.91	377.82
	3	496.00	1,121.03
	4	3,746.99	2,169.64
	6	8,545.46	13,333.15
8	10,259.22	14,451.73	
<b>Sale for Resale</b>	4 or less	3,746.99	-
	6	8,545.46	-
	8	10,259.22	-
	10+	53,162.39	-
<b>Multi-Family and Mobile Home</b> (per unit)	All sizes	9.06	13.59
<b>Hotels and Motels</b> (per unit)	All sizes	5.60	11.09
<b>Recreational Vehicles</b> (per unit)	All sizes	6.52	11.38
<b>Private Fire Protection</b>	All Sizes	114	-
<b>Irrigation</b>	5/8	14.16	-
	1	28.05	-
	1 1/2	77.28	-
	2	179.68	-
	3	431.22	-
4	1,907.96	-	
<b>Reclaimed Water</b> (based on 1,000 GPD demand and 20% discount on capital contribution)	All sizes	6.00	-
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, 2014**

Customer Class (all Meter sizes unless noted)	Water		Wastewater		
	Volume (per 1,000 Gals)	Charge (\$)	Volume (per 1,000 Gals)	Charge (\$)	
<b>Residential</b>	0-3	1.44	0 - 15	3.66	
	4-6	2.51	Over 15	No Charge	
	7-12	5.95			
	Over 12	7.21			
<b>Commercial, Municipal and Institutional</b>	0 - 75% of Avg Consumption	3.60	All Volumes	3.66	
	Over 75% of Avg. Consumption	7.21			
<b>Sale for Resale</b>	Water Treatment Charge	2.29	N/A	-	
	Water Transmission Charge	0.08	N/A	-	
<b>Multi-Family and Mobile Homes (per unit)</b>	0-2	1.44	0-8	3.66	
	3-4	2.51			
	5-6	5.95			
	Over 6	7.21	Over 8	No Charge	
<b>Hotels and Motels (per unit)</b>	0 - 75% of Avg Consumption	3.60	All Volumes	3.66	
	Over 75% of Avg. Consumption	7.21			
<b>Recreational Vehicles (per unit)</b>	0 - 75% of Avg Consumption	3.60	All Volumes	3.66	
	Over 75% of Avg. Consumption	7.21			
<b>Private Fire Protection</b>	All Volumes	5.95	N/A	-	
<b>Irrigation</b>					
	5/8" meter	0-8	5.95	N/A	-
		Over 8	7.21	N/A	-
	1" meter	0-22	5.95	N/A	-
		Over 22	7.21	N/A	-
	1 1/2" meter	0-55	5.95	N/A	-
		Over 55	7.21	N/A	-
	2 to 3" meter	0-142	5.95	N/A	-
Over 142		7.21	N/A	-	
<b>Reclaimed Water</b>	All Volumes	0.07	N/A	-	

Source: Broward County Water and Wastewater Services

Since 1994, average residential use of water has decreased from 220 gpd (gallons per day) to 185 gpd. The decrease appears to be the result of ongoing water restrictions and the water conservation initiatives of Broward County and the SFWMD. Further study completed as part of the comprehensive Rate Study completed in fiscal year 2010 has determined that the treatment plant must produce 206 gpd of water to deliver 185 gpd to the average residential customer. Converting this 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). Similarly, the ratio of billed water to treated wastewater is 1.13x, which yields the requirement of 209 gpd of wastewater treatment capacity per ERU. The capital recovery charges effective for fiscal year 2014 are \$1,590 and \$2,010 for water and sewer respectively. At the beginning of the NIP projects, the County adopted the policy of not charging for the first ERU for wastewater 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 on the basis of flows, debt service costs assessed on the basis of 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**

Since 1994, the County has recognized advantages in encouraging retail customers to conserve water. At the time, the County established and has continued to use a rate schedule that sets higher water rates for levels of consumption beyond basic use. As a result of a rate study completed in 2010, an additional rate tier was added. 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 a 3% increase in the average monthly residential bill of 5,000 gallons from fiscal year 2014 to fiscal year 2015. 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, 2014. 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, 2014**

(1,000 Gallons)

Fiscal Year Ended 9/30	Treated Retail	Coconut Creek	Treated Water Total <sup>1</sup>	Wastewater Water <sup>1</sup>
2010	6,880,573	1,748,303	8,628,876	4,744,985
2011	6,885,439	1,731,297	8,616,736	4,891,742
2012	6,695,748	1,643,812	8,339,560	4,872,721
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

<sup>1</sup> Droughts which began in April 2007 have resulted in reduced water use due to demand management efforts comprising water conservation initiatives, including year round lawn irrigation restrictions. Reduced water use 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 levels at which increased rates are applied to encourage customers to reduce consumption. The automatic rate adjustment was adopted by the Board as a way 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 7-1 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
<b>Single Family (all meter sizes)</b>			
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
<b>Multi-Family (per unit, all meters)</b>			
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
<b>Irrigation</b>			
5/8" Meter, First Tier	0-8	0-4	0-2
5/8" Meter, Second Tier	Over 85	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
<b>Commercial, Municipal, Institutional, Hotels, Motels and Recreational Vehicles</b>			
First Tier	0-75%	0-60%	0-45%
Second Tier	Over 75%	Over 60%	Over 45%

*Source: Broward County Water and Wastewater Services*

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.

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, or a greater amount if recommended by the Consulting Engineer. Five percent of fiscal year 2014 revenues are approximately \$6.2 million. The current balance in the Renewal, Replacement and Improvement Fund is \$6.2 million, as recommended by Brown and Caldwell.

### 7.3 Revenue Projections

Annual water and wastewater revenues and expenditures for fiscal year 2014 are based on actual values from financial statements prepared as of September 30, 2014. Fiscal year 2015 revenues and expenditures have been projected based upon the rates approved by the County, which were implemented October 1, 2014 in conjunction with estimated expenses through fiscal year 2015. Revenues for fiscal years 2015 through 2019 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 2015 have been estimated at one percent annually for water and two percent annually for wastewater. Operation and Maintenance costs are forecast at budgeted levels for fiscal year 2015 and assumed to increase by an average of two percent annually for both water and wastewater beginning in fiscal year 2016. Retail rate increases from fiscal years 2016 through 2019 of approximately three percent 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. Should such rate increases not be approved, coverage would be reduced. The revenue forecast for the large users of the NRWWS have 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 Series 2019A 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 2014, the total revenues generated by the Utility were sufficient to meet the bond covenant requirement of 120 percent coverage of all debt service obligations. The audited financial statements at September 30, 2014 present the computation of debt service coverage on all outstanding revenue bonds as 1.64. In addition, a Balance Available for Renewal, Replacement and Capital Expenditures of approximately \$24.0 million was generated during fiscal year 2014. Debt service coverage for Fiscal year 2010 through 2014 and projected values for fiscal year 2015 through fiscal year 2019 are presented in Table 7-7.

An estimate of interest income is projected annually from fiscal year 2015 through fiscal year 2019. 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.

## Section 7 Financial Conditions

<b>Table 7-6 Historical and Projected Ratios of Large Users' Revenues and Wastewater Revenues (in 1,000s)</b>										
	<b>Historical</b>					<b>Projected</b>				
	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>
Total Revenues <sup>1</sup>	111,634	116,474	118,221	122,344	123,983	127,798	131,600	137,310	142,239	145,470
Large User Revenues (Excluding Broward County)	31,361	30,660	31,228	32,957	32,413	34,000	34,271	35,819	36,405	35,015
Percentage Large User to Total Revenues	28.1%	26.3%	26.4%	26.9%	26.1%	26.6%	26.0%	26.1%	25.6%	24.1%
Regional Raw Water Revenues	833	820	701	876	945	827	877	894	912	931
Percentage Regional Raw Water Total Revenues	0.7%	0.7%	0.6%	0.7%	0.8%	0.6%	0.7%	0.7%	0.6%	0.6%
Sale for Resale/Water <sup>2</sup>	4,931	5,328	5,520	5,740	5,938	5,900	5,900	6,018	6,138	6,261
Percentage Sale for Resale Revenues to Total Revenues	4.4%	4.6%	4.7%	4.7%	4.8%	4.6%	4.5%	4.4%	4.3%	4.3%
<sup>1</sup> Total Revenues do not include interest earned on the construction account.										
<sup>2</sup> Principally Sales to City of Coconut Creek										
Source: Broward County Water and Wastewater Services										

## Section 7 Financial Conditions

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

	Historical					Projected				
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
<b>Revenues:</b>										
Water	\$ 42,771	\$ 45,114	\$ 43,458	\$ 43,990	\$ 45,453	<b>\$ 45,500</b>	<b>\$ 47,484</b>	<b>\$ 49,701</b>	<b>\$ 52,301</b>	<b>\$ 54,602</b>
Wastewater	62,946	64,843	66,249	69,419	70,385	<b>72,000</b>	<b>74,280</b>	<b>77,496</b>	<b>79,540</b>	<b>80,171</b>
Other <sup>1</sup>	4,159	4,947	8,030	9,735	7,869	<b>9,948</b>	<b>9,337</b>	<b>9,613</b>	<b>9,898</b>	<b>10,200</b>
Interest Income	1,758	1,570	793	200	276	<b>350</b>	<b>499</b>	<b>499</b>	<b>499</b>	<b>499</b>
<b>Total Revenues</b>	<b>\$ 111,634</b>	<b>\$ 116,474</b>	<b>\$118,530</b>	<b>\$123,344</b>	<b>\$123,983</b>	<b>\$127,798</b>	<b>\$131,600</b>	<b>\$137,309</b>	<b>\$142,238</b>	<b>\$145,472</b>
<b>Current Expenses:</b>										
Water Transmission & Distrib	\$ 8,962	\$ 8,817	\$ 8,811	\$ 9,043	<b>\$ 10,024</b>	<b>\$ 10,325</b>	<b>\$ 10,893</b>	<b>\$ 11,111</b>	<b>\$ 11,333</b>	<b>\$ 11,560</b>
Water Source of Supply, Treatment & Pumping	9,420	9,184	8,702	8,713	<b>9,060</b>	<b>9,332</b>	<b>9,845</b>	<b>10,042</b>	<b>10,243</b>	<b>10,448</b>
Wastewater Collection & Transmission	10,185	9,866	11,169	11,141	<b>9,200</b>	<b>9,476</b>	<b>9,998</b>	<b>10,198</b>	<b>10,401</b>	<b>10,609</b>
Wastewater Treatment	14,955	14,729	15,324	14,936	<b>15,373</b>	<b>15,834</b>	<b>16,706</b>	<b>17,040</b>	<b>17,381</b>	<b>17,728</b>
Customer Service	5,229	5,400	5,499	4,729	<b>4,765</b>	<b>4,908</b>	<b>5,178</b>	<b>5,282</b>	<b>5,387</b>	<b>5,495</b>
Administrative/General	16,736	15,947	14,568	14,813	<b>14,041</b>	<b>14,462</b>	<b>15,258</b>	<b>15,563</b>	<b>15,875</b>	<b>16,192</b>
<b>Total Current Expenses</b>	<b>\$ 65,487</b>	<b>\$ 63,943</b>	<b>\$ 64,073</b>	<b>\$ 63,375</b>	<b>\$ 62,463</b>	<b>\$ 64,337</b>	<b>\$ 67,878</b>	<b>\$ 69,236</b>	<b>\$ 70,620</b>	<b>\$ 72,033</b>
<b>Net Revenues</b>	<b>\$ 46,147</b>	<b>\$ 52,531</b>	<b>\$ 54,457</b>	<b>\$ 59,969</b>	<b>\$ 61,520</b>	<b>\$ 63,461</b>	<b>\$ 63,722</b>	<b>\$ 68,073</b>	<b>\$ 71,618</b>	<b>\$ 73,439</b>
<b>Debt Service:</b>										
Senior Lien Debt:										
Series 1988-A Bonds	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Series 2003-A Bonds	5,867	5,868	3,459	1,048	-	-	-	-	-	-
<b>Series 2003-B Bonds</b>	<b>9,970</b>	<b>9,970</b>	<b>9,079</b>	<b>8,188</b>	-	-	-	-	-	-
<b>Series 2005-A Bonds</b>	<b>3,837</b>	<b>3,837</b>	<b>3,147</b>	<b>2,456</b>	<b>2,457</b>	<b>2,457</b>	<b>2,457</b>	<b>2,457</b>	<b>2,457</b>	<b>2,457</b>
Series 2009-A Bonds	10,324	10,324	10,322	10,325	10,326	<b>10,321</b>	<b>10,328</b>	<b>10,324</b>	<b>10,324</b>	<b>10,324</b>
<b>Series 2012-A Bonds</b>	-	-	<b>3,219</b>	<b>8,251</b>	<b>8,252</b>	<b>8,252</b>	<b>8,251</b>	<b>8,253</b>	<b>8,253</b>	<b>8,253</b>
<b>Series 2012-B Bonds</b>	-	-	<b>2,623</b>	<b>5,522</b>	<b>5,523</b>	<b>5,523</b>	<b>5,523</b>	<b>5,523</b>	<b>5,523</b>	<b>5,523</b>
<b>Series 2012-C Bonds</b>	-	-	<b>283</b>	<b>1,706</b>	<b>10,941</b>	<b>10,945</b>	<b>10,940</b>	<b>10,943</b>	<b>10,943</b>	<b>10,943</b>
Series 2019-A Bonds	-	-	-	-	-	-	-	-	-	<b>7,565</b>
<b>Total Debt Service</b>	<b>\$ 29,998</b>	<b>\$ 29,999</b>	<b>\$ 32,132</b>	<b>\$ 37,496</b>	<b>\$ 37,499</b>	<b>\$ 37,498</b>	<b>\$ 37,499</b>	<b>\$ 37,500</b>	<b>\$ 37,500</b>	<b>\$ 45,065</b>
Debt Coverage Senior Lien	1.54	1.75	1.69	1.60	1.64	1.69	1.70	1.82	1.91	1.63

<sup>1</sup> Commencing in fiscal year 2012, other revenues include the customer service charge previously reflected as water revenues.

Source: Broward County Water and Wastewater Services

### 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.

## Section 7 Financial Conditions

**Table 7-8 Comparative Rate Survey as of 12/31/2014 (Based On Usage of  
5,000 Gallons Per Month for a 5/8" meter**

Utility	Water	Sewer	Total
Davie	36.51	68.12	104.63
Dania Beach	35.00	58.82	93.82
Sunrise (outside City)	43.56	53.26	96.82
Wilton Manors	52.09	43.86	95.95
Oakland Park	44.61	42.68	87.29
Hollywood	26.93	54.27	81.20
Sunrise (inside City)	34.86	42.60	77.46
Parkland	23.89	50.88	74.77
Margate (outside City)	35.13	35.75	70.88
North Lauderdale	27.91	40.80	68.71
<b>Average Water &amp; Sewer for Broward</b>	<b>29.57</b>	<b>38.70</b>	<b>68.27</b>
Coconut Creek	39.08	30.00	69.08
Cooper City	26.47	40.16	66.63
Pompano Beach (outside City)	30.10	32.18	62.28
Tamarac	21.80	42.75	64.55
Hallandale Beach	24.36	34.76	59.12
Miramar	28.21	35.92	64.13
<b>Broward County (WWS)</b>	<b>24.48</b>	<b>35.76</b>	<b>60.24</b>
NSID	33.59	28.42	62.01
Royal Utility	26.68	31.24	57.92
Margate (inside City)	28.11	28.60	56.71
Coral Springs	19.89	37.85	57.74
Deerfield Beach	28.25	24.53	52.78
Plantation	20.46	34.54	55.00
Fort Lauderdale	20.36	34.12	54.48
Lauderhill	18.97	32.53	51.50
CSID	25.01	25.01	50.02
Pompano Beach (inside City)	24.08	25.76	49.84
Pembroke Pines	23.07	26.71	49.78
<b>Water Only</b>			
Hillsboro	34.20		34.20
<b>Sewer Only</b>			
Pembroke Park		51.83	51.83
Lauderdale by the sea		37.14	37.14
<b>Tri-County Utilities</b>			
Palm Beach County	23.28	25.38	48.66
Miami Dade County	9.71	19.29	29.00

### 7.5 Insurance Coverage

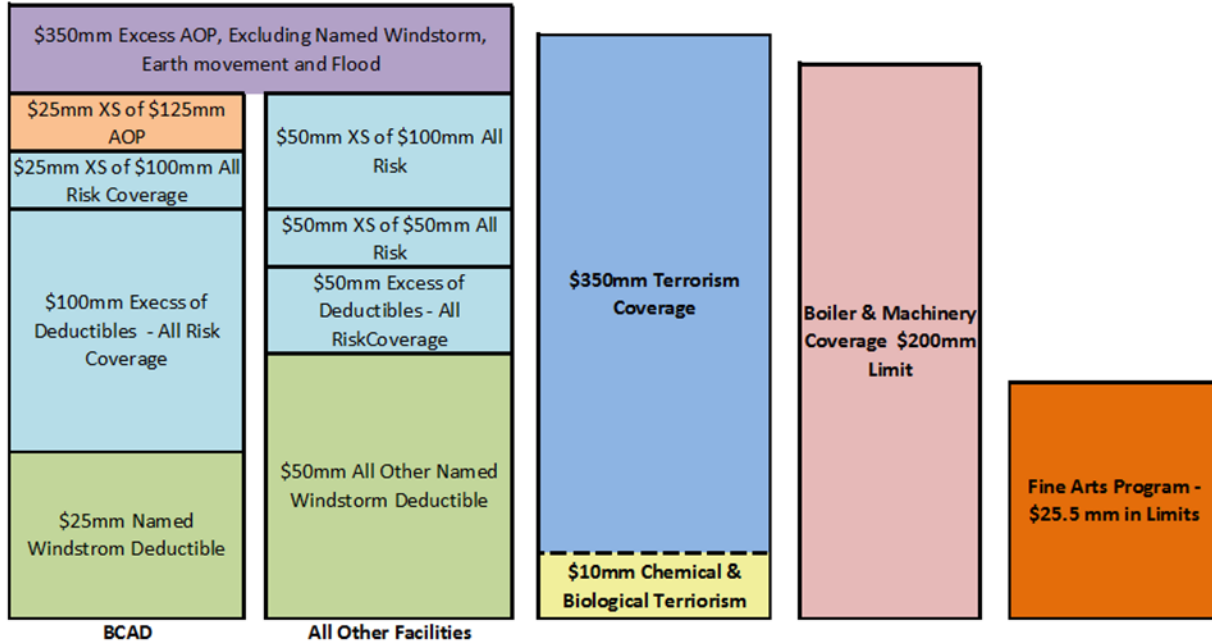
The bond covenants require that customary insurance be carried on the physical assets of the system. This year the County enhanced WWS insurance program by creating a dedicated coverage tower specific to WWS locations that now provides more comprehensive protection for its physical assets. The term of the present policy is from February 1, 2014 to February 1, 2015.

The Catastrophic Property marketplace has improved because of the record levels of capacity paired with Catastrophic (CAT) losses being lower than in years past and no major hurricane hit the mainland US since 2008, and none have hit Florida in eight years. This has created a soft property marketplace in Southeastern Florida allowing the County to benefit in the ability to add an additional tower dedicated to WWS for improved coverage that also includes additional loss control prevention surveys and inspections.

Broward County insures WWS physical assets of over \$497 Million with ACE American Insurance Company, an admitted A++ XV carrier rated by AM Best, as their lead carrier on a dedicated tower that provides \$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 assets located in Zone X. 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 on the following page, not only does WWS have an independent tower, Aviation (BCAD), and County (including Port Everglades) have separate unique programs. All three include additional limits of coverage above each independent tower for a combined program limit of \$500 Million per occurrence for All Other Perils (AOP) limit excluding Windstorm, Earth Movement and Flood).

Figure 7-1 Broward County Insurance Towers



This new property program saved Broward County over \$4 million in premium or approximately 16% compared to the prior year. WWS's insured assets comprise 12.6% of Broward County's assets and by extension WWS pays approximately 12.6% of Broward County property premium. This translates to a savings for WWS of approximately \$600,000 in renewal costs with no loss of coverage. To put this into perspective, Broward County incurred this savings at a time when property insurance premiums in the Southeastern United States were rising from between 1% and 30% according to the Council of Insurance Agents and Brokers<sup>1</sup>.

It is anticipated that a softening of the Catastrophic Property marketplace will continue into 2015 as long as there are no major catastrophic losses throughout the world as has been the case since early 2011. The State of Florida has been fortunate to avoid any major hurricanes making landfall since Hurricane Wilma in 2005. The last major hurricane to hit the United States was Hurricane Ike in 2008. In 2012, Super Storm Sandy hit the northeast corridor with what turned out to be mostly flood losses. That part of the country has actually seen a somewhat hardening property marketplace since Sandy hit the area.

It is anticipated that if we continue to avoid any major catastrophic events, natural or otherwise, that there will be a continuing softening of the Catastrophic Property marketplace in Southeastern Florida. That being the case, Broward County will be looking to potentially develop

<sup>1</sup> 1-10% in 72% of accounts, 10-20% in 23% of accounts

<http://www.ciab.com/WorkArea/DownloadAsset.aspx?id=3901&libID=3923>



## Section 7 Financial Conditions

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a similar stand-alone insurance tower for WWS as it did for BCAD. Assuming there are continued premium savings and no reduction in coverage or limits, this type of alternative might be a strong one to consider.

The four major above-ground water and wastewater facilities and their estimated value, as provided by BCWWS, as of February, 2014 are as follows:

<b>Table 7-9 Estimated Value of Aboveground Water and Wastewater Facilities</b>	
<b>Facility</b>	<b>FY 2014 Estimated Bldg. Value (\$1,000s)</b>
NRWWTP Complex	\$850,000
Water Treatment Plant 2 A	\$ 100,000
Water Treatment Plant 1 A	\$ 65,000
3 A Repump Station	\$ 15,000

The level of coverage (less deductible) appears to be sufficient to fund the loss of the single most expensive asset, the NRWWTP Complex; although the potential for the complete destruction of this facility is minimal. Any losses in excess of the coverage amount would have to be covered by the County through its own resources or through federal or state emergency management assistance.

# Appendix A

**Table A-1**  
**Water Production, Wastewater Treatment, and Regional Raw Water**  
(Million Gallons)

	<b>FY-2005</b>	<b>FY-2006</b>	<b>FY-2007</b>	<b>FY-2008</b>	<b>FY-2009</b>	<b>FY-2010</b>	<b>FY-2011</b>	<b>FY-2012</b>	<b>FY-2013</b>	<b>FY-2014</b>
<b>Water Production</b>										
Plant 1A	3,210	3,147	2,977	3,059	2,835	2,865	2,635	2,672	2,613	2,608
Plant 1B	0	0	0	0	0	0	0	0	0	0
Plant 2A	5,752	5,568	5,179	4,599	4,571	4,555	4,572	4,259	4,444	4,364
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	2,831	2,568	2,608	2,486	2,597	2,203	2,204	2,187	2,390	2,457
<b>Total Water Production</b>	<b>11,793</b>	<b>11,283</b>	<b>10,764</b>	<b>10,143</b>	<b>10,003</b>	<b>9,623</b>	<b>9,411</b>	<b>9,118</b>	<b>9,447</b>	<b>9,429</b>
<b>Wastewater Treatment</b>										
North Regional WWTP	25,807	25,110	24,257	25,156	23,793	23,852	21,762	25,989	24,777	25,276
WW Flows to Hlwd. Regional Treatment	913	988	967	1,053	1,162	1,069	958	1,158	1,142	1,308
<b>Total Wastewater Treatment</b>	<b>26,720</b>	<b>26,098</b>	<b>25,224</b>	<b>26,209</b>	<b>24,955</b>	<b>24,921</b>	<b>22,720</b>	<b>27,147</b>	<b>25,919</b>	<b>26,584</b>
<b>Regional Raw Water</b>										
	5,668	6,597	6,795	7,023	6,438	6,374	7,196	6,669	6,455	6,462
<b>Notes:</b>										
1. Water for 1B and Broadview produced by 1A.										
2. Water for 3B/3C purchased from Hollywood (after October 15, 1996).										
<b>Source: Broward County Water and Wastewater Services</b>										

**Table A - 2**  
**Average Number of Accounts**  
**As of September 30, 2014**

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)
<b>Residential Single Family</b>						
5/8"	46,198	46,168	231,559	40,736	40,710	208,327
1"	1,854	1,787	25,748	2,458	2,395	31,392
1 1/2"	70	70	1,964	177	177	3,683
2"	2	2	398	31	31	1,318
<b>TPK Residential Single Family</b>						
5/8"	19	2	29	18	1	19
<b>Residential Multi-Family, Hotel &amp; RVs</b>	33,435	2,059	125,543	32,372	1,887	121,534
<b>Commercial</b>						
5/8"	2,708	2,707	12,478	1,893	1,893	9,434
1"	1,470	1,417	17,068	755	755	12,798
1 1/2"	697	695	27,240	547	545	18,747
2"	845	624	52,258	451	451	45,917
3"	71	71	6,638	15	15	3,929
4"	10	10	19,603	8	8	5,771
6"	7	7	7,128	1	1	1,022
<b>Irrigation</b>						
5/8"	284	284	2,124	3	3	11
1"	292	292	5,293	1	1	-
1 1/2"	208	208	9,865	-	-	-
2"	130	130	12,911	-	-	-
<b>Sale for Resale</b>						
10"	5	5	146,244	-	-	-
<b>TOTAL</b>	<b>88,305</b>	<b>56,538</b>	<b>704,089</b>	<b>79,466</b>	<b>48,873</b>	<b>463,903</b>

Source: Broward County Water and Wastewater Services

**Table A-3**  
**Broward County Water and Wastewater Services**  
**Retail Water & Wastewater**  
**Customer Average Monthly Demand & Revenues**  
**As of September 30, 2014**

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	259,697	1,328,034	5.11	218,374	1,523,557	6.98
Residential Multi Family	112,243	567,003	5.05	102,086	702,500	6.88
Commercial	155,710	1,127,415	7.24	109,814	783,112	7.13
Sale for Resale	146,244	482,329	3.30	N/A	N/A	N/A
Irrigation	30,193	236,706	7.84	N/A	N/A	N/A
<b>Total</b>	<b>704,089</b>	<b>3,741,488</b>	<b>5.31</b>	<b>430,273</b>	<b>3,009,169</b>	<b>6.99</b>

Source: Broward County Water and Wastewater Services

**Table A-4  
WATER & WASTEWATER SERVICES  
ACTIVITY BASED COSTING REPORT  
FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2014**

RETAIL WATER	Wellfields	Treatment	Purchased Water	Distribution	Total Water
PERSONAL SERVICES	\$ 60,728	\$ 2,832,797	\$ -	\$ 1,494,272	\$ 4,387,796
OPERATING MATERIAL	22,007	428,996	-	258,675	709,679
OTHER MATERIAL	-	33,886	-	2,578	36,464
UTILITIES-OTHER	-	659	-	32,943	33,602
ELECTRIC	23,607	810,554	-	365,813	1,199,974
TREAT/TRANS	-	-	-	-	-
PURCHASED WATER	-	-	5,784,455	-	5,784,455
RENTAL/LEASES	-	500	-	617	1,116
MOTOR POOL	-	173,217	-	96,390	269,606
CONTRACT SERVICE	12,095	870,354	-	547,664	1,430,113
OTHER	211,693	(137,436)	-	266,086	340,343
EDUCATIONAL COURSES	-	4,586	-	3,635	8,220
COMPUTER MAINTENANCE	-	-	-	-	-
TRAVEL	-	-	-	-	-
OTHER CHEMICALS	-	958,900	-	26,497	985,397
CHEMICALS CHLORINE	-	-	-	10,853	10,853
CHEMICALS LIME	-	1,348,595	-	-	1,348,595
<b>SUBTOTAL</b>	330,130	7,325,607	5,784,455	3,106,022	16,546,215
<b><u>OPERATING COST RECLASS:</u></b>					
ONE CALL	-	-	-	132,168	132,168
PAINT SHOP	-	50,619	-	-	50,619
HEAVY EQUIPMENT	-	-	-	183,097	183,097
<b>SUBTOTAL</b>	-	50,619	-	315,266	365,885
<b><u>ALLOCATE:</u></b>					
SECTION ADMIN.	795	17,374	-	5,214	23,382
DIVISION ADMINISTRATION	17,257	382,925	302,365	162,358	864,905
<b>SUBTOTAL DIRECT OVERHEAD</b>	18,051	400,299	302,365	167,572	888,287
<b>TOTAL</b>	<b>\$ 348,181</b>	<b>\$ 7,776,525</b>	<b>\$ 6,086,821</b>	<b>\$ 3,588,859</b>	<b>\$ 17,800,387</b>

**Table A - 4.1  
WATER & WASTEWATER SERVICES  
ACTIVITY BASED COSTING REPORT  
FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2014**

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	\$ -	\$ 21,905	\$ 21,905	\$ -	\$ 38,823	\$ 38,823	\$ -	\$ 60,728	\$ 60,728
OPERATING MATERIAL	-	14,045	14,045	-	7,962	7,962	-	22,007	22,007
OTHER MATERIAL	-	-	-	-	-	-	-	-	-
UTILITIES-OTHER	-	-	-	-	-	-	-	-	-
ELECTRIC	-	-	-	23,607	-	23,607	23,607	-	23,607
TREAT/TRANS	-	-	-	-	-	-	-	-	-
PURCHASED WATER	-	-	-	-	-	-	-	-	-
RENTAL/LEASES	-	-	-	-	-	-	-	-	-
MOTOR POOL	-	-	-	-	-	-	-	-	-
CONTRACT SERVICE	-	-	-	-	12,095	12,095	-	12,095	12,095
OTHER	90,000	11,651	101,651	110,000	42	110,042	200,000	11,693	211,693
EDUCATIONAL COURSES	-	-	-	-	-	-	-	-	-
COMPUTER MAINTENANCE	-	-	-	-	-	-	-	-	-
TRAVEL	-	-	-	-	-	-	-	-	-
OTHER CHEMICALS	-	-	-	-	-	-	-	-	-
CHEMICALS CHLORINE	-	-	-	-	-	-	-	-	-
CHEMICALS LIME	-	-	-	-	-	-	-	-	-
<b>SUBTOTAL</b>	<b>90,000</b>	<b>47,601</b>	<b>137,601</b>	<b>133,607</b>	<b>58,921</b>	<b>192,528</b>	<b>223,607</b>	<b>106,523</b>	<b>330,130</b>
<b><u>OPERATING COST RECLASS:</u></b>									
ONE CALL	-	-	-	-	-	-	-	-	-
PAINT SHOP	-	-	-	-	-	-	-	-	-
HEAVY EQUIPMENT	-	-	-	-	-	-	-	-	-
<b>SUBTOTAL</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b><u>ALLOCATE:</u></b>									
SECTION ADMIN.	157	83	240	385	170	554	542	253	795
DIVISION ADMINISTRATION	4,704	2,488	7,193	6,984	3,080	10,064	11,688	5,568	17,257
<b>SUBTOTAL DIRECT OVERHEAD</b>	<b>4,862</b>	<b>2,571</b>	<b>7,433</b>	<b>7,369</b>	<b>3,250</b>	<b>10,618</b>	<b>12,230</b>	<b>5,821</b>	<b>18,051</b>
<b>TOTAL</b>	<b>\$ 94,862</b>	<b>\$ 50,173</b>	<b>\$ 145,035</b>	<b>\$ 140,976</b>	<b>\$ 62,171</b>	<b>\$ 203,146</b>	<b>\$ 235,837</b>	<b>\$ 112,344</b>	<b>\$ 348,181</b>

**Table A - 4.2  
WATER & WASTEWATER SERVICES  
ACTIVITY BASED COSTING REPORT  
FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2014**

	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	\$ 830,971	\$ 613,255	\$ 1,444,226	\$ 734,467	\$ 654,104	\$ 1,388,571	\$ 1,565,438	\$ 1,267,359	\$ 2,832,797	\$ -
OPERATING MATERIAL	11,906	197,671	209,577	14,760	204,659	219,420	26,666	402,330	428,996	-
OTHER MATERIAL	14,079	2,264	16,342	13,161	4,383	17,544	27,239	6,647	33,886	-
UTILITIES-OTHER	659	-	659	-	-	-	659	-	659	-
ELECTRIC	357,097	-	357,097	453,457	-	453,457	810,554	-	810,554	-
TREAT/TRANS	-	-	-	-	-	-	-	-	-	-
PURCHASED WATER	-	-	-	-	-	-	-	-	-	5,784,455
RENTAL/LEASES	143	204	347	153	-	153	296	204	500	-
MOTOR POOL	52,229	45,743	97,971	39,382	35,863	75,245	91,611	81,606	173,217	-
CONTRACT SERVICE	25,015	365,351	390,366	45,799	434,189	479,989	70,814	799,540	870,354	-
OTHER	9,320	(159,109)	(149,789)	8,850	3,504	12,354	18,170	(155,606)	(137,436)	-
EDUCATIONAL COURSES	586	1,646	2,232	519	1,834	2,353	1,106	3,480	4,586	-
COMPUTER MAINTENANCE	-	-	-	-	-	-	-	-	-	-
TRAVEL	-	-	-	-	-	-	-	-	-	-
OTHER CHEMICALS	423,893	-	423,893	535,007	-	535,007	958,900	-	958,900	-
CHEMICALS CHLORINE	-	-	-	-	-	-	-	-	-	-
CHEMICALS LIME	491,180	-	491,180	857,414	-	857,414	1,348,595	-	1,348,595	-
<b>SUBTOTAL</b>	<b>2,217,078</b>	<b>1,067,023</b>	<b>3,284,101</b>	<b>2,702,971</b>	<b>1,338,536</b>	<b>4,041,507</b>	<b>4,920,049</b>	<b>2,405,559</b>	<b>7,325,607</b>	<b>5,784,455</b>
<b><u>OPERATING COST RECLASS:</u></b>										
ONE CALL	-	-	-	-	-	-	-	-	-	-
PAINT SHOP	-	17,658	17,658	-	32,961	32,961	-	50,619	50,619	-
HEAVY EQUIPMENT	-	-	-	-	-	-	-	-	-	-
<b>SUBTOTAL</b>	<b>-</b>	<b>17,658</b>	<b>17,658</b>	<b>-</b>	<b>32,961</b>	<b>32,961</b>	<b>-</b>	<b>50,619</b>	<b>50,619</b>	<b>-</b>
<b><u>ALLOCATE:</u></b>										
SECTION ADMIN.	3,875	1,865	5,739	7,781	3,853	11,634	11,656	5,718	17,374	-
DIVISION ADMINISTRATION	115,891	55,775	171,667	141,290	69,968	211,258	257,181	125,744	382,925	302,365
<b>SUBTOTAL DIRECT OVERHEAD</b>	<b>119,766</b>	<b>57,640</b>	<b>177,406</b>	<b>149,071</b>	<b>73,821</b>	<b>222,892</b>	<b>268,837</b>	<b>131,462</b>	<b>400,299</b>	<b>302,365</b>
<b>TOTAL</b>	<b>\$ 2,336,844</b>	<b>\$ 1,142,321</b>	<b>\$ 3,479,165</b>	<b>\$ 2,852,042</b>	<b>\$ 1,445,319</b>	<b>\$ 4,297,361</b>	<b>\$ 5,188,886</b>	<b>\$ 2,587,640</b>	<b>\$ 7,776,525</b>	<b>\$ 6,086,821</b>



**Table A - 4.3  
WATER & WASTEWATER SERVICES  
ACTIVITY BASED COSTING REPORT  
FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2014**

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	\$ -	\$ 256,071	\$ 256,071	\$ -	\$ 238,153	\$ 238,153	\$ 604,828	\$ 395,220	\$ 1,000,047	\$ 604,828	\$ 889,444	\$ 1,494,272
OPERATING MATERIAL	-	55,303	55,303	-	56,214	56,214	44,627	102,531	147,158	44,627	214,048	258,675
OTHER MATERIAL	-	-	-	-	-	-	2,578	-	2,578	2,578	-	2,578
UTILITIES-OTHER	-	-	-	-	-	-	32,943	-	32,943	32,943	-	32,943
ELECTRIC	163,768	-	163,768	-	-	-	202,044	-	202,044	365,813	-	365,813
TREAT/TRANS	-	-	-	-	-	-	-	-	-	-	-	-
PURCHASED WATER	-	-	-	-	-	-	-	-	-	-	-	-
RENTAL/LEASES	-	-	-	-	-	-	617	-	617	617	-	617
MOTOR POOL	-	-	-	-	-	-	96,390	-	96,390	96,390	-	96,390
CONTRACT SERVICE	-	78,094	78,094	-	143,373	143,373	8,461	317,737	326,197	8,461	539,203	547,664
OTHER	-	147,425	147,425	-	140,555	140,555	(260,282)	238,387	(21,894)	(260,282)	526,368	266,086
EDUCATIONAL COURSES	-	-	-	-	-	-	3,635	-	3,635	3,635	-	3,635
COMPUTER MAINTENANCE	-	-	-	-	-	-	-	-	-	-	-	-
TRAVEL	-	-	-	-	-	-	-	-	-	-	-	-
OTHER CHEMICALS	-	-	-	-	-	-	26,497	-	26,497	26,497	-	26,497
CHEMICALS CHLORINE	-	-	-	-	-	-	10,853	-	10,853	10,853	-	10,853
CHEMICALS LIME	-	-	-	-	-	-	-	-	-	-	-	-
<b>SUBTOTAL</b>	163,768	536,894	700,662	-	578,295	578,295	773,190	1,053,874	1,827,065	936,959	2,169,063	3,106,022
<b>OPERATING COST RECLASS:</b>												
ONE CALL	45,669	-	45,669	46,249	-	46,249	40,250	-	40,250	132,168	-	132,168
PAINT SHOP	-	-	-	-	-	-	-	-	-	-	-	-
HEAVY EQUIPMENT	-	83,457	83,457	-	60,403	60,403	-	39,237	39,237	-	183,097	183,097
<b>SUBTOTAL</b>	45,669	83,457	129,126	46,249	60,403	106,652	40,250	39,237	79,488	132,168	183,097	315,266
<b>ALLOCATE:</b>												
SECTION ADMIN.	286	938	1,225	-	1,665	1,665	483	1,842	2,324	769	4,445	5,214
DIVISION ADMINISTRATION	8,561	28,065	36,625	-	30,229	30,229	40,416	55,088	95,504	48,977	113,381	162,358
<b>SUBTOTAL DIRECT OVERHEAD</b>	8,847	29,003	37,850	-	31,893	31,893	40,899	56,930	97,829	49,746	117,826	167,572
<b>TOTAL</b>	\$ 218,284	\$ 649,353	\$ 867,637	\$ 46,249	\$ 670,591	\$ 716,841	\$ 854,340	\$ 1,150,042	\$ 2,004,382	\$ 1,118,873	\$ 2,469,987	\$ 3,588,859

\*includes Underground

**Table A - 4.4  
WATER & WASTEWATER SERVICES  
ACTIVITY BASED COSTING REPORT  
FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2014**

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	\$ -	\$ 108,025	\$ 108,025	\$ -	\$ 126,921	\$ 126,921	\$ 360,473	\$ 74,883	\$ 435,355	\$ 360,473	\$ 309,828	\$ 670,301
OPERATING MATERIAL	-	16,120	16,120	-	13,459	13,459	51,443	16,570	68,013	51,443	46,150	97,592
OTHER MATERIAL	-	-	-	-	-	-	3,656	-	3,656	3,656	-	3,656
UTILITIES-OTHER	-	-	-	-	-	-	2,486,957	-	2,486,957	2,486,957	-	2,486,957
ELECTRIC	-	-	-	910	-	910	-	-	-	910	-	910
TREAT/TRANS	-	-	-	-	-	-	-	-	-	-	-	-
PURCHASED WATER	-	-	-	-	-	-	-	-	-	-	-	-
RENTAL/LEASES	-	-	-	-	-	-	-	-	-	-	-	-
MOTOR POOL	-	-	-	-	-	-	99,767	-	99,767	99,767	-	99,767
CONTRACT SERVICE	-	191,234	191,234	-	4,524	4,524	11,925	24,391	36,316	11,925	220,149	232,074
OTHER	-	86,386	86,386	-	79,465	79,465	(245,339)	69,104	(176,235)	(245,339)	234,955	(10,385)
EDUCATIONAL COURSES	-	-	-	-	-	-	-	-	-	-	-	-
COMPUTER MAINTENANCE	-	-	-	-	-	-	1,021	-	1,021	1,021	-	1,021
TRAVEL	-	-	-	-	-	-	-	-	-	-	-	-
OTHER CHEMICALS	-	-	-	-	-	-	-	-	-	-	-	-
CHEMICALS CHLORINE	-	-	-	-	-	-	-	-	-	-	-	-
CHEMICALS LIME	-	-	-	-	-	-	-	-	-	-	-	-
<b>SUBTOTAL</b>	-	401,765	401,765	910	224,369	225,279	2,769,902	184,948	2,954,850	2,770,812	811,082	3,581,894
<b>ALLOCATE:</b>												
SECTION ADMIN.	-	702	702	3	646	649	4,346	323	4,670	4,349	1,671	6,020
DIVISION ADMINISTRATION	-	21,001	21,001	48	11,728	11,776	144,789	9,668	154,456	144,836	42,397	187,233
ONE CALL	28,640	-	28,640	29,027	-	29,027	15,094	-	15,094	72,760	-	72,760
PAINT SHOP												
HEAVY EQUIPMENT												
<b>SUBTOTAL DIRECT OVERHEAD</b>	28,640	21,703	50,343	29,077	12,374	41,451	164,229	9,991	174,220	221,945	44,068	266,014
<b>TOTAL</b>	\$ 28,640	\$ 423,468	\$ 452,108	\$ 29,987	\$ 236,743	\$ 266,730	\$ 2,934,131	\$ 194,939	\$ 3,129,070	\$ 2,992,757	\$ 855,150	\$ 3,847,908

\* includes Underground

**Table A - 4.5**  
**WATER & WASTEWATER SERVICES**  
**ACTIVITY BASED COSTING REPORT**  
**FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2014**

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	\$ -	\$ 234,769	\$ 234,769	\$ -	\$ 398,809	\$ 398,809	\$ -	\$ 265,830	\$ 265,830	\$ 635,232	\$ 635,232	\$ 899,408	\$ 1,534,640
OPERATING MATERIAL	-	220,787	220,787	-	386,620	386,620	-	191,429	191,429	31,186	31,186	798,836	830,022
OTHER MATERIAL	-	-	-	-	-	-	-	-	-	1,906	1,906	-	1,906
UTILITIES-OTHER	2,364	-	2,364	2,318	-	2,318	-	-	-	-	4,681	-	4,681
ELECTRIC	183,147	-	183,147	172,527	-	172,527	105,863	-	105,863	-	461,537	-	461,537
TREAT/TRANS	-	-	-	-	-	-	-	-	-	-	-	-	-
PURCHASED WATER	-	-	-	-	-	-	-	-	-	-	-	-	-
RENTAL/LEASES	-	-	-	-	-	-	-	-	-	498	498	-	498
MOTOR POOL	-	-	-	-	-	-	-	-	-	173,185	173,185	-	173,185
CONTRACT SERVICE	-	27,470	27,470	2,800	82,533	85,333	-	83,742	83,742	18,297	21,097	193,745	214,842
OTHER	1,775	157,209	158,984	500	232,056	232,556	508	175,609	176,116	(528,678)	(525,895)	564,873	38,978
EDUCATIONAL COURSES	-	-	-	-	-	-	-	-	-	-	-	-	-
COMPUTER MAINTENANCE	-	-	-	-	-	-	-	-	-	5,303	5,303	-	5,303
TRAVEL	-	-	-	-	-	-	-	-	-	-	-	-	-
OTHER CHEMICALS	-	-	-	-	-	-	-	-	-	-	-	-	-
CHEMICALS CHLORINE	-	-	-	-	-	-	-	-	-	-	-	-	-
CHEMICALS LIME	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>SUBTOTAL</b>	187,285	640,234	827,519	178,145	1,100,018	1,278,163	106,371	716,610	822,981	336,929	808,730	2,456,863	3,265,593
<b>ALLOCATE:</b>													
SECTION ADMIN.	327	1,119	1,446	513	3,167	3,680	186	1,252	1,438	-	1,026	5,538	6,564
DIVISION ADMINISTRATION	9,790	33,466	43,256	9,312	57,500	66,812	5,560	37,459	43,019	17,612	42,274	128,425	170,699
ONE CALL	-	-	-	-	-	-	-	-	-	-	-	-	-
PAINT SHOP	-	16,481	16,481	-	16,481	16,481	-	16,481	16,481	-	-	49,442	49,442
HEAVY EQUIPMENT	-	44,342	44,342	-	34,106	34,106	-	23,385	23,385	-	-	101,833	101,833
GENERATORS	(44,706)	-	(44,706)	(62,848)	-	(62,848)	(38,227)	-	(38,227)	-	(145,780)	-	(145,780)
<b>SUBTOTAL DIRECT OVERHEAD</b>	10,117	95,408	105,525	9,825	111,254	121,079	5,746	78,577	84,323	17,612	43,300	285,238	328,539
<b>TOTAL</b>	\$ 197,402	\$ 735,642	\$ 933,044	\$ 187,970	\$ 1,211,272	\$ 1,399,241	\$ 112,117	\$ 795,188	\$ 907,305	\$ 354,541	\$ 852,030	\$ 2,742,101	\$ 3,594,132

**Table A - 4.6  
WATER & WASTEWATER SERVICES  
ACTIVITY BASED COSTING REPORT  
FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2014**

<b>Retail Wastewater</b>	<b>Collection</b>	<b>Lift Stations</b>	<b>Total Wastewater</b>
PERSONAL SERVICES	\$ 670,301	\$ 1,534,640	\$ 2,204,941
OPERATING MATERIAL	97,592	830,022	927,615
OTHER MATERIAL	3,656	1,906	5,562
UTILITIES-OTHER	2,486,957	4,681	2,491,638
ELECTRIC	910	461,537	462,447
TREAT/TRANS	-	-	-
PURCHASED WATER	-	-	-
RENTAL/LEASES	-	498	498
MOTOR POOL	99,767	173,185	272,952
CONTRACT SERVICE	232,074	214,842	446,916
OTHER	(10,385)	38,978	28,594
EDUCATIONAL COURSES	-	-	-
COMPUTER MAINTENANCE	1,021	5,303	6,324
TRAVEL	-	-	-
OTHER CHEMICALS	-	-	-
CHEMICALS CHLORINE	-	-	-
CHEMICALS LIME	-	-	-
<b>SUBTOTAL</b>	<b>3,581,894</b>	<b>3,265,593</b>	<b>6,847,487</b>
<b><u>OPERATING COST RECLASS:</u></b>			
ONE CALL	72,760	-	72,760
PAINT SHOP	-	49,442	49,442
HEAVY EQUIPMENT	-	101,833	101,833
GENERATORS	-	(145,780)	(145,780)
<b>SUBTOTAL</b>	<b>72,760</b>	<b>5,495</b>	<b>78,255</b>
<b><u>ALLOCATE:</u></b>			
SECTION ADMIN.	6,020	6,564	12,584
DIVISION ADMINISTRATION	187,233	170,699	357,932
<b>SUBTOTAL DIRECT OVERHEAD</b>	<b>193,253</b>	<b>177,263</b>	<b>370,517</b>
<b>TOTAL</b>	<b>\$ 3,847,908</b>	<b>\$ 3,448,351</b>	<b>\$ 7,296,259</b>

**Table A - 4.7**  
**WATER & WASTEWATER SERVICES**  
**ACTIVITY BASED COSTING REPORT**  
**FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2014**

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	\$ -	\$ 22,080	\$ 22,080	\$ -	\$ 43,272	\$ 43,272	\$ -	\$ 65,352	\$ 65,352
OPERATING MATERIAL	-	7,680	7,680	-	101,068	101,068	-	108,749	108,749
OTHER MATERIAL	-	-	-	-	-	-	-	-	-
UTILITIES-OTHER	-	-	-	-	-	-	-	-	-
ELECTRIC	119,108	-	119,108	330,276	-	330,276	449,384	-	449,384
TREAT/TRANS	-	-	-	-	-	-	-	-	-
PURCHASED WATER	-	-	-	-	-	-	-	-	-
RENTAL/LEASES	-	-	-	-	-	-	-	-	-
MOTOR POOL	-	-	-	-	-	-	-	-	-
CONTRACT SERVICE	-	16,871	16,871	1,450	143,348	144,798	1,450	160,220	161,669
OTHER	100,000	262	100,261	100,000	26,188	126,187	200,000	26,449	226,449
EDUCATIONAL COURSES	-	-	-	-	-	-	-	-	-
COMPUTER MAINTENANCE	-	-	-	-	-	-	-	-	-
TRAVEL	-	-	-	-	-	-	-	-	-
OTHER CHEMICALS	-	-	-	-	-	-	-	-	-
CHEMICALS CHLORINE	-	-	-	-	-	-	-	-	-
CHEMICALS LIME	-	-	-	-	-	-	-	-	-
<b>SUBTOTAL</b>	<b>219,108</b>	<b>46,894</b>	<b>266,002</b>	<b>431,725</b>	<b>313,876</b>	<b>745,601</b>	<b>650,834</b>	<b>360,770</b>	<b>1,011,603</b>
<b><u>OPERATING COST RECLASS:</u></b>									
ONE CALL	2,032	-	2,032	2,032	-	2,032	4,064	-	4,064
PAINT SHOP	-	-	-	-	-	-	-	-	-
HEAVY EQUIPMENT	-	2,807	2,807	-	-	-	-	2,807	2,807
<b>SUBTOTAL</b>	<b>2,032</b>	<b>2,807</b>	<b>4,839</b>	<b>2,032</b>	<b>-</b>	<b>2,032</b>	<b>4,064</b>	<b>2,807</b>	<b>6,871</b>
<b><u>ALLOCATE:</u></b>									
SECTION ADMIN.	631	135	766	755	549	1,303	1,385	684	2,069
DIVISION ADMINISTRATION	11,453	2,451	13,904	22,567	16,407	38,974	34,020	18,858	52,879
<b>SUBTOTAL DIRECT OVERHEAD</b>	<b>12,084</b>	<b>2,586</b>	<b>14,670</b>	<b>23,322</b>	<b>16,955</b>	<b>40,277</b>	<b>35,406</b>	<b>19,542</b>	<b>54,947</b>
<b>TOTAL</b>	<b>\$ 233,224</b>	<b>\$ 52,287</b>	<b>\$ 285,511</b>	<b>\$ 457,079</b>	<b>\$ 330,831</b>	<b>\$ 787,910</b>	<b>\$ 690,303</b>	<b>\$ 383,118</b>	<b>\$ 1,073,422</b>

**Table A - 4.8**  
**WATER & WASTEWATER SERVICES**  
**ACTIVITY BASED COSTING REPORT**  
**FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2014**

Wholesale Wastewater Treatment - Other	Reuse Distribution			C&M & Septage	Total Other
	Operations	Maintenance	Total O & M		
PERSONAL SERVICES	\$ -	\$ 5,014	\$ 5,014	\$ 1,008,768	\$ 1,013,781
OPERATING MATERIAL	-	1,998	1,998	29,675	31,673
OTHER MATERIAL	-	-	-	8,911	8,911
UTILITIES-OTHER	-	-	-	5,966	5,966
ELECTRIC	-	-	-	-	-
TREAT/TRANS	-	-	-	-	-
PURCHASED WATER	-	-	-	-	-
RENTAL/LEASES	-	-	-	447	447
MOTOR POOL	-	-	-	24,795	24,795
CONTRACT SERVICE	-	773	773	28,335	29,108
OTHER	-	2,422	2,422	108,660	111,082
EDUCATIONAL COURSES	-	-	-	-	-
COMPUTER MAINTENANCE	-	-	-	3,871	3,871
TRAVEL	-	-	-	-	-
OTHER CHEMICALS	-	-	-	-	-
CHEMICALS CHLORINE	-	-	-	792	792
CHEMICALS LIME	-	-	-	-	-
<b>SUBTOTAL</b>	-	10,207	10,207	1,220,219	1,230,425
<b><u>OPERATING COST RECLASS:</u></b>					
ONE CALL	-	-	-	-	-
PAINT SHOP	-	-	-	-	-
HEAVY EQUIPMENT	-	48,545	48,545	-	48,545
<b>SUBTOTAL</b>	-	48,545	48,545	-	48,545
<b><u>ALLOCATE:</u></b>					
SECTION ADMIN.	-	17	17	-	17
DIVISION ADMINISTRATION	-	534	534	63,783	64,317
<b>SUBTOTAL DIRECT OVERHEAD</b>	-	550	550	63,783	64,333
<b>TOTAL</b>	\$ -	\$ 59,302	\$ 59,302	\$ 1,284,002	\$ 1,343,304

**Table A - 4.9  
WATER & WASTEWATER SERVICES  
ACTIVITY BASED COSTING REPORT  
FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2014**

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	\$ 3,347,605	\$ 207,750	\$ 3,555,354	\$ -	\$ 121,414	\$ 121,414	\$ -	\$ 26,601	\$ 26,601	\$ 3,347,605	\$ 355,765	\$ 3,703,370	\$ 1,013,781	\$ 4,717,151
OPERATING MATERIAL	919,248	322,584	1,241,832	-	160,220	160,220	-	63,706	63,706	919,248	546,511	1,465,759	31,673	1,497,433
OTHER MATERIAL	20,909	-	20,909	-	-	-	-	-	-	20,909	-	20,909	8,911	29,820
UTILITIES-OTHER	230,398	-	230,398	333	-	333	-	-	-	230,731	-	230,731	5,966	236,697
ELECTRIC	3,288,319	-	3,288,319	-	-	-	-	-	-	3,288,319	-	3,288,319	-	3,288,319
TREAT/TRANS	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PURCHASED WATER	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RENTAL/LEASES	28,351	-	28,351	-	-	-	-	-	-	28,351	-	28,351	447	28,798
MOTOR POOL	151,506	-	151,506	-	-	-	-	-	-	151,506	-	151,506	24,795	176,301
CONTRACT SERVICE	2,574,344	1,709	2,576,053	-	61,083	61,083	-	17,939	17,939	2,574,344	80,730	2,655,074	29,108	2,684,182
OTHER	79,470	19,234	98,704	-	6,891	6,891	-	2,227	2,227	79,470	28,351	107,821	111,082	218,902
EDUCATIONAL COURSES	21,249	-	21,249	-	-	-	-	-	-	21,249	-	21,249	-	21,249
COMPUTER MAINTENANCE	-	-	-	-	-	-	-	-	-	-	-	-	3,871	3,871
TRAVEL	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OTHER CHEMICALS	817,017	-	817,017	-	-	-	-	-	-	817,017	-	817,017	-	817,017
CHEMICALS CHLORINE	119,061	-	119,061	-	-	-	-	-	-	119,061	-	119,061	792	119,853
CHEMICALS LIME	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>SUBTOTAL</b>	<b>11,597,477</b>	<b>551,277</b>	<b>12,148,754</b>	<b>333</b>	<b>349,608</b>	<b>349,941</b>	<b>-</b>	<b>110,473</b>	<b>110,473</b>	<b>11,597,811</b>	<b>1,011,358</b>	<b>12,609,168</b>	<b>1,230,425</b>	<b>13,839,594</b>
<b>OPERATING COST RECLASS:</b>														
ONE CALL	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PAINT SHOP	-	17,658	17,658	-	-	-	-	-	-	-	17,658	17,658	-	17,658
HEAVY EQUIPMENT	-	-	-	-	-	-	-	-	-	-	-	-	48,545	48,545
<b>SUBTOTAL</b>	<b>-</b>	<b>17,658</b>	<b>17,658</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>17,658</b>	<b>17,658</b>	<b>48,545</b>	<b>66,203</b>
<b>ALLOCATE:</b>														
SECTION ADMIN.	18,834	895	19,730	1	568	568	-	179	179	18,835	1,642	20,477	17	20,494
DIVISION ADMINISTRATION	606,224	28,816	635,041	17	18,275	18,292	-	5,775	5,775	606,242	52,866	659,107	64,317	723,424
<b>SUBTOTAL DIRECT OVERHEAD</b>	<b>625,059</b>	<b>29,712</b>	<b>654,770</b>	<b>18</b>	<b>18,843</b>	<b>18,860</b>	<b>-</b>	<b>5,954</b>	<b>5,954</b>	<b>625,077</b>	<b>54,508</b>	<b>679,585</b>	<b>64,333</b>	<b>743,918</b>
<b>TOTAL</b>	<b>\$ 12,222,536</b>	<b>\$ 598,646</b>	<b>\$ 12,821,182</b>	<b>\$ 351</b>	<b>\$ 368,451</b>	<b>\$ 368,802</b>	<b>\$ -</b>	<b>\$ 116,427</b>	<b>\$ 116,427</b>	<b>\$ 12,222,887</b>	<b>\$ 1,083,524</b>	<b>\$ 13,306,411</b>	<b>\$ 1,343,304</b>	<b>\$ 14,649,715</b>

**Table A - 4.10  
WATER & WASTEWATER SERVICES  
ACTIVITY BASED COSTING REPORT  
FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2014**

<b>Wholesale Transmission (Master Lift Stations)</b>	<b>District Four</b>		
	<b>Operations</b>	<b>Maintenance</b>	<b>Total O &amp; M</b>
PERSONAL SERVICES	\$ 374,064	\$ 387,523	\$ 761,587
OPERATING MATERIAL	14,363	176,911	191,274
OTHER MATERIAL	2,362	-	2,362
UTILITIES-OTHER	94,252	-	94,252
ELECTRIC	571,607	-	571,607
TREAT/TRANS	-	-	-
PURCHASED WATER	-	-	-
RENTAL/LEASES	-	-	-
MOTOR POOL	-	53,206	53,206
CONTRACT SERVICE	2,179	80,708	82,887
OTHER	1,285	15,118	16,403
EDUCATIONAL COURSES	-	-	-
COMPUTER MAINTENANCE	3,751	-	3,751
TRAVEL	-	-	-
OTHER CHEMICALS	-	-	-
CHEMICALS CHLORINE	-	-	-
CHEMICALS LIME	-	165	165
<b>SUBTOTAL</b>	<b>1,063,863</b>	<b>713,631</b>	<b>1,777,494</b>
<b><u>OPERATING COST RECLASS:</u></b>			
ONE CALL	12,965	-	12,965
<b>SUBTOTAL</b>	<b>12,965</b>	<b>-</b>	<b>12,965</b>
<b><u>ALLOCATE:</u></b>			
SECTION ADMIN.	1,728	1,159	2,887
DIVISION ADMINISTRATION	55,610	37,303	92,913
<b>SUBTOTAL DIRECT OVERHEAD</b>	<b>57,338</b>	<b>38,462</b>	<b>95,800</b>
<b>TOTAL</b>	<b>\$ 1,134,166</b>	<b>\$ 752,093</b>	<b>\$ 1,886,259</b>



**Table A-4.11  
WATER & WASTEWATER SERVICES  
GENERAL & ADMINISTRATIVE  
ACTIVITY BASED COSTING REPORT  
FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2014**

	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	\$ 901,739	\$ 14,584	\$ 1,518,319	\$ 688,263	\$ 537,448	\$ 10,925	\$ 421,934	\$ 2,325,658	\$ 291,213	\$ 305,813	\$ 825,719	\$ 7,841,614
OPERATING MATERIAL	232	-	8,896	25,466	-	25,222	-	380,435	62,163	20,282	-	522,696
OTHER MATERIAL	14,473	-	28,402	96,024	14,467	-	154	334,107	233	5,302	12,224	505,386
UTILITIES-OTHER	1,460	-	1,679	251,958	-	-	22,650	-	98,723	-	-	376,471
ELECTRIC	-	-	-	-	-	-	-	-	203,598	-	-	203,598
TREAT/TRANS	-	-	-	-	-	-	-	-	-	-	-	-
PURCHASED WATER	-	-	-	-	-	-	-	-	-	-	-	-
RENTAL/LEASES	722	-	3,252	-	-	-	-	7,177	-	320	-	11,472
MOTOR POOL	-	-	44,207	-	-	-	-	73,553	19,189	404	-	137,353
CONTRACT SERVICE	2,061	131	60,764	197,979	326,671	-	146,250	1,349,807	475,437	6,786	135,436	2,701,322
OTHER	(225,159)	-	3,265	1,309	-	-	-	4,244	12,516	3,684	67	(200,073)
COUNTY SERVICES	3,604,281	-	-	-	-	-	-	-	-	-	-	3,604,281
EDUCATIONAL COURSES	5,869	-	12,647	35,730	15,996	-	3,854	1,834	-	-	1,001	76,931
COMPUTER MAINTENANCE	-	-	-	56,231	-	-	-	-	-	-	-	56,231
PURCHASED INSURANCE	1,690,704	-	-	-	-	-	-	-	-	-	-	1,690,704
TRAVEL	-	-	4,530	-	-	-	-	88	-	-	181	4,799
OPERATING COSTS RECLASS	20,095	-	-	-	-	-	-	-	-	-	-	20,095
CHEMICALS CHLORINE	-	-	-	-	-	-	-	-	-	-	-	-
CHEMICALS LIME	-	-	-	-	-	-	-	-	-	-	-	-
<b>SUBTOTAL</b>	<b>6,016,476</b>	<b>14,715</b>	<b>1,685,960</b>	<b>1,352,960</b>	<b>894,581</b>	<b>36,147</b>	<b>594,843</b>	<b>4,476,904</b>	<b>1,163,072</b>	<b>342,591</b>	<b>974,628</b>	<b>17,552,877</b>
<b>ALLOCATE:</b>												
DIVISION ADMINISTRATION				378,471	250,247	10,112	166,399	288,127	74,854	22,049	62,726	1,252,983
<b>TOTAL</b>	<b>6,016,476</b>	<b>14,715</b>	<b>1,685,960</b>	<b>1,731,431</b>	<b>1,144,828</b>	<b>46,259</b>	<b>761,242</b>	<b>4,765,031</b>	<b>1,237,926</b>	<b>364,639</b>	<b>1,037,354</b>	<b>18,805,860</b>
TOTAL TO BE ALLOCATED	6,016,476	14,715	1,685,960	1,731,431	1,144,828	46,259	761,242	4,765,031	1,237,926	364,639	1,037,354	18,805,860
	(6,016,476)	(14,715)	(1,685,960)	(1,731,431)	(1,144,828)	(46,259)	(761,242)	(4,765,031)	(1,237,926)	(364,639)	(1,037,354)	(18,805,860)
<b>BALANCE AFTER ALLOCATION</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>

**Table A-5  
Water & Wastewater Services  
Disaggregation of Operating & Maintenance Expenses  
FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 2014**

<b>OPERATION AND MAINTENANCE EXPENSES:</b>	<b>RETAIL WATER</b>	<b>RETAIL WASTEWATER</b>	<b>WHOLESALE RAW WATER</b>	<b>WHOLESALE TREATMENT</b>	<b>WHOLESALE TRANSMISSION</b>	<b>WWS ADMIN, WWITD &amp; BOD</b>	<b>ENGINEERING</b>	<b>TOTAL</b>
Personal Services	\$ 4,387,796	\$ 2,204,941	\$ 65,352	\$ 4,717,151	\$ 761,587	\$ 6,323,295	\$ 1,518,319	\$ 19,978,442
Utility Services	1,233,576	2,954,085	449,384	3,525,016	665,859	578,390	1,679	9,407,990
Material & Supplies	746,143	933,177	108,749	1,527,253	193,636	990,784	37,297	4,537,040
Chemicals	2,344,844	-	-	936,870	165	-	-	3,281,880
Motor Pool	269,606	272,952	-	176,301	53,206	93,146	44,207	909,418
Contractual Services	1,430,113	446,916	161,669	2,684,182	82,887	2,640,557	60,764	7,507,088
Purchased Insurance	-	-	-	-	-	1,690,704	-	1,690,704
County Administrative Service	-	-	-	-	-	3,604,281	-	3,604,281
Purchased Water	5,784,455	-	-	-	-	-	-	5,784,455
Rental & Leases	1,116	498	-	28,798	-	8,220	3,252	41,884
Travel	-	-	-	-	-	269	4,530	4,799
Other	340,343	28,594	226,449	218,902	16,403	(183,244)	3,265	650,713
Educational Courses	8,220	-	-	21,249	-	64,285	12,647	106,400
Computer Maintenance	-	6,324	-	3,871	3,751	56,231	-	70,176
<b>IRR &amp; Expensed Projects</b>	-	-	-	-	-	-	-	-
<b>SUBTOTAL O &amp; M EXPENSES</b>	<b>16,546,215</b>	<b>6,847,487</b>	<b>1,011,603</b>	<b>13,839,594</b>	<b>1,777,494</b>	<b>15,866,917</b>	<b>1,685,960</b>	<b>57,575,269</b>
<b>OPERATING OVERHEAD:</b>								
SECTION ADMINISTRATION	23,382	12,584	2,069	20,494	2,887	-	-	61,416
DIVISION ADMINISTRATION	864,905	357,932	52,879	723,424	92,913	1,252,983	-	3,345,037
ONE CALL	132,168	72,760	4,064	-	12,965	-	-	221,958
PAINT SHOP	50,619	49,442	-	17,658	-	-	-	117,720
HEAVY EQUIPMENT	183,097	101,833	2,807	48,545	-	-	-	336,282
GENERATORS	-	(145,780)	-	-	-	-	-	(145,780)
LAB	473,828	2,468	19,743	723,081	14,807	-	-	1,233,927
<b>SUBTOTAL OPERATING O/H</b>	<b>1,728,000</b>	<b>451,240</b>	<b>81,561</b>	<b>1,533,202</b>	<b>123,572</b>	<b>1,252,983</b>	<b>-</b>	<b>5,170,559</b>
<b>TOTAL EXPENSES BEFORE ALLOCATION</b>	<b>18,274,215</b>	<b>7,298,726</b>	<b>1,093,165</b>	<b>15,372,796</b>	<b>1,901,066</b>	<b>17,119,900</b>	<b>1,685,960</b>	<b>62,745,828</b>
<b>ALLOCATION:</b>								
CUSTOMER SERVICE	2,265,046	1,880,530	47,650	476,503	95,301	(4,765,031)	-	-
WWS ADMINISTRATION	5,839,447	2,332,277	349,316	4,912,311	607,478	(12,354,870)	(1,685,960)	-
<b>SUBTOTAL ALLOCATION</b>	<b>8,104,494</b>	<b>4,212,807</b>	<b>396,966</b>	<b>5,388,815</b>	<b>702,778</b>	<b>(17,119,900)</b>	<b>(1,685,960)</b>	<b>-</b>
<b>TOTAL OPERATING EXPENSES</b>	<b>26,378,709</b>	<b>11,511,534</b>	<b>1,490,131</b>	<b>20,761,611</b>	<b>2,603,844</b>	<b>-</b>	<b>-</b>	<b>62,745,828</b>
<b>RETAIL SHARE OF REGIONAL COST</b>	<b>545,283</b>	<b>4,548,425</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>5,093,707</b>
<b>TOTAL COST</b>	<b>\$ 26,923,991</b>	<b>\$ 16,059,958</b>	<b>\$ 1,490,131</b>	<b>\$ 20,761,611</b>	<b>\$ 2,603,844</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 67,839,535</b>

SOURCE: BROWARD COUNTY WATER & WASTEWATER FUND

Table A-6  
 Operating and Maintenance Expense for Large User Rate  
 Fiscal Year 2014 and 2015 (1)  
 \$ per 1000 Gallons

	Fiscal 2014		Fiscal 2015	
	Treatment & Disposal	Transmission	Treatment & Disposal	Transmission
Total Direct Operating Costs	16,109,960	2,534,790	18,569,350	2,570,010
Allocated A & G Costs	5,311,270	690,960	5,953,860	763,940
Projected Annual Average Daily Flow (MGD)	71.2	55.9	67.9	52.9
Operating and Maintenance Rate Per 1,000 Gallons	0.747	0.158	0.839	0.162

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 - 8**  
**Broward County Public Works Department**  
**Water & Wastewater Fund**  
**Statement of Net Position (1)**  
**September 30, 2014, 2013, 2012, 2011, and 2010 (In Thousands)**

	FY 2014	FY 2013	FY 2012	FY 2011	FY 2010
<b>ASSETS</b>					
Current Assets:					
Unrestricted Assets:					
Cash & Cash Equivalents	\$ 27,881	\$ 14,441	\$ 4,531	\$ 34,511	\$ 19,154
Investments	56,591	39,703	32,234	7,335	-
Receivable (Net)	14,873	13,460	12,867	12,765	14,779
Inventory	8,511	8,070	7,557	7,121	7,242
Prepaid Items	1,568	2,051	1,391	703	1,263
Total Current Unrestricted Assets	109,424	77,725	58,580	62,435	42,438
Restricted Assets:					
Current Restricted Assets	45,757	39,144	39,280	28,484	28,056
Total Current Assets	155,181	116,869	97,860	90,919	70,494
Noncurrent Assets:					
Noncurrent Restricted Assets	81,043	122,932	148,407	35,549	71,423
Capital Assets:					
Utility Plant in Service (2)	1,124,870	1,102,690	1,035,917	-	-
Land	4,936	4,904	4,904	4,901	4,896
Buildings (2)	-	-	-	209,769	209,769
Equipment (2)	27,270	26,710	24,509	761,713	739,770
Construction in Progress	63,231	40,268	70,212	108,117	65,978
Total Capital Assets	1,220,307	1,174,572	1,135,542	1,084,500	1,020,413
Less Accumulated Depreciation	(485,842)	(452,215)	(418,484)	(388,541)	(358,282)
Total Capital Assets, Net	734,465	722,357	717,058	695,959	662,131
Deferred Bond Issuance Costs	-	-	-	2,466	2,750
Total Noncurrent Assets	815,508	845,289	865,465	733,974	736,304
<b>Total Assets</b>	<b>\$ 970,689</b>	<b>\$ 962,158</b>	<b>\$ 963,325</b>	<b>\$ 824,893</b>	<b>\$ 806,798</b>
<b>DEFERRED OUTFLOWS OF RESOURCES</b>					
Deferred Charge on Refunding	\$ 11,824	\$ 13,311	\$ 14,798	\$ -	\$ -
<b>LIABILITIES</b>					
Current Liabilities:					
Payable From Unrestricted Assets:					
Accounts Payable and Accrued Liabilities	\$ 3,547	\$ 3,216	\$ 4,485	\$ 9,453	\$ 10,680
Due to Other County Funds	-	-	-	21,355	-
Due to Other Governments	3,091	3,258	2,425	2,177	1,949
Compensated Absences	1,759	1,763	1,781	1,796	1,696
Total Current Liabilities Payable from Unrestricted Assets	8,397	8,237	8,691	34,781	14,325
Payable From Restricted Assets					
Accounts Payable and Accrued Liabilities	11,257	5,013	8,436	12	-
Accrued Interest Payable	11,897	12,068	11,914	9,984	10,117
Revenue Bonds Payable	13,705	13,360	10,440	10,110	9,765
Customer Deposits	8,898	8,703	8,490	8,378	8,174
Total Current Liabilities Payable from Restricted Assets	45,757	39,144	39,280	28,484	28,056
Total Current Liabilities	54,154	47,381	47,971	63,265	42,381
Noncurrent Liabilities:					
Revenue Bonds Payable	535,928	551,826	567,379	402,623	412,674
Other Post Employment Benefits Liability	690	617	538	470	346
Compensated Absences	1,865	1,822	2,220	2,487	2,963
Total Noncurrent Liabilities	538,483	554,265	570,137	405,580	415,983
<b>Total Liabilities</b>	<b>\$ 592,637</b>	<b>\$ 601,646</b>	<b>\$ 618,108</b>	<b>\$ 468,845</b>	<b>\$ 458,364</b>
<b>NET POSITION</b>					
Net Investment in Capital Assets	\$ 271,569	\$ 287,484	\$ 259,115	\$ 276,709	\$ 275,516
Restricted For:					
Debt Service Reserve	13,705	13,360	47,939	40,110	39,765
Renewal, Replacement and Improvement	6,130	5,930	5,830	5,600	5,600
Unrestricted	98,472	67,049	47,131	33,629	27,553
<b>Total Net Position</b>	<b>\$ 389,876</b>	<b>\$ 373,823</b>	<b>\$ 360,015</b>	<b>\$ 356,048</b>	<b>\$ 348,434</b>

(1) Effective with the implementation of GASB No. 63 in fiscal year 2013, Net Assets was renamed Net Position

(2) Reclassified capital assets to Utility Plant in Service category in fiscal years 2013 and 2012.

**Table A - 9**  
**Broward County Public Works Department**  
**Water & Wastewater Fund**  
**Statement of Revenue, Expense, and Changes in Net Position (1)**  
**September 30, 2014, 2013, 2012, 2011, and 2010 (In Thousands)**

	FY 2014	FY 2013	FY 2012	FY 2011	FY 2010
<b>Operating Revenue:</b>					
Retail Services:					
Water	\$ 44,508	\$ 43,114	\$ 45,642	\$ 44,294	\$ 41,939
Wastewater	35,740	34,485	33,476	32,664	29,926
Septic Charges	2,232	1,977	1,545	1,519	1,659
Other Services	6,932	6,807	4,070	4,094	3,890
	89,412	86,383	84,733	82,571	77,414
Wholesale Services:					
Water	945	876	701	820	833
Wastewater	32,413	32,957	31,228	30,660	31,361
Total Operating Revenue	122,770	120,216	116,662	114,051	109,608
<b>Operating Expenses:</b>					
Personal Services	23,742	23,208	23,108	24,664	26,882
Utilities Services	14,927	15,338	15,400	14,273	14,017
Chemicals	3,281	3,086	2,784	2,803	2,556
County Services	3,339	3,236	3,334	3,390	3,583
Material and Supplies	4,923	5,635	4,432	5,656	4,837
Motor Pool	1,245	1,449	1,520	1,387	1,279
Contractual Services	8,423	8,203	8,420	6,196	7,412
Other	2,583	3,220	5,075	5,574	4,921
Total Operating Expense Before Depreciation	62,463	63,375	64,073	63,943	65,487
<b>Operating Income Before Depreciation</b>	<b>60,307</b>	<b>56,841</b>	<b>52,589</b>	<b>50,108</b>	<b>44,121</b>
Depreciation Expense	34,730	33,947	31,039	30,975	28,924
<b>Operating Income</b>	<b>25,577</b>	<b>22,894</b>	<b>21,550</b>	<b>19,133</b>	<b>15,197</b>
<b>Non-Operating Revenue (Expense):</b>					
Grants	11	20	-	-	-
Interest Income	394	353	793	1,570	1,758
Interest Expense	(16,964)	(17,235)	(18,557)	(17,608)	(17,772)
Other Expense	(32)	(24)	(11)	(295)	(4,591)
Other Income	941	1,938	1,053	853	269
Bond Issuance Costs	-	-	(2,306)	-	-
Write off Discontinued Project Costs	(499)	(179)	-	-	-
Gain/(Loss) on Disposal of Assets	25	4	22	25	38
Total Non-Operating (Expense)	(16,124)	(15,123)	(19,006)	(15,455)	(20,298)
<b>Income Before Capital Contributions</b>	<b>9,453</b>	<b>7,771</b>	<b>2,544</b>	<b>3,678</b>	<b>(5,101)</b>
<b>Capital Contributions:</b>					
Total Capital Contributions	6,600	6,037	4,768	3,936	7,581
<b>Change In Net Position</b>	<b>16,053</b>	<b>13,808</b>	<b>7,312</b>	<b>7,614</b>	<b>2,480</b>
Total Net Position - Beginning, as Restated in 2012	373,823	360,015	352,703	348,434	345,954
<b>Total Net Position - Ending</b>	<b>\$ 389,876</b>	<b>\$ 373,823</b>	<b>\$ 360,015</b>	<b>\$ 356,048</b>	<b>\$ 348,434</b>

(1) Effective with the implementation of GASB No. 63 in fiscal year 2013, Net Assets was renamed Net Position.

**Table A - 10**  
**Broward County Public Works Department**  
**Water & Wastewater Fund**  
**Statement of Cash Flows**  
**September 30, 2014, 2013, 2012, 2011, and 2010 (In Thousands)**

	FY 2014	FY 2013	FY 2012	FY 2011	FY 2010
<b>Cash Flows From Operating Activities:</b>					
Cash Received from Customers	\$ 121,370	\$ 120,655	\$ 117,325	\$ 116,498	\$ 109,970
Cash Payments to Suppliers for Goods and Services	(38,988)	(42,004)	(41,486)	(38,846)	(39,031)
Cash Payments to Employees for Services	(23,439)	(23,503)	(23,410)	(24,888)	(26,137)
Other Cash Received (Paid)	941	980	1,053	853	(4,045)
Net Cash Provided by Operating Activities	59,884	56,128	53,482	53,617	40,757
<b>Cash Flows From Noncapital Financing Activities:</b>					
Cash from Noncapital Grants	11	20	-	-	-
Net Cash Provided by Noncapital Financing Activities	11	20	-	-	-
<b>Cash Flows From Capital and Related Financing Activities</b>					
Acquisition and Construction of Capital Assets	(33,708)	(35,632)	(43,827)	(64,245)	(52,409)
Proceeds from Internal Loan	-	-	3,513	21,355	-
Payments on Internal Loan	-	-	(24,869)	-	-
Interest Paid on Internal Loan	-	-	(175)	-	-
Proceeds from Sale of Capital Assets	69	12	22	25	37
Proceeds From Revenue Bonds	-	-	157,651	-	-
Payment of Bond Issuance Costs	-	-	(110)	-	-
Capital Recovery Fees	4,093	3,680	636	662	275
Capital Surcharges Contributed from Other Governments	1,662	1,633	1,709	1,721	1,742
Principal Paid on Revenue Bonds	(13,360)	(10,440)	(10,110)	(9,706)	(7,789)
Interest Paid on Revenue Bonds	(23,965)	(23,982)	(19,724)	(17,457)	(18,155)
Other Costs Paid	(43)	(18)	(11)	(295)	(33)
Net Cash (Used For) Provided by Capital and Related Financing Activities	(65,252)	(64,747)	64,705	(67,940)	(76,332)
<b>Cash Flows From Investing Activities:</b>					
Purchase of Investment Securities	(166,287)	(130,683)	(70,241)	(102,646)	(51,449)
Proceeds from Sale and Maturities of Investment Securities	150,090	123,945	49,500	87,341	53,937
Interest on Investments	409	367	793	1,569	1,758
Net Cash (Used For) Provided by Investing Activities	(15,788)	(6,371)	(19,948)	(13,736)	4,246
Net Increase (Decrease) In Cash & Cash Equivalents	(21,145)	(14,970)	98,239	(28,059)	(31,329)
Cash & Cash Equivalents, Beginning of Year	134,677	149,647	51,408	82,624	113,953
<b>Cash &amp; Cash Equivalents, End of Year</b>	<b>\$ 113,532</b>	<b>\$ 134,677</b>	<b>\$ 149,647</b>	<b>\$ 54,565</b>	<b>\$ 82,624</b>
Cash and Cash Equivalents - Unrestricted Assets	\$ 27,881	\$ 14,441	\$ 4,531	\$ 41,846	\$ 19,154
Cash and Cash Equivalents - Restricted Assets	85,651	120,236	145,116	12,719	63,470
Total Cash & Cash Equivalents	\$ 113,532	\$ 134,677	\$ 149,647	\$ 54,565	\$ 82,624
<b>Reconciliation Of Operating Income To Net Cash Provided By Operating Activities:</b>					
Operating Income	\$ 25,577	\$ 22,894	\$ 21,550	\$ 19,133	\$ 15,196
Depreciation	34,730	33,947	31,039	30,975	28,924
Miscellaneous Non-Operating Income (Expense)	941	1,030	1,053	853	(4,045)
Decrease (Increase) in Assets:					
Accounts Receivable	(1,428)	(607)	304	2,014	125
Inventory	(441)	(513)	(436)	121	(652)
Prepaid Items	197	131	(687)	560	107
Increase (Decrease) in Liabilities:					
Accounts Payable	(23)	(1,455)	601	(247)	119
Accrued Liabilities	191	(8)	(87)	27	124
Due to Other Governments	(167)	833	248	228	(54)
Customer Deposits	195	213	111	205	292
Compensated Absences	39	(416)	(282)	(376)	495
Other Post Employment Benefits	73	79	68	124	126
Total Adjustments	34,307	33,234	31,932	34,484	25,561
<b>Net Cash Provided by Operating Activities</b>	<b>\$ 59,884</b>	<b>\$ 56,128</b>	<b>\$ 53,482</b>	<b>\$ 53,617</b>	<b>\$ 40,757</b>

<b>A-11</b> <b>Water and Wastewater Retail Statistics</b> <b>(1,000's gallons)</b> <b>As of September 30, 2014</b>				
<b>Water</b>	<b>Produced</b>	<b>Purchased</b>	<b>Billed</b>	<b>System Uses &amp; Losses</b>
District 1	2,608,091	185,400	2,427,561	365,930
District 2	4,363,773	0	2,309,948	-
District 2 - Resale	0	0	1,754,927	298,898
District 3A	0	1,024,686	898,332	126,354
District 3BC	0	1,246,511	1,058,210	188,301
<b>Total</b>	<b>6,971,864</b>	<b>2,456,597</b>	<b>8,448,978</b>	<b>979,483</b>
<b>Wastewater</b>	<b>Billed *</b>	<b>Wastewater Transmission to Plant</b>		
District 1	2,268,018	2,683,138		
District 2	1,962,165	2,677,775		
District 3A	617,492	631,728		
District 3BC	317,383	331,975		
<b>Total</b>	<b>5,165,058</b>	<b>6,324,616</b>		
* Based upon water billed to wastewater customers. Residential billing capped at 15,000 gallons.				
<b>Source: Broward County Water and Wastewater Services</b>				

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

<b>FY</b>	<b>Capital Budget</b>	<b>Debt Financed</b>	<b>Cash Financed</b>
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	25,000,000	4,000,000
2016	75,960,850	40,000,000	25,000,000
2017	140,893,890	40,000,000	25,000,000
2018	94,362,750	40,000,000	25,000,000
2019	78,104,300	40,000,000	25,000,000

**Source: Broward County Water and Wastewater Services**



**Table A-13  
Water and Wastewater Services  
Historical Capital Recovery Fees Collected**

<b>Fiscal Year Ended 9/30</b>	<b>Water</b>	<b>Wastewater</b>	<b>Total</b>
2005	1,245,231	1,344,064	2,589,295
2006	1,088,629	1,288,714	2,377,343
2007	2,825,876	1,068,021	3,893,897
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

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	
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%
2006	0.583	0.115	10,018.08	3,643.94	2.5%

Source: Broward County Water and Wastewater Services